3GPP TSG_CN#7 **NP-000160**

ETSI SMG3 Plenary Meeting #7,
Madrid, Spain
13th – 15th March 2000

Agenda item: **5.2.3**

Source: **TSG_N WG 2**

Title: **CRs to 3G Work Item CAMEL phase 3 (23.078) Part 1**

Introduction:

This document contains **"20"** CRs on **Work Item CAMEL phase 3,** that have been agreed by **TSG_N WG 2,** and are forwarded to **TSG_N Plenary** meeting #7 for approval.

Tdoc	Spec	CR	Rev	Cat	Rel	Old ver	New ver	Subject
N2A000114	23.078	034	1	D	R99	3.3.0	3.4.0	Correction to some SDLs in chapter 4
N2A000306	23.078	035	3	F	R99	3.3.0	3.4.0	Correction of Translation Information Flag in the VLR for DTN
N2A000255	23.078	037	3	C	R99	3.3.0	3.4.0	Clarification on CUG handling
N2A000117	23.078	038	1	F	R99	3.3.0	3.4.0	Clarification of SS Invocation Notification
N2A000300	23.078	040	5	C	R99	3.3.0	3.4.0	Correction of SS Invocation Notification for CCBS
N2A000296	23.078	041	5	C	R99	3.3.0	3.4.0	Introduction of call gapping
N2A000264	23.078	042	2	F	R99	3.3.0	3.4.0	Technical and editorial corrections to ATSI, ATM, NCSD (rev of both 008 &014)
N2A000265	23.078	043	2	F	R99	3.3.0	3.4.0	Technical and editorial corrections to Location Services and Any Time Interrogation
N2A000118	23.078	044	1	F	R99	3.3.0	3.4.0	Technical and editorial corrections to circuit cwithed call handling
N2A000017	23.078	045		F	R99	3.3.0	3.4.0	Technical and editorial corrections to USSD
N2A000119	23.078	046	1	F	R99	3.3.0	3.4.0	Technical and editorial corrections to GPRS
N2A000019	23.078	047		F	R99	3.3.0	3.4.0	Technical and editorial corrections to SMS
N2A000122	23.078	048	1	F	R99	3.3.0	3.4.0	Inclusion of O-CSI trigger criteria in Resume Call Handling
N2A000268	23.078	051	4	F	R99	3.3.0	3.4.0	Correction of SDL related to CAMEL Phase3 for D-CSI
N2A000269	23.078	052	4	F	R99	3.3.0	3.4.0	Addition of description of D-CSI in MO Calls
N2A000033	23.078	055		F	R99	3.3.0	3.4.0	Reporting of T_Busy when absent subscriber
N2A000277	23.078	056	3	F	R99	3.3.0	3.4.0	GPRS TCAP dialogues
N2A000059	23.078	059		F	R99	3.3.0	3.4.0	Addition of gsmSRF disconnect handling in CCF SDL
N2A000282	23.078	061	3	B	R99	3.3.0	3.4.0	Addition of SCI handling in Waiting for Instructions For DS state
N2A000151	23.078	063	2	F	R99	3.3.0	3.4.0	Clarification of N-CSI in Core NW

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Kyoto, Japan, 17-21 Jan 2000

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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.

23.078	CR	034r1	Current Version:	3.3.0

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

For submission to:	CN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		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: CN WG2 **Date:** 22/12/99

Subject: Correction to some SDLs in chapter 4.

Work item: CAMEL Phase 3

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			Release 97	
C	Functional modification of feature			Release 98	
D	Editorial modification	X		Release 99	X
				Release 00	

Reason for change: Some SDLs did not have the solid line box present to explain where signals to the left and or the right are to/from.
One SDL had a 'No' decision line missing from a Yes/No decision box.

Clauses affected: 4.5.6.4

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: The SDL's contain blue change bars indicating the elements that have been added or changed. This is a feature present in (at least) Telelogic Tau 3.5 and above. Please see the Telelogic Tau help files for more details.


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

4 Circuit switched Call Control

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4.5.6 Handling of mobile calls in the gsmSSF

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4.5.6.4 Process gsmSSF and procedures

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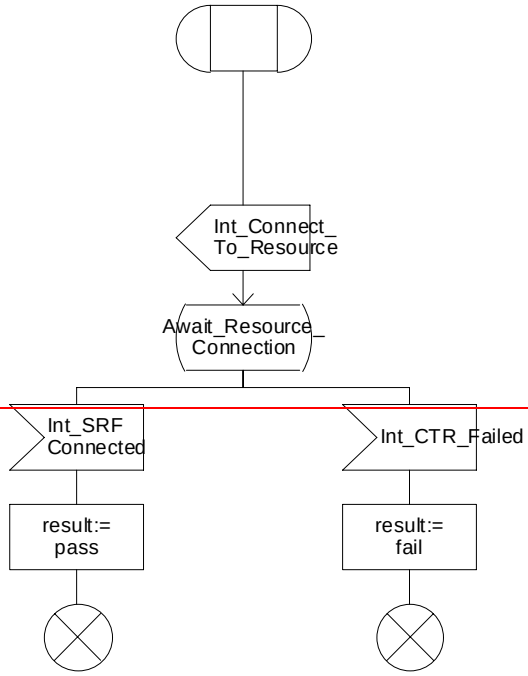
Procedure Connect_To_Resource 1(1)

This procedure is called, when the ConnectToResource request is received in WfI or Mon state.



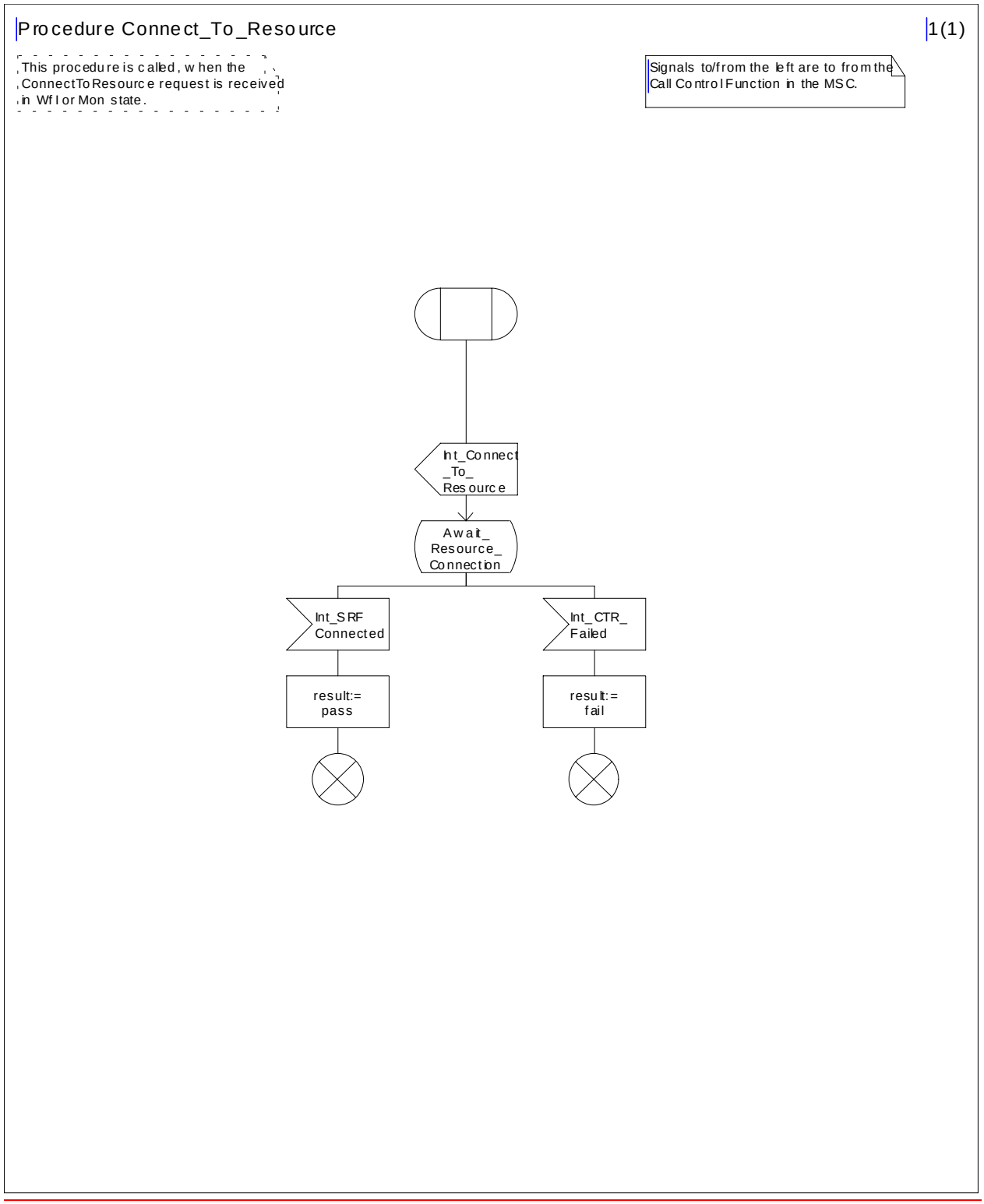
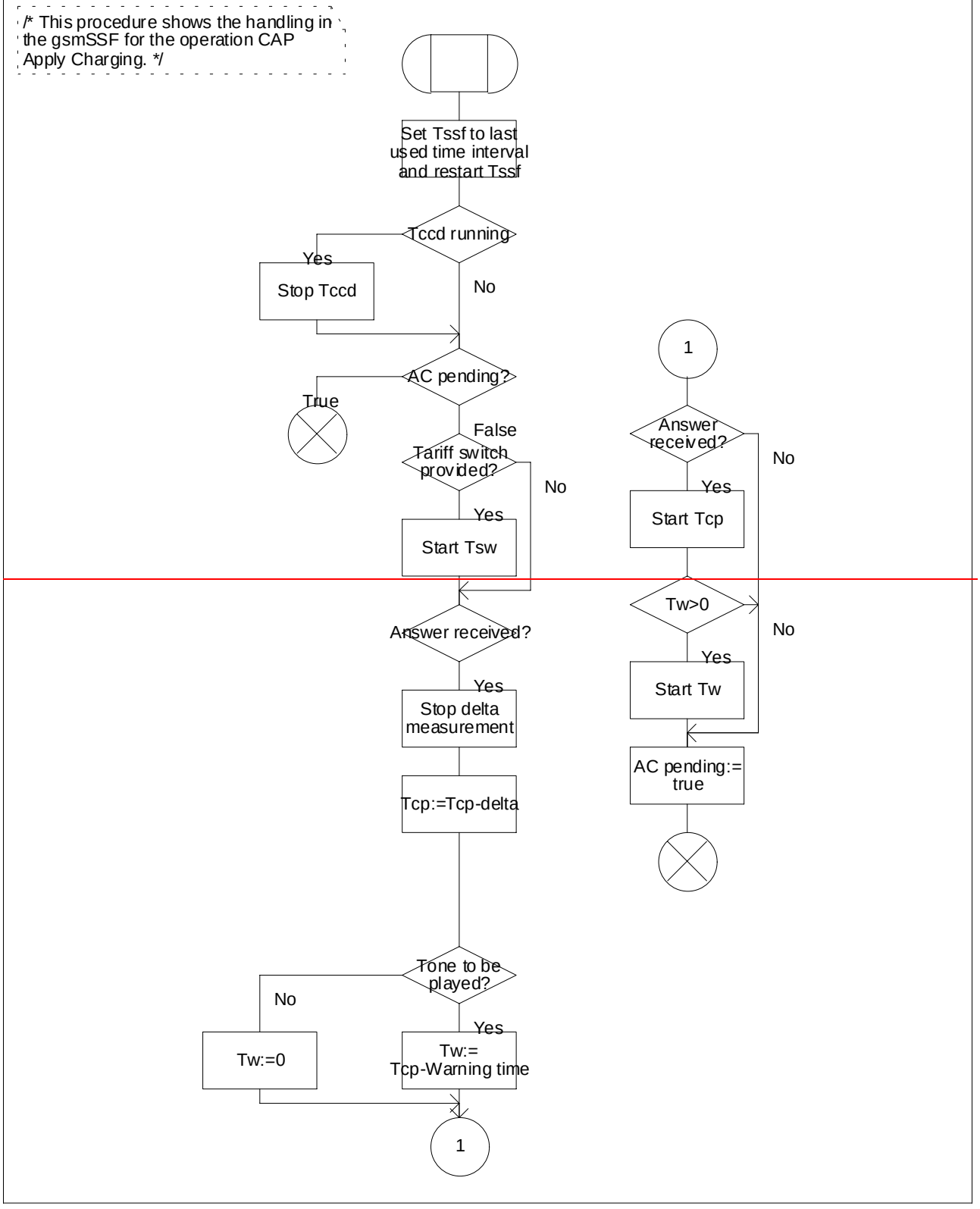


Figure 4.61a: Procedure Connect_To_Resource (sheet 0)

Procedure Handle_AC 1(1)



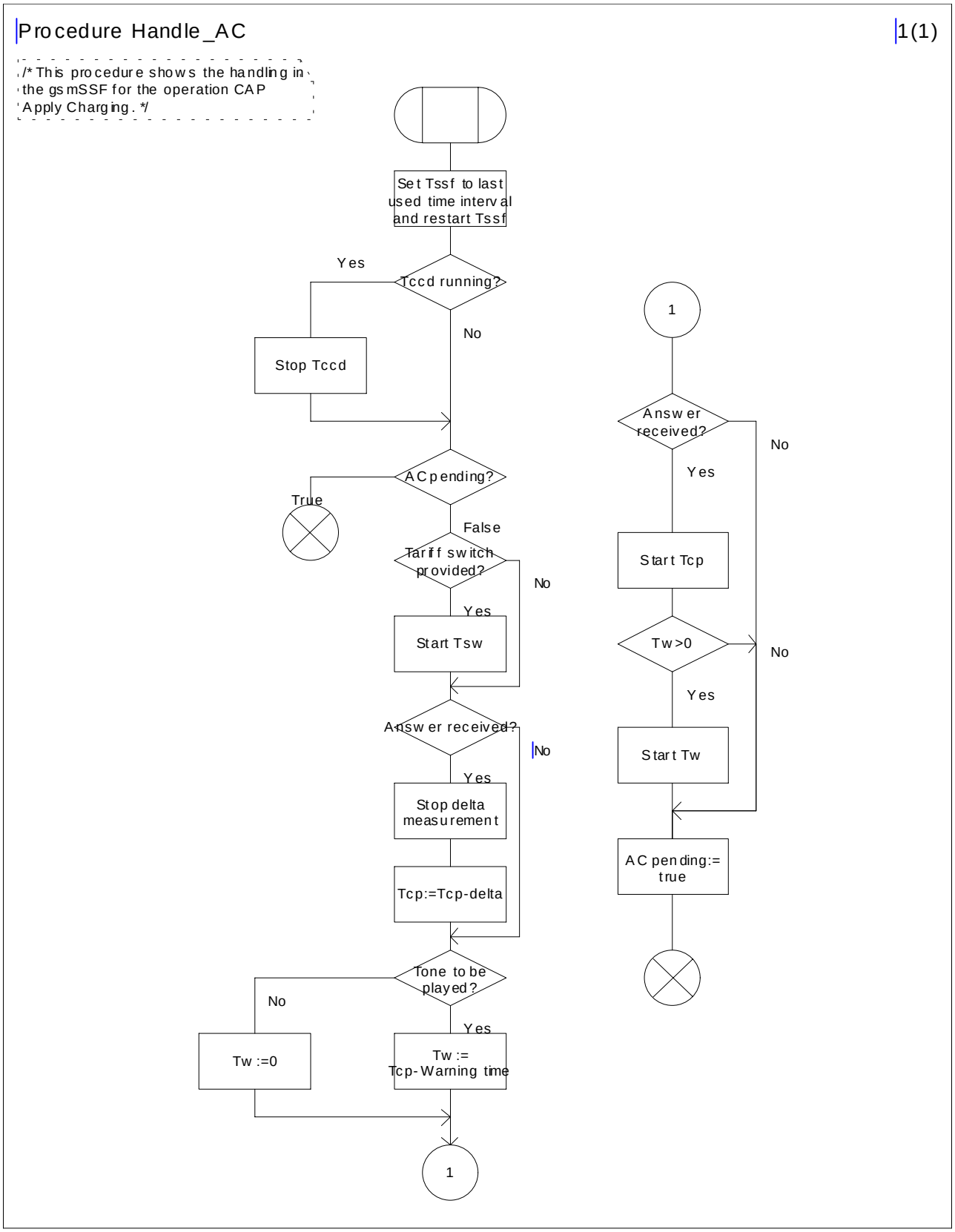
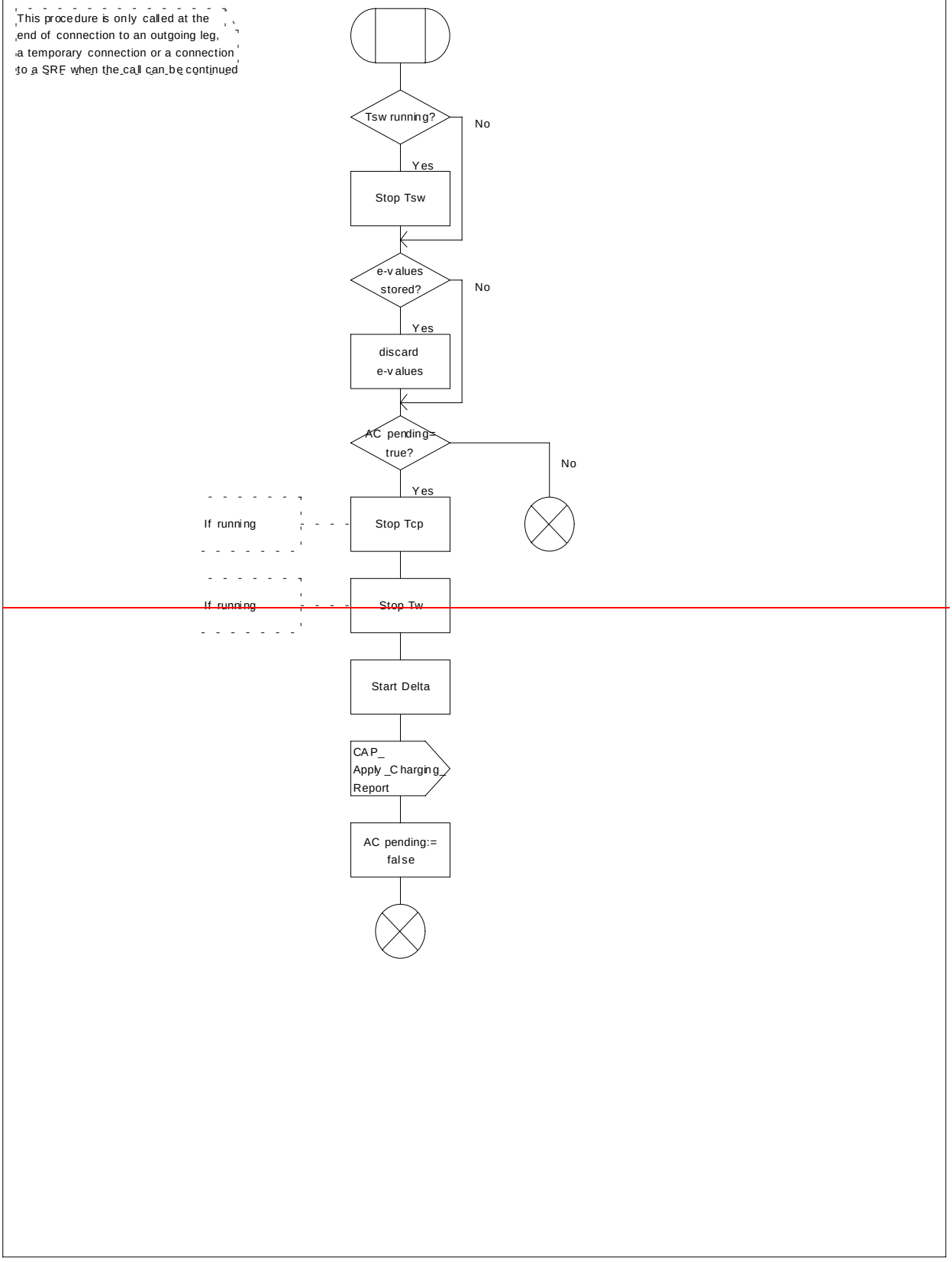


Figure 4.62a: Procedure Handle_AC (sheet 1)

Procedure Handle_ACR 1(1)



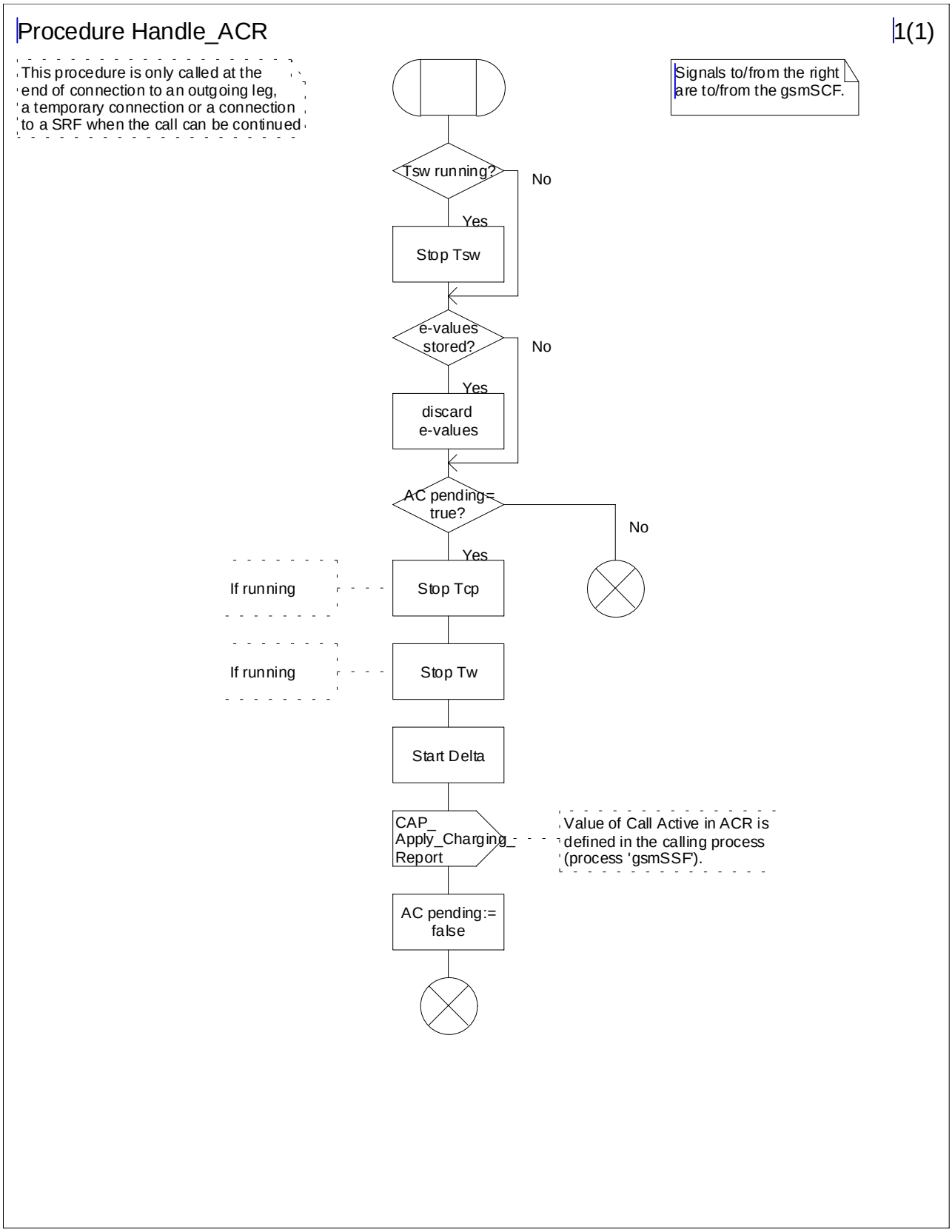


Figure 4.63a: Procedure Handle_ACR (sheet 1)

3GPP/SMG Meeting #01/00
Sophia Antipolis, France, 21-25 Feb 2000

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

CHANGE REQUEST

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23.078	CR	035r3	Current Version:	3.3.0

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

For submission to: CN#7 *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: CN WG2 **Date:** 29/02/00

Subject: Correction of Translation Information Flag in the VLR for DTN.

Work item: CAMEL Phase 3

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

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

Reason for change:

- The two paragraphs in 4.3.6.2.1on DTN, incorrectly refer to call forwarding instead of call deflection.
- Grammar correction in section 4.7.2.2.
- An additional clause, 4.7.2.3, has been added to explain invocation of Call Deflection.

Clauses affected: 4.3.6.2.1, 4.7.2.2, 4.7.2.3 (new section)

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:


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****** First Modified Section ******

2 Normative 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] 3G TS 22.078: "Digital cellular telecommunications system (Phase 2+); Customized Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3. Service description. Stage 1

[3] 3G TS 23.018: "Digital cellular telecommunications system (Phase 2+); Basic call handling ; Technical realisation".

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[33] 3G TS 24.008: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification"

[34] 3G TS 23.032: "3rd Generation Partnership Project; Technical Specification Group Core Network; Universal Geographical Area Description (GAD)"

[35] 3G TS 23.072: “Call Deflection (CD) Supplementary Service - Stage 2”

****** Next Modified Section ******

4.3.6.2.1 Translation Information Flag

~~A flag (~~The TIF-CSI~~)~~ in the CAMEL Subscriber data ~~in the HLR~~ indicates,

- ~~-~~when the subscriber registers a forwarded-to number, that the HLR shall not attempt to perform any translation, number format checks, prohibited FTN checks~~,~~ or call barring checks. (see 3G TS 23.082) ~~(cf. 4.7.2).~~

~~If the flag is absent, this indicates that a translation is needed in the HLR and the usual procedure applies as defined in the current version of 3G TS GSM 03.82 23.082 [27]. In particular, the interaction with barring services shall be performed by the HLR at the registration of the FTN.~~

- when the subscriber invokes the Call Deflection supplementary service, ~~A flag (TIF) in the CAMEL Subscriber data in the VLR indicates, when the subscriber registers a forwarded-to number~~ for Deflected To Numbers, that the VLR shall not attempt to perform any translation, number format checks, prohibited DTN checks~~,~~ or call barring checks. (see 3G TS 23.072) ~~cf. 4.7.2).~~

~~If the flag is absent, this indicates that a translation is needed in the VLR and the usual procedure applies as defined in the current version of 3G TS GSM 03.82 23.072 [35]. In particular, the interaction with barring services shall be performed by the VLR at the registration of the DTN~~ invocation of Call Deflection~~.~~

****** Next Modified Section ******

4.7.2 Call forwarding services

…

4.7.2.2 Invocation of Call Forwarding

The functional behaviour for the invocation of the Call Forwarding supplementary service is defined in 3G TS 23.018 [3] and 3G TS 23.082. The following additional requirements apply.

When ~~c~~Call ~~f~~Forwarding is invoked for a CAMEL subscriber with O-CSI ~~or D-CSI~~, the gsmSSF shall send the FTN to the gsmSCF in the format in which it was received from the HLR. When Call Forwarding is invoked for a CAMEL subscriber with D-CSI or if a N-CSI is present in the forwarding MSC, then the FTN shall be treated as defined in section 4.2.1.2.2.

If the Service Interaction Indicators Two parameter was included in the Initial Address Message, the Continue With Argument message or the Connect message, ~~these~~ the appropriate indicator shall be applied for the forwarded call.

An HLR shall not send an FTN which is not in international E.164 format to a GMSC which does not support CAMEL phase 2, i.e. if the HLR is handling a request from a GMSC for routeing information and the forwarded-to number is registered in a format other than international E.164, the service logic in the HLR shall behave as if the call forwarding is provisioned but not registered.

****** New Section ******

4.7.2.3 Invocation of Call Deflection

The functional behaviour for the invocation of the Call Deflection supplementary service is defined in 3G TS 23.018 [3] and 3G TS 23.072 [35]. The following additional requirements apply~~ies~~.

When Call Deflection is invoked ~~for~~by a CAMEL subscriber with O-CSI ~~or D-CSI~~, the gsmSSF shall send the DTN to the gsmSCF in the format in which it was received from the MS. When Call Deflection is invoked by a CAMEL subscriber with D-CSI or if a N-CSI is present in the VMSC, then the DTN shall be treated as defined in section 4.2.1.2.2.

If the Service Interaction Indicators Two parameter was included in the Initial Address Message, the Continue With Argument message or the Connect message, the appropriate indicator shall be applied for the deflected call.

3GPP TSG-N2
Sophia Antipolis, France, 21 - 25 Feb 2000

Tdoc 3GPP N2A000255
(revised from N2A181 & 083)

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23.078	CR	037r3	Current Version:	3.3.0

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

For submission to:	CN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		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:	CN WG2
Date:	29/02/2000
Subject:	Clarification of CUG handling & explicit treatment of Int_Continue_With_Argument
Work item:	CAMEL Phase 3

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

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:
In CAMEL Phase 3, the gsmSCF has the ability to change CUG information for a call. The handling of this information requires further clarification in the SDLs and in section 4.7: “Interaction with Supplementary Services”. This CR aims to complete the work on the interactions between CUG and CAMEL Phase 3.
This CR also proposes the explicit signal sending/receiving Int_Continue_With_Argument and the specific treatment thereafter, as well as limiting the signal at only the following states:

- DP_Collected_Information
- DP_Analysed_Information
- DP_Termination_Attempt_Authorised

Clauses affected: 4.5.2.1, 4.5.3.1, 4.5.4.1, 4.5.5, 4.5.6.4, 4.7.4 (new)

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	CR 29.078 - 57r1
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:
Although current SDL diagrams indicate the possibility of receiving Continue with argument (by using the check box whether parameters present or not), this method may confuse readers (leaving them wondering whether this signal is impossible or just missing!) if the check box is not seen.


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****** First Modified Section ******

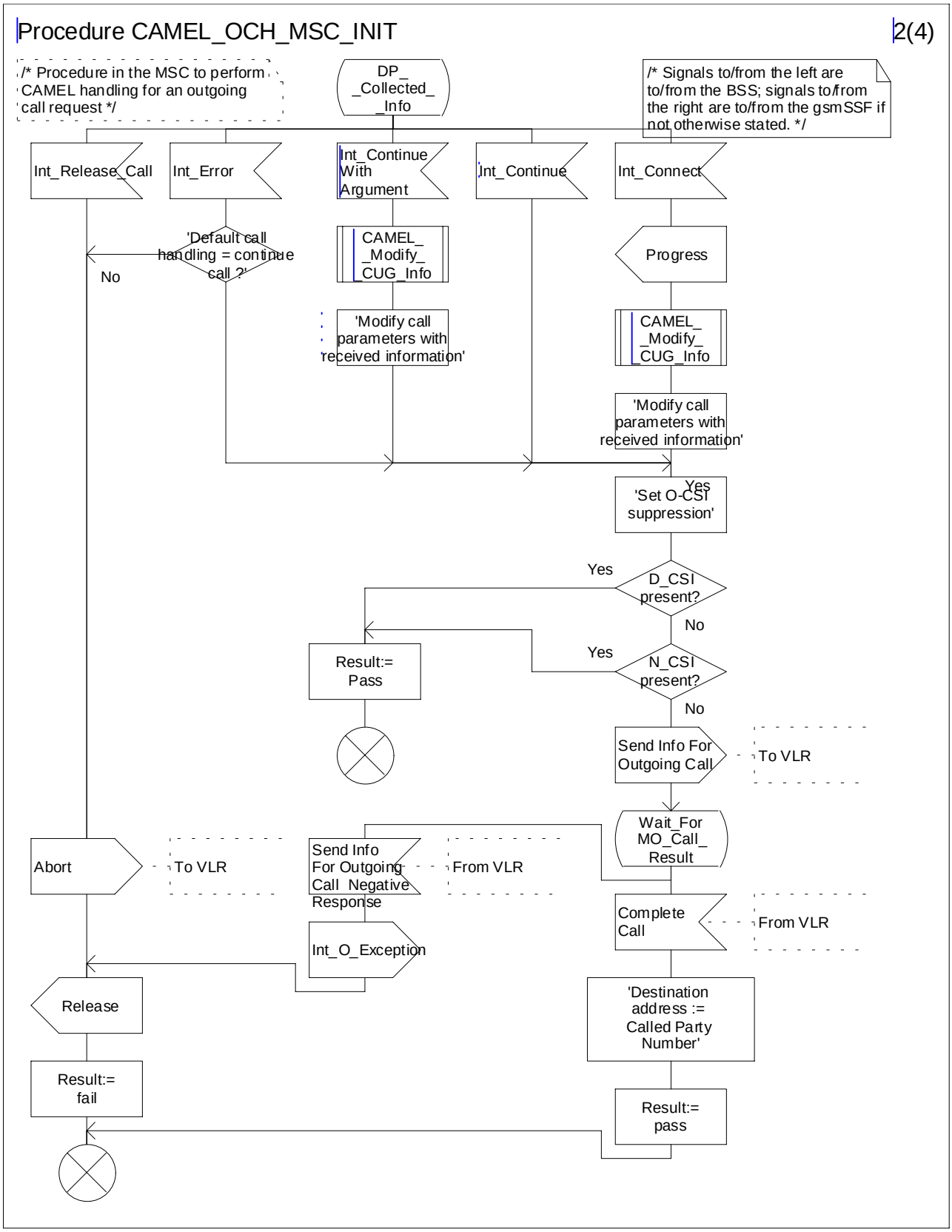
4.5.2.1 Handling of mobile originated calls in the originating MSC

The functional behaviour of the originating VMSC is specified in 3G TS 23.018 [3]. The procedures specific to CAMEL are specified in this subclause :

- Procedure CAMEL_OCH_MSC_INIT,
- Procedure CAMEL_OCH_MSC_ANSWER,
- Procedure CAMEL_OCH_MSC1,
- Procedure CAMEL_OCH_MSC2,
- Procedure CAMEL_OCH_MSC_DISC1,
- Procedure CAMEL_OCH_MSC_DISC2,
- Procedure CAMEL_OCH_MSC_DISC4,
- Procedure CAMEL_OCH_ETC,
- Procedure CAMEL_OCH_CTR,
- Procedure CAMEL_Start_TNRy,
- Procedure CAMEL_Stop_TNRy.
- —Procedure CAMEL_Store_Destination_Address
- Procedure CAMEL_Modify_CUG_Info

The procedure Send_Access_Connect_If_Required is specified in 3G TS 23.018 [3].

The following paragraphs gives details on the behaviour of the MSC in the procedure CAMEL_OCH_MSC_INIT, CAMEL_OCH_ETC, CAMEL_OCH_ANSWER and CAMEL_Store_Destination_Address.


Procedure CAMEL_OCH_MSC_INIT
2(4)
/* Procedure in the MSC to perform CAMEL handling for an outgoing call request */
DP_ _Collected_ _Info
/* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated. */
Int_Release_Call
Int_Error
Int_Continue With Argument
Int_Continue
Int_Connect
'Default call handling = continue call ?'
No
CAMEL_ _Modify_ _CUG_Info
'Modify call parameters with received information'
Progress
CAMEL_ _Modify_ _CUG_Info
'Modify call parameters with received information'
Yes
'Set O-CSI suppression'
Yes
D_CSI present?
No
Yes
N_CSI present?
No
Result:= Pass
Send Info For Outgoing Call
To VLR
Wait_For MO_Call_ Result
Abort
To VLR
Send Info For Outgoing Call Negative Response
From VLR
Complete Call
From VLR
Int_O_Exception
Release
'Destination address := Called Party Number'
Result:= fail
Result:= pass

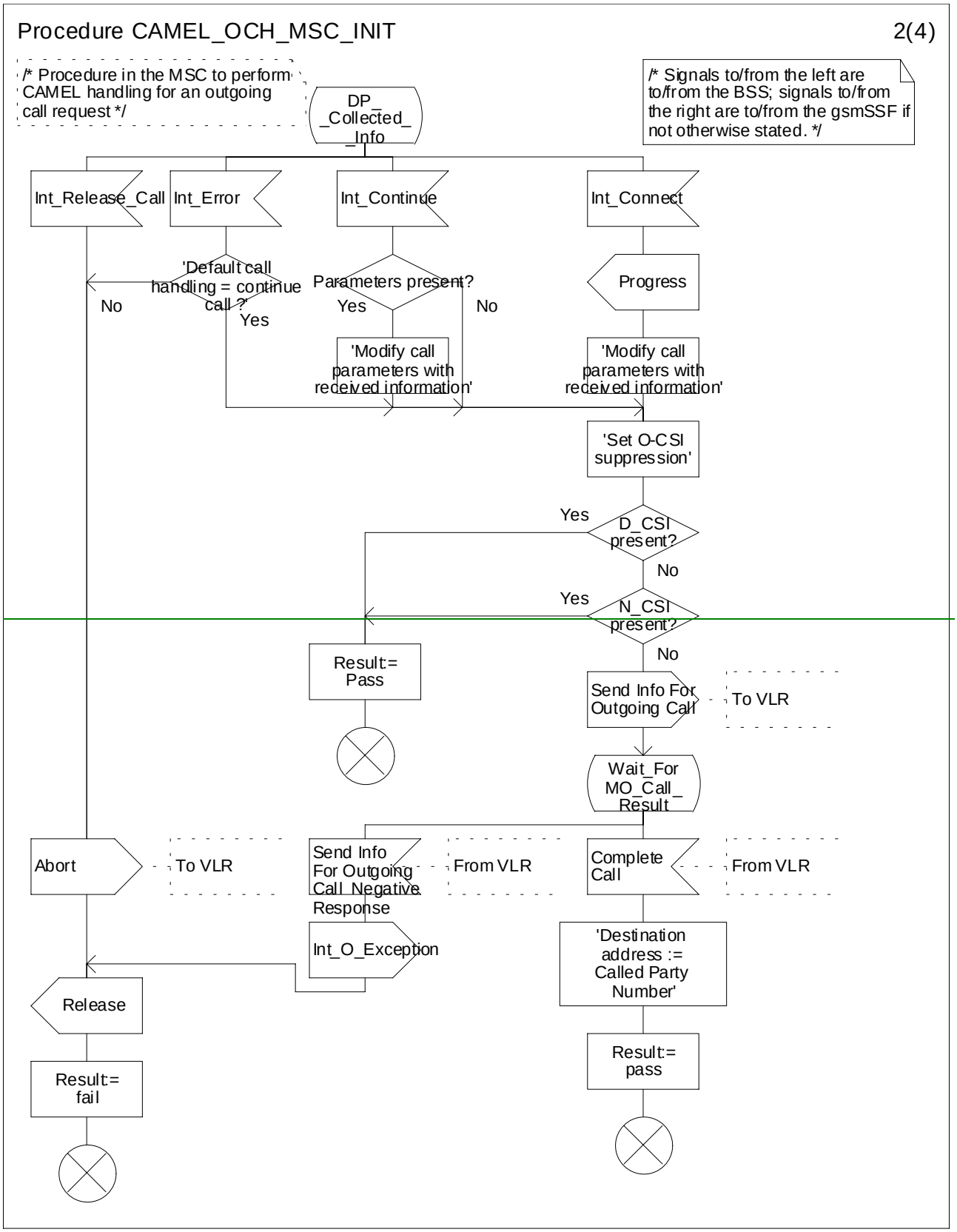
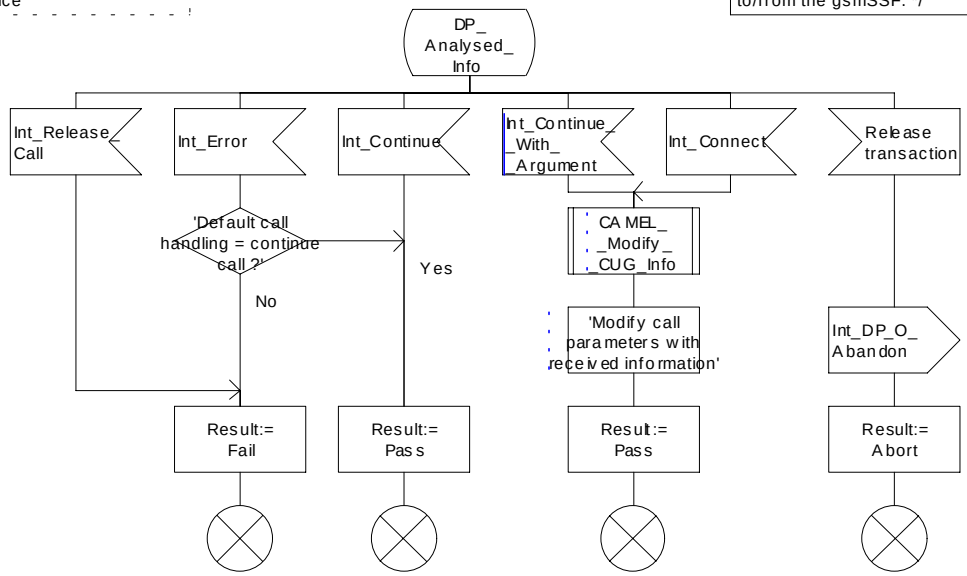


Figure4.10b: Procedure CAMEL_OCH_MSC_INIT (sheet 2)

Procedure CAMEL_SDS_MO_INIT 2(2)

Procedure in the MSC to perform CAMEL handling for a subscribed Dialled Service

/* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF. */



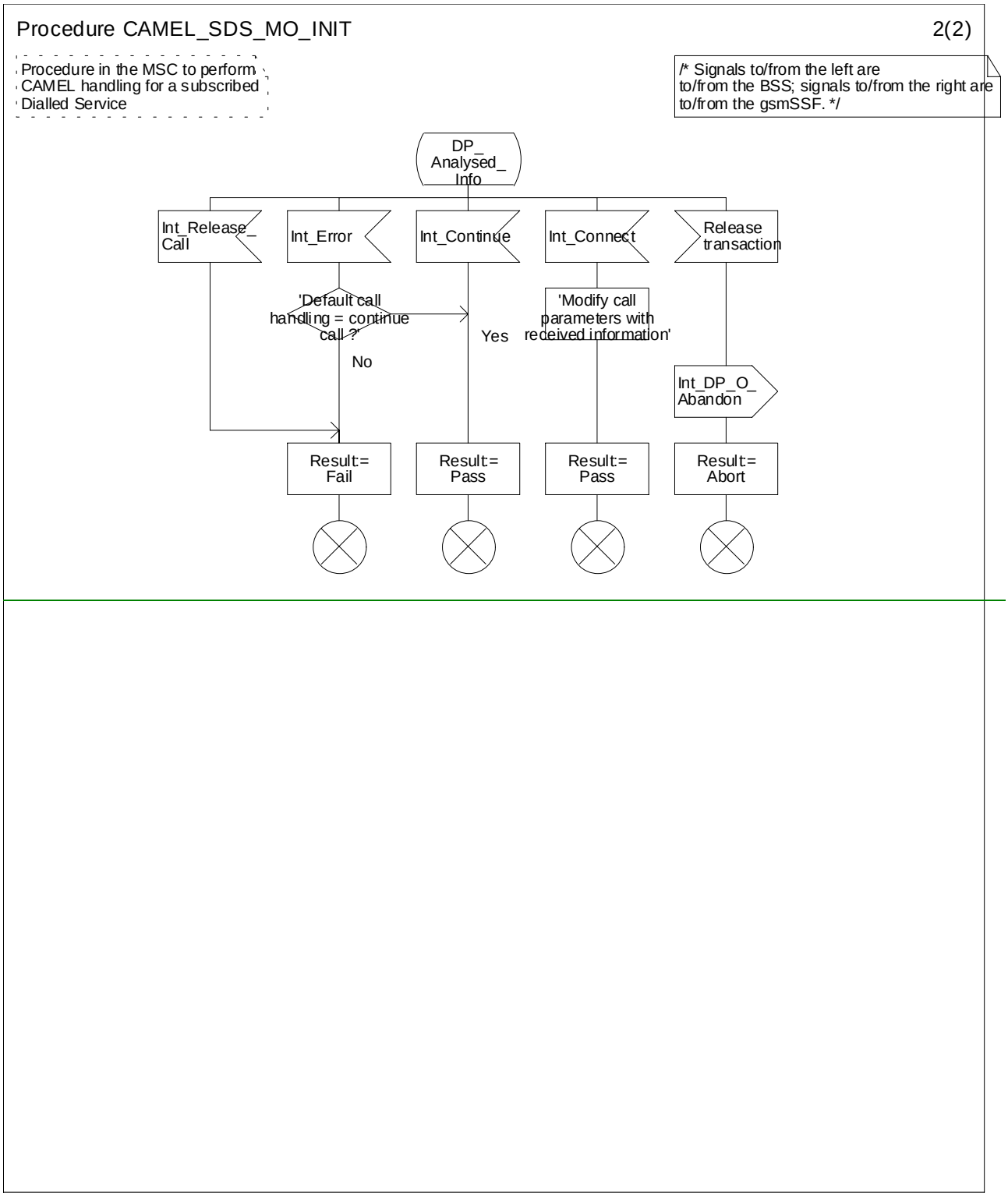
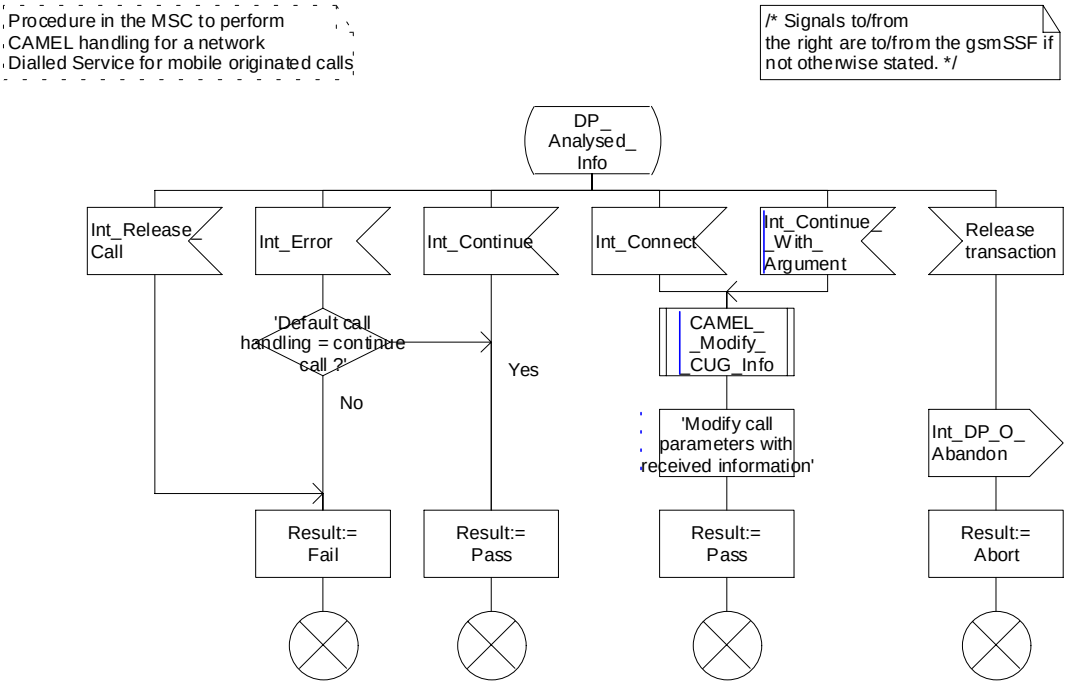


Figure 4.11b: Procedure CAMEL_SDS_MO_INIT (sheet 2)

Procedure CAMEL_NDS_MO_INIT 2(2)



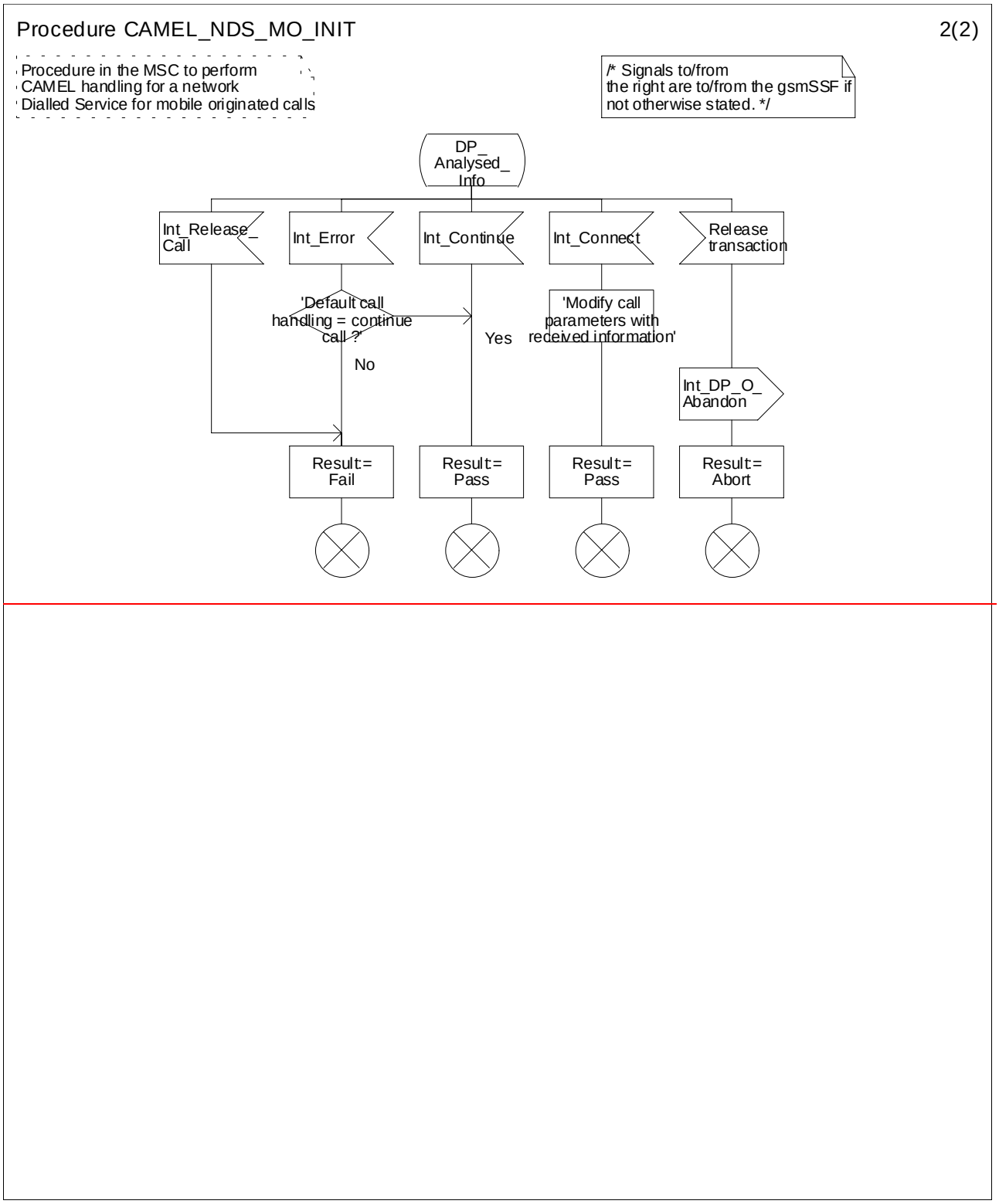
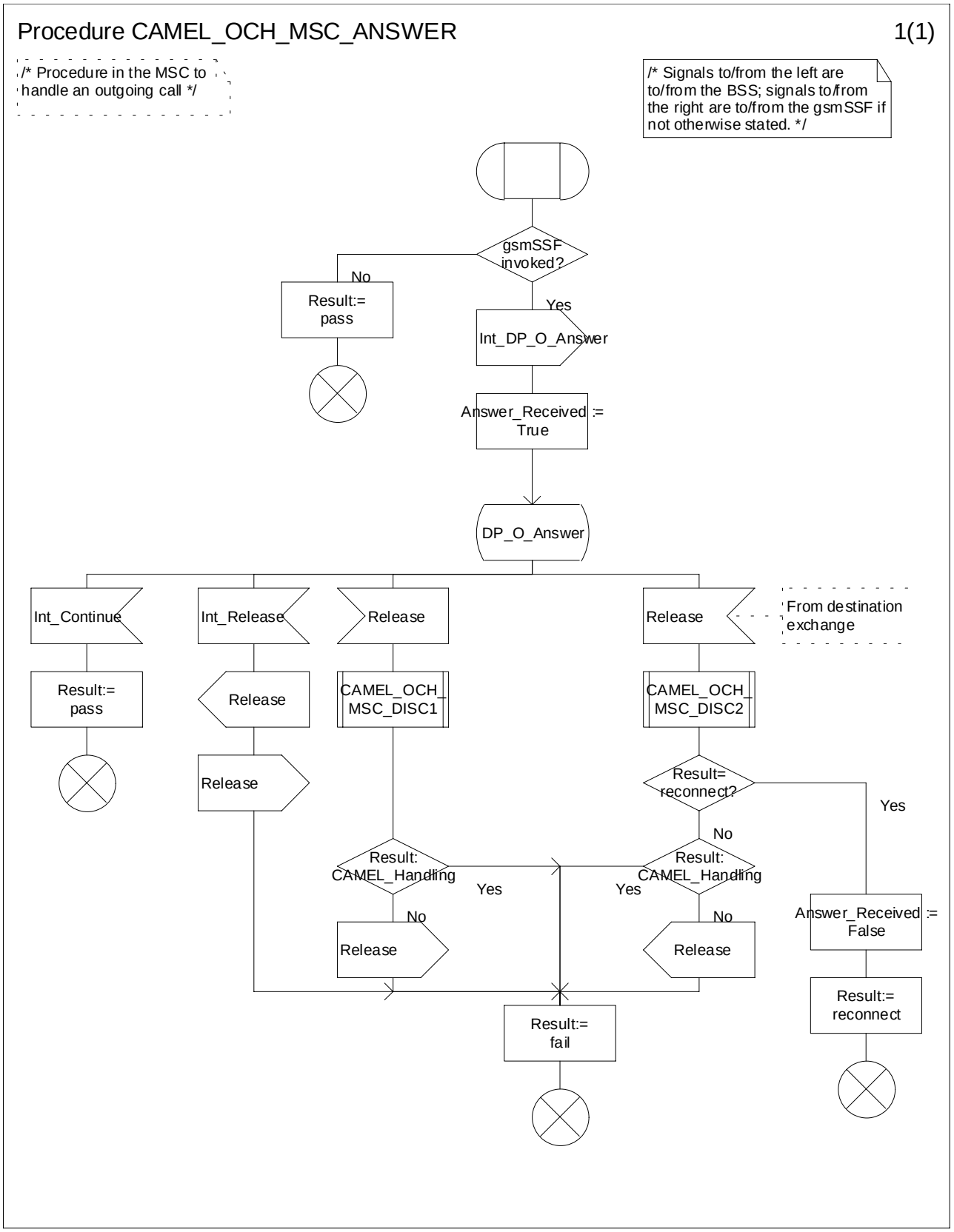


Figure 4.12b: Procedure CAMEL_NDS_MO_INIT (sheet 2)


Procedure CAMEL_OCH_MSC_ANSWER
1(1)
/* Procedure in the MSC to handle an outgoing call */
/* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated. */
gsmSSF invoked?
No
Result:= pass
Yes
Int_DP_O_Answer
Answer_Received := True
DP_O_Answer
Int_Continue
Int_Release
Release
Release
From destination exchange
Result:= pass
Release
CAMEL_OCH_ MSC_DISC1
CAMEL_OCH_ MSC_DISC2
Release
Result= reconnect?
Yes
No
Result: CAMEL_Handling
Yes
No
Result: CAMEL_Handling
Yes
No
Release
Release
Answer_Received := False
Result:= reconnect
Result:= fail

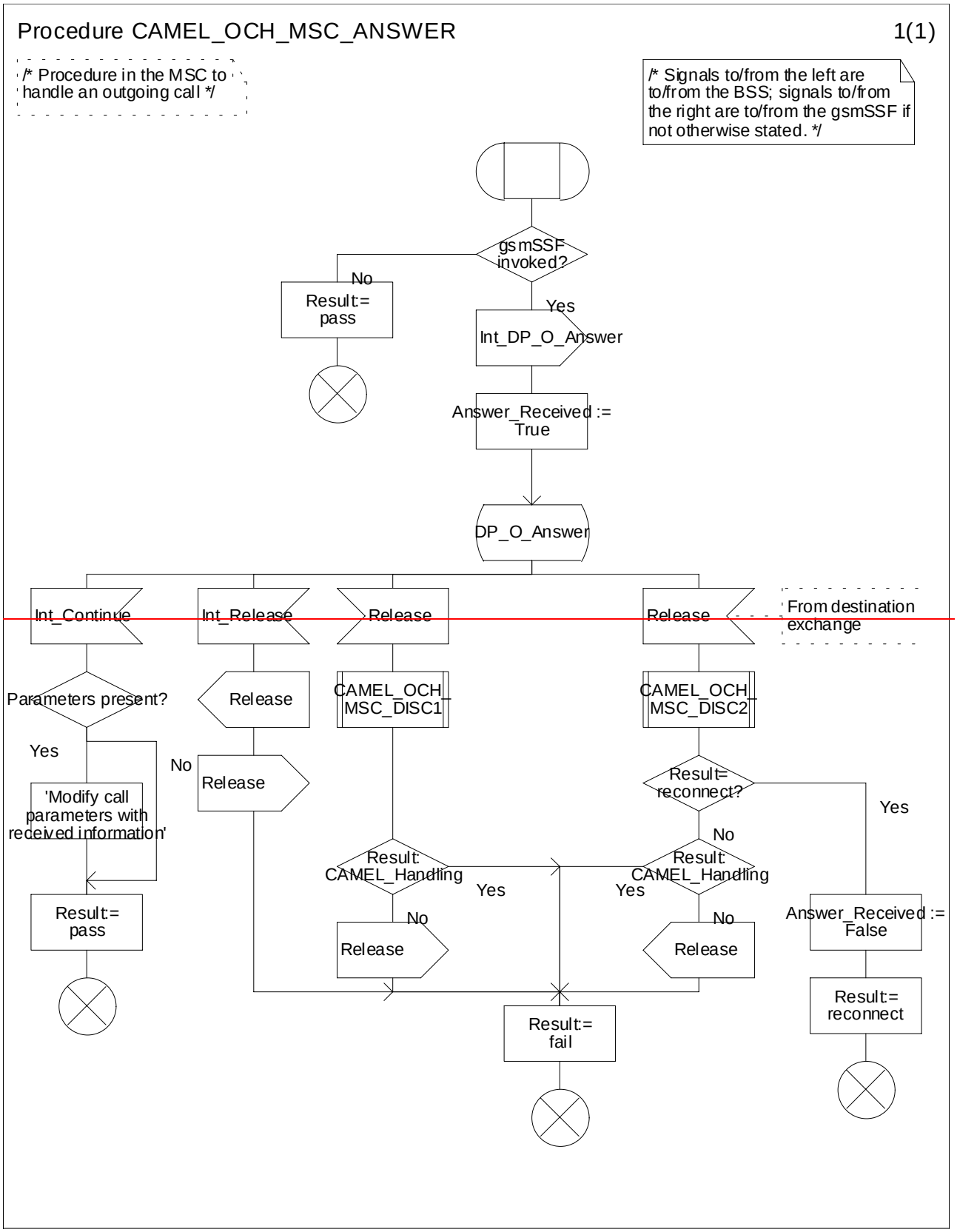
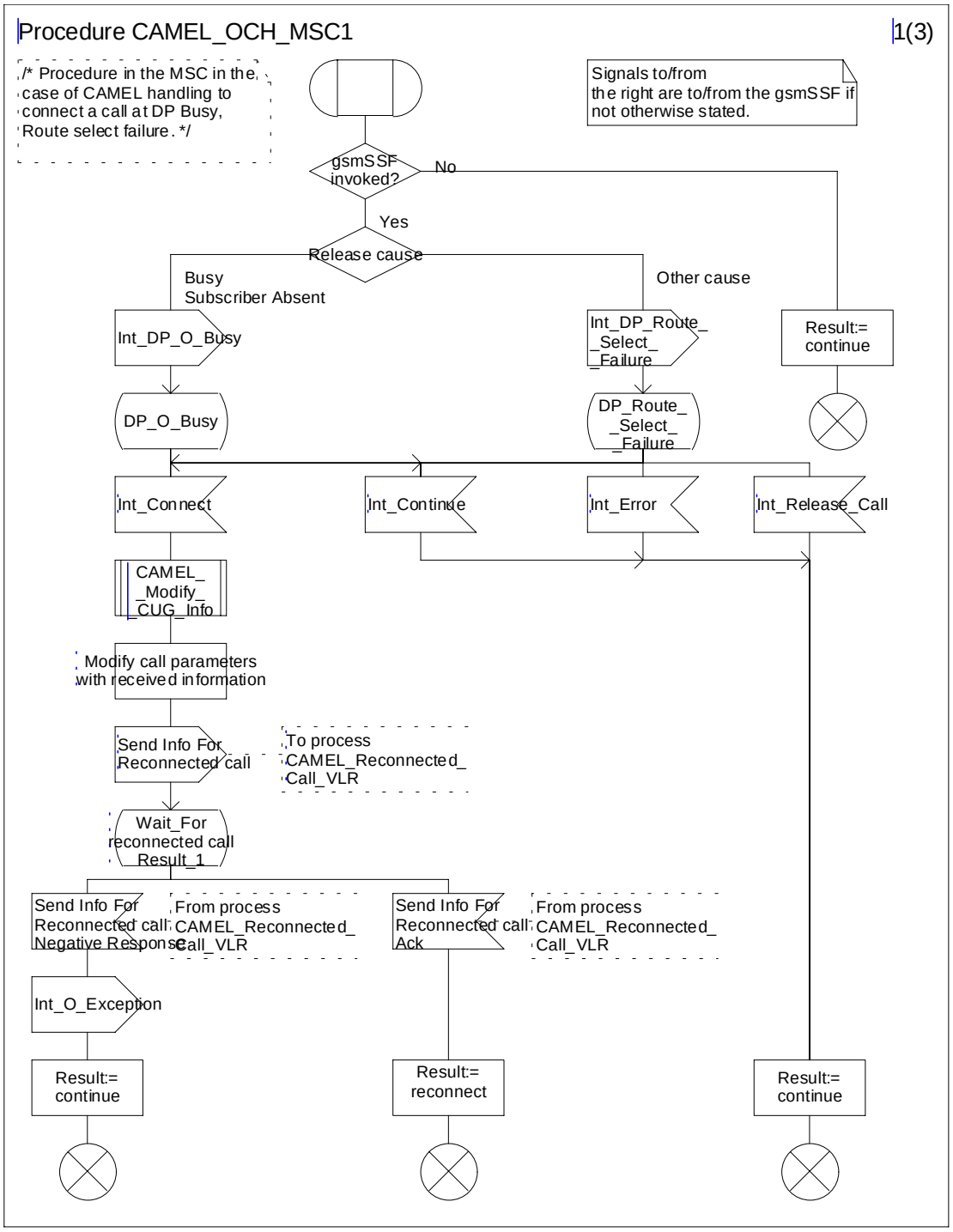


Figure 4.13a: Procedure CAMEL_OCH_MSC_ANSWER (sheet 1)


Procedure CAMEL_OCH_MSC1
1(3)
/* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. */
Signals to/from the right are to/from the gsmSSF if not otherwise stated.
gsmSSF invoked?
No
Yes
Release cause
Busy
Subscriber Absent
Other cause
Int_DP_O_Busy
Int_DP_Route_ _Select_ _Failure
Result:= continue
DP_O_Busy
DP_Route_ _Select_ _Failure
Int_Connect
Int_Continue
Int_Error
Int_Release_Call
CAMEL_ _Modify_ _CUG_Info
Modify call parameters with received information
Send Info For Reconnected call
To process CAMEL_Reconnected_ Call_VLR
Wait_For reconnected call Result_1
Send Info For Reconnected call: Negative Response
From process CAMEL_Reconnected_ Call_VLR
Send Info For Reconnected call: Ack
From process CAMEL_Reconnected_ Call_VLR
Int_O_Exception
Result:= continue
Result:= reconnect
Result:= continue

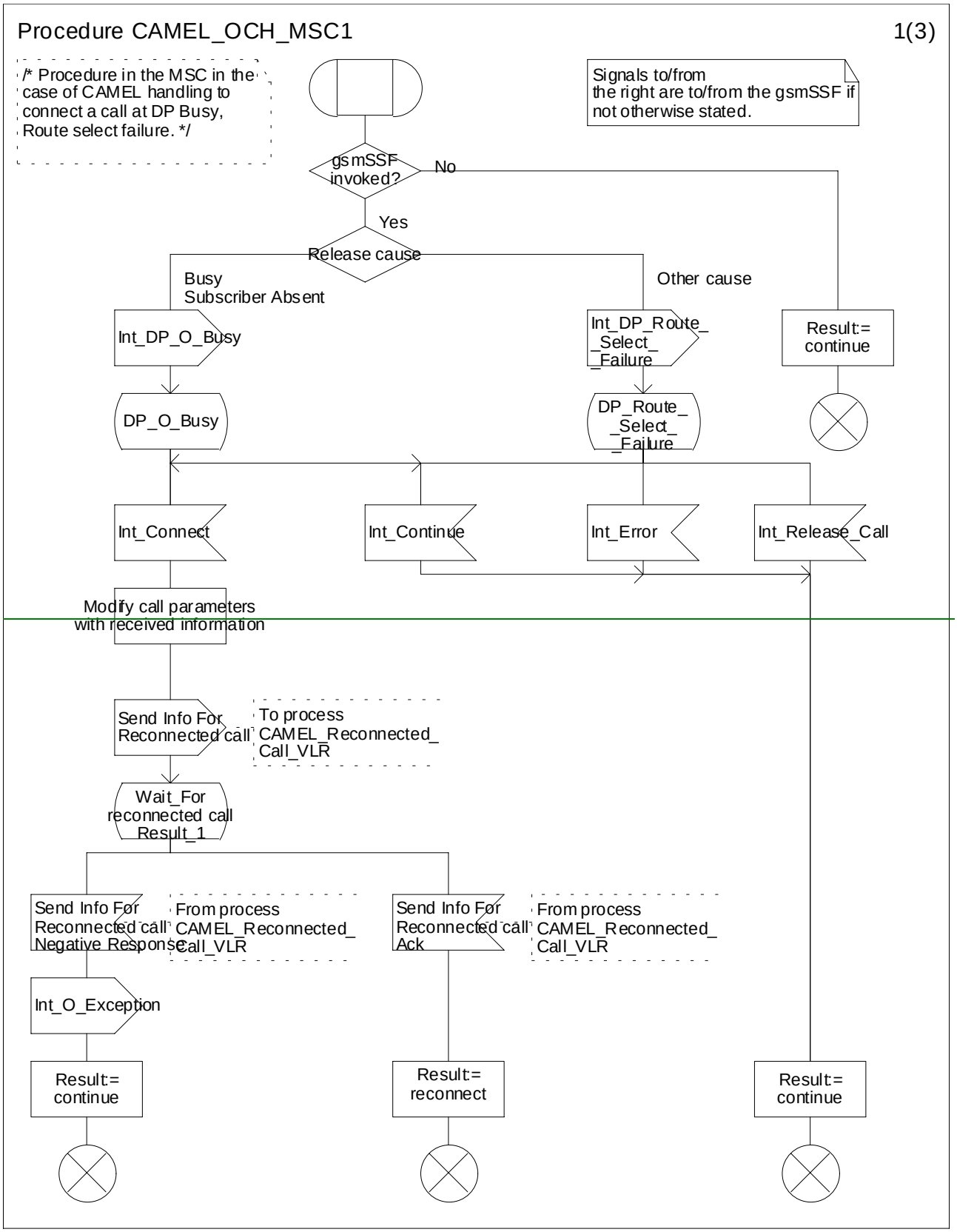
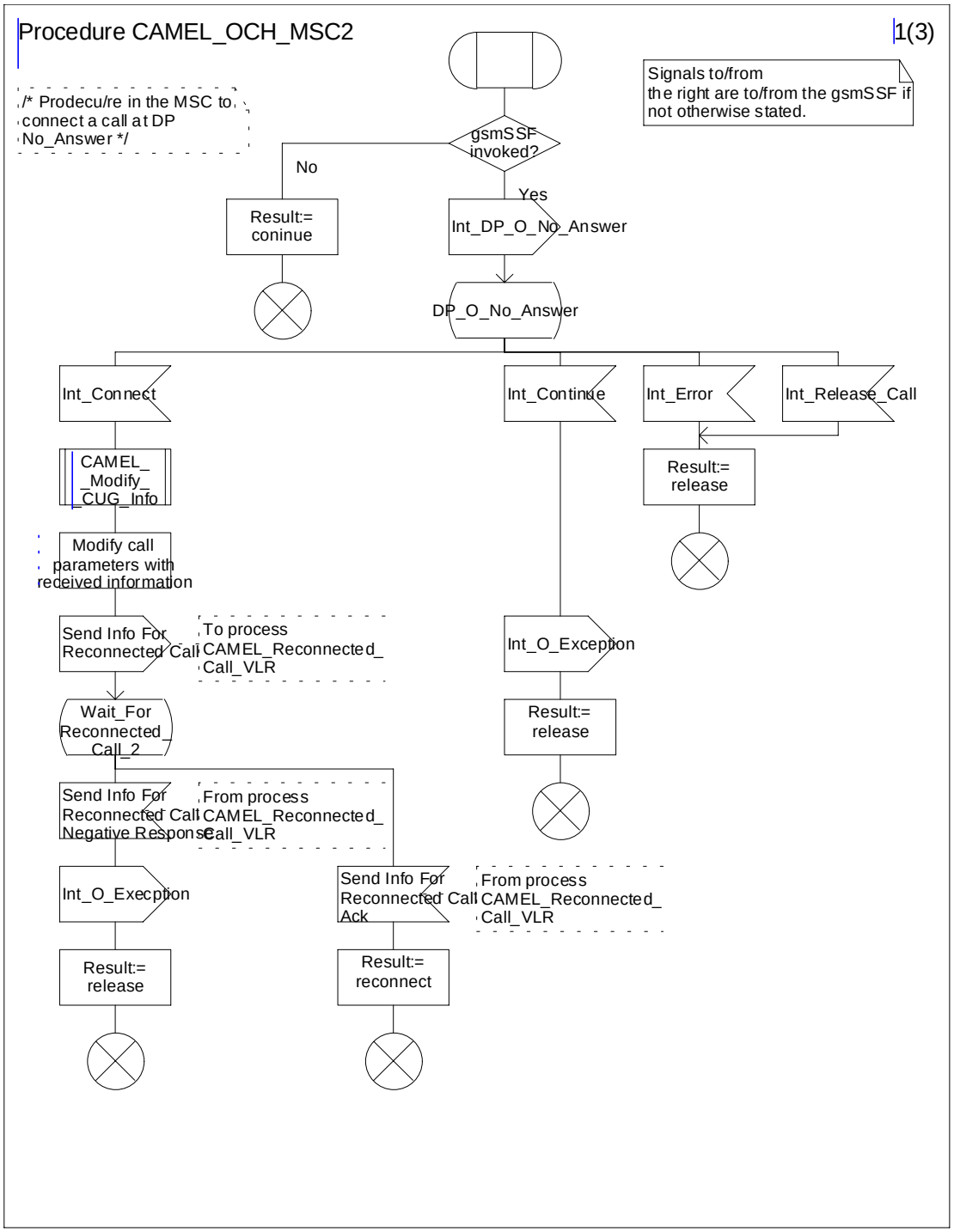


Figure 4.14a: Procedure CAMEL_OCH_MSC1 (sheet 1)


Procedure CAMEL_OCH_MSC2
1(3)
/* Prodecu/re in the MSC to connect a call at DP No_Answer */
Signals to/from the right are to/from the gsmSSF if not otherwise stated.
gsmSSF invoked?
No
Yes
Result:= coninue
Int_DP_O_No_Answer
DP_O_No_Answer
Int_Connect
Int_Continue
Int_Error
Int_Release_Call
CAMEL_ _Modify_ _CUG_Info
Result:= release
Modify call parameters with received information
Send Info For Reconnected Call
To process CAMEL_Reconnected_ Call_VLR
Int_O_Exception
Wait_For Reconnected_ Call_2
Result:= release
Send Info For Reconnected Call Negative Response
From process CAMEL_Reconnected_ Call_VLR
Int_O_Execption
Send Info For Reconnected Call Ack
From process CAMEL_Reconnected_ Call_VLR
Result:= release
Result:= reconnect

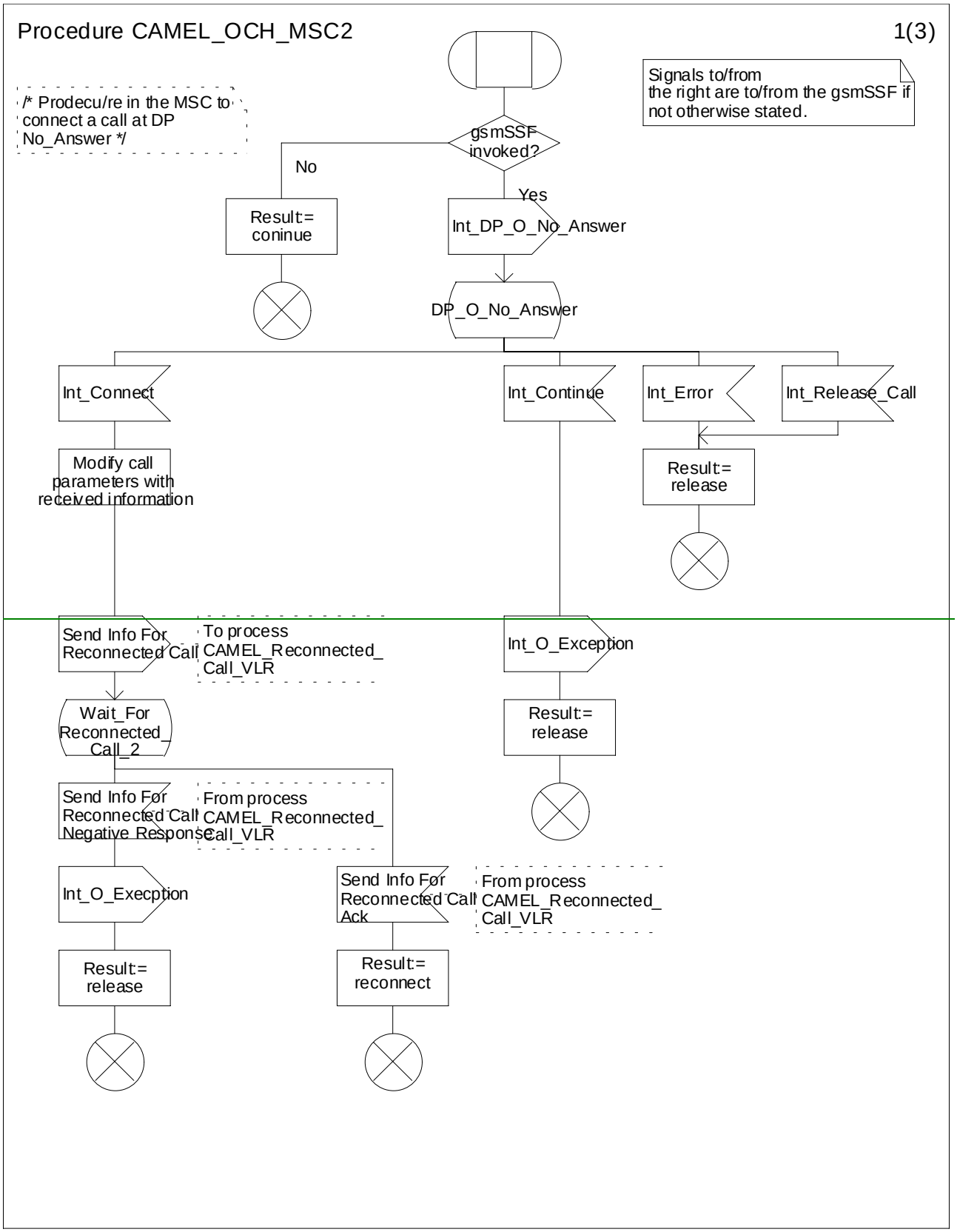
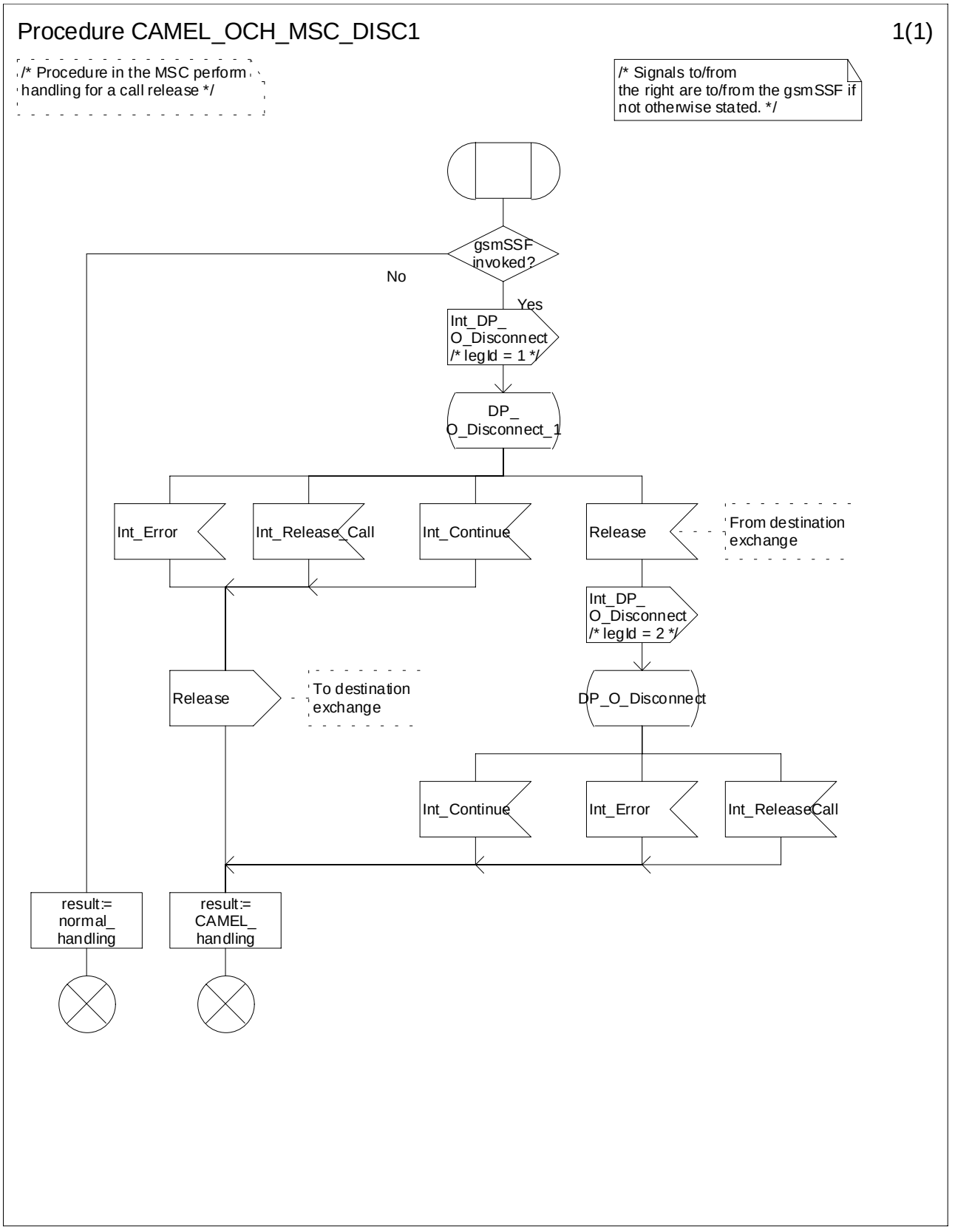


Figure 4.15a: Procedure CAMEL_OCH_MSC2 (sheet 1)


Procedure CAMEL_OCH_MSC_DISC1
1(1)
/* Procedure in the MSC perform handling for a call release */
/* Signals to/from the right are to/from the gsmSSF if not otherwise stated. */
gsmSSF invoked?
No
Yes
Int_DP_ O_Disconnect /* legId = 1 */
DP_ O_Disconnect_1
Int_Error
Int_Release_Call
Int_Continue
Release
From destination exchange
Int_DP_ O_Disconnect /* legId = 2 */
Release
To destination exchange
DP_O_Disconnect
Int_Continue
Int_Error
Int_ReleaseCall
result:= normal_ handling
result:= CAMEL_ handling

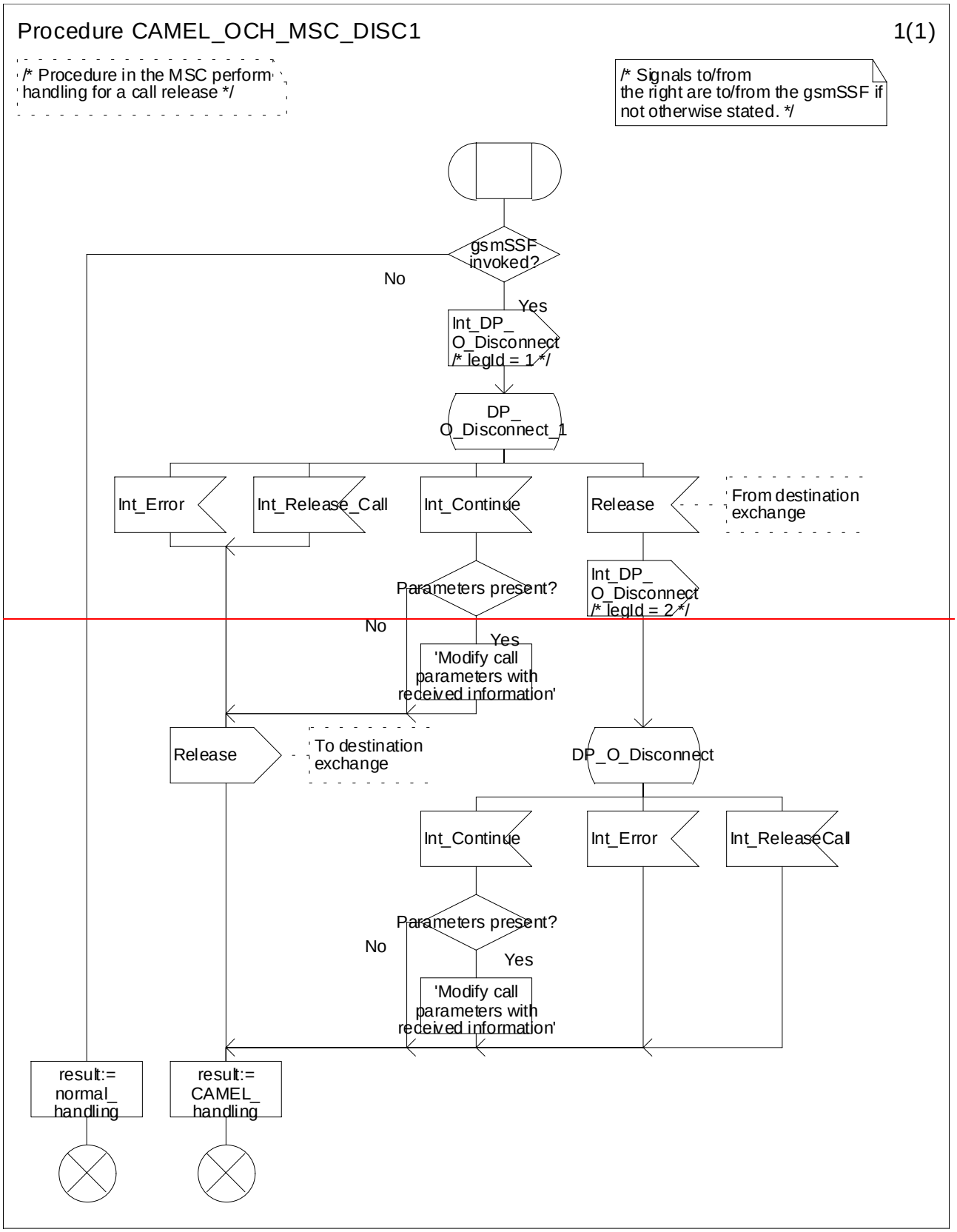
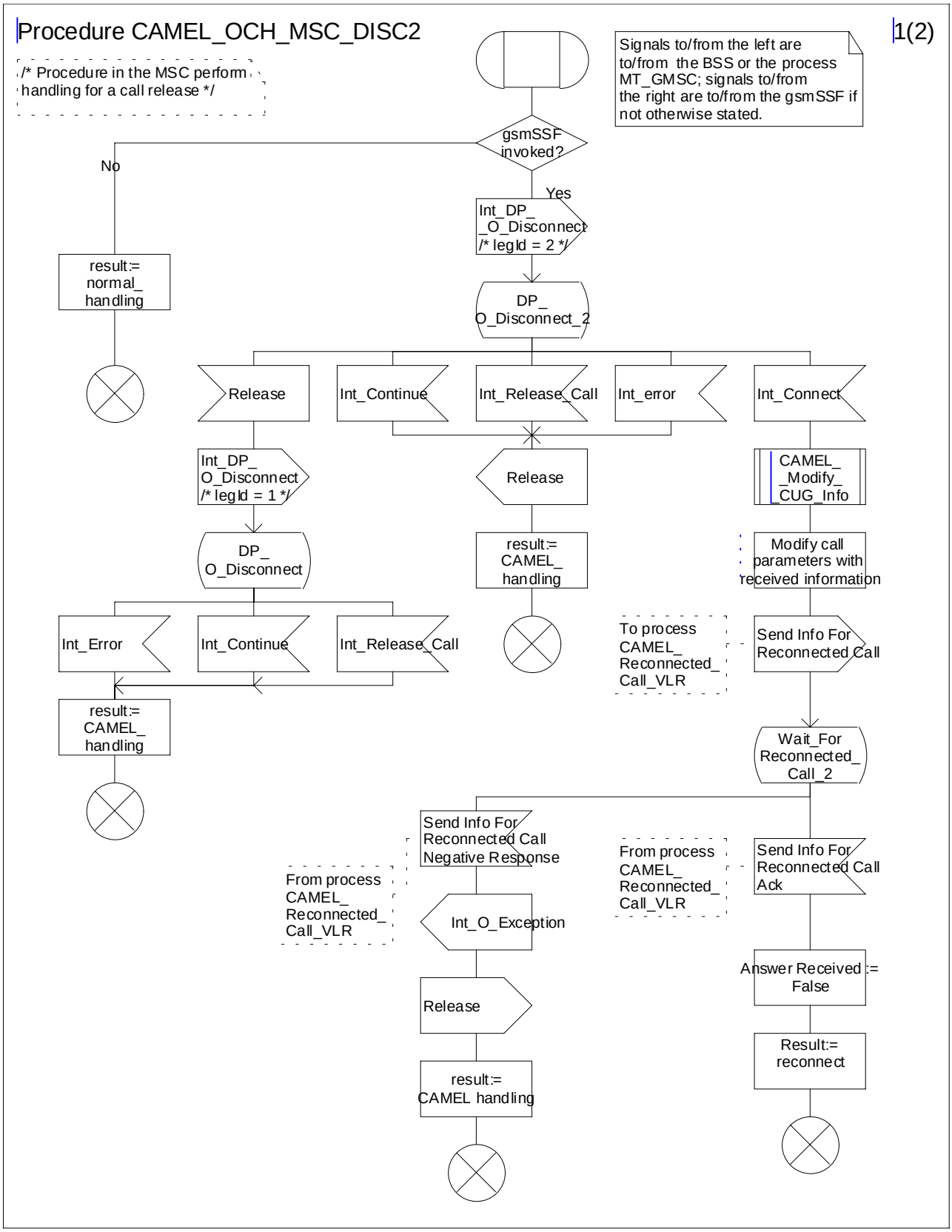


Figure 4.16a: Procedure CAMEL_OCH_MSC_DISC1 (sheet 1)


Procedure CAMEL_OCH_MSC_DISC2
1(2)
/* Procedure in the MSC perform handling for a call release */
Signals to/from the left are to/from the BSS or the process MT_GMSC; signals to/from the right are to/from the gsmSSF if not otherwise stated.
gsmSSF invoked?
No
Yes
result:= normal_ handling
Int_DP_ _O_Disconnect /* legId = 2 */
DP_ O_Disconnect_2
Release
Int_Continue
Int_Release_Call
Int_error
Int_Connect
Int_DP_ O_Disconnect /* legId = 1 */
Release
CAMEL_ _Modify_ _CUG_Info
DP_ O_Disconnect
result:= CAMEL_ handling
Modify call parameters with received information
Int_Error
Int_Continue
Int_Release_Call
To process CAMEL_ Reconnected_ Call_VLR
Send Info For Reconnected Call
result:= CAMEL_ handling
Wait_For Reconnected_ Call_2
Send Info For Reconnected Call Negative Response
From process CAMEL_ Reconnected_ Call_VLR
From process CAMEL_ Reconnected_ Call_VLR
Send Info For Reconnected Call Ack
Int_O_Exception
Answer Received := False
Release
Result:= reconnect
result:= CAMEL handling

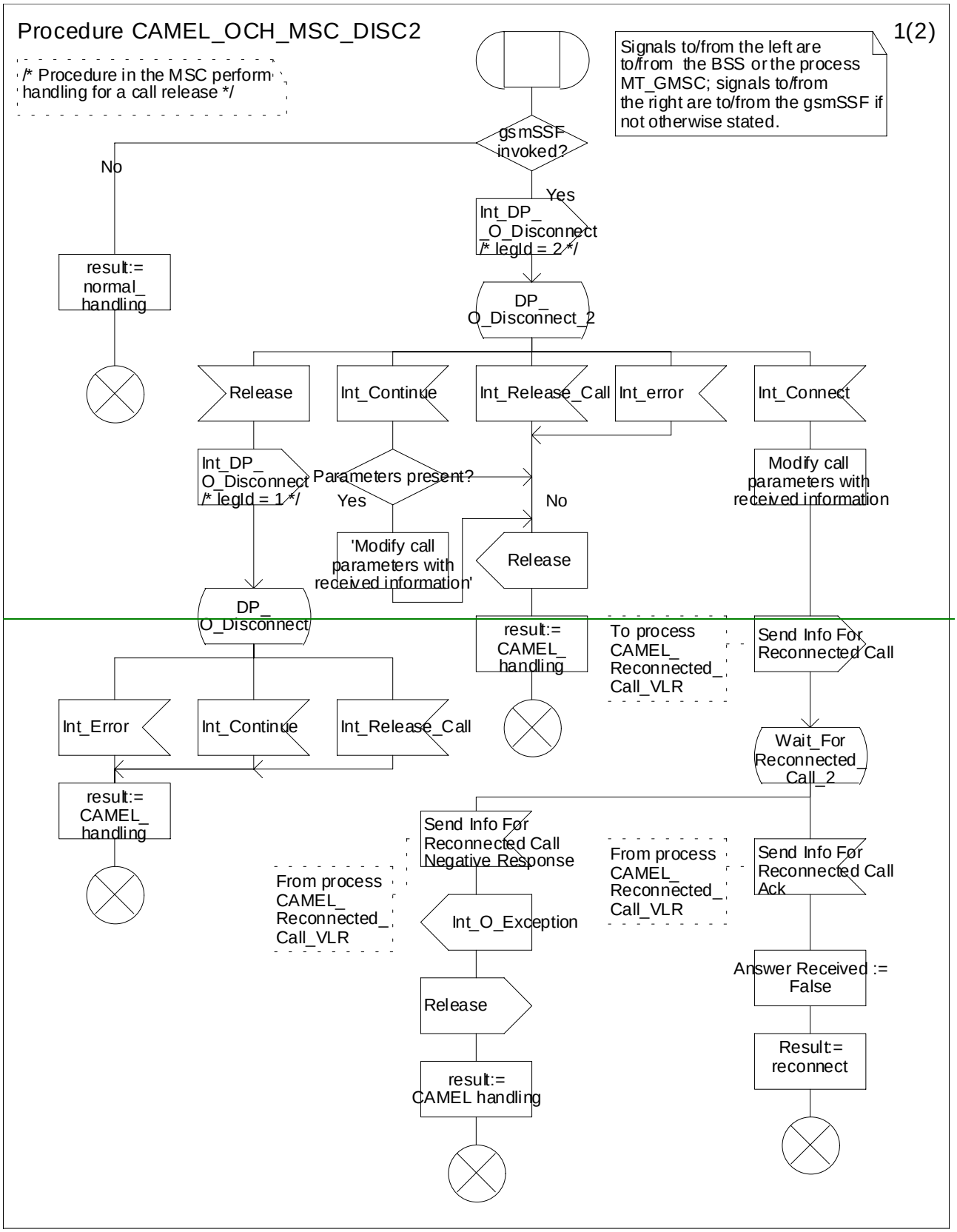


Figure 4.17a: Procedure CAMEL_OCH_MSC_DISC2 (sheet 1)

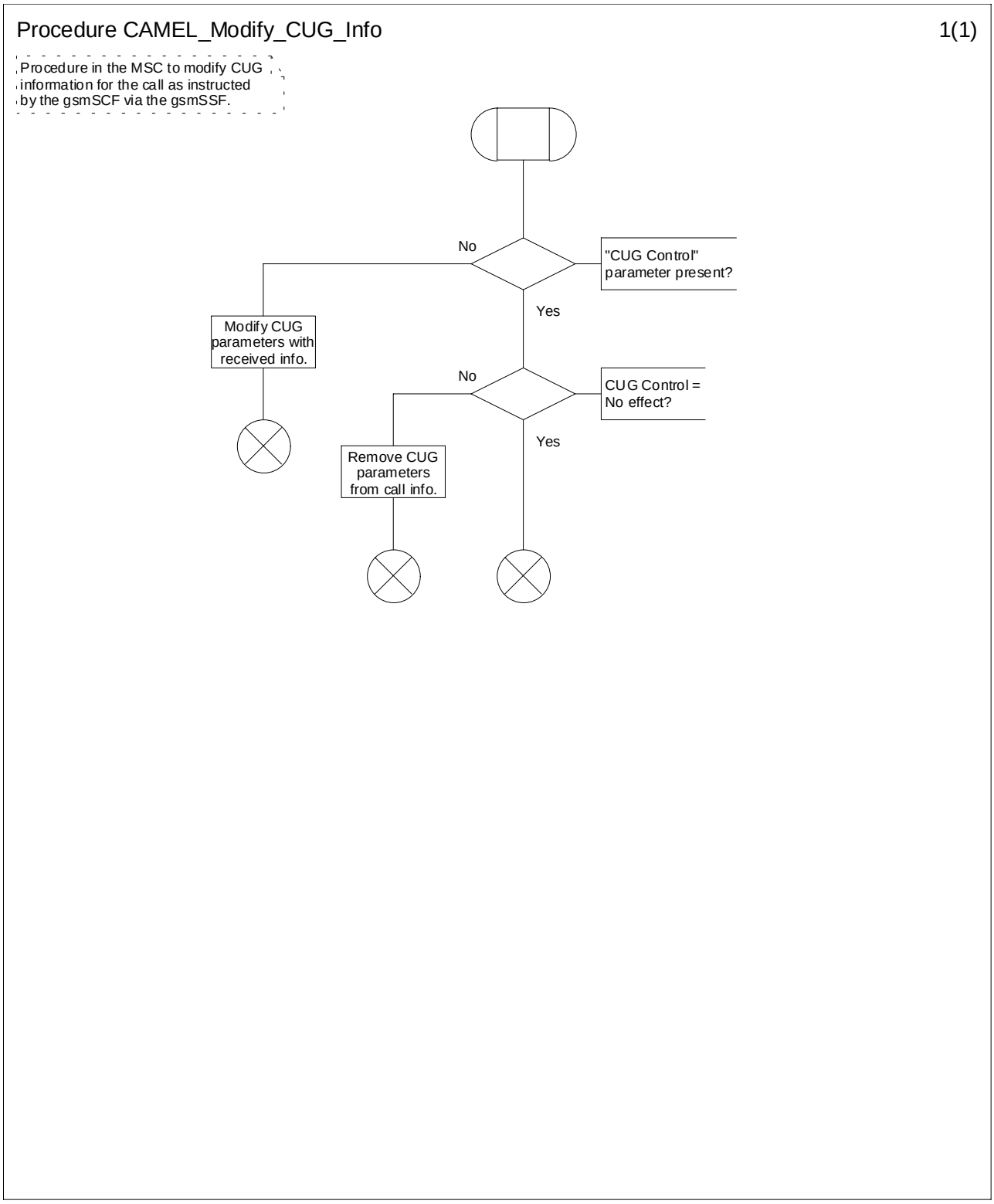
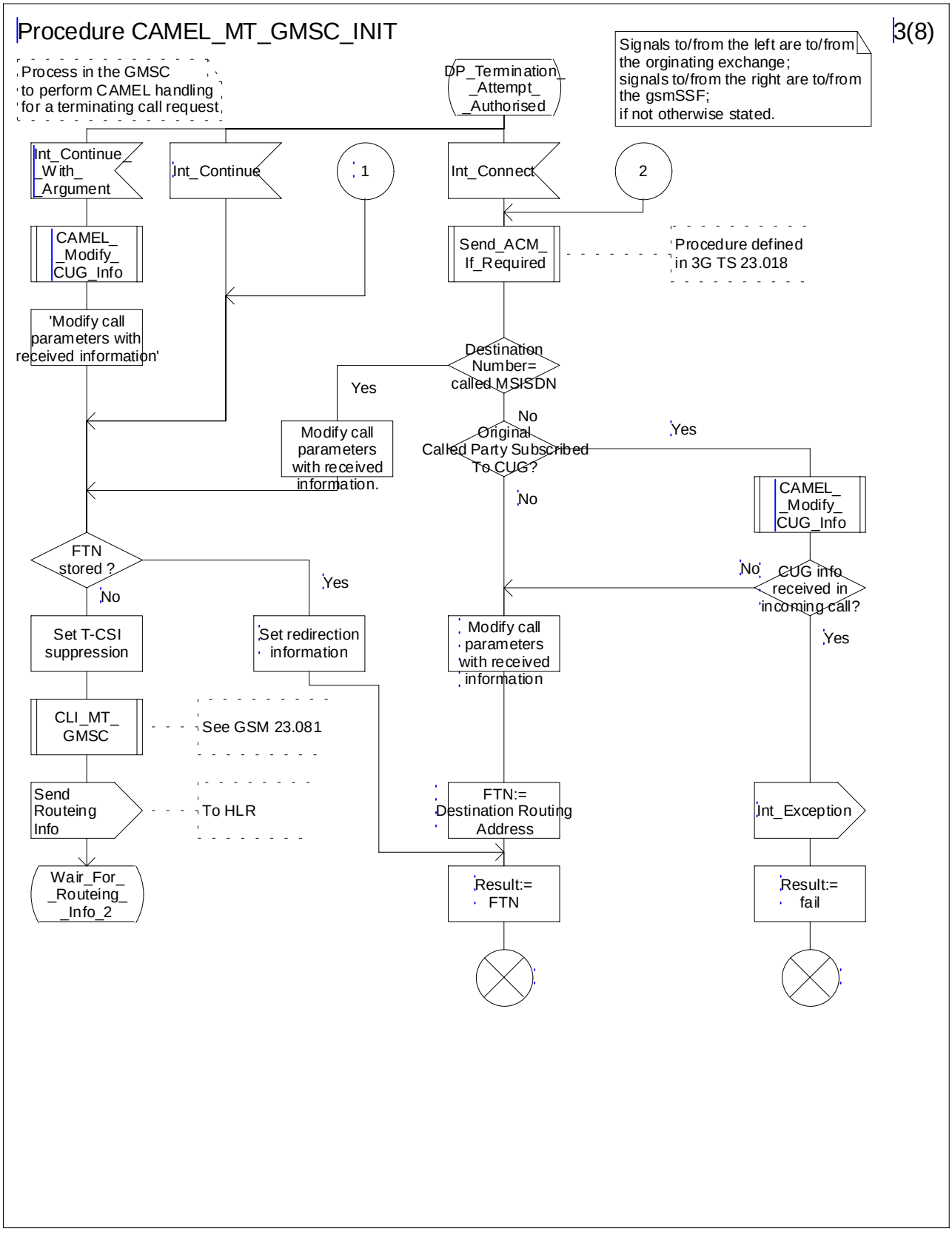


Figure 4.xa: Procedure CAMEL_Modify_CUG_Info (sheet 1)

****** Next Modified Section ******

4.5.3.1 Retrieval of routeing information in the GMSC



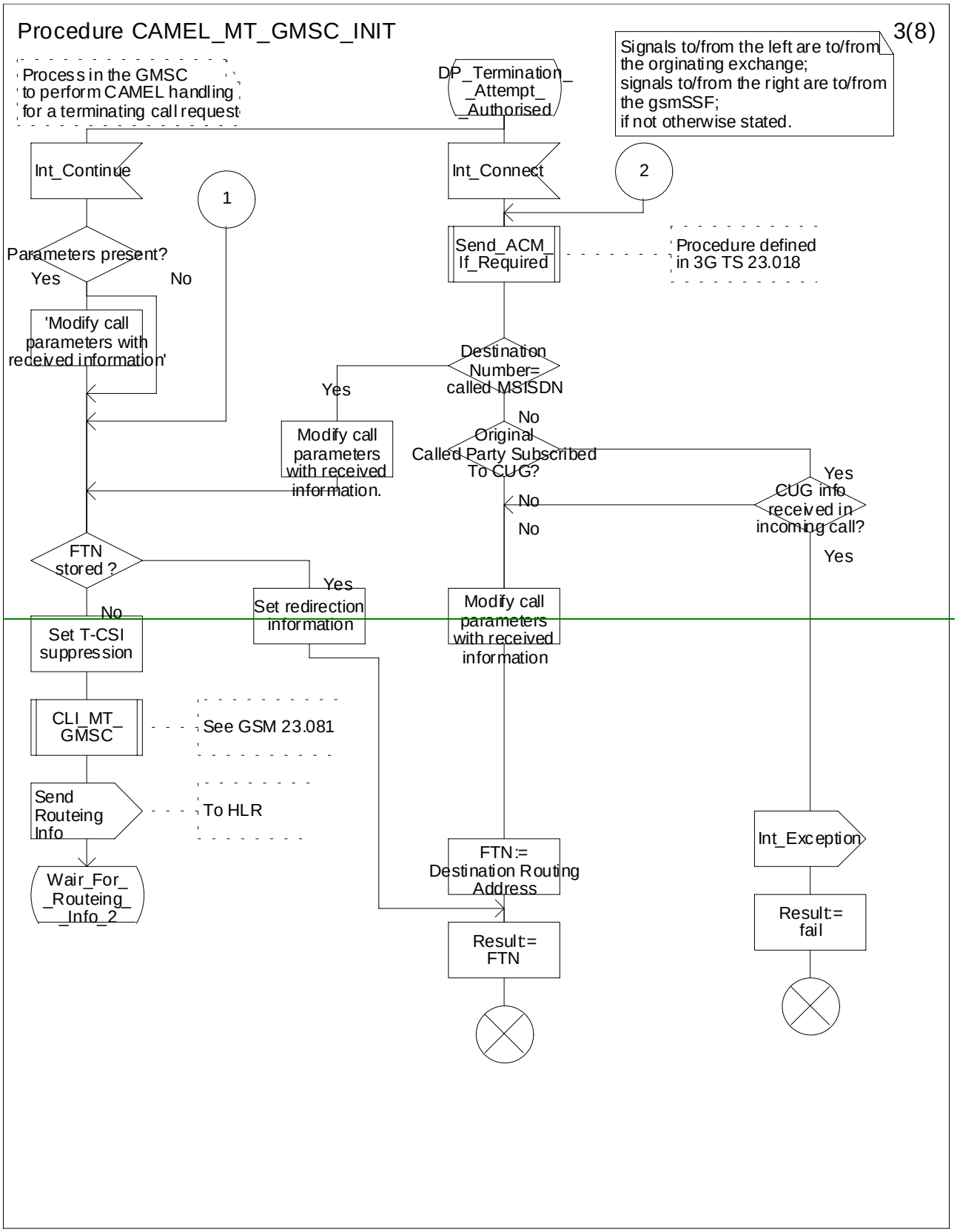
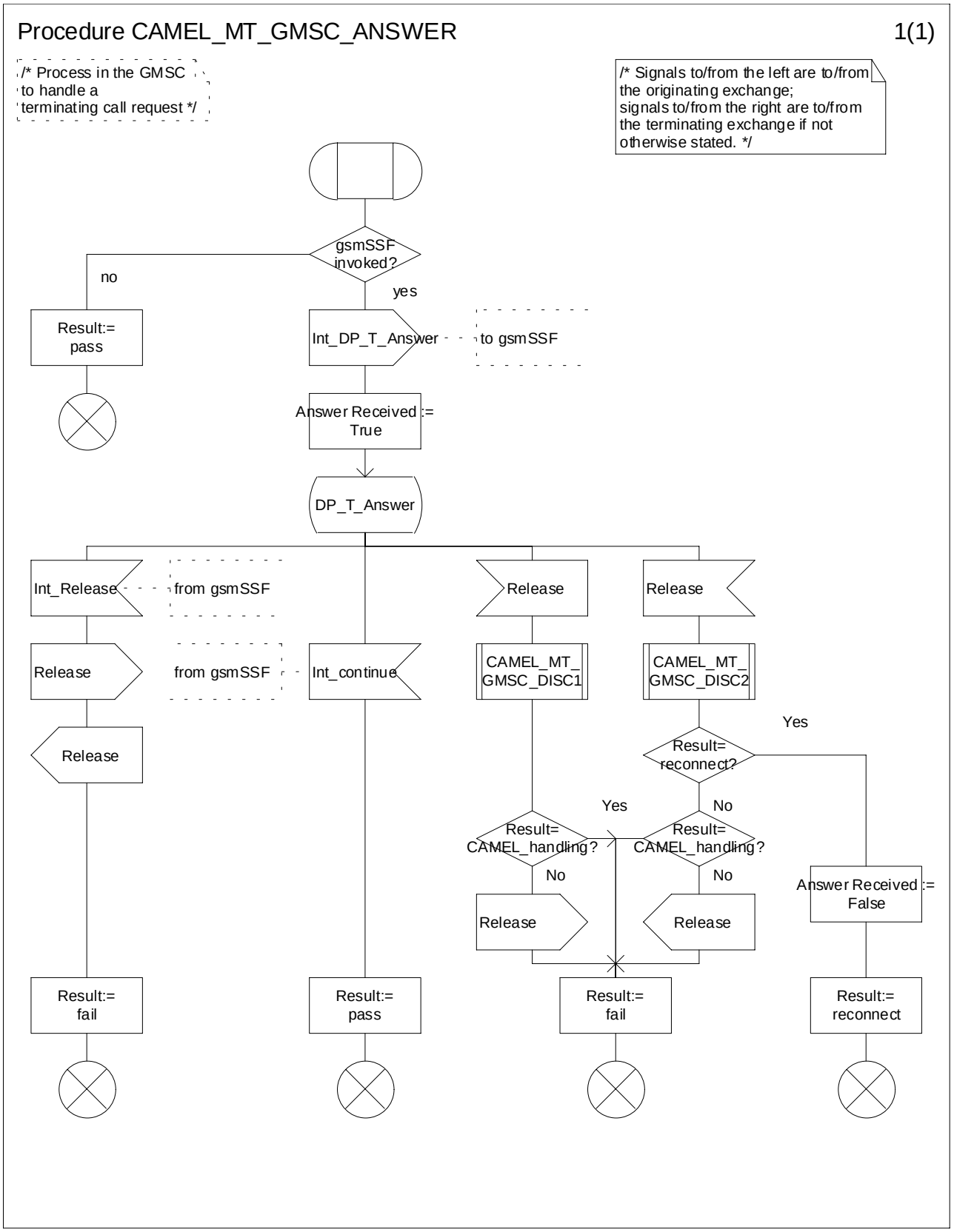


Figure 4.27c: Procedure CAMEL_MT_GMSC_INIT (sheet 3)


Procedure CAMEL_MT_GMSC_ANSWER
1(1)
/* Process in the GMSC to handle a terminating call request */
/* Signals to/from the left are to/from the originating exchange; signals to/from the right are to/from the terminating exchange if not otherwise stated. */
gsmSSF invoked?
no
yes
Result:= pass
Int_DP_T_Answer
to gsmSSF
Answer Received := True
DP_T_Answer
Int_Release
from gsmSSF
Release
from gsmSSF
Int_continue
Release
Release
CAMEL_MT_ GMSC_DISC1
Release
CAMEL_MT_ GMSC_DISC2
Yes
Result= reconnect?
Yes
No
Result= CAMEL_handling?
Result= CAMEL_handling?
No
No
Release
Release
Answer Received := False
Result:= fail
Result:= pass
Result:= fail
Result:= reconnect

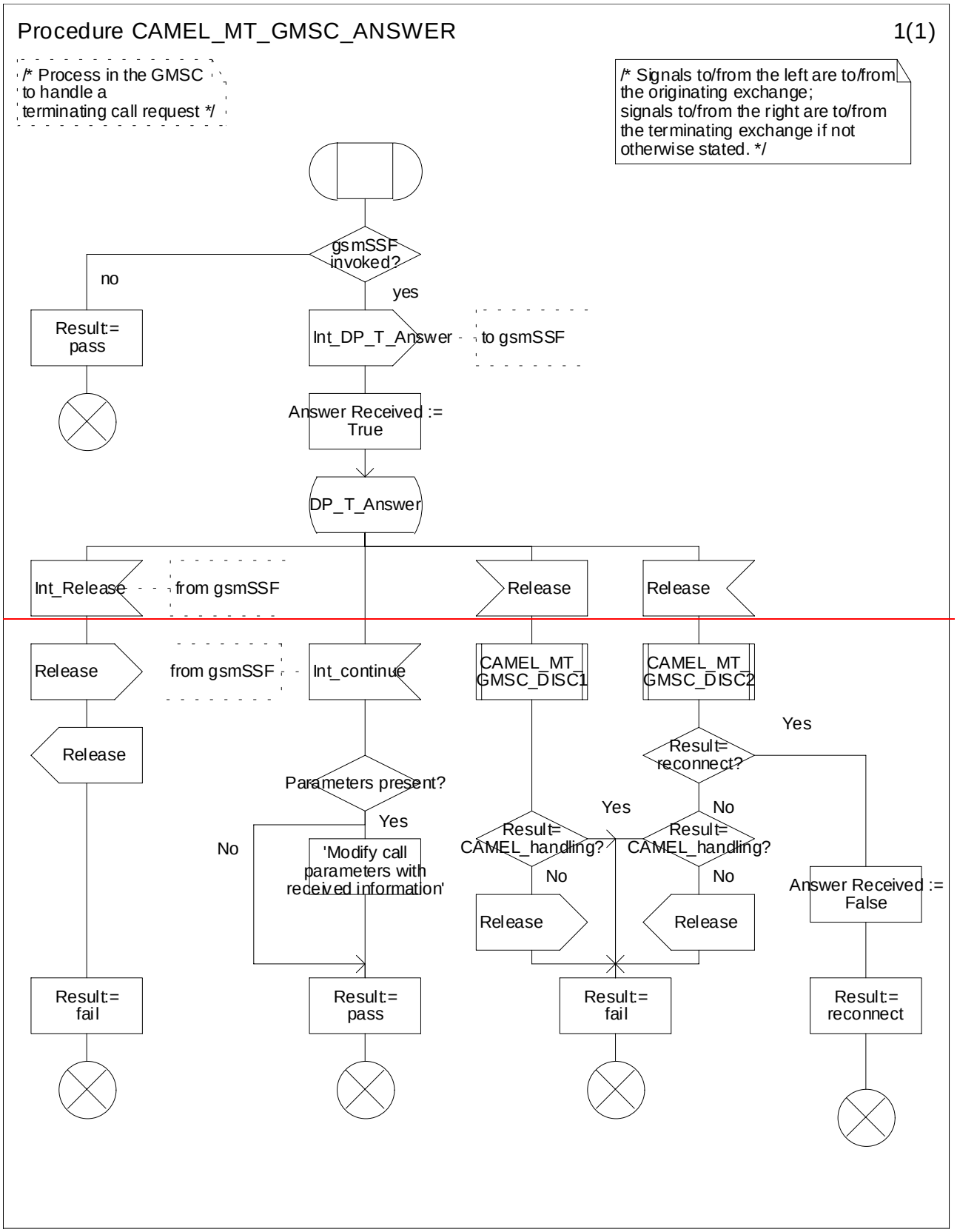
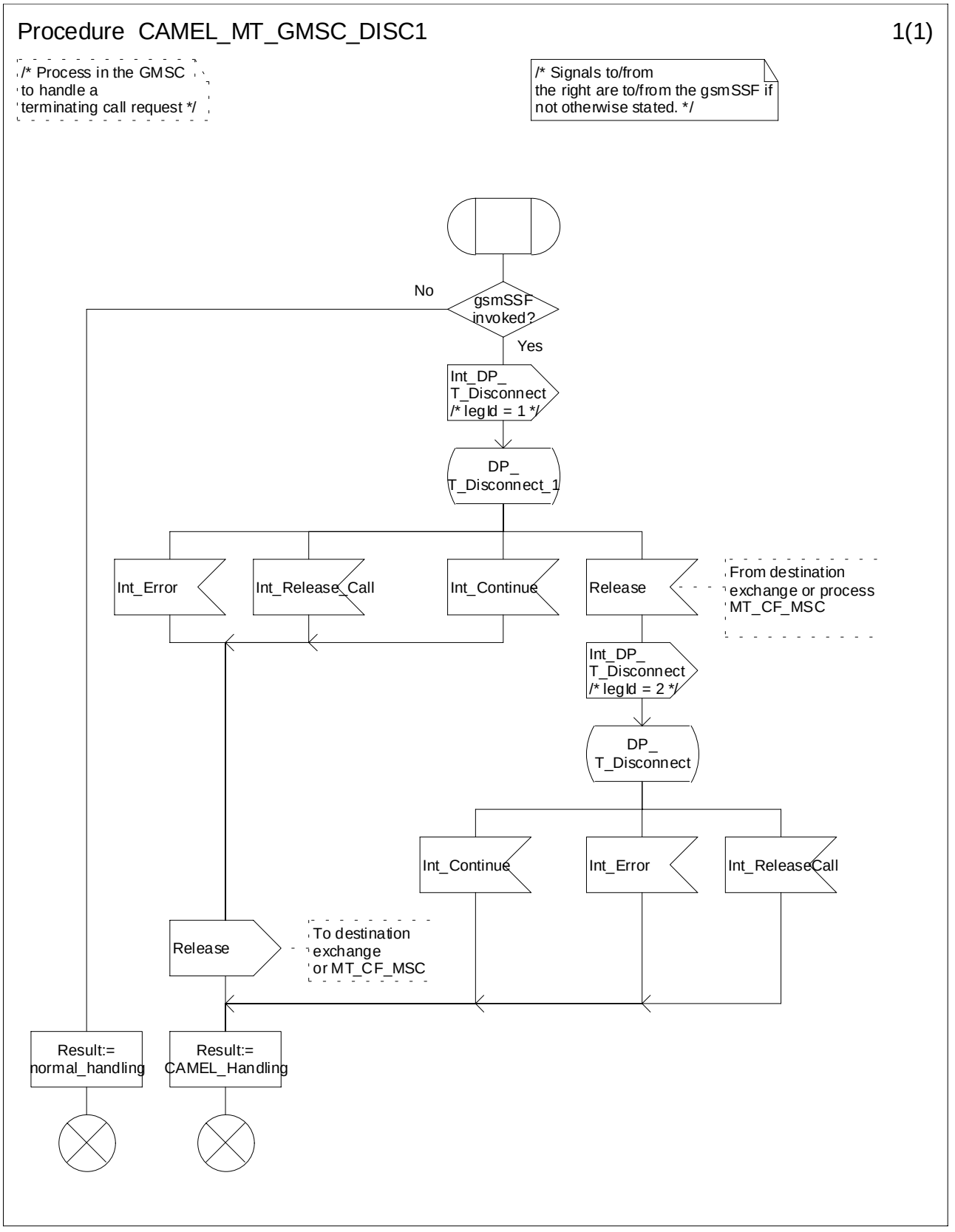


Figure 4.28a: Procedure CAMEL_MT_GMSC_ANSWER (sheet 1)


Procedure CAMEL_MT_GMSC_DISC1
1(1)
/* Process in the GMSC to handle a terminating call request */
/* Signals to/from the right are to/from the gsmSSF if not otherwise stated. */
No
gsmSSF invoked?
Yes
Int_DP_ T_Disconnect /* legId = 1 */
DP_ T_Disconnect_1
Int_Error
Int_Release_Call
Int_Continue
Release
From destination exchange or process MT_CF_MSC
Int_DP_ T_Disconnect /* legId = 2 */
DP_ T_Disconnect
Int_Continue
Int_Error
Int_ReleaseCall
Release
To destination exchange or MT_CF_MSC
Result:= normal_handling
Result:= CAMEL_Handling

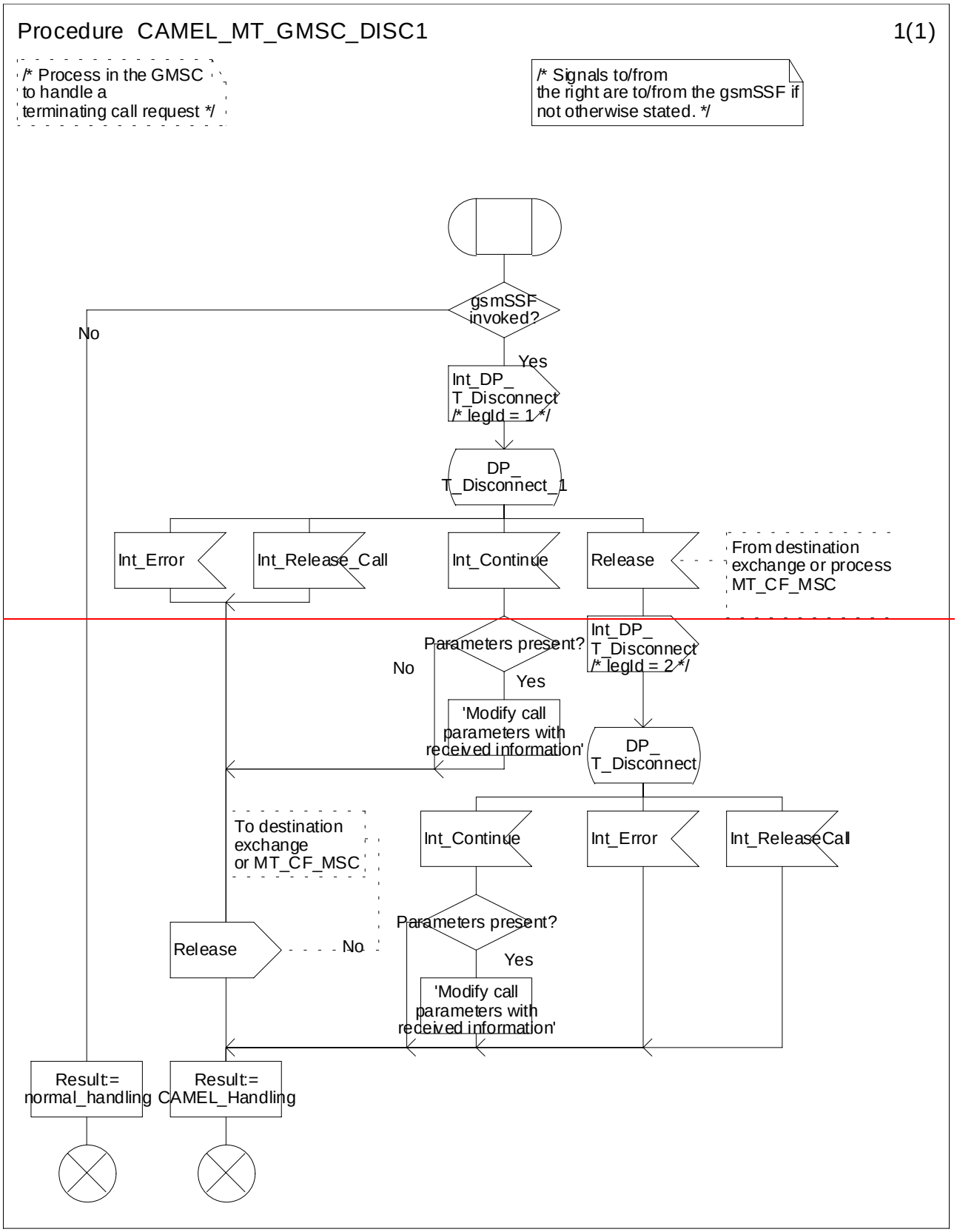
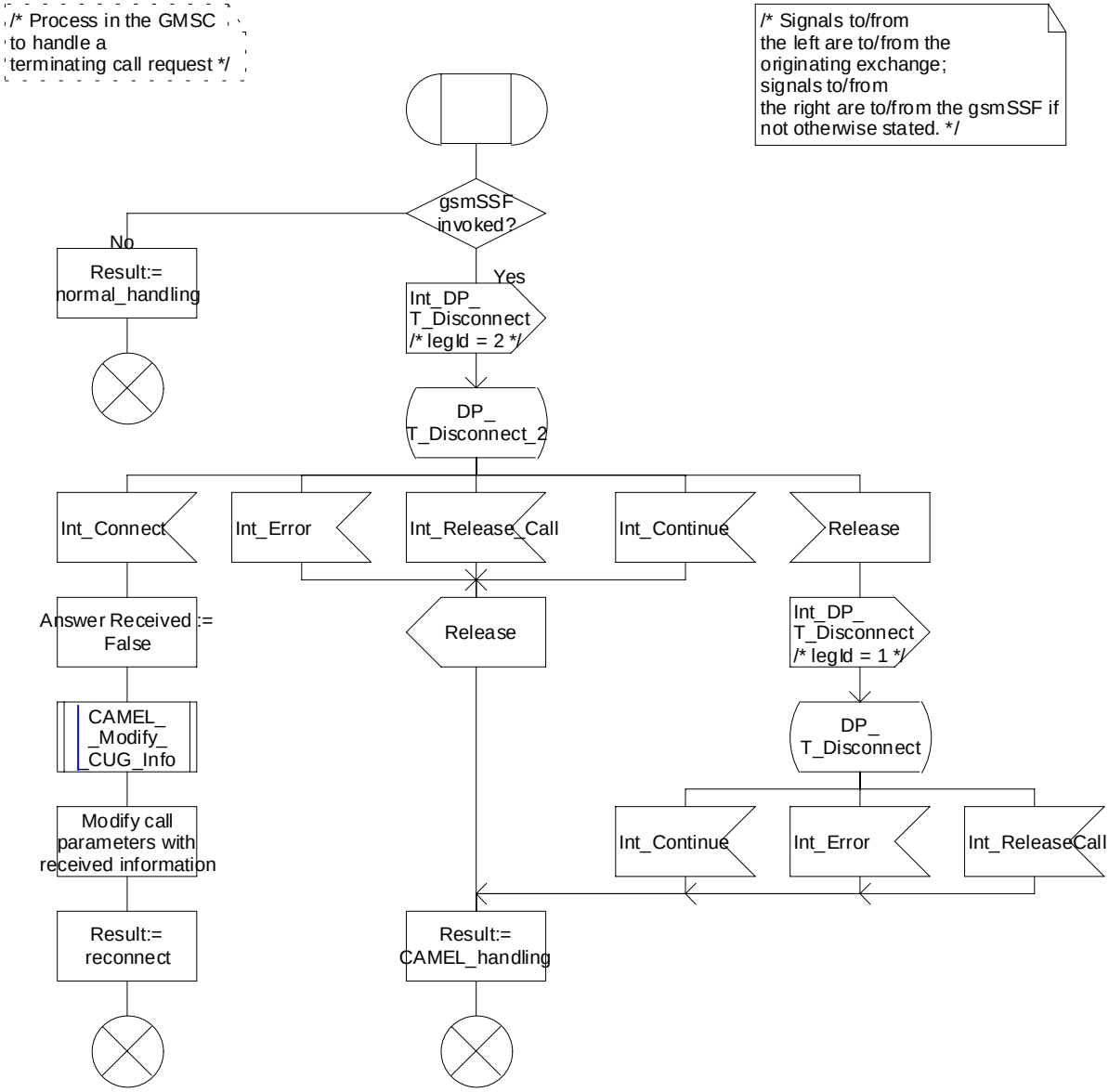


Figure 4.29a: Procedure CAMEL_MT_GMSC_DISC1 (sheet 1)

Procedure CAMEL_MT_GMSC_DISC2 1(2)



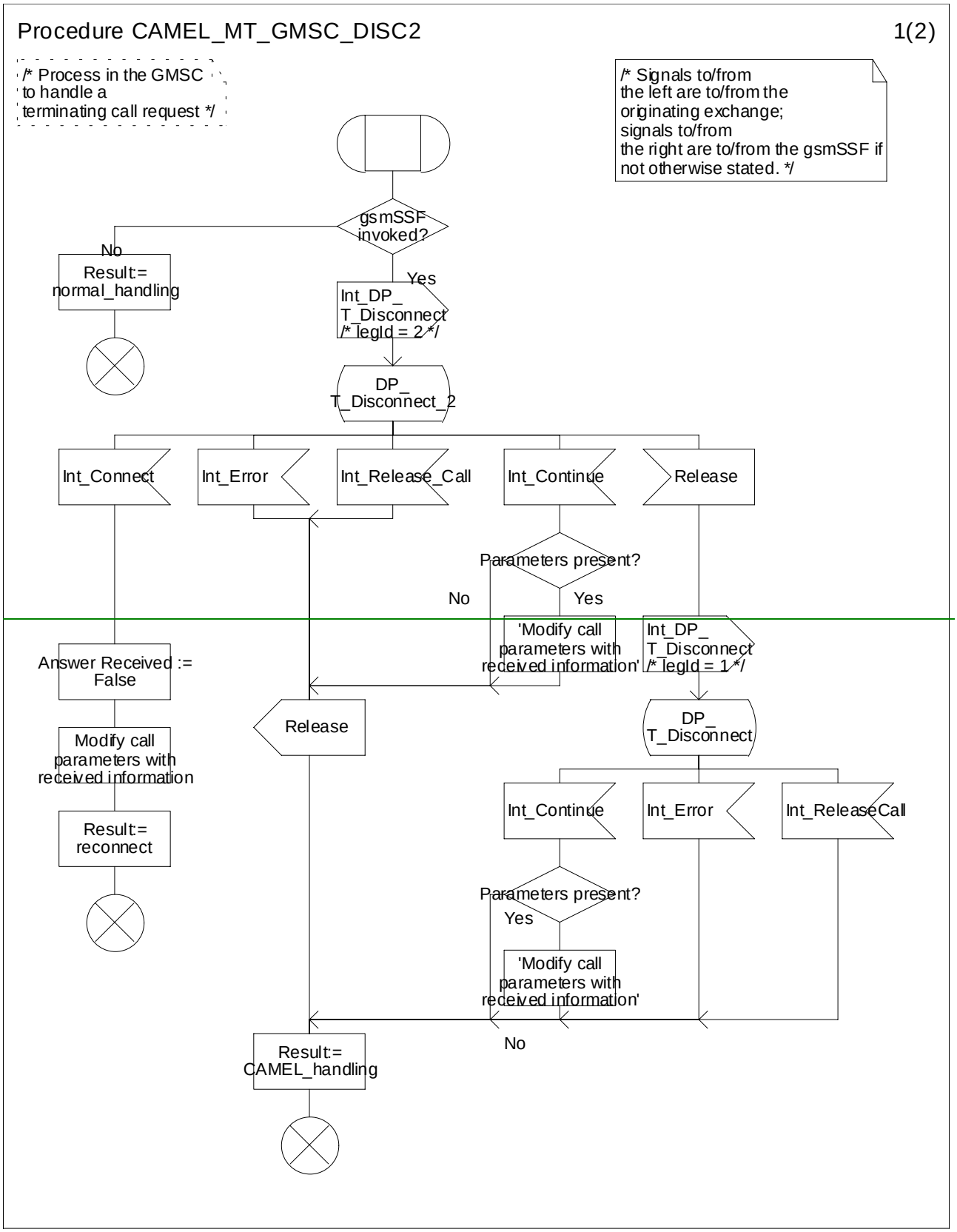
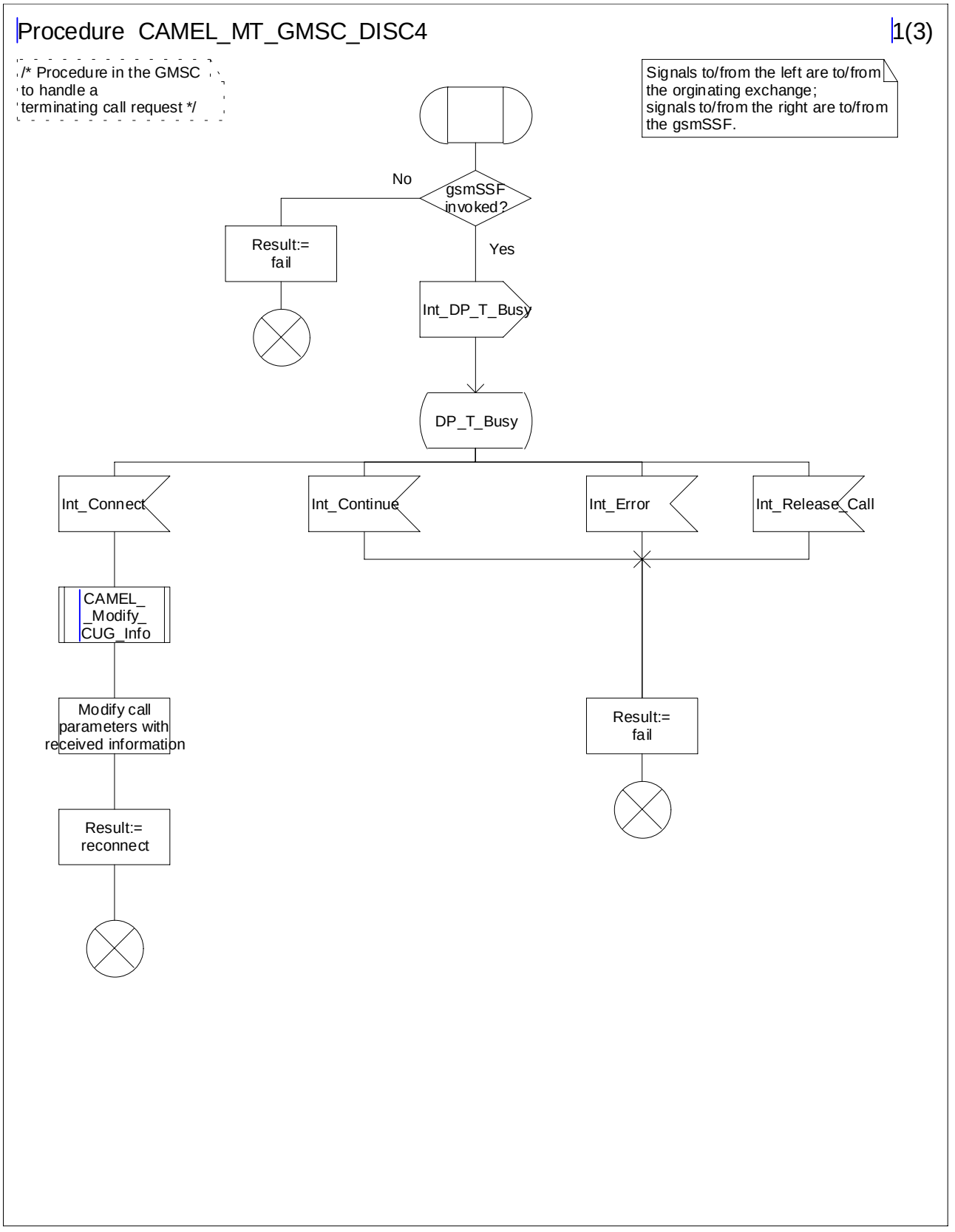


Figure 4.30a: Procedure CAMEL_MT_GMSC_DISC2 (sheet 1)


Procedure CAMEL_MT_GMSC_DISC4
1(3)
/* Procedure in the GMSC to handle a terminating call request */
Signals to/from the left are to/from the orginating exchange; signals to/from the right are to/from the gsmSSF.
gsmSSF invoked?
No
Yes
Result:= fail
Int_DP_T_Busy
DP_T_Busy
Int_Connect
Int_Continue
Int_Error
Int_Release_Call
CAMEL_ _Modify_ CUG_Info
Modify call parameters with received information
Result:= reconnect
Result:= fail

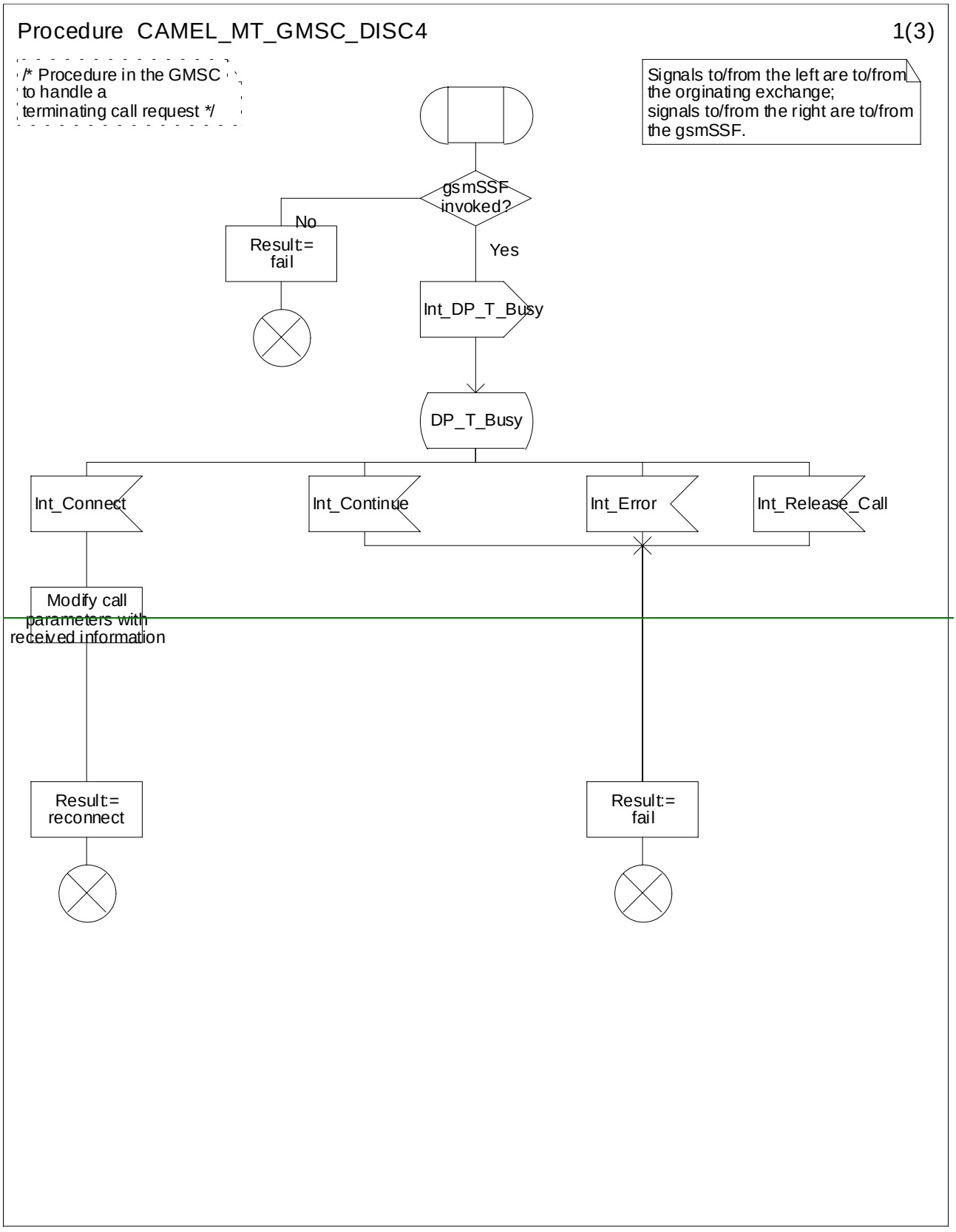
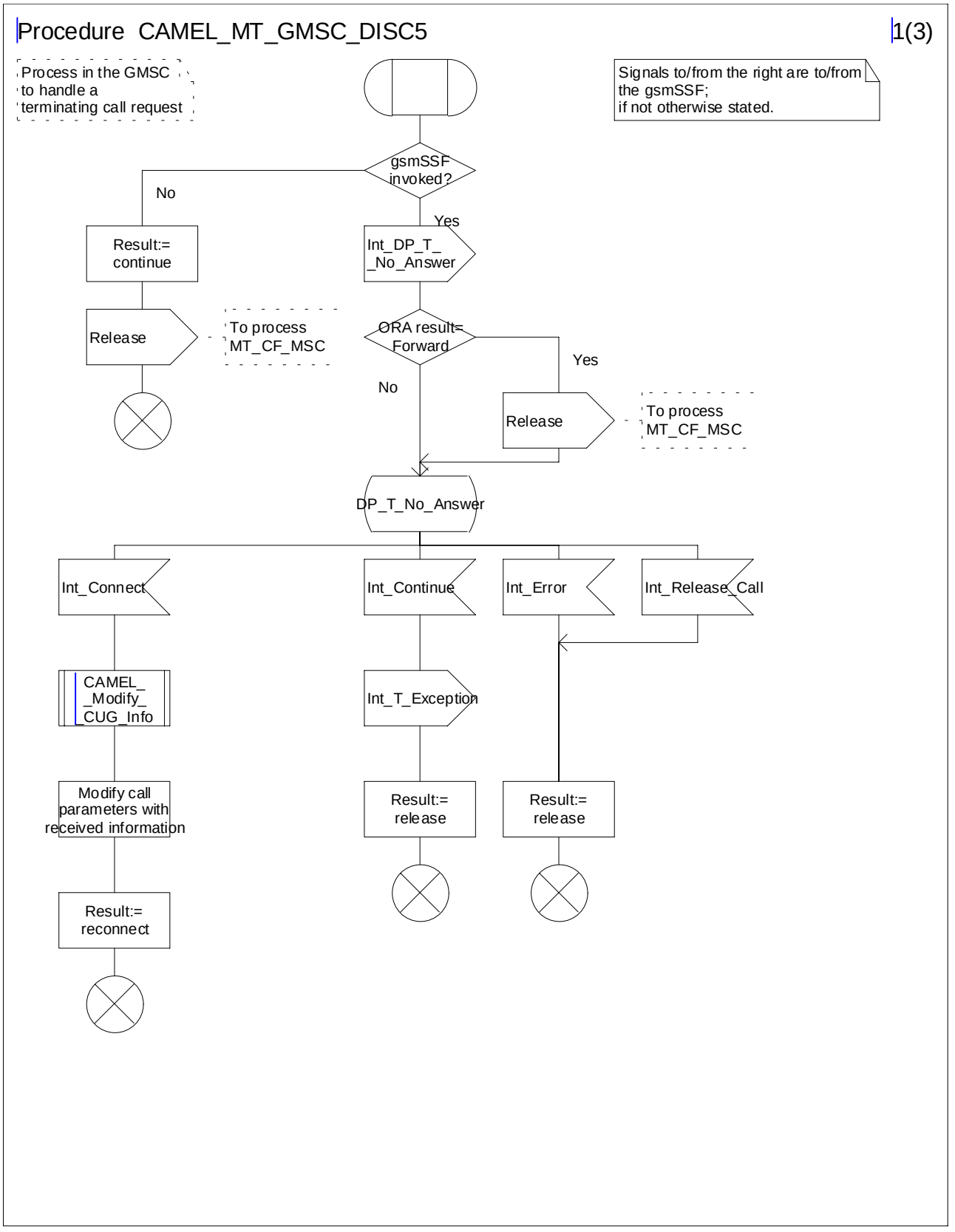


Figure 4.31a: Procedure CAMEL_MT_GMSC_DISC4 (sheet 1)


Procedure CAMEL_MT_GMSC_DISC5
1(3)
Process in the GMSC to handle a terminating call request
Signals to/from the right are to/from the gsmSSF; if not otherwise stated.
gsmSSF invoked?
No
Yes
Result:= continue
Int_DP_T_ _No_Answer
Release
To process MT_CF_MSC
ORA result= Forward
Yes
No
Release
To process MT_CF_MSC
DP_T_No_Answer
Int_Connect
Int_Continue
Int_Error
Int_Release_Call
CAMEL_ _Modify_ CUG_Info
Int_T_Exception
Modify call parameters with received information
Result:= release
Result:= release
Result:= reconnect

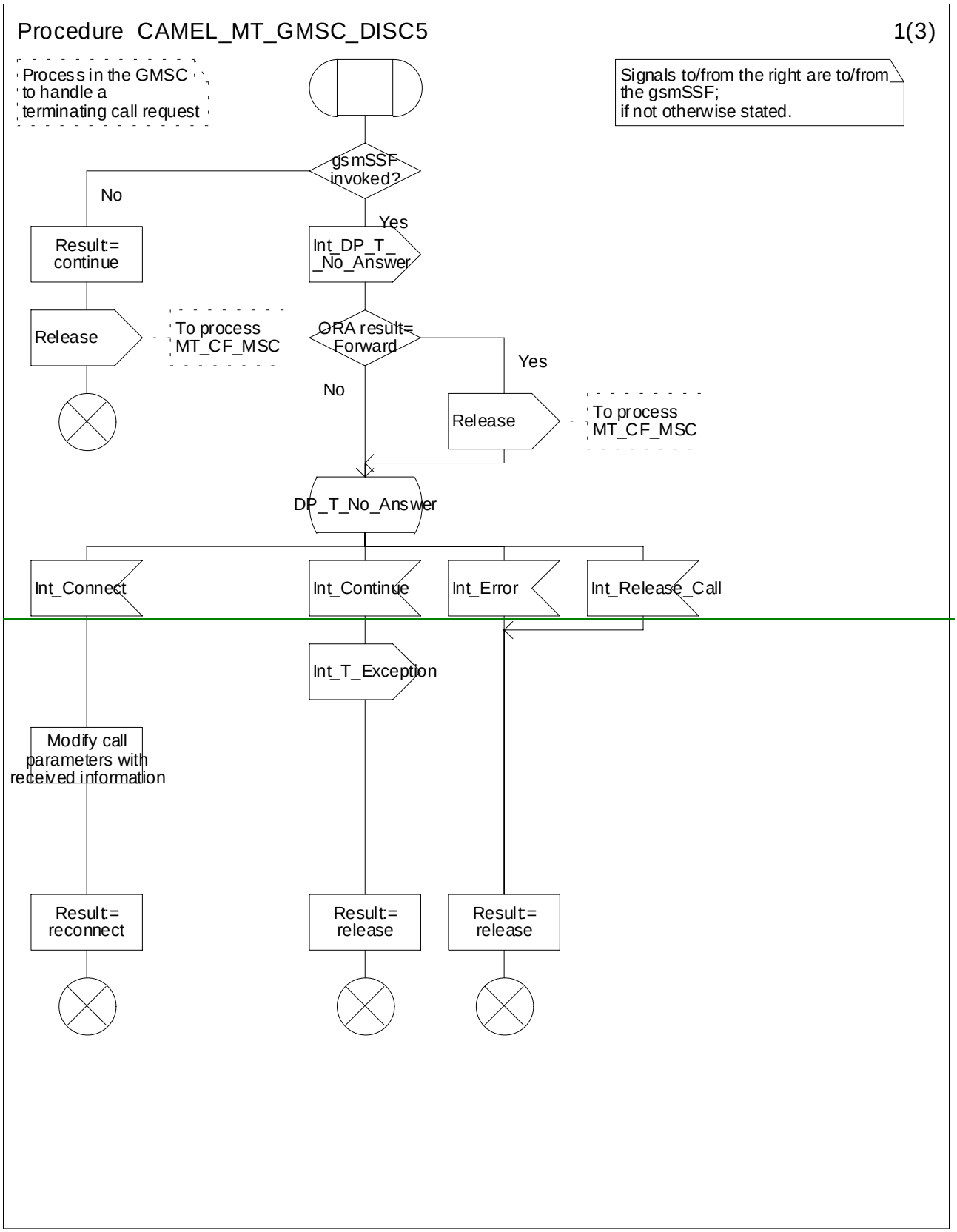
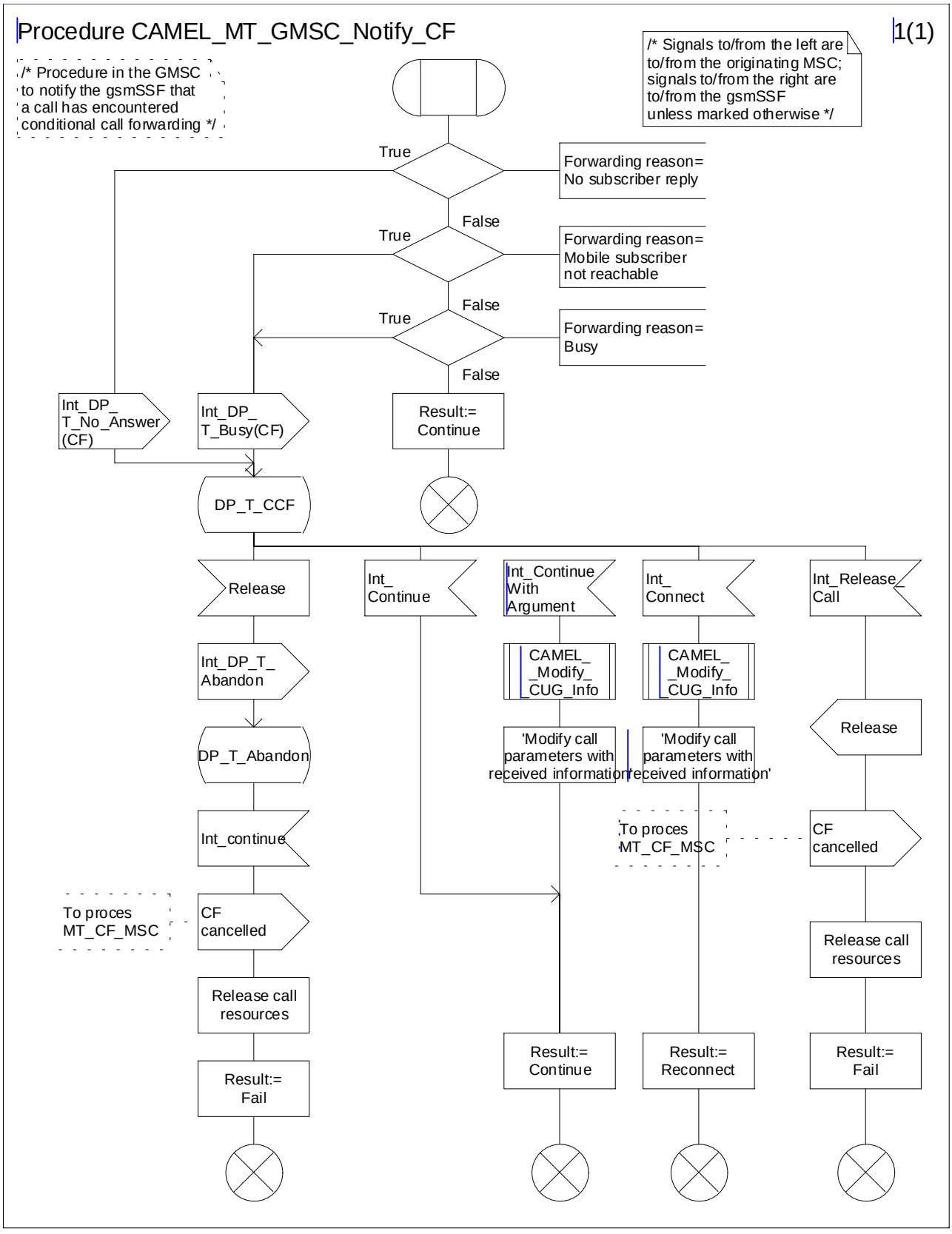


Figure 4.32a: Procedure CAMEL_MT_GMSC_DISC5 (sheet 1)


Procedure CAMEL_MT_GMSC_Notify_CF
1(1)
/* Procedure in the GMSC to notify the gsmSSF that a call has encountered conditional call forwarding */
/* Signals to/from the left are to/from the originating MSC; signals to/from the right are to/from the gsmSSF unless marked otherwise */
True
Forwarding reason= No subscriber reply
False
True
Forwarding reason= Mobile subscriber not reachable
False
True
Forwarding reason= Busy
False
Int_DP_ T_No_Answer (CF)
Int_DP_ T_Busy(CF)
Result:= Continue
DP_T_CCF
Release
Int_ Continue
Int_Continue With Argument
Int_ Connect
Int_Release_ Call
Int_DP_T_ Abandon
CAMEL_ _Modify_ _CUG_Info
CAMEL_ _Modify_ _CUG_Info
Release
DP_T_Abandon
'Modify call parameters with received information'
'Modify call parameters with received information'
To proces MT_CF_MSC
CF cancelled
Int_continue
To proces MT_CF_MSC
CF cancelled
Release call resources
Release call resources
Result:= Continue
Result:= Reconnect
Result:= Fail
Result:= Fail

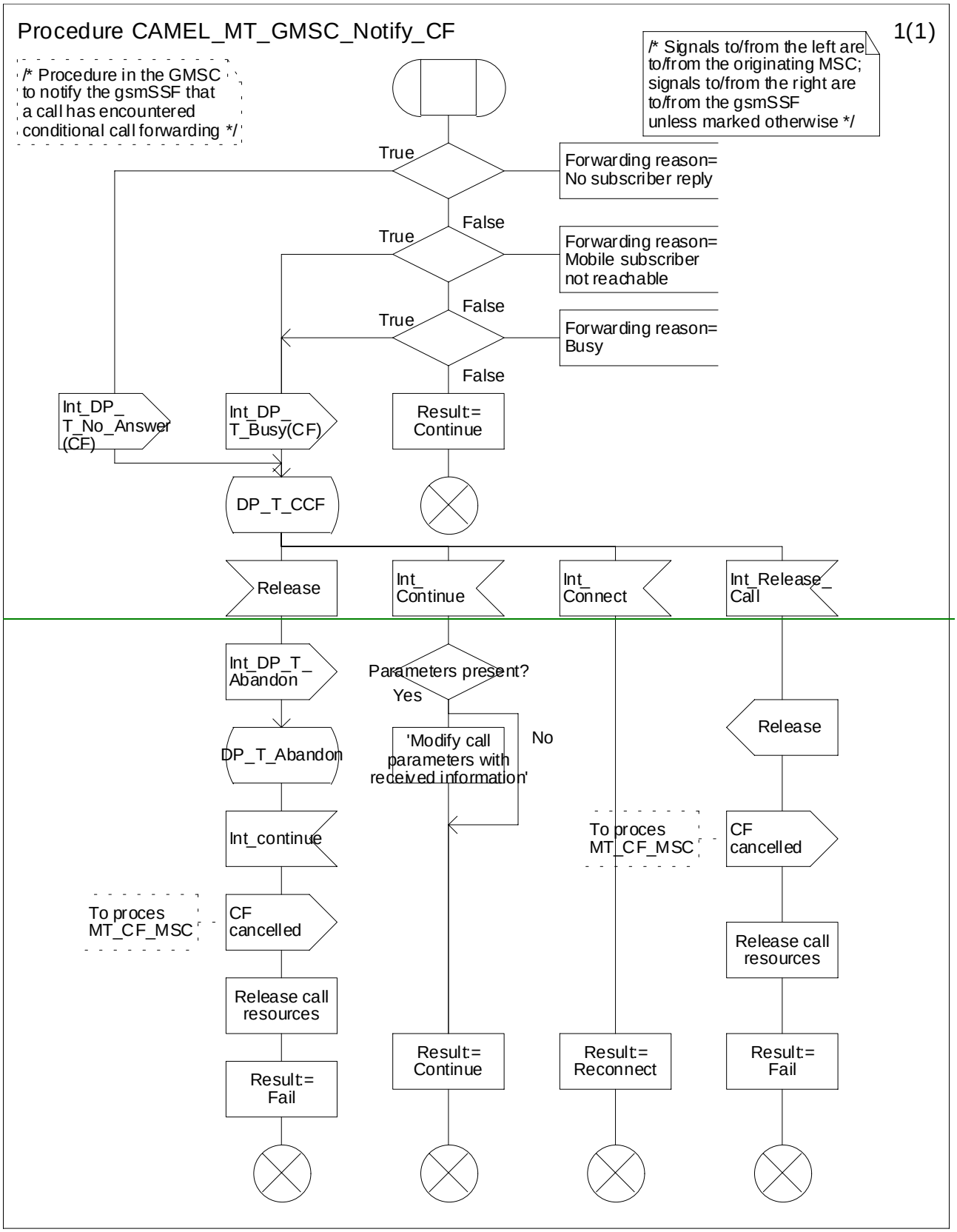
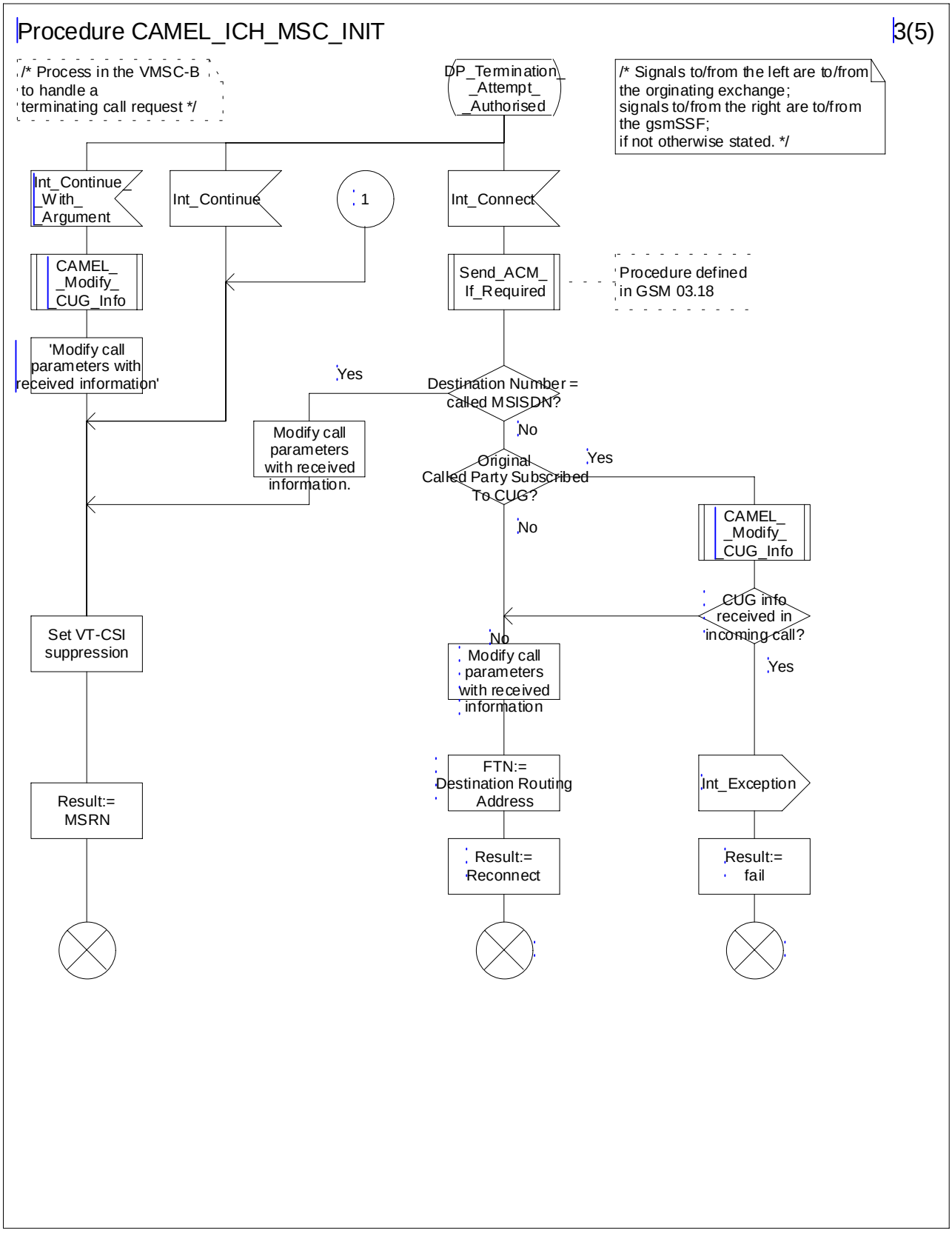


Figure 4.36: Procedure CAMEL_MT_GMSC_Notify_CF (sheet 1)

****** Next Modified Section ******

4.5.4.1 Handling of mobile terminating calls in the terminating VMSC



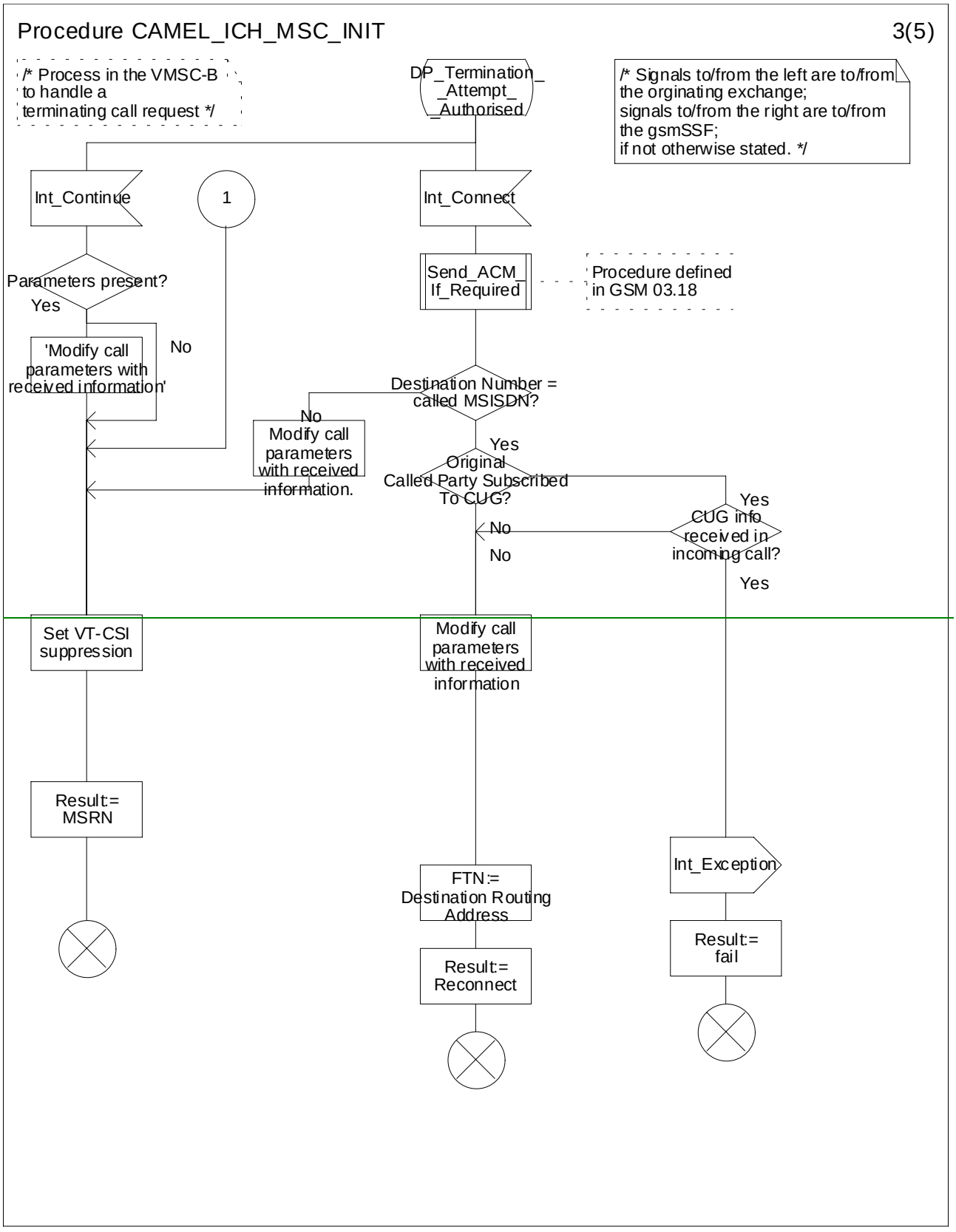
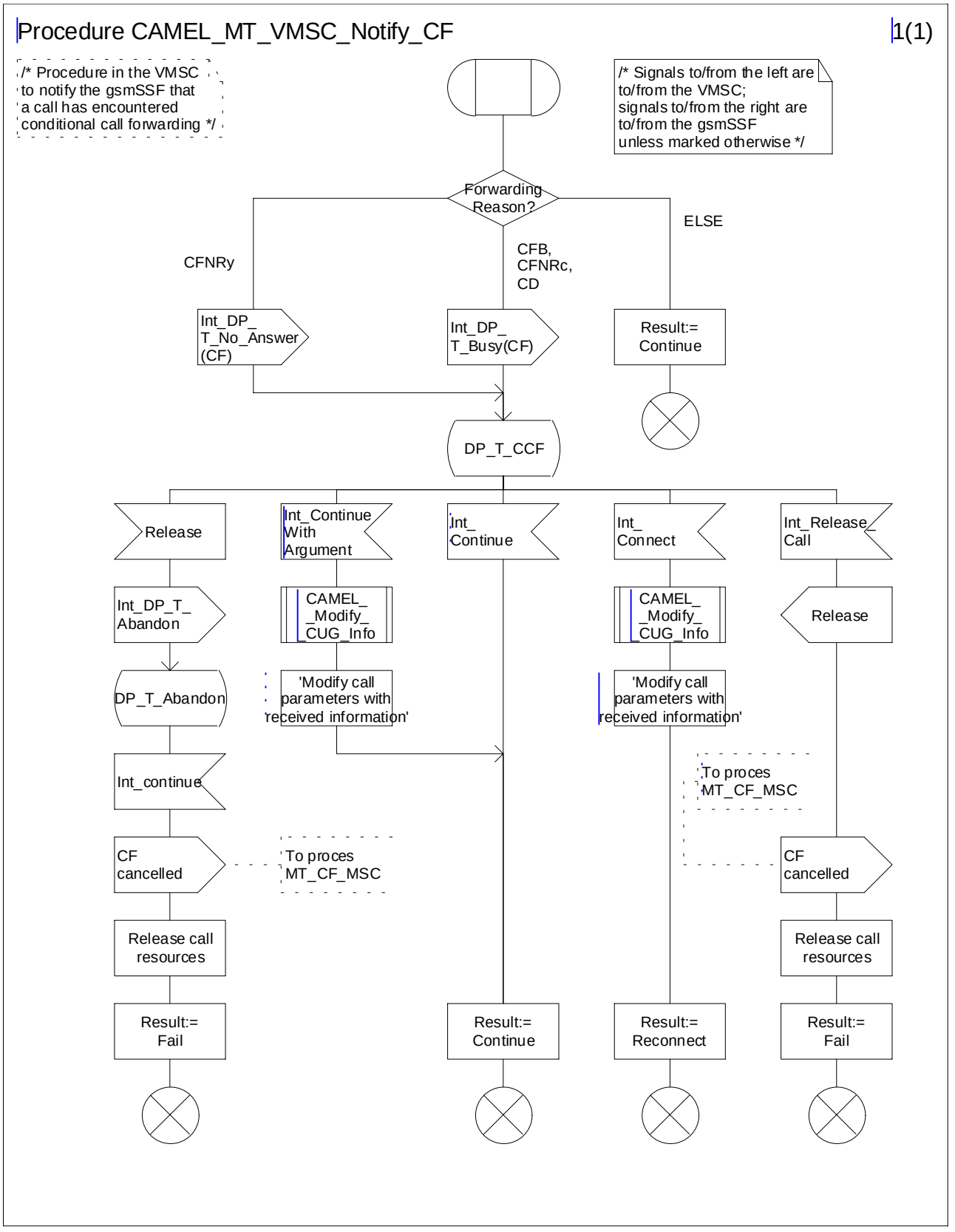


Figure 4.45c: Procedure CAMEL_ICH_MSC_INIT (sheet 3)


Procedure CAMEL_MT_VMSC_Notify_CF
1(1)
/* Procedure in the VMSC to notify the gsmSSF that a call has encountered conditional call forwarding */
/* Signals to/from the left are to/from the VMSC; signals to/from the right are to/from the gsmSSF unless marked otherwise */
Forwarding Reason?
CFNRy
CFB, CFNRc, CD
ELSE
Int_DP_T_No_Answer (CF)
Int_DP_T_Busy(CF)
Result:= Continue
DP_T_CCF
Release
Int_Continue With Argument
Int_ Continue
Int_ Connect
Int_Release_Call
Int_DP_T_ Abandon
CAMEL_ _Modify_ _CUG_Info
CAMEL_ _Modify_ _CUG_Info
Release
DP_T_Abandon
'Modify call parameters with received information'
'Modify call parameters with received information'
Int_continue
To proces MT_CF_MSC
CF cancelled
To proces MT_CF_MSC
CF cancelled
Release call resources
Release call resources
Result:= Fail
Result:= Continue
Result:= Reconnect
Result:= Fail

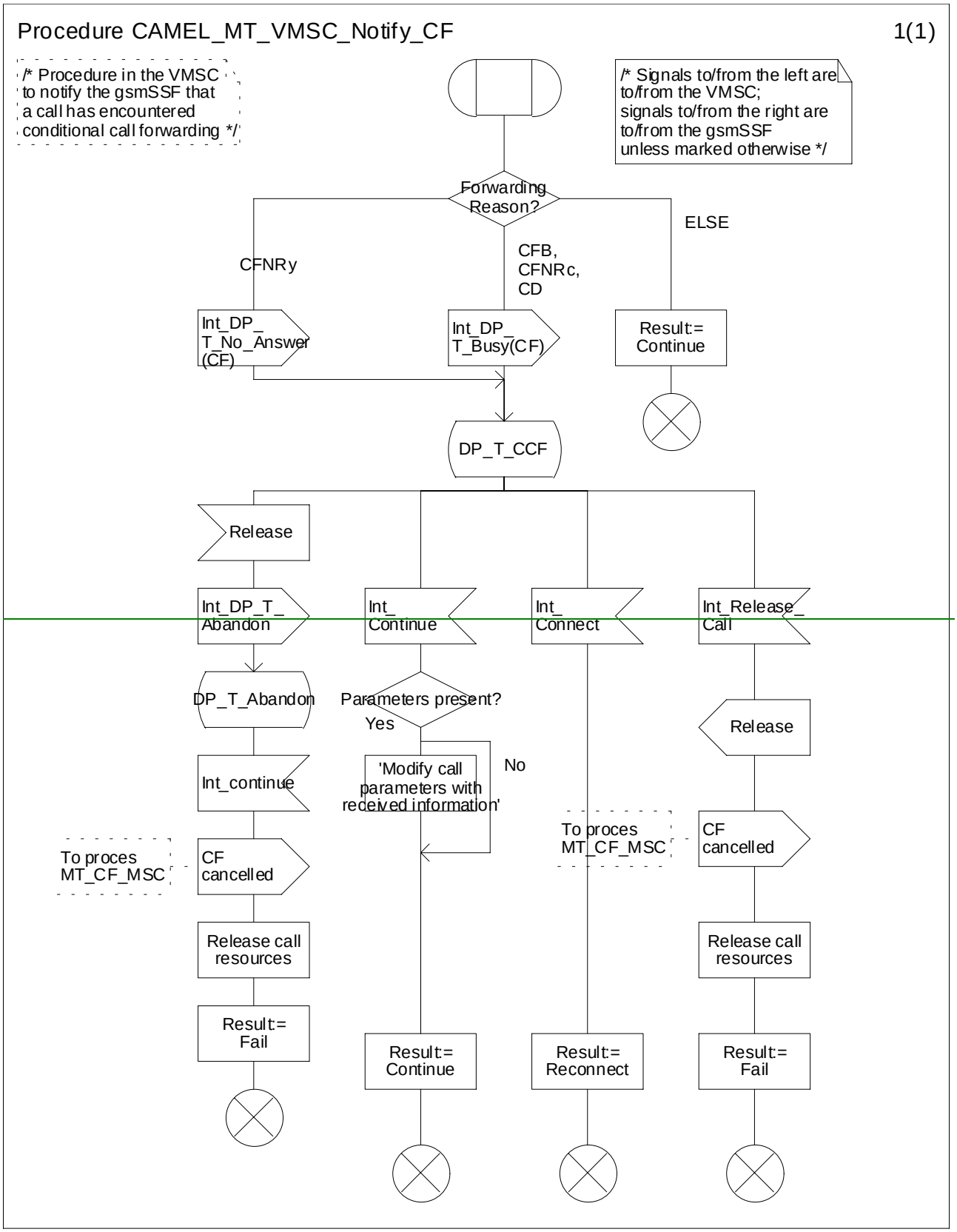
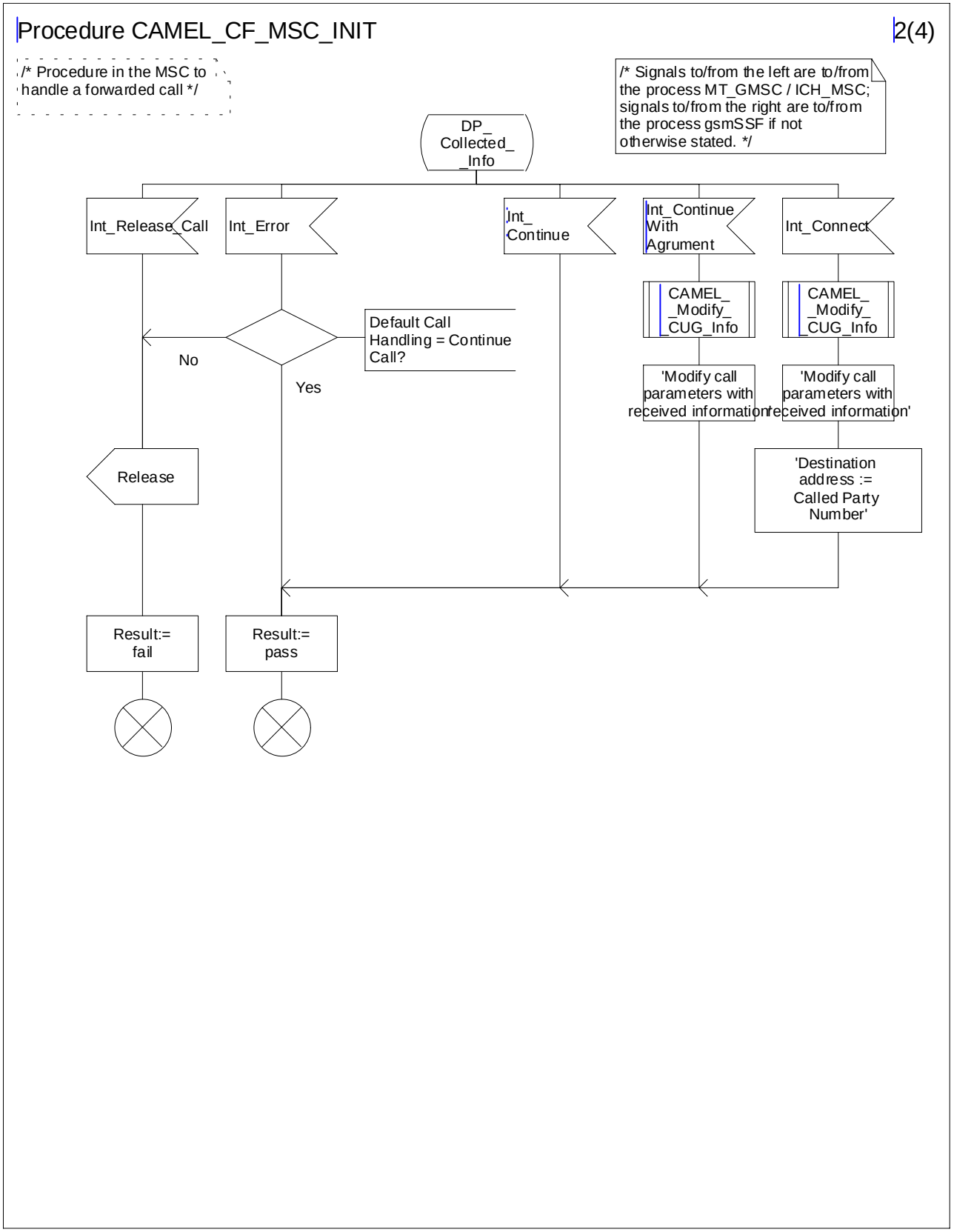


Figure 4.46: Procedure CAMEL_MT_VMSC_Notify_CF (sheet 1)

****** Next Modified Section ******

4.5.5 Handling of forwarded calls



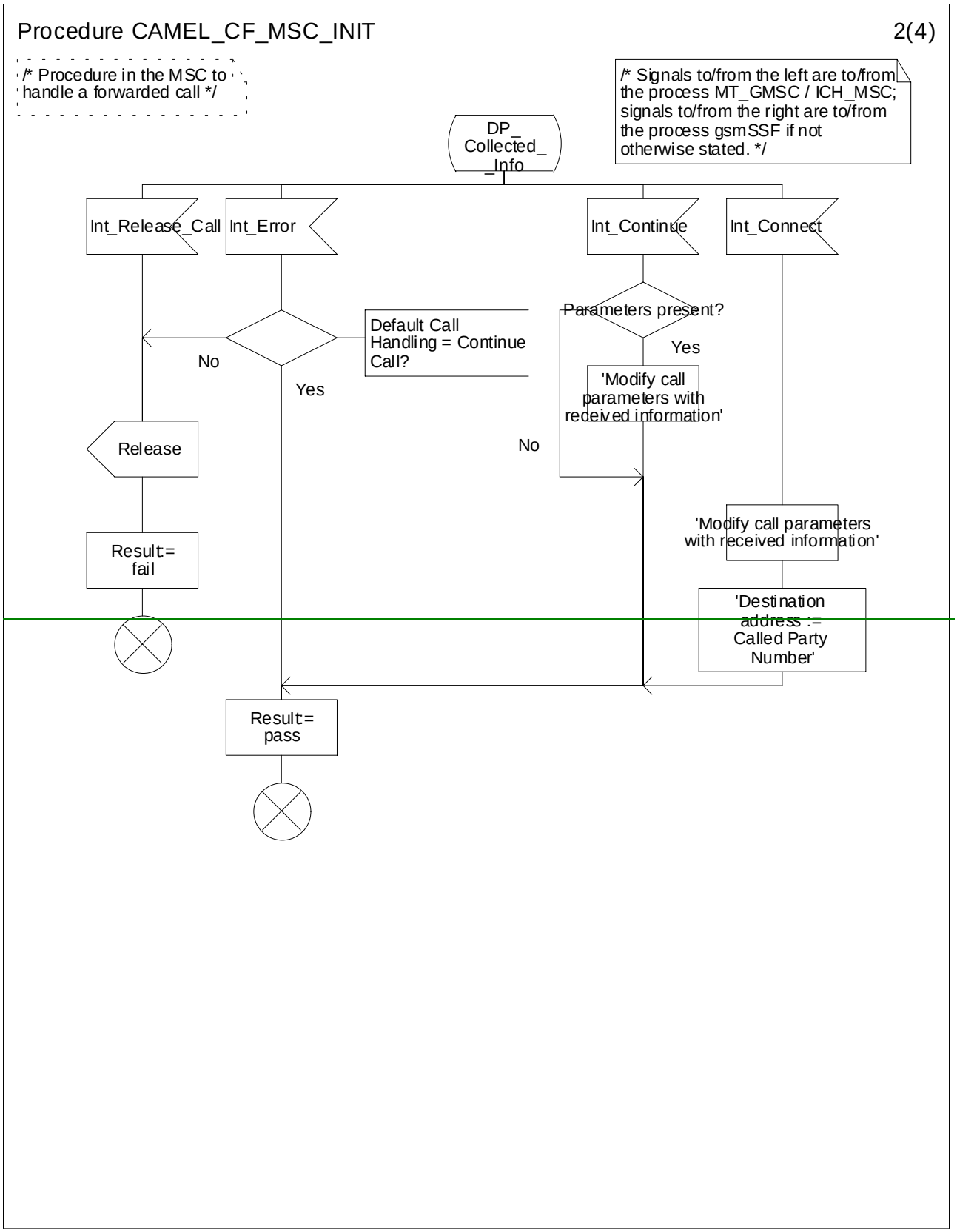
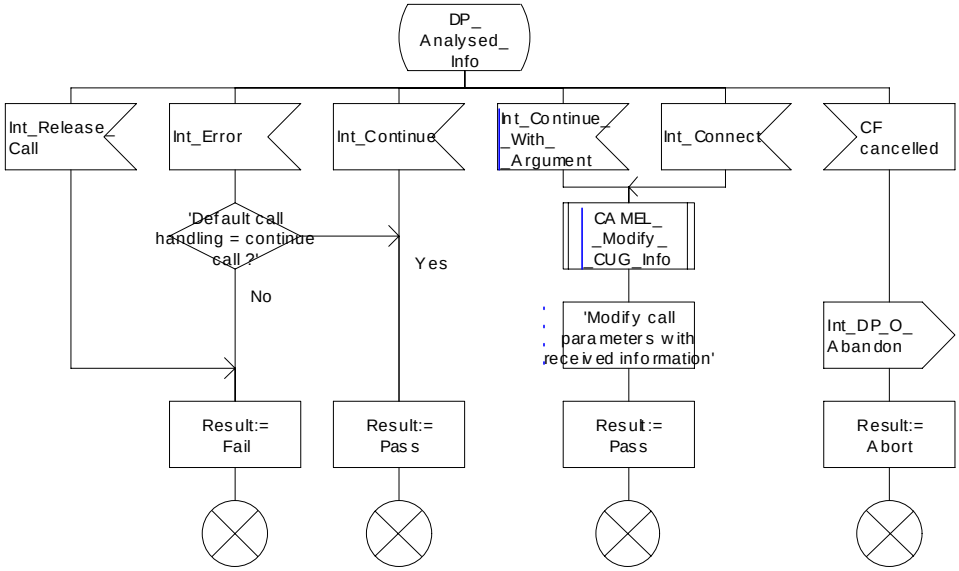


Figure 4.50b: Procedure CAMEL_CF_MSC_INIT (sheet 2)

Procedure CAMEL_SDS_CF_INIT 2(2)

Procedure in the MSC to perform CAMEL handling for a subscribed Dialled Service

/* Signals to/from the left are to/from the parent process; signals to/from the right are to/from the gsmSSF. */



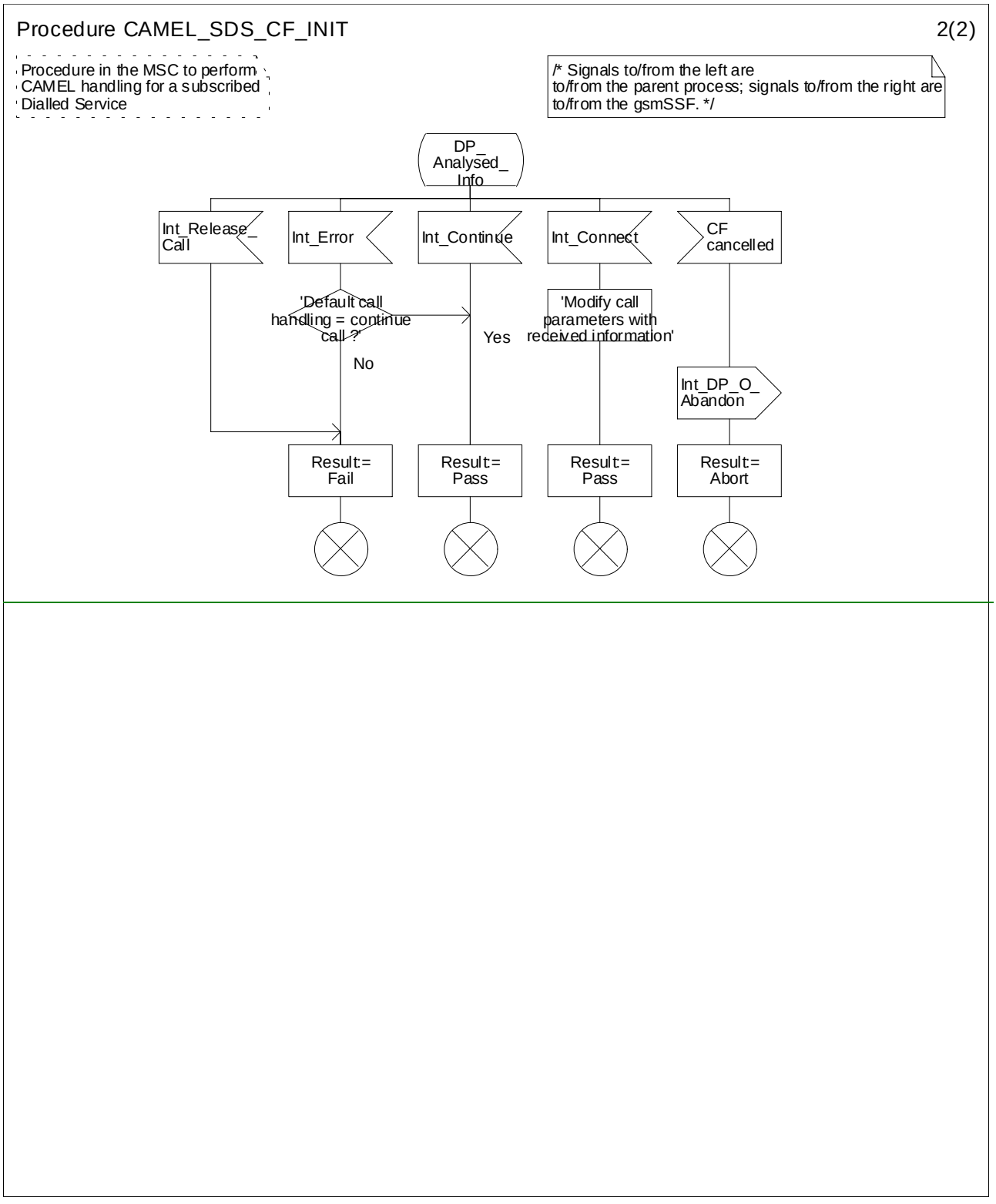
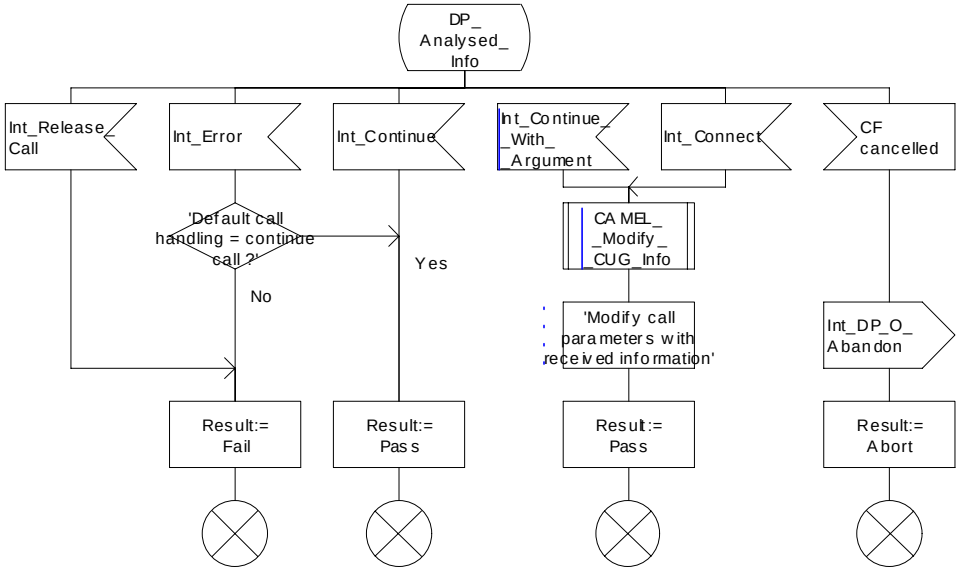


Figure 4.51b: Procedure CAMEL_SDS_CF_INIT (sheet 2)

Procedure CAMEL_NDS_CF_INIT 2(2)

Procedure in the MSC to perform CAMEL handling for a network Dialled Service for mobile originated calls

/* Signals to/from the left are to/from parent process; signals to/from the right are to/from the gsmSSF. */



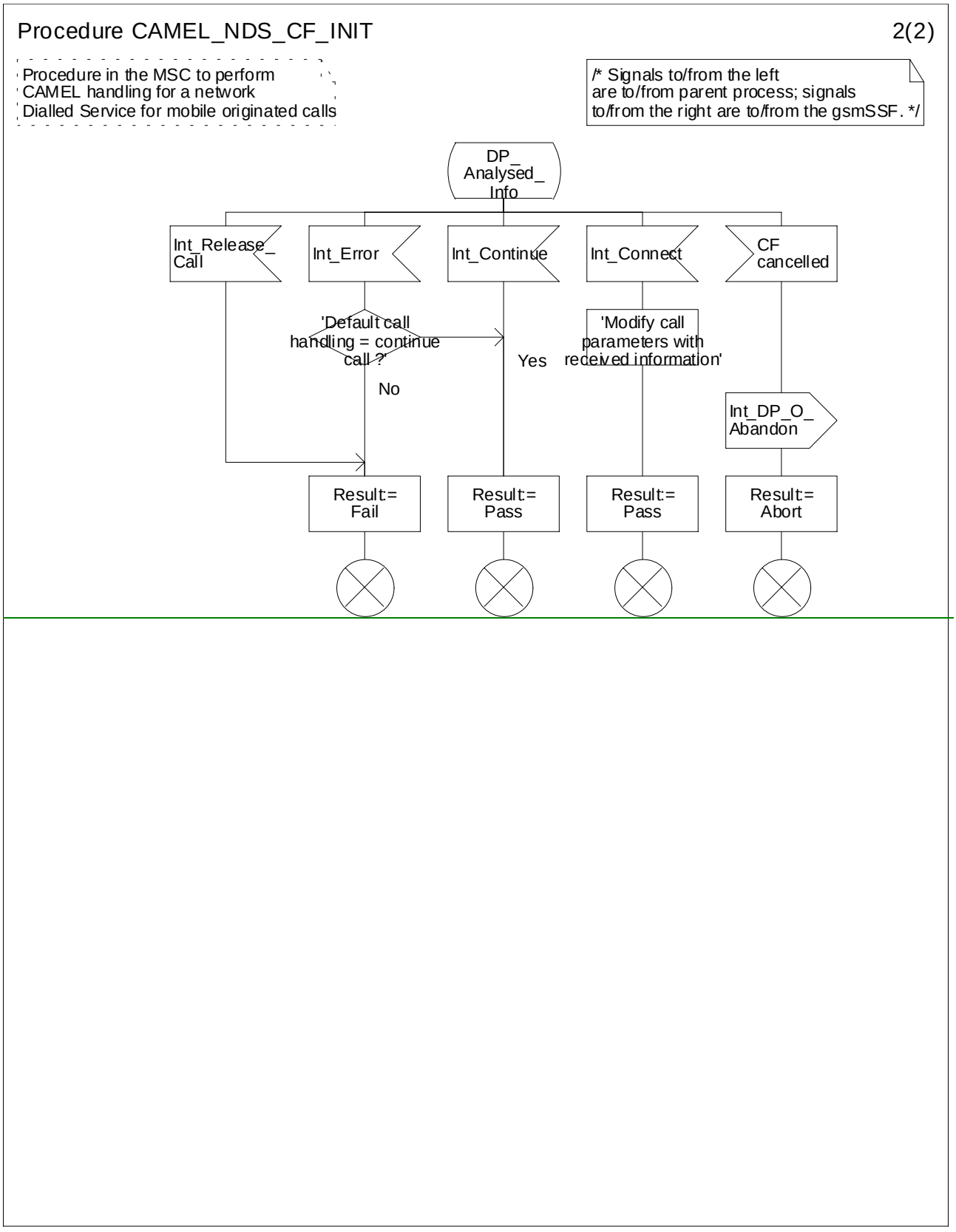
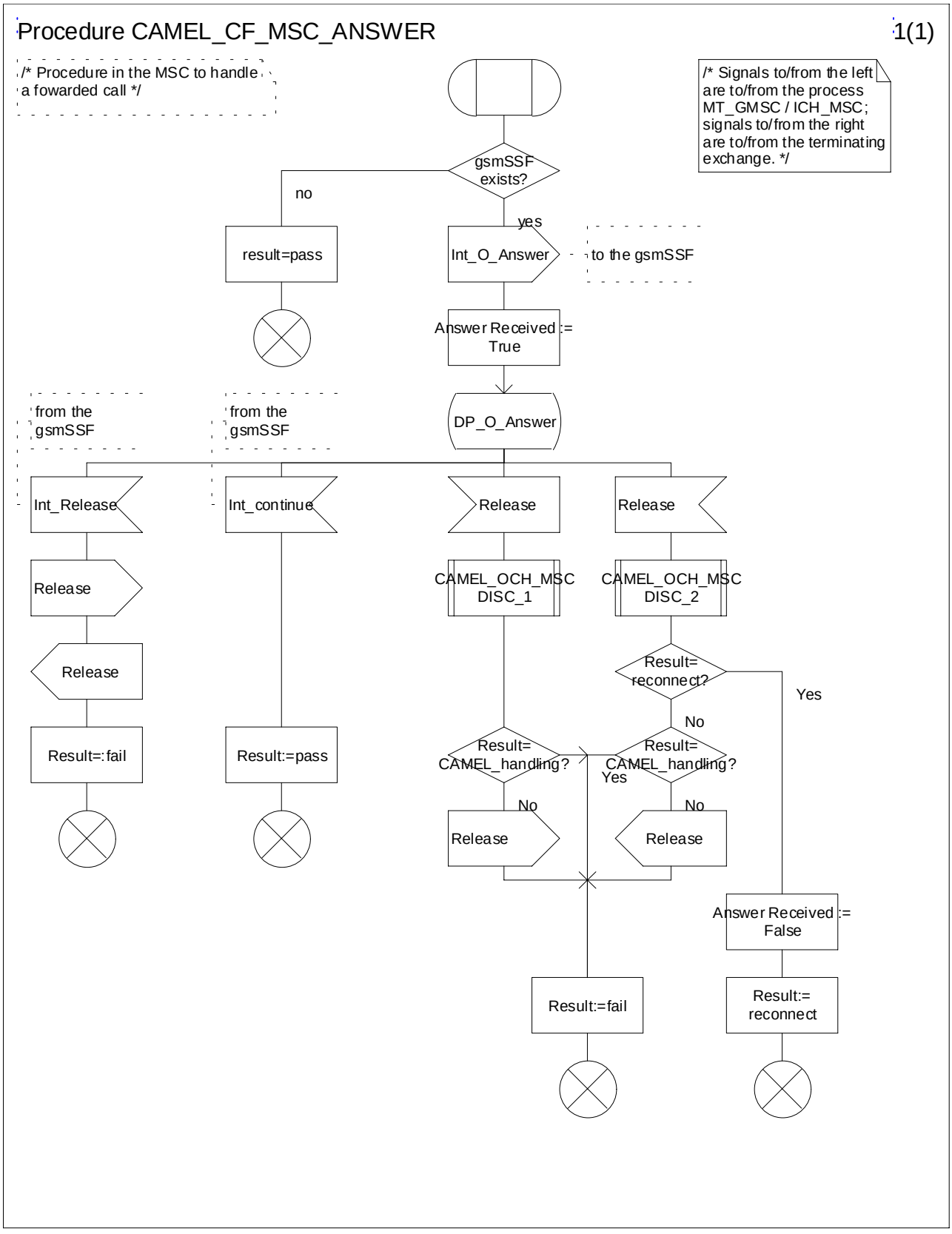


Figure 4.52b: Procedure CAMEL_NDS_CF_INIT (sheet 2)


Procedure CAMEL_CF_MSC_ANSWER
1(1)
/* Procedure in the MSC to handle a fowarded call */
/* Signals to/from the left are to/from the process MT_GMSC / ICH_MSC; signals to/from the right are to/from the terminating exchange. */
gsmSSF exists?
no
yes
result=pass
Int_O_Answer
to the gsmSSF
Answer Received := True
DP_O_Answer
from the gsmSSF
from the gsmSSF
Int_Release
Int_continue
Release
Release
Release
Release
CAMEL_OCH_MSC DISC_1
CAMEL_OCH_MSC DISC_2
Result=: fail
Result:=pass
Result= reconnect?
Yes
No
Result= CAMEL_handling?
Result= CAMEL_handling?
Yes
No
No
Release
Release
Answer Received := False
Result:=fail
Result:= reconnect

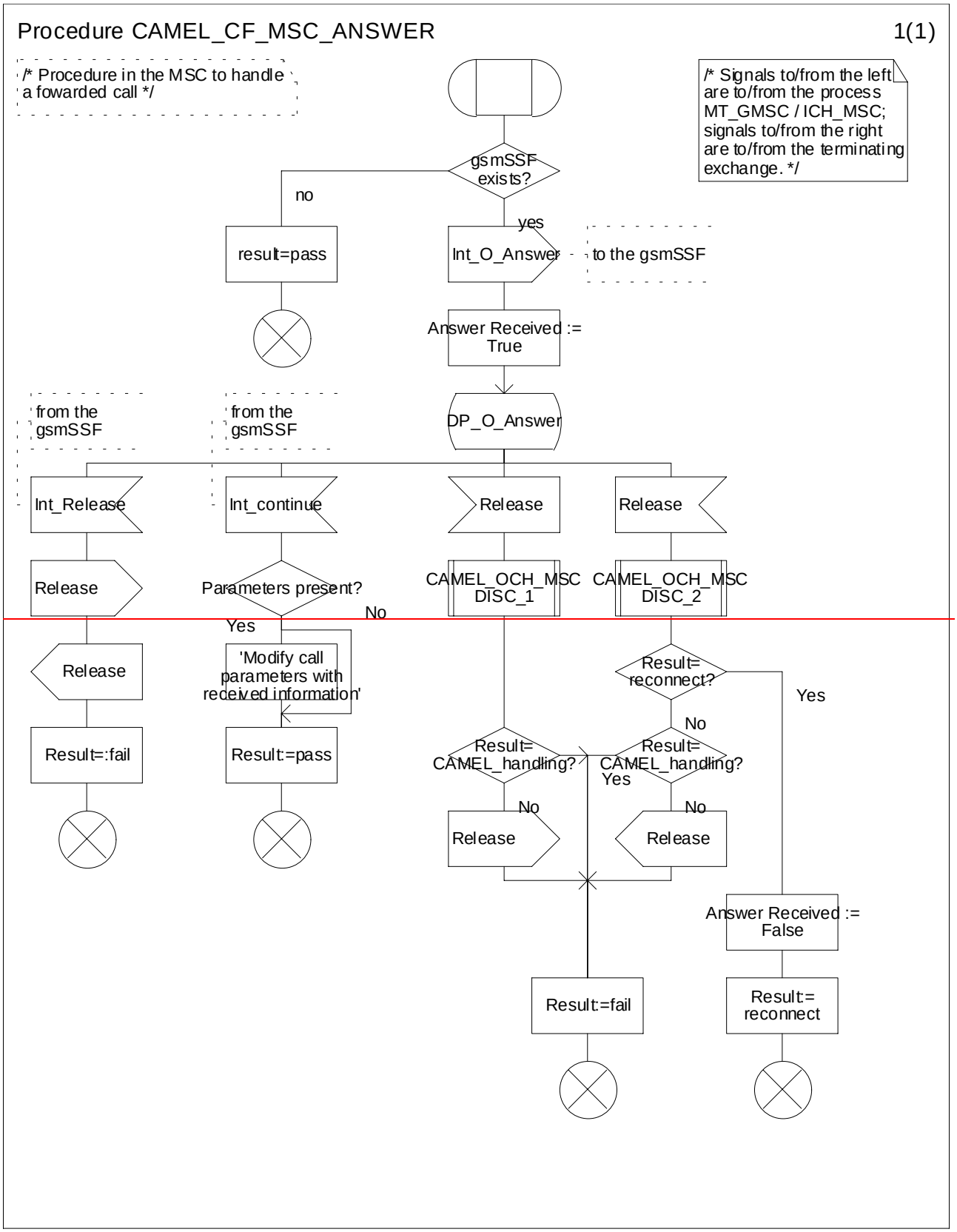
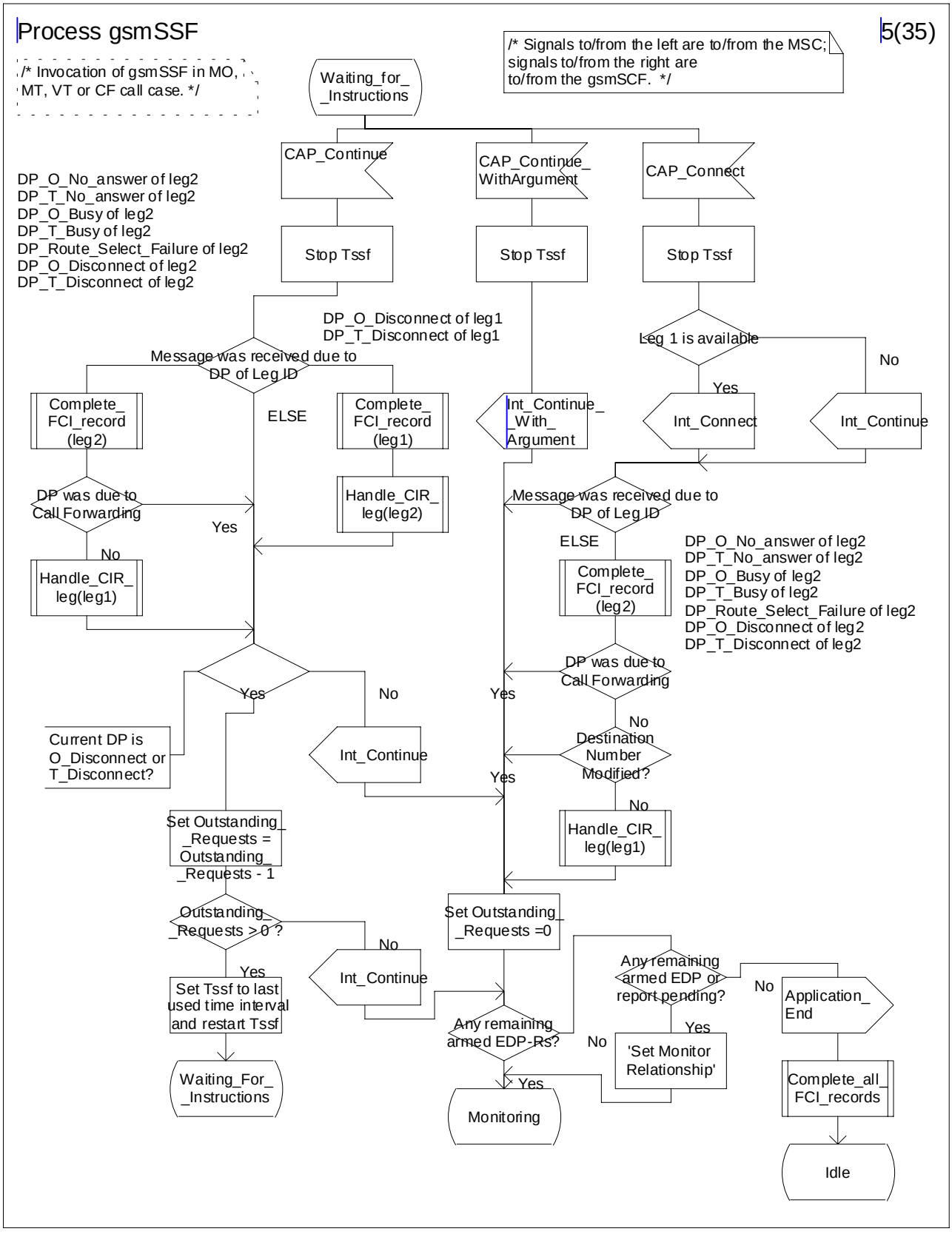


Figure 4.53a: Procedure CAMEL_CF_MSC_ANSWER (sheet 1)

****** Next Modified Section ******

4.5.6.4 Process gsmSSF and procedures



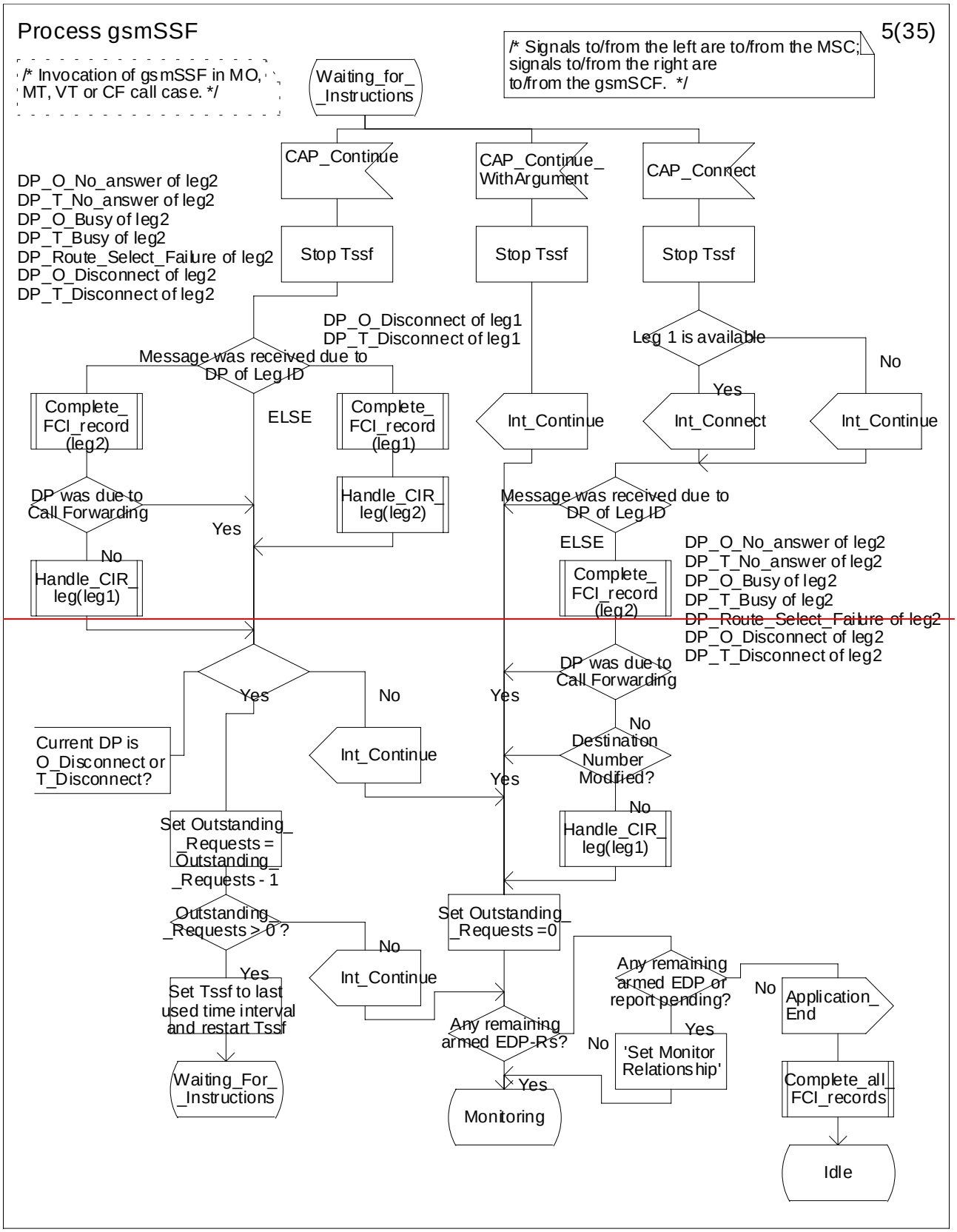
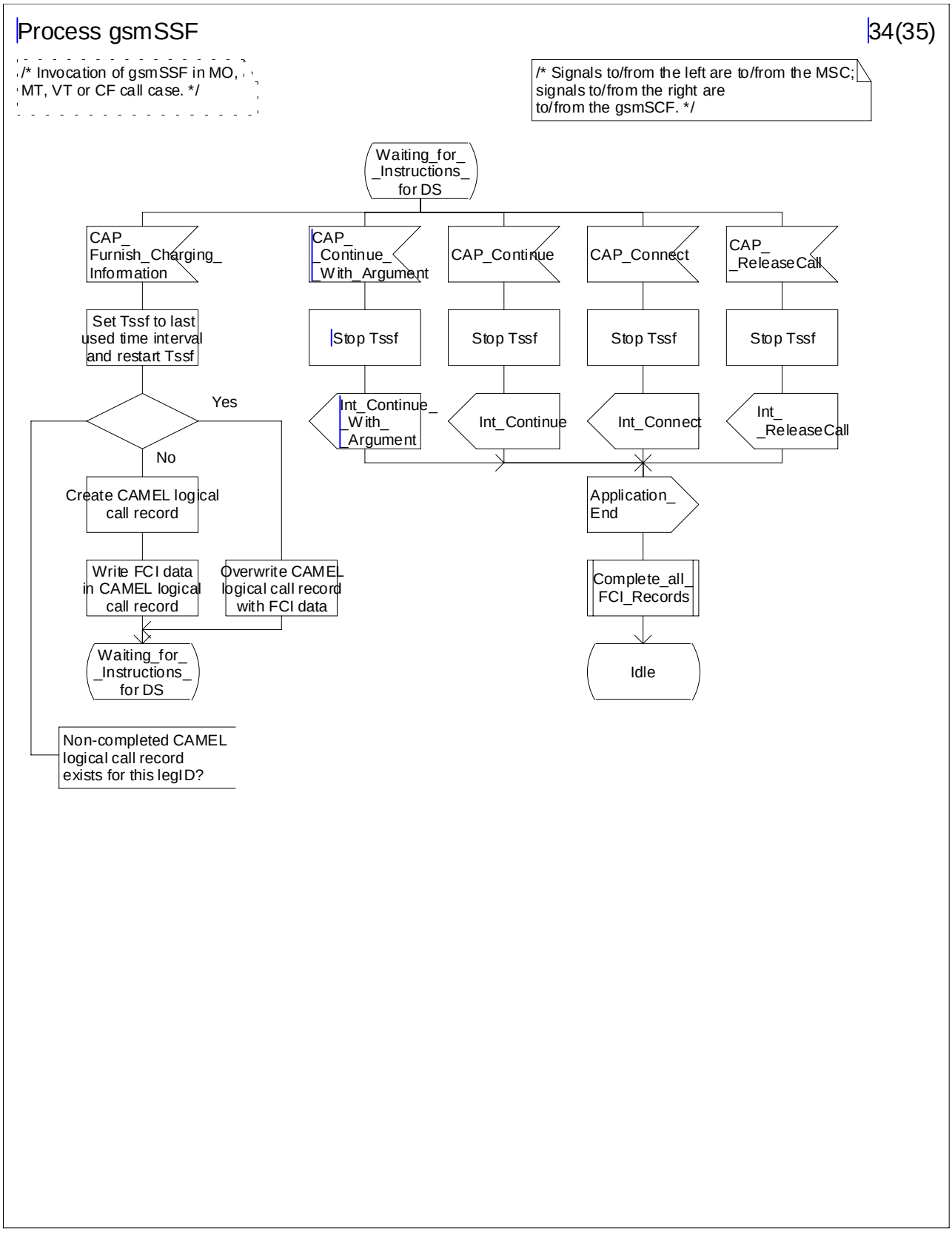


Figure 4.57e: Process gsmSSF (sheet 5)


Process gsmSSF
34(35)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
Waiting_for_ _Instructions_ for DS
CAP_ Furnish_Charging_ Information
CAP_ _Continue_ _With_Argument
CAP_Continue
CAP_Connect
CAP_ _ReleaseCall
Set Tssf to last used time interval and restart Tssf
Stop Tssf
Stop Tssf
Stop Tssf
Stop Tssf
Yes
Int_Continue_ _With_ _Argument
Int_Continue
Int_Connect
Int_ _ReleaseCall
No
Create CAMEL logical call record
Application_ End
Write FCI data in CAMEL logical call record
Overwrite CAMEL logical call record with FCI data
Complete_all_ FCI_Records
Waiting_for_ _Instructions_ for DS
Idle
Non-completed CAMEL logical call record exists for this legID?

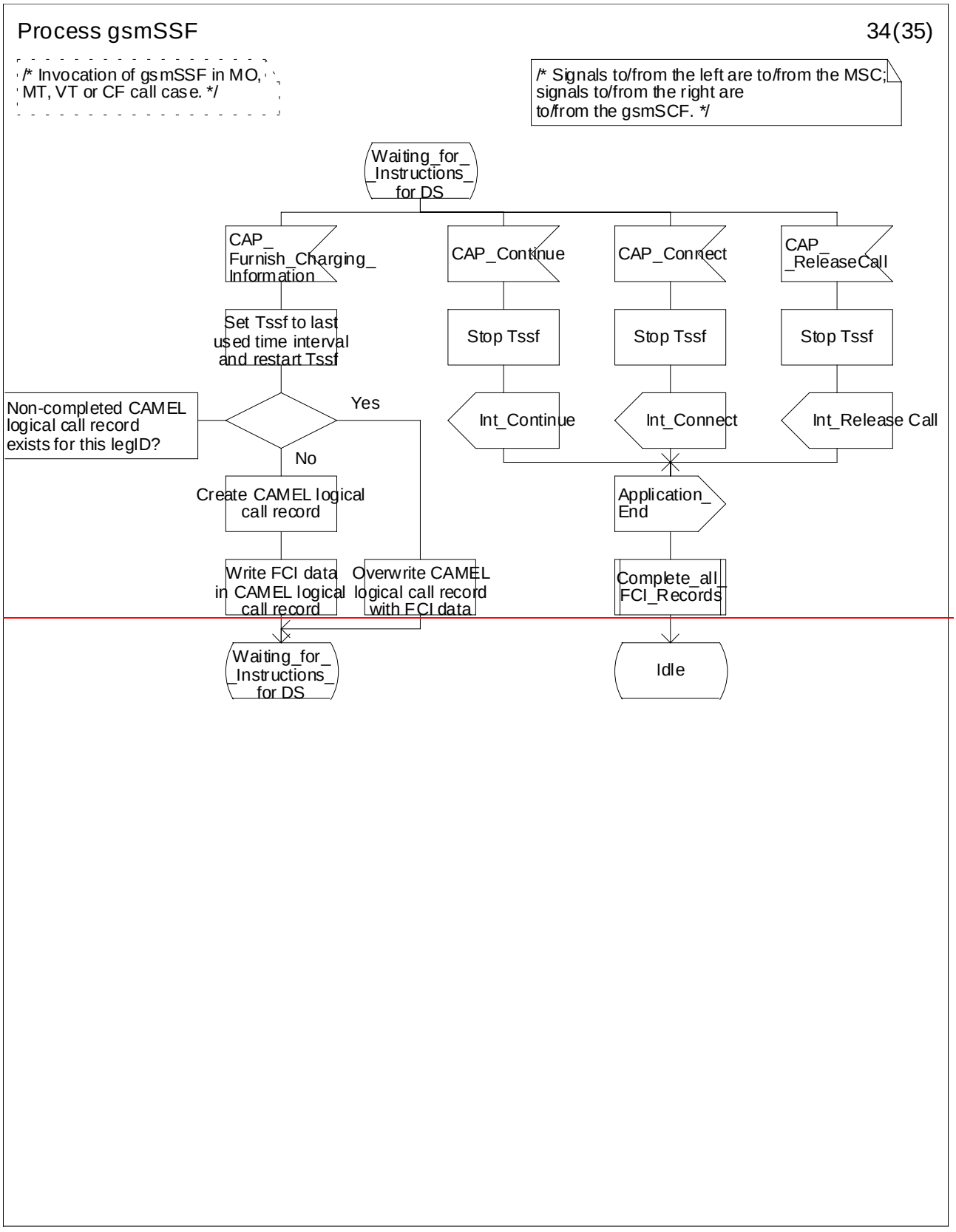


Figure 4.57hh: Process gsmSSF (sheet 34)

****** Next Modified Section ******

4.6.2.5 Connect

4.6.2.5.1 Description

This IF is used to request the gsmSSF to perform the call processing actions to route a call to a specific destination. To do so, the gsmSSF may use destination information from the calling party and existing call set-up information depending on the information provided by the gsmSCF.

4.6.2.5.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Alerting Pattern	-	-	O	O	This parameter indicates the kind of Alerting Pattern to be applied.
Calling Partys Category	O	O	O	O	This IE indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).
Destination Routing Address	M	M	M	M	This IE contains the called party number towards which the call is to be routed.
Generic Number	O	O	O	O	This IE contains the generic number. Its used to convey the additional calling party number, which e.g. could be used to modify the calling line ID presented to the called user.
NA Carrier Information	O	O	O	O	This IE is described in the next table.
NA Originating Line Information	O	O	O	O	This IE identifies the type of number in the NA Charge Number (e.g. subscriber versus PLMN operator number).
NA Charge Number	O	O	O	O	This IE identifies the chargeable number for the usage of a North American carrier.
O-CSI Applicable	-	-	O	O	This IE indicates that the O-CSI, if present shall be applied on the outgoing leg.
Original Called Party ID	O	O	O	O	This IE carries the dialled digits if the call has met call forwarding on route to the gsmSSF or is forwarded by the gsmSCF.
Redirecting Party ID	O	O	O	O	This IE indicates the directory number the call was redirected from.
Redirection Information	O	O	O	O	This IE contains forwarding related information, such as redirecting counter.
Suppression Of Announcements	-	-	O	O	This IE indicates that announcements or tones generated as a result of unsuccessful call setup shall be suppressed.
Service Interaction Indicators Two	O	O	O	O	This IE is described in a table below.
CUG Interlock Code	O	O	O	O	See 3G TS 23.085 [9] for details of this IE.
Outgoing Access Indicator	O	O	O	O	See 3G TS 23.085 [9] for details of this IE.
Non-CUG Call	O	O	O	O	This IE indicates that no parameters for CUG should be used for the call (i.e. the call should be a non-CUG call).

O Optional (Service logic dependent)

\- Not applicable

NOTE: Non-CUG Call shall not be present if at least one of CUG Interlock Code and Outgoing Access Indicator are present.

****** Next Modified Section ******

4.6.2.8 Continue With Argument

4.6.2.8.1 Description

This information flow requests the gsmSSF to proceed the call processing with modified information at the DP at which it previously suspended call processing to await gsmSCF instructions. The gsmSSF completes DP processing, and continues basic call processing (i.e., proceeds to the next point in call in the BCSM) with the modified call setup information as received from the gsmSCF.

4.6.2.8.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Alerting Pattern	-	-	O	O	This parameter indicates the kind of Alerting Pattern to be applied.
Calling Partys Category	O	O	O	O	This IE indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).
Generic Number	O	O	O	O	This IE contains the generic number. Its used to convey the additional calling party number, which e.g. could be used to modify the calling line ID presented to the called user.
NA Carrier Information	O	O	O	O	This IE is described in the next table.
NA Originating Line Information	O	O	O	O	This IE identifies the type of number in the NA Charge Number (e.g. subscriber versus PLMN operator number).
NA Charge Number	O	O	O	O	This IE identifies the chargeable number for the usage of a North American carrier.
Original Called Party ID	O	O	O	O	This IE carries the dialled digits if the call has met call forwarding on route to the gsmSSF or is forwarded by the gsmSCF.
Redirecting Party ID	O	O	O	O	This IE indicates the directory number the call was redirected from.
Redirection Information	O	O	O	O	This IE contains forwarding related information, such as redirecting counter.
Suppression Of Announcements	-	-	O	O	This IE indicates that announcements or tones generated as a result of unsuccessful call setup shall be suppressed.
Service Interaction Indicators Two	O	O	O	O	See the Information Flow table of the Connect operation for an explanation of this parameter. For Mobile Terminated calls, this parameter may only be sent to the VMSC.
CUG Interlock Code	O	O	O	O	See 3G TS 23.085 [9] for details of this IE.
Outgoing Access Indicator	O	O	O	O	See 3G TS 23.085 [9] for details of this IE.
Non-CUG Call	O	O	O	O	This IE indicates that no parameters for CUG should be used for the call (i.e. the call should be a non-CUG call.

O Optional (Service logic dependent)

- Not applicable

NOTE: Non-CUG Call shall not be present if at least one of CUG Interlock Code and Outgoing Access Indicator are present.

NA Carrier Information contains the following information:

Information element name	MO	MF	MT	VT	Description
NA Carrier Identification Code	M	M	M	M	This IE uniquely identifies a North American long distance carrier.
NA Carrier Selection Information	M	M	M	M	This IE indicates the way the carrier was selected e.g.: - dialled - subscribed

M Mandatory (The IE shall always be sent)

****** Last Modified Section ******

4.7 Interaction with supplementary services

…

4.7.3 Call Barring services

When a CAMEL subscriber with O-CSI and TIF-CSI attempts to activate a conditional call barring service (BOIC, BOIC-exHC), the HLR shall not check the interactions with call forwarding.

4.7.4 Closed User Group

For a CUG subscriber with CAMEL services:

- The HLR shall store (and transfer to the VLR) the necessary subscriber data to ensure that the served subscriber is not unnecessarily prevented by CUG constraints from originating calls.
- The HLR shall store the necessary subscriber data to ensure that the served subscriber is not unnecessarily prevented by CUG constraints from receiving calls.

For an MO or MF call, the CUG information for that call shall be sent to the gsmSCF in the Initial DP.

If the gsmSCF returns a Continue message, the call shall continue with the original CUG information unchanged.

If the gsmSCF returns a Connect or Continue With Argument message, the CUG handling in table 4.x applies.

Table 4.x: CUG handling on receipt of Connect or Continue With Argument for an MO or MF call.

CUG parameters in message:	**Handling:**
Non-CUG call	Remove CUG information for the call and continue as a non-CUG call
CUG information (see note)	Call shall continue with modified CUG information
No CUG information	Call shall continue with original CUG information

NOTE: CUG information consists of at least one of CUG Interlock Code and Outgoing Access Indicator.

For an MT or VT call which is to be routed to the terminating subscriber, the CUG information shall be sent to the gsmSCF in the Initial DP, but the gsmSCF shall not have the ability to change the CUG information for the call.

For an MT or VT call which is to be forwarded under CAMEL control, if the gsmSCF returns a Connect or Continue With Argument message, the CUG handling in table 4.x applies.

3GPP TSG-N2
Kyoto, Japan, 17 - 21 Jan 2000

Tdoc 3GPP N2A00-0117
(revision of N2A00-007)

CHANGE REQUEST

23.078	**CR**	**038r1**	Current Version:	3.3.0

For submission to: CN#7 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: CN WG2 **Date:** 17/01/2000

Subject: Clarification of SS Invocation Notification

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: The handling of the SS Invocation Notification was moved from section 4 to section 8. This contribution moves the reference to SS-CSI from section 4 to section 8. This CR also proposes a number of technical and editorial corrections to chapter 8 of 3G TS 23.078.

Clauses affected: 4.1.1, 8.1, 8.4

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: Additional changes, compared to N2A00-0007:

- All references to SSIN have been removed from chapter 4 and have been moved to chapter 8, where applicable.
- References have been updated, where needed.

****** First Modified Section ******

4 Circuit switched Call Control

4.1 Architecture

4.1.1 Functional Entities used for CAMEL

This subclause describes the functional architecture needed to support CAMEL. Also the additions needed to the basic GSM functionality are described. Figure 4.1 shows the functional entities involved in calls requiring CAMEL support. The architecture is applicable to the third phase of CAMEL.

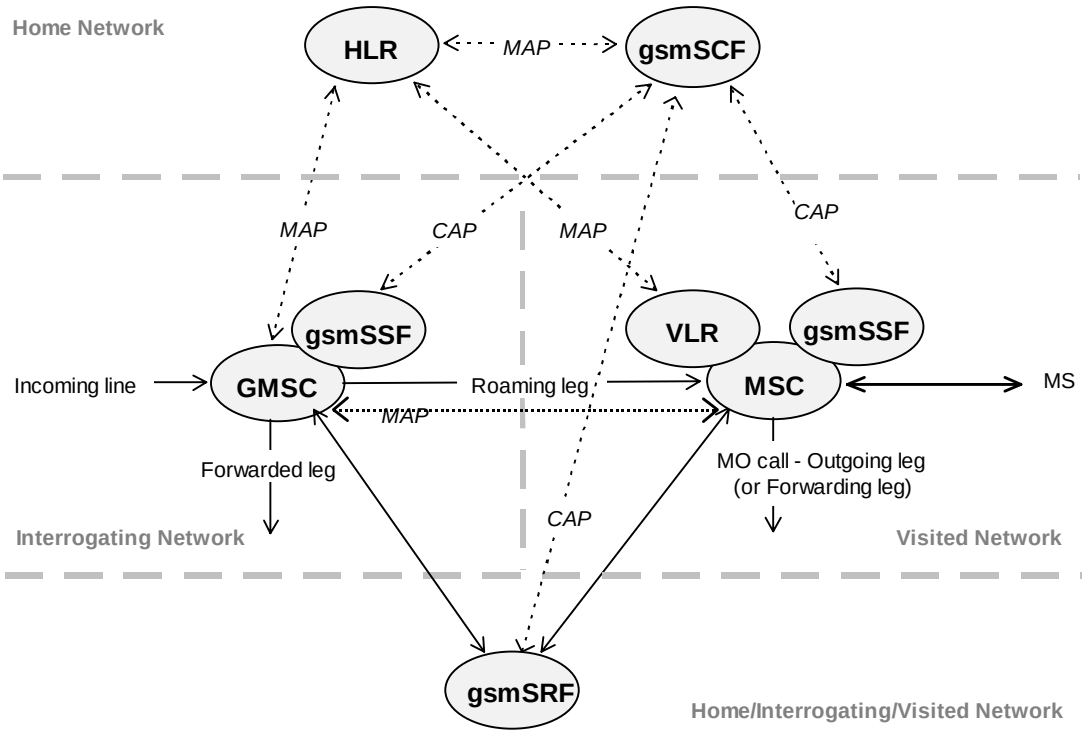


Figure 4.1: Functional architecture for support of CAMEL

HLR: For subscribers requiring CAMEL support, ~~T~~the HLR stores ~~for subscribers requiring CAMEL support~~ the information relevant to the current subscription regarding O-CSI, D-CSI, T-CSI, VT-CSI, and TIF-CSI ~~and SS-CSI~~. The O-CSI is sent to the VLR at Location Update, on data restoration or if the O-CSI is updated by administrative action. The D-CSI is sent to the VLR at Location Update, on data restoration or if the D-CSI is updated by administrative action. The VT-CSI is sent to the VLR at Location Update, on data restoration or if the VT-CSI is updated by administrative action. ~~The SS-CSI is sent to the VLR at Location Update, on data restoration or if the SS-CSI is updated.~~ The O/T-CSI is sent to the GMSC when the HLR responds to a request for routeing information. ~~When processing an invocation of the CCBS supplementary service, the HLR shall send a notification of the invocation of the supplementary service to the gsmSCF if required by the SS-CSI.~~

GMSC: When processing the calls for subscribers requiring CAMEL support, the GMSC receives an O/T-CSI from the HLR, indicating the GMSC to request instructions from the gsmSSF. The GMSC monitors on request the call states (events) and informs the gsmSSF of these states during processing, enabling the gsmSSF to control the execution of the call in the GMSC.

MSC: When processing the calls for subscribers requiring CAMEL support, the MSC receives an O-CSI and / or VT-CSI from the VLR indicating the MSC to request instructions from the gsmSSF. The MSC monitors on request the call states (events) and informs the gsmSSF of these states during processing, enabling the gsmSSF to control the execution

of the call in the MSC. ~~When processing an invocation of any of the supplementary services ECT, CD and MPTY, the MSC may receive a SS-CSI from the VLR, indicating that a notification of the invocation of the supplementary service shall be sent to the gsmSCF.~~

VLR: The VLR stores the O-CSI, VT-CSI, and TIF-CSI ~~and SS-CSI~~ as a part of the subscriber data for subscribers roaming in the VLR area.

gsmSSF: see subclause 3.1.

gsmSCF: see subclause 3.1.

gsmSRF: see subclause 3.1.

****** Next Modified Section ******

4.6.13 VLR to MSC information flows

4.6.13.1 Complete Call

4.6.13.1.1 Description

This IF is described in 3G TS 23.018 [3] and is used to instruct the MSC to continue the connection of a call.

4.6.13.1.2 Information Elements

Complete Call contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	This IE indicates that CAMEL handling applies for an MO call. Shall be present in the response to the first interrogation for an MO call if CAMEL handling applies; otherwise shall be absent. Shall be absent in the response to the second interrogation for an MO call and in the response to the interrogation for an MT call.
VT-CSI	C	This IE identifies the subscriber as having terminating CAMEL services in the VMSC.
Call Reference Number	M	This IE carries the Call Reference Number provided by the HLR in the Provide Roaming Number IF.
GMSC Address	M	This IE is the E.164 address of the GMSC.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent if applicable)

4.6.13.2 Process Call Waiting

4.6.13.2.1 Description

This IF is described in GSM 03.18 [3] and is used to instruct the MSC to continue the connection of a waiting call.

4.6.13.2.2 Information Elements

Process Call Waiting contains the following CAMEL specific IE:

Information element name	Required	Description
Call Reference Number	M	This IE carries the Call Reference Number provided by the HLR in the Provide Roaming Number IF.
GMSC Address	M	This IE is the E.164 address of the GMSC.

M Mandatory (The IE shall always be sent)

4.6.13.3 Send Info For Incoming Call ack

4.6.13.3.1 Description

This IF is described in 3G TS 23.018 [3] and is used to indicate that the incoming call for which the MSC requested subscription information shall be forwarded.

4.6.13.3.1 Information Elements

Send Info For Incoming Call ack contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	This IE indicates that CAMEL handling applies for a forwarded call. Shall be present if CAMEL handling applies; otherwise shall be absent.
VT-CSI	C	This IE identifies the subscriber as having terminating CAMEL services in the VMSC.
Suppression Of Announcement	C	This IE indicates that announcements or tones generated when the call is forwarded shall be suppressed. Shall be sent if it was received in the Provide Roaming Number for this call.
~~SS-CSI~~	~~C~~	~~This IE indicates that SS invocation notification applies for the call.~~ ~~This IE is described in section 8.2.1.1.~~ ~~Shall be present if SS invocation notification is required if Call Deflection is invoked; otherwise shall be absent.~~
Call Reference Number	M	This IE carries the Call Reference Number provided by the HLR in the Provide Roaming Number IF.
GMSC Address	M	This IE is the E.164 address of the GMSC.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent if applicable)

4.6.13.4 Send Info For Incoming Call negative response

4.6.13.4.1 Description

This IF is described in 3G TS 23.018 [3] and is used to indicate that the incoming call for which the MSC requested subscription information shall not be connected.

4.6.13.4.2 Information Elements

Send Info For Incoming Call negative response contains the following CAMEL specific IE which may be attached as a IE to any of the negative response values defined in 3G TS 23.018 [3]:

Information element name	Required	Description
Suppression Of Announcement	C	This IE indicates that announcements or tones generated as a result of unsuccessful call setup shall be suppressed. Shall be sent if it was received in the Provide Roaming Number for this call.

C Conditional (The IE shall be sent if applicable)

****** Next Modified Section ******

8 SS Notifications

8.1 Architecture

8.1.1 Functional Entities used for CAMEL

~~See subclasue 4.1~~

This subclause describes the functional architecture needed to support SS Notifications. Figure 8.1 shows the functional entities involved in sending SS Notifications. The architecture is applicable to the third phase of CAMEL.

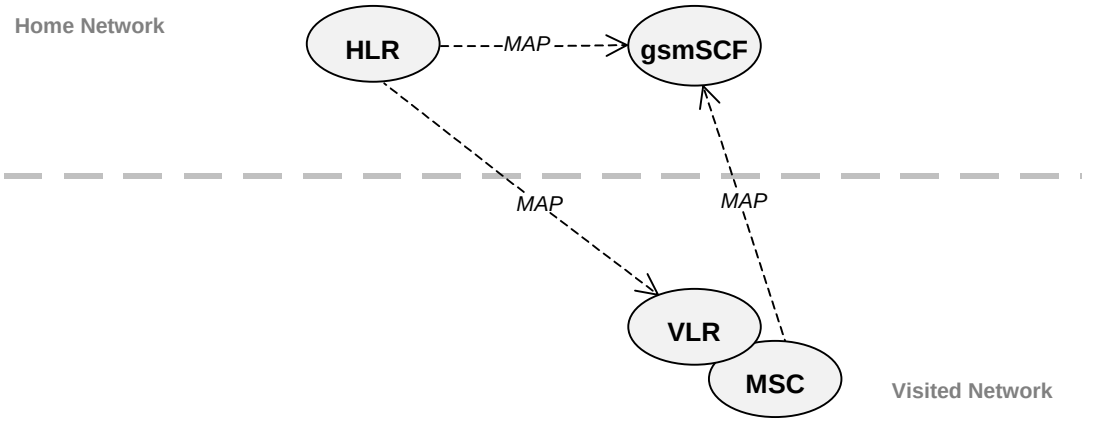


Figure 8.1: Functional architecture for support of SS Notifications

HLR: For subscribers requiring CAMEL support, the HLR stores the information relevant to the current subscription regarding SS-CSI. The SS-CSI is sent to the VLR at Location Update, on ~~d~~Data ~~r~~Restoration or if the SS-CSI is updated by administrative action. When processing an invocation of the CCBS supplementary service, the HLR shall send a notification of the invocation of the supplementary service to the gsmSCF if required by the SS-CSI.

MSC: When processing an invocation of any of the supplementary services ECT, CD and MPTY, the MSC may receive an SS-CSI from the VLR, indicating that a notification of the invocation of the supplementary service shall be sent to the gsmSCF.

VLR: The VLR stores the SS-CSI as a part of the subscriber data for subscribers roaming in the VLR area.

gsmSCF: The gsmSCF receives the SS Invocation Notification from the MSC or HLR.

8.1.2 Interfaces defined for SS Notifications~~CAMEL~~

This subclause describes the different interfaces applicable to SS Notifications~~CAMEL~~. It specifies on a high level the functions specific to SS Notifications~~CAMEL~~.

8.1.2.1 MSC - gsmSCF interface

This interface is used by the MSC to send supplementary service invocation notifications to the gsmSCF. The SS invocations that can be notified to the gsmSCF via this interface are Call Deflection (CD), Explicit Call Transfer (ECT) and Multi Party (MPTY).

8.1.2.2 HLR - gsmSCF interface

This interface is used by the HLR to send supplementary service invocation notifications to the gsmSCF. The SS invocation that can be notified to the gsmSCF via this interface is Call Completion to Busy Subscriber (CCBS).

8.1.2.3 VLR - MSC interface

This interface is used by the VLR to transfer SS-CSI to the MSC.

8.1.2.4 HLR-VLR interface

This interface is used by the HLR to send the SS-CSI to the VLR or to remove SS-CSI from the VLR.

****** Next Modified Section ******

8.4 Description of information flows

…

8.4.2 HLR to VLR information flows

8.4.2.1 Delete Subscriber Data

8.4.2.1.1 Description

This IF is used by the HLR to remove CAMEL subscription data from the VLR. This IF is specified in 3G TS 29.002 [4].

8.4.2.1.2 Information Elements

The Delete Subscriber Data contains the following CAMEL specific IE:

Information element name	Required	Description
CAMEL Subscription Info Withdraw	C	This IE identifies that all CSIs shall be deleted from the subscriber data in the VLR.

C Conditional (The IE shall be sent when deletion is requested)

8.4.2.2 Insert Subscriber Data

8.4.2.2.1 Description

This IF is used by an HLR to update a VLR with certain subscriber data. This IF is specified in 3G TS 29.002 [4].

8.4.2.2.2 Information Elements

Insert Subscriber Data contains the following CAMEL specific IE for SS Notifications:

Information element name	Required	Description
SS-CSI	C	This IE identifies the subscriber as having supplementary service invocation notification services. It contains the Notification Criteria and gsmSCFAddress. This IE is described in section 8.2.1.1.

C Conditional (The IE shall be sent, if required)

8.4.3 HLR to gsmSCF information flows

8.4.3.1 SS Invocation Notification

This IF is generated by the HLR when it shall notify the gsmSCF of a supplementary service invocation.

8.4.3.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Notification Event	M	This IE indicates the supplementary service invocation, resulting in the SS Invocation Notification IF. Only the following Supplementary Services are allowed: Completion of Calls to Busy Subscriber
IMSI	M	This IE identifies the mobile subscriber who has invoked the supplementary service to be notified.
MSISDN	M	This IE identifies the mobile subscriber who has invoked the supplementary service to be notified.

M Mandatory (The IE shall always be sent)

~~C Conditional (The IE shall be sent if applicable)~~

8.4.4 VLR to MSC information flows

8.4.4.1 Invoke SS result

8.4.4.1.1 Description

This IF is used by the VLR to send SS-CSI to the MSC. This IF is specified in 3G TS 29.002 [4].

8.4.4.1.2 Information Elements

The IF contains the following CAMEL specific IE:

Information element name	Required	Description
SS-CSI	C	This IE is included when it is available in the VLR and either ECT or MPTY has been successfully invoked and that supplementary service has been marked for notification.

C Conditional (The IE shall be sent when ECT or MPTY invocation shall be notified)

8.4.4.2 Send Info For Incoming Call ack

8.4.4.2.1 Description

This IF is used by the VLR to send SS-CSI to the MSC. This IF is specified in 3G TS 23.018 [3].

8.4.4.2.2 Information Elements

The IE contains the following CAMEL specific IE:

Information element name	Required	Description
SS-CSI	C	This IE is included when it is available in the VLR and CD has been successfully invoked and that supplementary service has been marked for notification.

C Conditional (The IE shall be sent when CD invocation shall be notified)

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Kyoto, Japan, 17 - 21 Jan 2000

Tdoc 3GPP N2A000300

CHANGE REQUEST

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

23.078	**CR**	**040r5**	Current Version:	3.3.0

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

For submission to: CN#7 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

strategic [ ]
non-strategic [ ]
(for SMG use only)

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: CN WG2 **Date:** 11/01/2000

Subject: Correction of SS Invocation Notification for CCBS

Work item: CAMEL Phase 3

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

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[X]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: At the TSG-N SS ad hoc meeting, it was agreed that the SS Invocation Notification for CCBS should indicate the current status of the CCBS request. This was agreed by CN plenary via CR 23.093-002r3.

Clauses affected: 8.3.1, 8.4.3

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs: 23.093-002 (approved at CN#6), 29.002-079 (Tdoc N2A000011)
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.

****** First Modified Section ******

8.3.1 Handling of Supplementary Service Invocation Notification

At the invocation of any of the services ECT, CD and MPTY the VLR checks whether the criteria for sending a notification are fulfilled, i.e. whether the subscriber is provisioned with the SS-CSI and the particular invoked supplementary service is marked in the SS-CSI. If this is the case a notification is sent to the gsmSCF given by the gsmSCF address contained in the SS-CSI. The processing of the particular SS invocation is not suspended. If the notification criteria are not fulfilled the processing of the particular supplementary service continues unchanged and no notification is~~are~~ sent.

The sending of the notification is independent of call related CAMEL processing, i.e. processing indicated by O/T/VT-CSI.

On invocation of ECT, the VLR shall include the SS-CSI in the Invoke ECT response message (see Process MAF027 in 3G TS 23.091 [29]) to the MSC if applicable for ECT.

On invocation of MPTY, the VLR shall include the SS-CSI in the Process MPTY message (see Process MPTY_MAF026 in 3G TS 23.084 [28]) to the MSC if applicable for MPTY.

On invocation of CD, the VLR shall include the SS-CSI in the Send Info For Incoming Call ack message to the MSC if applicable to CD.

When a subscriber activates a CCBS request, the HLR checks whether the criteria for sending a notification are fulfilled, i.e. whether

- The subscriber is provisioned with ~~the~~ an active SS-CSI, and
- CCBS is marked in the SS-CSI.

If the criteria are fulfilled, a notification is immediately sent to the gsmSCF given by the gsmSCF address contained in the SS-CSI and the processing of the CCBS request continues. Whenever the state of the CCBS request changes (see TS 23.093), an additional notification is immediately sent to the gsmSCF and the processing of the CCBS request continues.

If the criteria are not fulfilled, the processing of the CCBS request continues unchanged and no notifications are sent.

****** Next Modified Section ******

8.4.3 HLR to gsmSCF information flows

8.4.3.1 SS Invocation Notification

This IF is generated by the HLR when it shall notify the gsmSCF of a supplementary service invocation.

8.4.3.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Notification Event	M	This IE indicates the supplementary service invocation, resulting in the SS Invocation Notification IF. Only the following Supplementary Services are allowed : Completion of Calls to Busy Subscriber
IMSI	M	This IE identifies the mobile subscriber who has invoked the supplementary service to be notified.
MSISDN	M	This IE identifies the mobile subscriber who has invoked the supplementary service to be notified.
B- Number	M	This IE indicates the destination address of the CCBS request.
CCBS Request State	M	This IE identifies the current state of the CCBS request. It can be one of: - Request - Recall - Active - Completed - Suspended - Frozen - Deleted

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent if applicable)

3GPP TSG CN WG2
Nice, FRANCE, 21-25 February 2000

N2A000295

Document

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

CHANGE REQUEST

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23.078	**CR**	**041r5**	Current Version:	3.3.0

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

For submission to: **TSG N2** *list expected approval meeting # here ↑*

for approval [X] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

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: France Télécom/Alcatel **Date:** 28/02/00

Subject: Introduction of Call Gapping

Work item: CAMEL phase 3

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

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[X]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: Following the decision agreed during the Phoenix, the process and procedures for Call Gapping are added to the specifications.
This CR only applies to CAMEL circuit switched handling. The applicability of Call Gapping to SMS and GPRS handling is for further study.

Clauses affected:

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	29.078
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: None

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first section modified

4.3.1.4 Default Call Handling

The Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.

next section modified

4.3.2.4 Default Call Handling

The Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each DP criteria.

next section modified

4.3.4.4 Default Call Handling

The Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.

next section modified

4.3.5.4 Default Call Handling

The Default Call Handling indicates whether the call shall be released or continued as requested in case of error in the gsmSSF to gsmSCF dialogue or in case the call is submitted to call gapping in the gsmSSF. A default call handling shall be associated to each Service Key.

next section modified

4.5.6.4 Process gsmSSF and procedures

(…)

The call gap operation can only be received for an opened transaction between the gsmSSF and the gsmSCF.

4.5.6.4.x Process gsmSSF_SSME_FSM

One process is instantiated for each Call Gap message received from a gsmSCF.

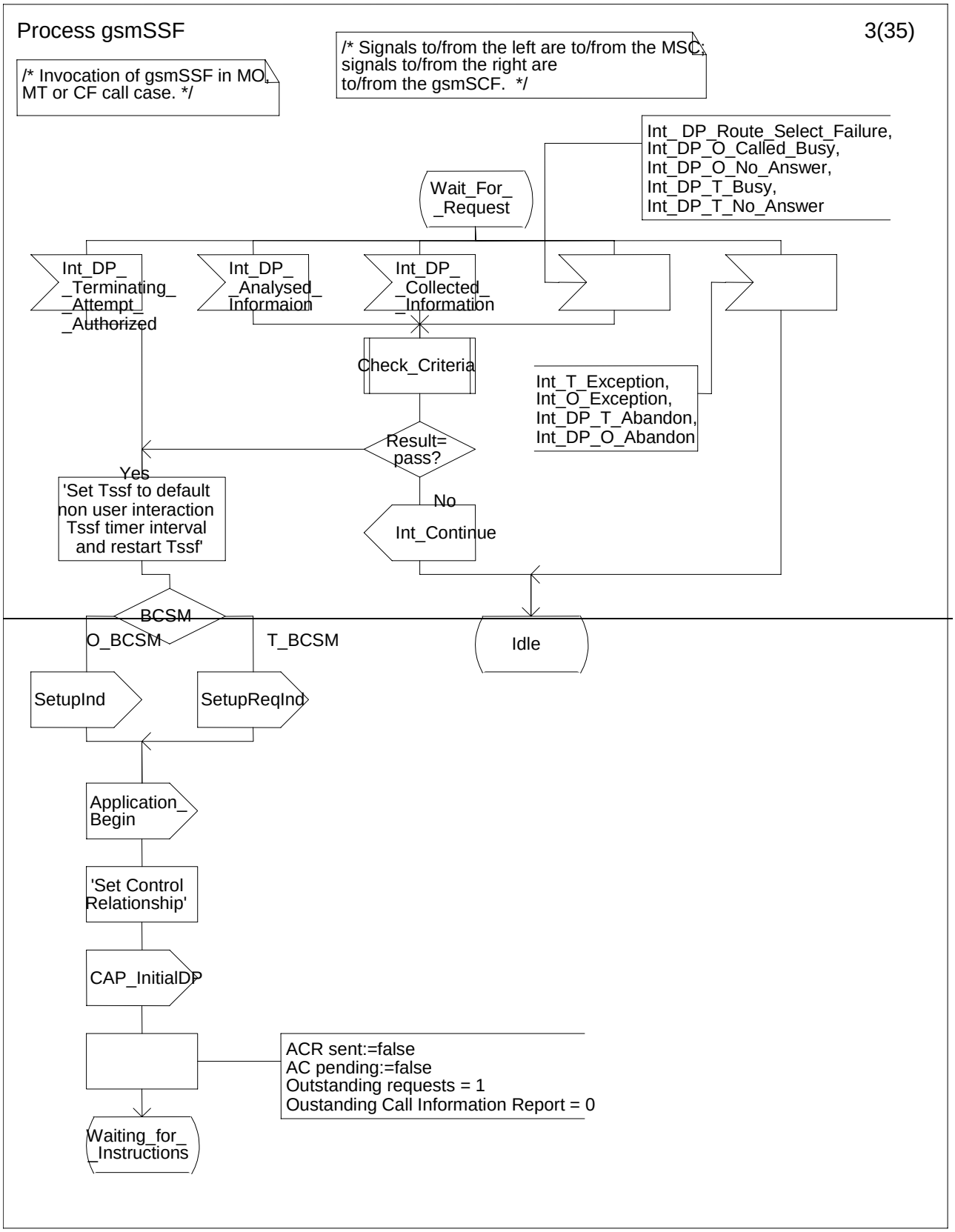


Figure 4.52.C : Process gsmSSF (sheet 3)

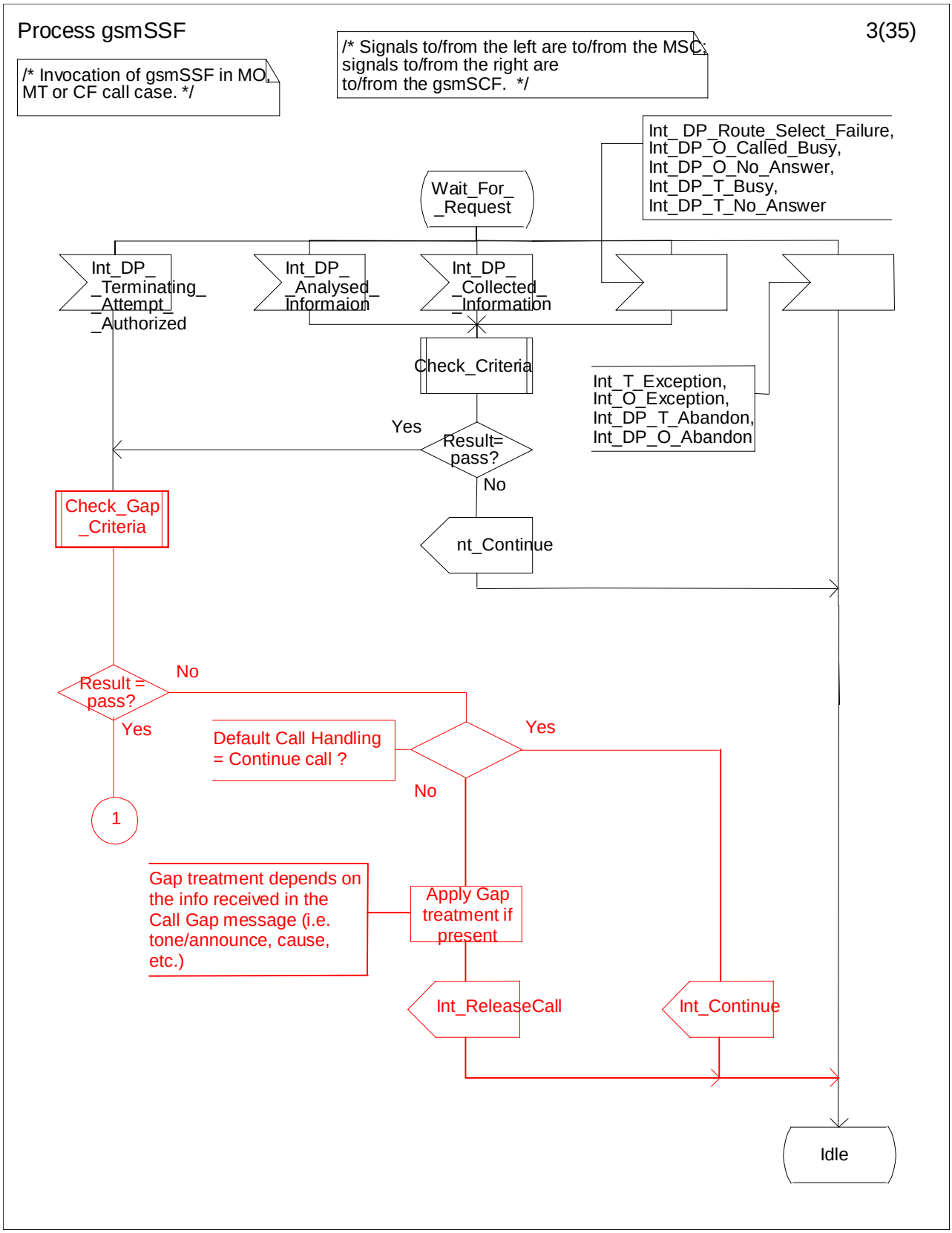


Figure 4.52.C : Process gsmSSF (sheet 3)

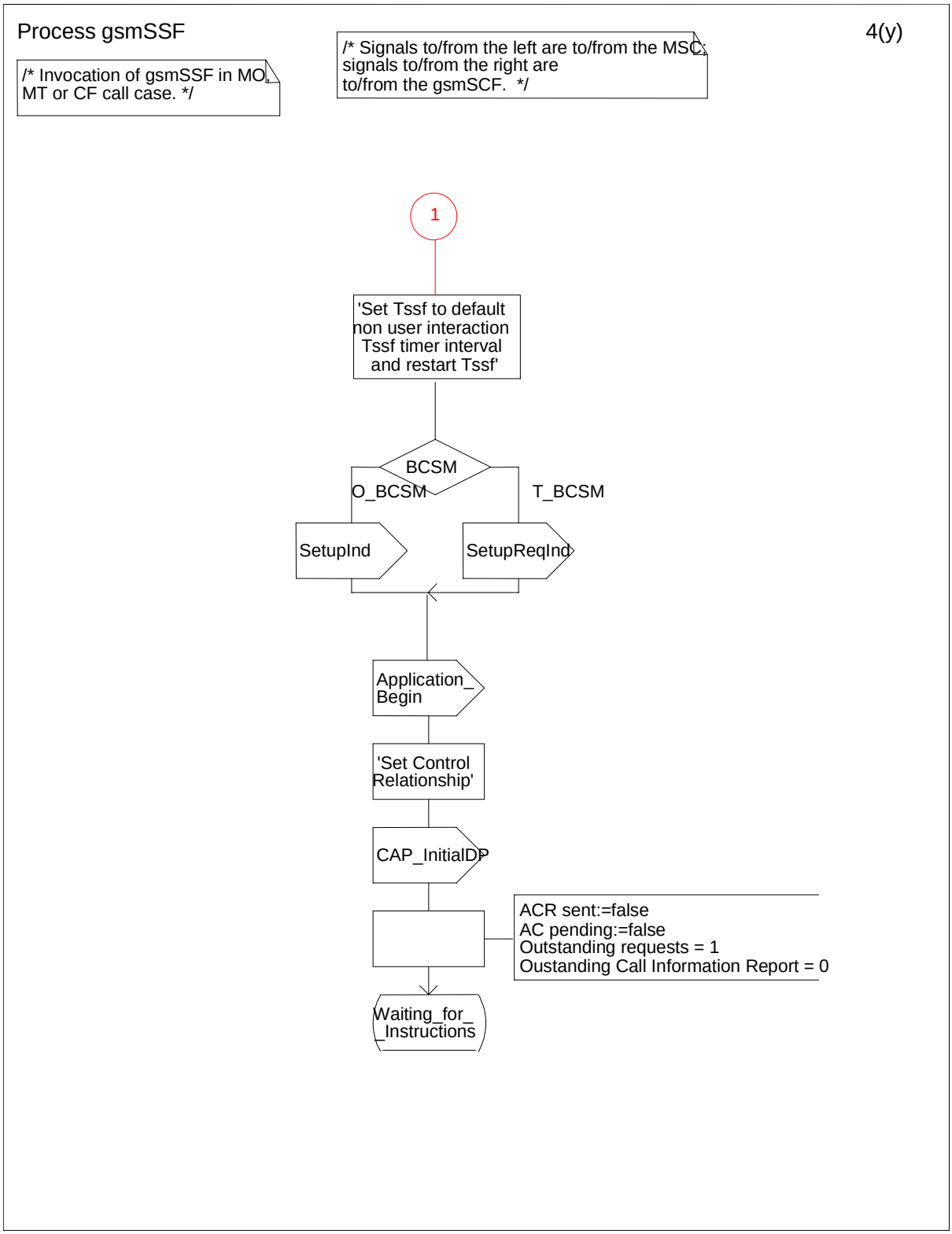


Figure 4.52.C : Process gsmSSF (sheet 4)

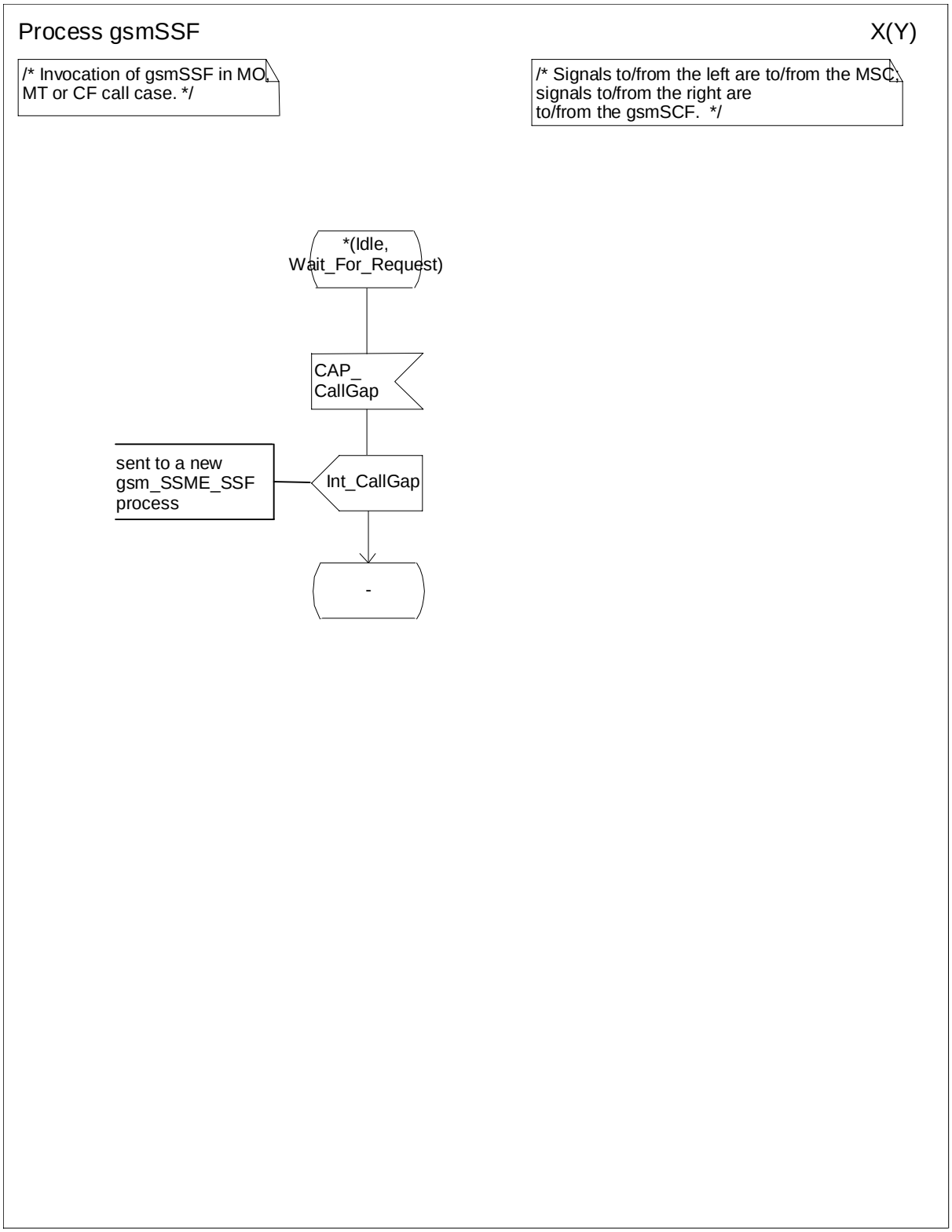


Figure 4.52.x : Process gsmSSF (sheet x)

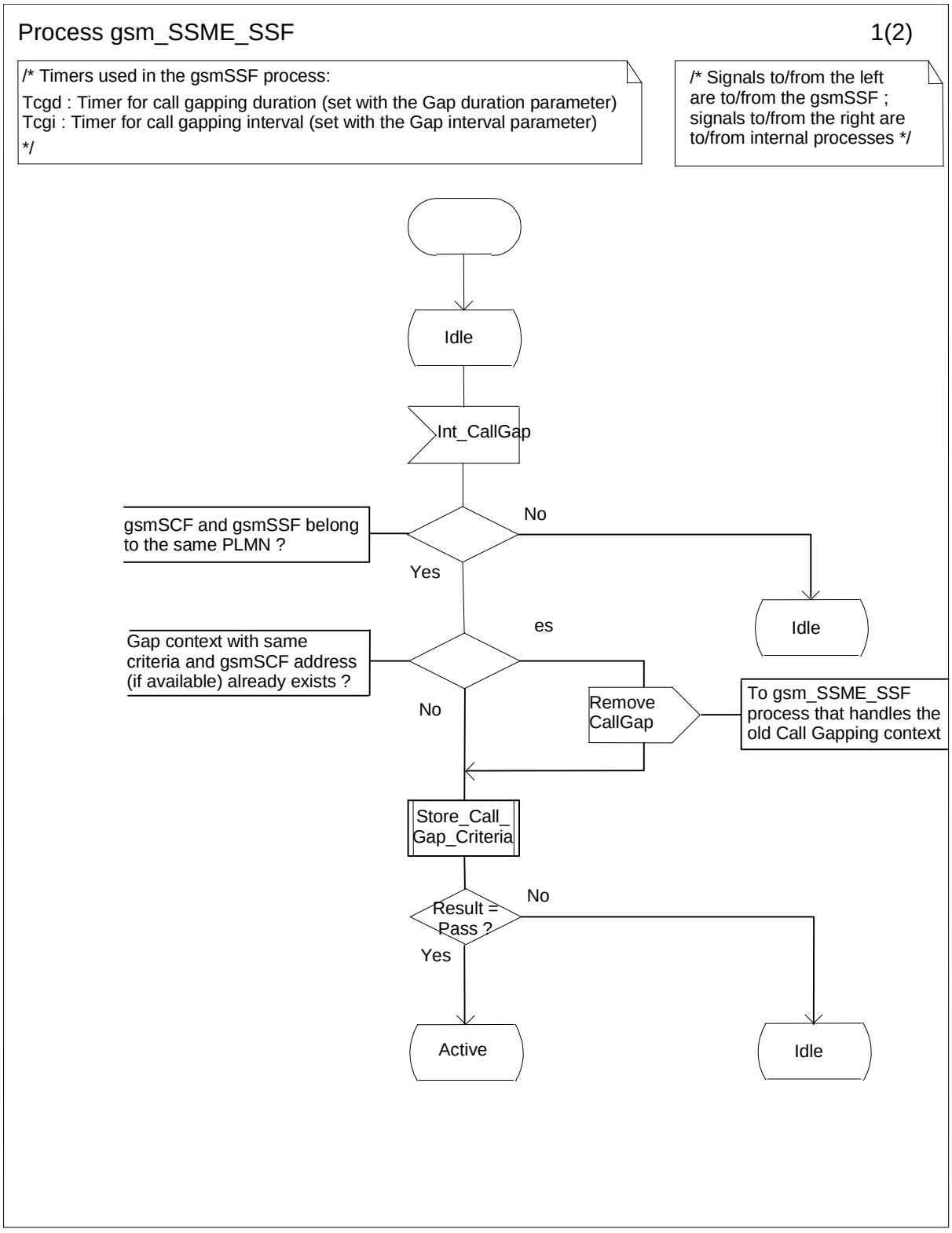


Figure x.x.x : Process gsm_SSME_SSF (sheet 1)

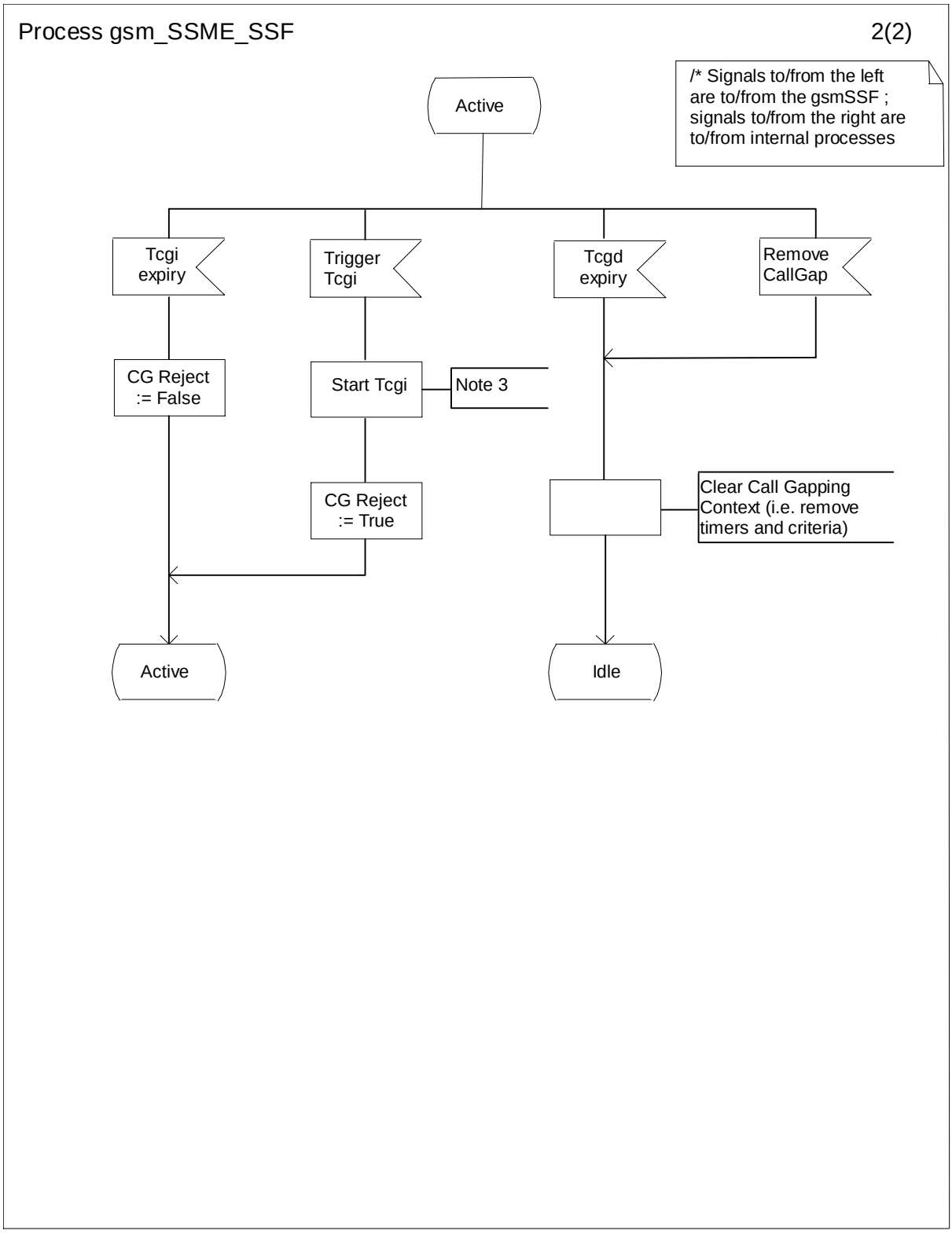


Figure x.x.x : Process gsm_SSME_SSF (sheet 2)

Note 3 :the timer Tcgi is started for the first time after the first call encountering the call gapping criteria is met.

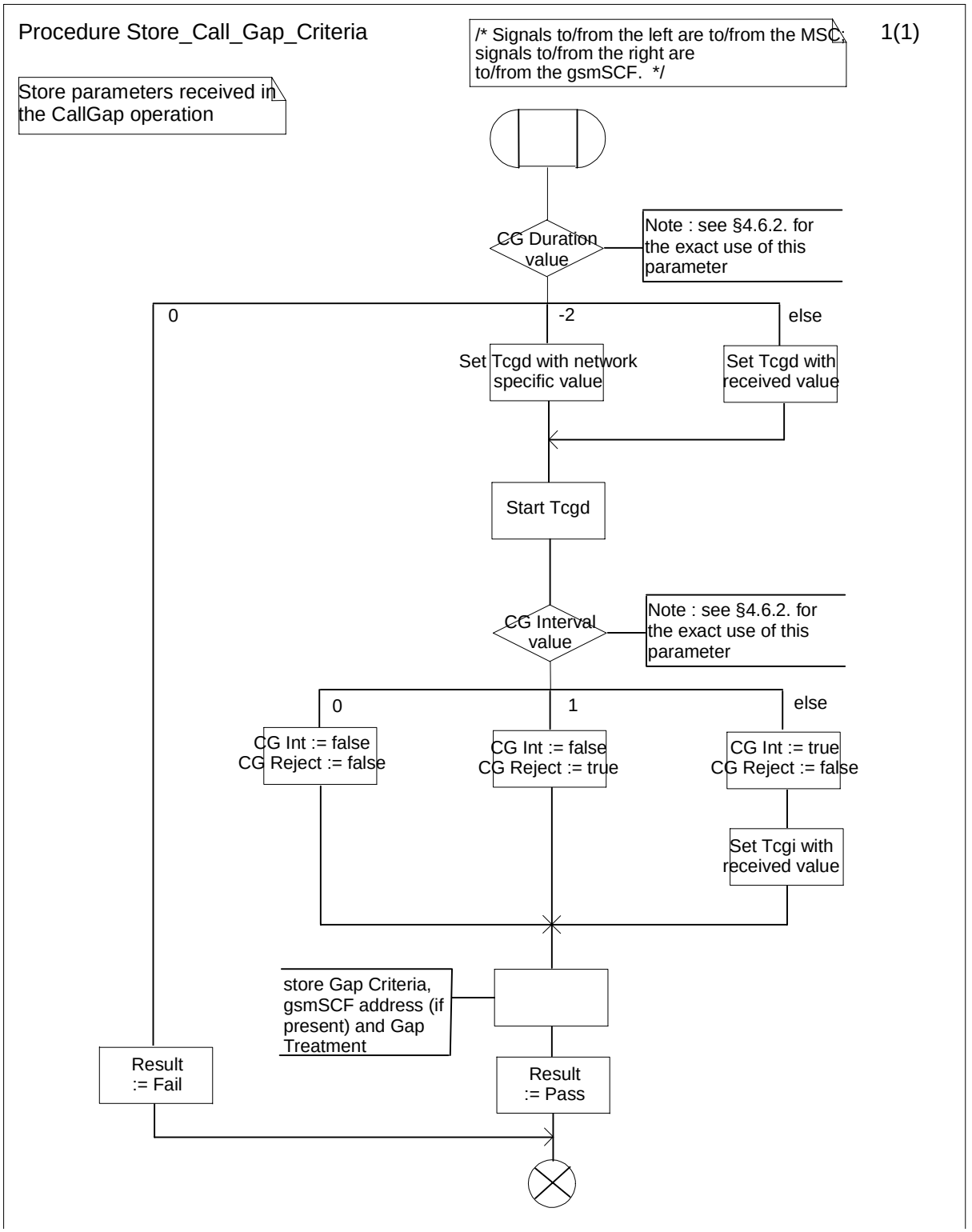


Figure x.x.x : Procedure Store_Gap_Criteria

NOTE : CG Int and CG Reject internal variables are initiated with False value.

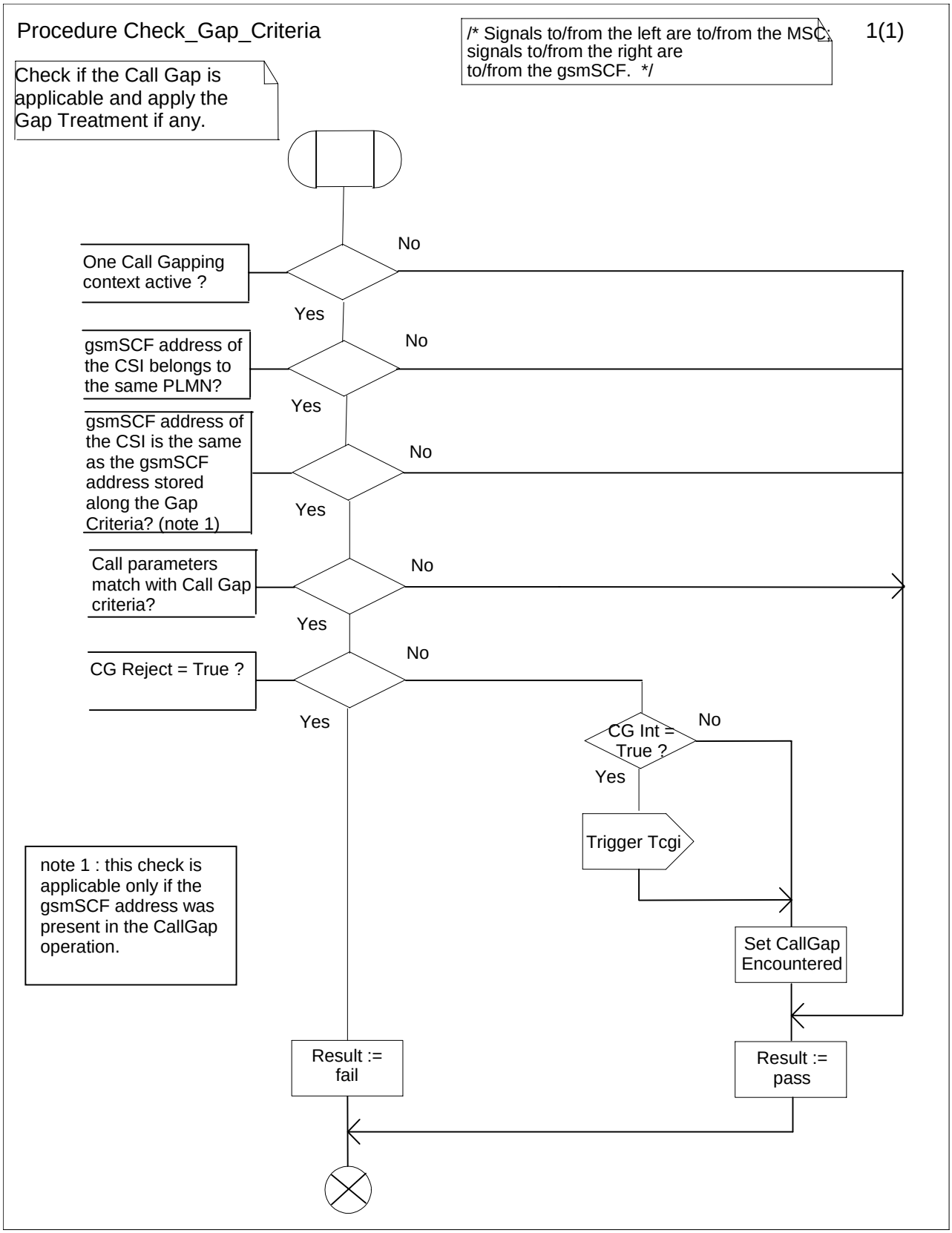


Figure x.x.x : Procedure Check_Gap_criteria

next section modified

4.6.1.5 Initial DP

4.6.1.5.1 Description

This IF is generated by the gsmSSF when a trigger is detected at a DP in the BCSM, to request instructions from the gsmSCF.

4.6.1.5.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Additional Calling Party Number	-	C	C	C	The calling party number provided by the access signalling system of the calling user.
Bearer Capability	M	C	C	C	This IE indicates the type of the bearer capability connection to the user.
Called Party Number	-	M	M	M	This IE contains the number used to identify the called party in the forward direction. For the VT calls this is the MSISDN received in the Provide Roaming Number; if the MSISDN is not available, the basic MSISDN is used.
Called Party BCD Number	M	-	-	-	This IE contains the number used to identify the called party in the forward direction. The number contained in this IE shall be identical to the number received over the access network. It may e.g. include service selection information, such as ∗ and # digits, or carrier selection information dialled by the subscriber.
Calling Party Number	M	C	C	C	This IE carries the calling party number to identify the calling party or the origin of the call.
Calling Partys Category	M	C	C	C	Indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).
Call Reference Number	M	M	M	M	This IE may be used by the gsmSCF for inclusion in a network optional gsmSCF call record. It has to be coupled with the identity of the MSC which allocated it in order to define unambiguously the identity of the call. For MO calls, the call reference number is set by the serving VMSC and included in the MO call record. For MT calls, the call reference number is set by the GMSC and included in the RCF call record in the GMSC and in the MT call record in the terminating MSC. For VT calls, the call reference number is set by the GMSC and included in the RCF call record in the GMSC and in the MT call record in the terminating MSC. For CF calls, the call reference number is set by the GMSC and included in the CF record in the forwarding MSC.
Cause	C	C	C	C	This IE indicates the cause specific to the armed BCSM DP event. This IE is applicable to DP Route_Select_Failure and DP T_Busy. The cause may be used by the SCF to decide about the further handling of the call.

Information element name	MO	MF	MT	VT	Description
Event Type BCSM	M	M	M	M	This IE indicates the armed BCSM DP event, resulting in the Initial DP IF.
Ext-Basic Service Code	C	C	C	C	This IE indicates the type of basic service i.e., teleservice or bearer service.
High Layer Compatibility	C	C	C	C	This IE indicates the type of the high layer compatibility, which will be used to determine the ISDN-teleservice of a connected ISDN terminal.
IMSI	M	M	M	M	This IE identifies the mobile subscriber.
IP SSP Capabilities	C	C	C	C	This IE indicates which SRF resources are supported within the gsmSSF and are available. If this IE is absent, this indicates that no gsmSRF is attached and available.
Location Information	M	-	C	M	This IE is described in the next table.
Location Number	M	C	C	C	For mobile originated calls this IE represents the location of the calling party. For all other call scenarios this IE contains the location number received in incoming ISUP signalling.
MSC Address	M	M	M	M	For MO calls, the MSC Address carries the international E.164 address of the serving VMSC. For MT calls, the MSC Address carries the international E.164 address of the GMSC. For VT calls, the MSC Address carries the international E.164 address of the serving VMSC. For CF calls, the MSC Address carries the international E.164 address of the forwarding MSC.
GMSC Address	-	M	-	M	For CF calls, the GMSC Address carries the international E.164 address of the GMSC. For VT calls, the GMSC Address carries the international E.164 address of the GMSC.
NA Carrier Information	C	C	C	C	The content of this IE is described in the next table. The IE may be sent when the VPLMN and the HPLMN of the subscriber are both North American. For MO calls, this IE shall contain any carrier that was dialed by the calling subscriber. If no carrier was dialed, the IE shall contain the calling subscriber's subscribed carrier. For MT and VT calls, the IE shall contain the carrier subscribed to by the called subscriber. For CF calls, the IE shall contain the carrier subscribed to by the forwarding subscriber.
Original Called Party ID	-	C	C	C	This IE carries the dialled digits if the call has met call forwarding on the route to the gsmSSF.
Redirecting Party ID	-	M	C	C	This IE indicates the directory number the call was redirected from.
Redirection Information	-	M	C	C	This IE contains forwarding related information, such as redirection counter.

Information element name	MO	MF	MT	VT	Description
Service Key	M	M	M	M	This IE identifies for the gsmSCF the requested set of one or more CAMEL services. It is used to address the correct application/SLP within the gsmSCF.
Subscriber State	-	-	C	C	This IE indicates the status of the MS. The states are: - CAMELBusy: The MS is engaged on a transaction for a mobile originating or terminated circuit-switched call. - NetworkDeterminedNotReachable: The network can determine from its internal data that the MS is not reachable. - AssumedIdle: The state of the MS is neither "CAMELBusy" nor "NetworkDeterminedNotReachable". - Not provided from VLR.
Time And Timezone	M	M	M	M	This IE contains the time that the gsmSSF was triggered, and the time zone the gsmSSF resides in.
GSM Forwarding Pending	-	-	C	C	This parameter indicates that a forwarded-to-number was received and the call will be forwarded due to GSM supplementary service call forwarding in the GMSC/VMSC.
Service Interaction Indicators Two	C	C	C	C	This IE is sent if it is received in the ISUP message or due to previous CAMEL processing. The IE is described in a table below.
CUG Information	-	C	C	C	See 3G TS 23.085 [9] for details of this IE.
CUG Index	C	-	-	-	See 3G TS 23.085 [9] for details of this IE.
CallGap Encountered	C	C	C	C	This parameter indicates the type of gapping the related call have been subjected to~~, if any~~. This parameter shall be present only if a call gapping context is applicable to the initialDP operation.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

- Not applicable

Location Information contains the following information:

Information element name	MO	MF	MT	VT	Description
Location Number	-	-	C	C	See 3G TS 23.018 [3].
CellIdOrLAI	M	-	C	C	See 3G TS 23.018 [3].
Geographical Information	C	-	C	C	See 3G TS 23.018 [3].
Geodetic Information	C	-	C	C	See 3G TS 23.018 [3].
Age Of Location Information	M	-	C	C	See 3G TS 23.018 [3].
VLR number	M	-	C	M	See 3G TS 23.018 [3].
Selected LSA Identity	C	-	C	C	This IE indicates the LSA identity associated with the current position of the MS. Send if the LSA ID of subscription and LSA ID of the used cell matches. In the case of multiple matches the one with the highest priority is sent. See 3G TS 23.073 [23]. The IE shall only be sent, if SoLSA is supported.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available. Further conditions are in the description column.)

- Not applicable

NA Carrier Information contains the following information:

Information element name	MO	MF	MT	VT	Description
NA Carrier Identification Code	M	M	M	M	This IE uniquely identifies a North American long distance carrier.
NA Carrier Selection Information	M	M	M	M	This IE indicates the way the carrier was selected e.g.: – dialled – subscribed

M Mandatory (The IE shall always be sent)

Service Interaction Indicators Two contains the following information:

Information element name	MO	MF	MT	VT	Description
Forward Service Interaction Indicator	C	C	C	C	This IE is described in a table below.
HOLD Treatment Indicator	C	C	C	C	This IE indicates whether the CAMEL subscriber can invoke HOLD for the call.
CW Treatment Indicator	C	C	C	C	This IE indicates whether CW can be applied for a call to the CAMEL subscriber whilst this call is ongoing.
ECT Treatment Indicator	C	C	C	C	This IE indicates whether the call leg can become part of an ECT call initiated by the calling subscriber.
Call Completion Treatment Indicator	C	C	C	C	This IE indicates whether a CCBS request can be made for the call.

C Conditional (The IE shall be sent, if available)

- Not applicable

Forward Service Interaction Indicator contains the following information:

Information element name	MO	MF	MT	VT	Description
Conference Treatment Indicator	C	C	C	C	This IE indicates whether the call leg can become part of a MPTY call initiated by the called subscriber.
Call Diversion Treatment Indicator	C	C	C	C	This IE indicates whether the call can be forwarded using the Call Forwarding or Call Deflection Supplementary Services.

next section modified

4.6.2 gsmSCF to gsmSSF information flows

4.6.2.x Call Gap

4.6.2.x.y Description

This IF is used to activate/modify/remove a call gap mechanism in the gsmSSF. The call gap mechanism is used to reduce the rate at which specific service requests are sent to a gsmSCF.

A Call Gap operation can only be sent on an opened dialogue between a gsmSCF and a gsmSSF.

It is possible to have several call gapping conditions applicable to the same gsmSSF (i.e. each conditions were activated for a defined Service (identified by the serviceKey) by a defined gsmSCF (identified by the gsmSCFAddress).

4.6.2.2.2 Information Elements

Information element name	Status	Description
Gap Criteria	M	This IE specifies the criteria for a call to be subject to call gapping.
Gap Indicators	M	This parameter indicates the gapping characteristics.
Control Type	O	This parameter indicates the reason for activating call gapping. The value "sCPOverloaded" indicates that an automatic congestion detection and control mechanism in the SCP has detected a congestion situation. The value "manuallyInitiated" indicates that the service and or network/service management centre has detected a congestion situation, or any other situation that requires manually initiated controls. The controlType "manuallyInitiated" will have priority over "sCPOverloaded" call gap. It should be noted that also non-IN controlled traffic control mechanism can apply to an exchange with the SSF functionality. As the non-IN controlled traffic control is within the CCF, this traffic control has implicit priority over the IN controlled traffic control. The non-IN controlled traffic control may also have some influence to the IN call. Therefore it is recommended to take measures to coordinate several traffic control mechanisms. The non-IN controlled traffic control and co-ordinationof several traffic control mechanisms are out of the scope of core INAP.
Gap Treatment	O	This parameter indicates how calls that were rejected due to the call gapping condition and for which the Default Call Handling was set to "Release Call" shall be treated.
~~gsmSCFAddressValue~~	~~M~~O	This parameter contains the address of the gsmSCF ~~for~~ which ~~the~~ initiated the CallGapping.~~ applies.~~

Gap Criteria contains one of the following (Choice) :

Information element name	MO	Description
Called Address	O	This parameter contains a string of digits. At each call attempt, when the leading digits of the dialled number match this specific value, the call gapping treatment shall be applied to this call.
Service	O	This parameter contains a service key value. At each call attempt, when the service key match this specific value, the call gapping treatment shall be applied to this call.
Called Address and Service	O	This parameter contains a specific string of digits and a service key value. At each call attempt, when the leading digits of the dialled number and the service key of a call match these specific values, the call gapping treatment shall be applied to this call.
Calling Address and Service	O	This parameter contains a specific string of digits and a service key value. At each call attempt, when the leading digits of the calling party number and the service key match these specific values, the call gapping treatment shall be applied to this call.
~~SCF Address and Service~~	~~O~~	~~This contains a specific gsmSCFaddress and a service key value. At each call attempt, when the SCF address and the service key match these specific values, the call gapping treatment shall be applied to this call.~~

Gap Indicators contains the following information :

Information element name	MO	Description
Duration	M	Duration specifies the total time interval during which call gapping for the specified gap criteria will be active. A duration of 0 indicates that gapping is to be removed. A duration of -2 indicates a network specific duration. Other values indicate duration in seconds.
Interval	M	This parameter specifies the minimum time between calls being allowed through. An interval of 0 indicates that calls meeting the gap criteria are not to be rejected. An interval of -1 indicates that all calls meeting the gap criteria are to be rejected. Other values indicate interval in milliseconds.

Gap Treatment contains one of the following (choice) :

Information element name	MO	Description
Information To Send	O	This parameter indicates an announcement, a tone or display information to be sent to the calling party. At the end of information sending, the call shall be released.
Release Cause	O	If the call is to be released, this IE indicates a specific cause value to be sent in the release message. See EN 300 356-1 [] for the coding.

Information To Send contains one of the following (choice) :

Information element name	MO	Description
In-band Info	O	This parameter specifies the in-band information to be sent.
Tone	O	This parameter specifies a tone to be sent to the end-user.

In-band Info contains the following information :

Information element name	MO	Description
Message Id	M	This parameter indicates the message(s) to be sent, it can be one of the following:
Message Duration	O	This parameter indicates the maximum time duration in seconds that the message shall be played/repeated. ZERO indicates endless repetition.

Message Id contains one of the following (choice) :

Information element name	MO	Description
Elementary Message Id	O	This parameter indicates a single announcement.

3GPP-CN2 WGA Meeting #2
Sophia Antipolis, France, 21 – 25 February 2000

Document N2A000264
(revision of N2A00-0125)

CHANGE REQUEST

23.078	**CR**	**042r2**	Current Version:	3.3.0

For submission to:	CN#7	for approval	X	strategic	
		for information		non-strategic	

Proposed change affects:	(U)SIM		ME		UTRAN / Radio		Core Network	X

Source:	CN WG2	**Date:**	23-02-2000

Subject:	Technical and editorial corrections to ATSI, ATM, NCSD

Work item:	CAMEL Phase 3

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

Reason for change:	This CR proposes a number of technical and editorial corrections to chapter 10 of 3G TS 23.078, 'Control and Interrogation of Subscription Data'.

Clauses affected:	10

Other specs affected:				
	Other 3G core specifications	X	→ List of CRs:	29.002
	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:	This CR also contains relevant changes contained in Tdoc N2A00-0008 and Tdoc N2A00-0108.

*** First Modified Section ***

10 Control and interrogation of subscription data

10.1 Architecture

10.1.1 Functional Entities used for CAMEL

This subclause describes the functional architecture required to support control and interrogation of subscription data. Figure 10.1 shows the functional entities involved in CAMEL support of control and interrogation of subscription data.

Figure 10.1: Functional architecture for support of control and interrogation of subscription data

gsmSCF: see subclause 4.1.

HLR: The HLR may provide an interface ~~towards~~ to the gsmSCF for the Any Time Subscription Interrogation and Any Time Modification procedures. The gsmSCF may provide an interface ~~towards~~ to the HLR for the Notify Subscriber Data Change procedure.

10.1.2 Interfaces defined for CAMEL

This subclause describes the ~~different~~ interface applicable to CAMEL control of subscription data. It specifies on a high level the functions specific to CAMEL.

10.1.2.1 gsmSCF - HLR

This interface is used by the gsmSCF to interrogate or modify information in the HLR. As a network operator option, the HLR may refuse to provide or modify the information requested by the gsmSCF. This interface is also used by the HLR to notify ~~to~~ the gsmSCF of a change of subscriber data ~~by the HLR~~.

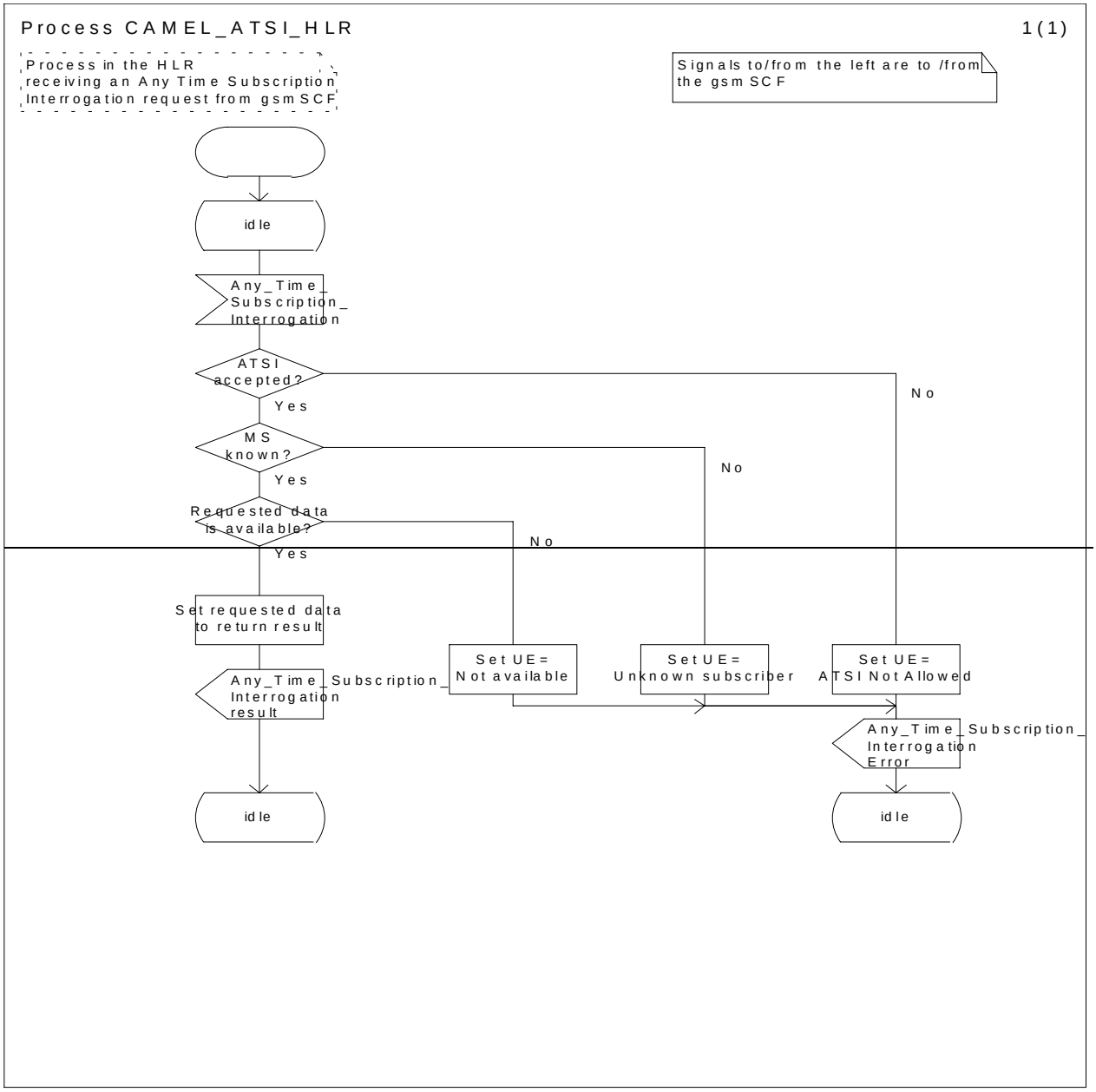
10.2 Procedures for CAMEL

10.2.1 Any Time Subscription Interrogation ~~for Subscription Information Retrieval~~

Handling of Any Time Interrogation for Subscription Information Retrieval involves the following process:

- CAMEL_ATSI_HLR.

If an OSS needs the Subscription Information, the gsmSCF initiates a transaction to the HLR by sending an Any–Time–Subscription–Interrogation Request. Support for this procedure is a network operator option.


Process CAMEL_ATSI_HLR
1(1)
Process in the HLR
receiving an Any Time Subscription
Interrogation request from gsmSCF
Signals to/from the left are to /from
the gsmSCF
idle
Any_Time_
Subscription_
Interrogation
ATSI
accepted?
No
Yes
MS
known?
No
Yes
Requested data
is available?
No
Yes
Set requested data
to return result
Any_Time_Subscription_
Interrogation
result
Set UE=
Not available
Set UE=
Unknown subscriber
Set UE=
ATSI Not Allowed
Any_Time_Subscription_
Interrogation
Error
idle
idle

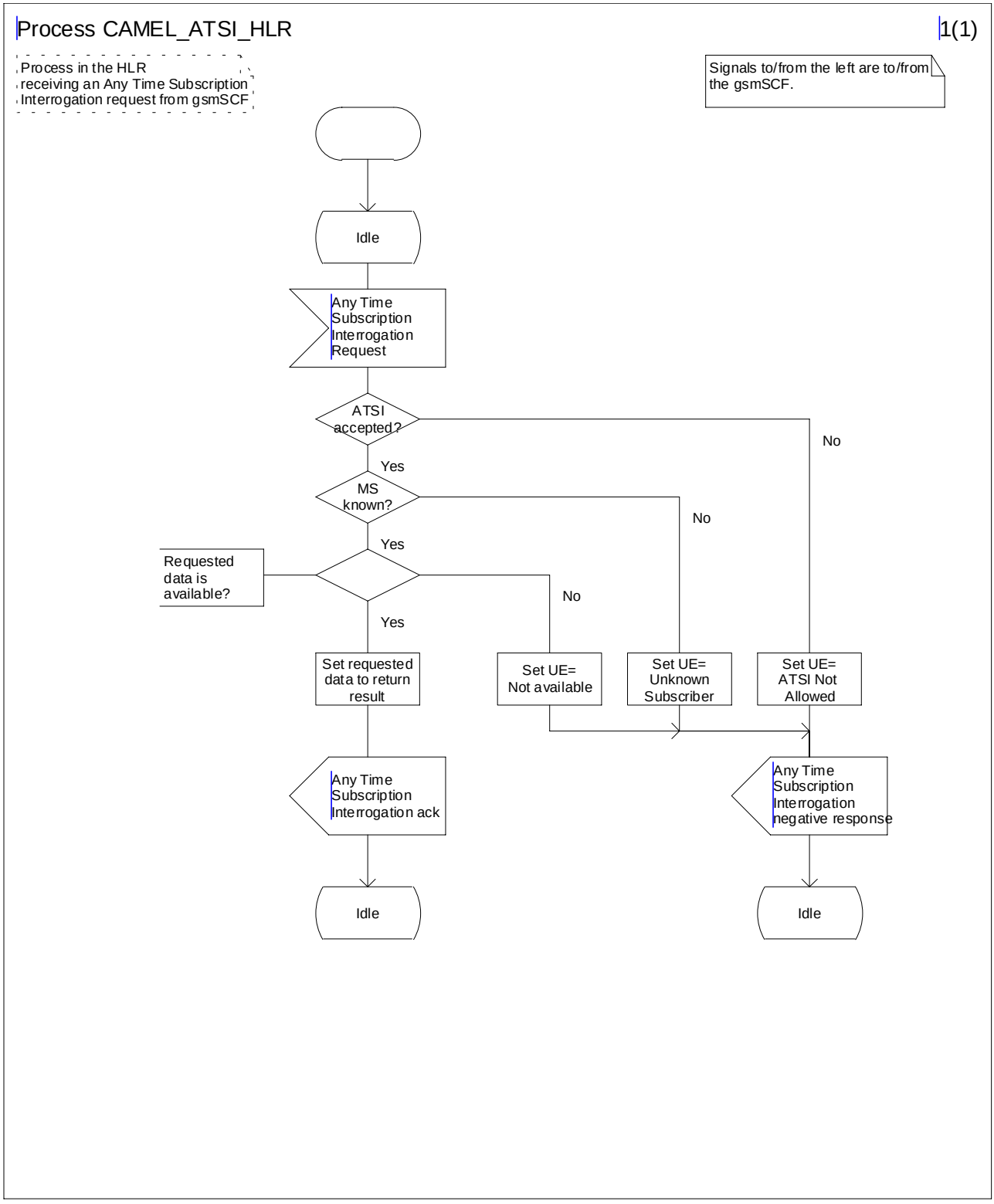


Figure 10.2: Process CAMEL_ATSI_HLR (sheet 1)

10.2.2 Any Time Modification

Handling of Any Time Modification involves the following process:

- CAMEL_ATM_HLR.

If an OSS needs to modify the Subscriber Information, the gsmSCF initiates a transaction to the HLR by sending an Any_Time_Modification Request.

When the HLR receives an Any_Time_Modification Request, then ~~HLR does the procedure as follows~~.

- If Call Fforwarding or Ccall Bbarring supplementary service data modification is requested, then

  - lif only ss-code (and basic-service) is set present in the Any –Time –Modification Rrequest, and ss-status is absent in the Any Time_Modification Request , then the HLR erases the data related to the requested indicated supplementary service.
    This may only be used for Call Forwarding supplementary service.

  - lif ss-code (and basic-service) and ss-status are set present in the Any –Time –Modification request, then the HLR does the activation or deactivation ofactivates or de-activates the requested indicated supplementary service.
    This may be used for Call Forwarding or Call Barring supplementary service.

  - lif ss-code (and basic-service) and at least one of "forwarded-to number, "/"forwarded to subaddress and "/"no reply condition time" are set present in the Any –Time –Modification request, then the HLR modifies the requested data of the requested Call Forwarding supplementary service.

  - If the Modify Notification Flag is present in Any Time Modification request, then the HLR modifies the state of the notification-to-CSE flag of the indicated supplementary service.

- If CSI data modification is requested, then the HLR modifies the CSI state and/or the notification-to-CSE flag of the requested indicated CSI.

After having executed the Any Time Modification instruction from the gsmSCF, the HLR calls the procedure CAMEL_NSDC_HLR, which sends notifications to gsmSCF(s), if required.
If a notification flag is set for the modified data, Notify_Subscriber_Data_Change is sent for the gsmSCF except for the gsmSCF which sent Any_Time_Modification Request. Support for this procedure is a network operator option.

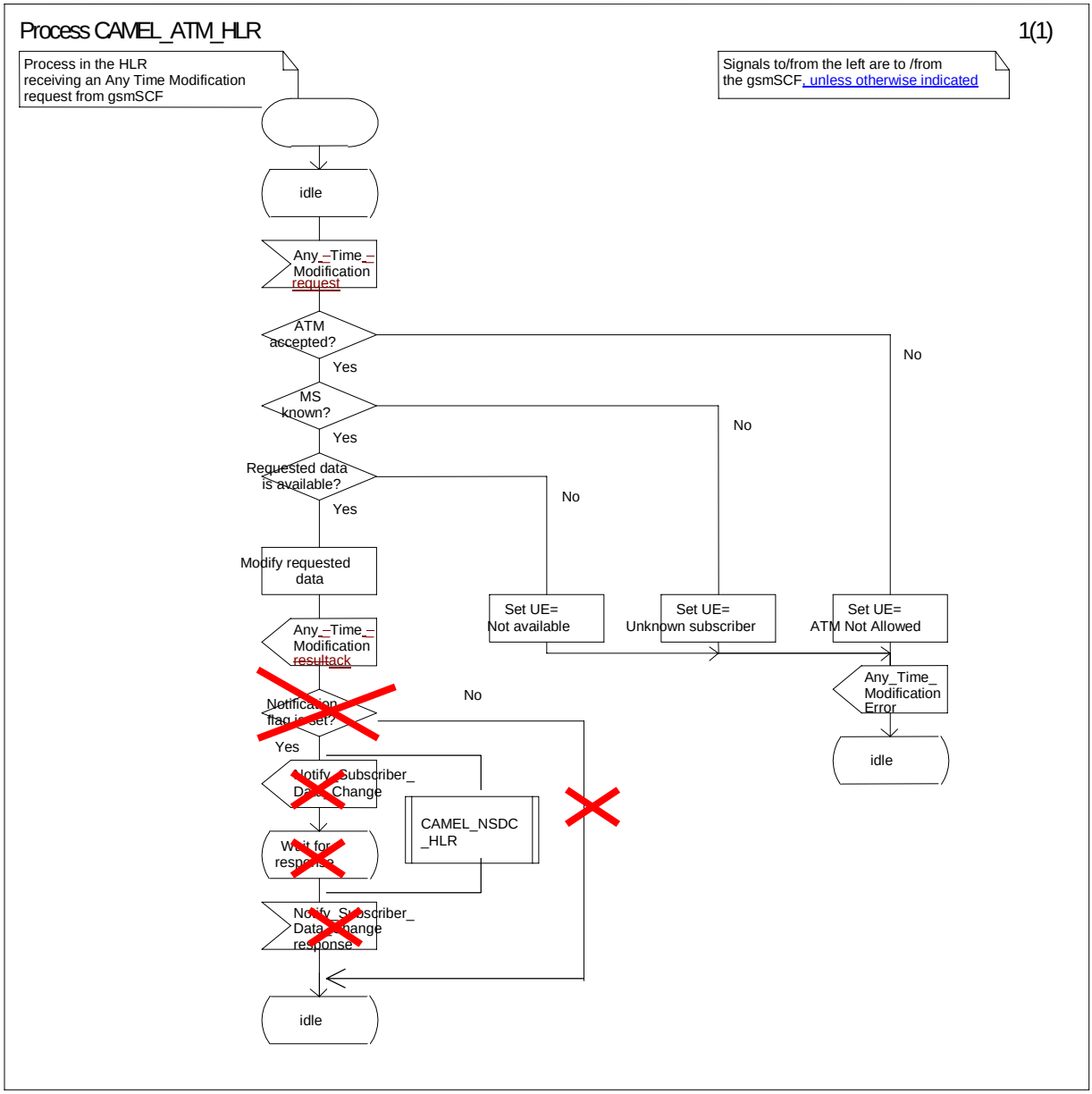


Figure 10.3: Process CAMEL_ATM_HLR (sheet 1)

10.2.3 Notify Subscriber Data Change

Changes of CSI, Call Forwarding data, Call Barring data or ODB data shall be notified only if the CSI, Call Forwarding data, Call Barring data or ODB is marked with the Notification-to-CSE flag.

The HLR maintains a list of~~with~~ gsmSCF address(es) for Call Forwarding Data, Call Barring Data, ODB and CSI. When any of these items has been modified, a notification shall be sent to each gsmSCF in the corresponding list.

When the change of subscriber data was caused by Any Time Modification, the notification of change of subscriber data shall not be sent to the gsmSCF ~~from~~ which originated this Any Time Modification ~~was received~~.

Each gsmSCF shall be notified only once. Multiple occurrence of gsmSCF Address in ~~CSIs of the subscriber~~these lists shall not lead to multiple notification.

Handling of Notify Ssubscriber Ddata Cchange involves the following ~~process~~procedure:

- CAMEL_NSDC_HLR.

~~If an OSS needs to notify to the CSE the change of subscriber data,~~ If a change of subscriber data needs to be notified to the gsmSCF, then the HLR initiates a transaction to the gsmSCF by sending Notify_Subscriber_Data_Change ~~Request~~message. Support for this procedure is a network operator option.

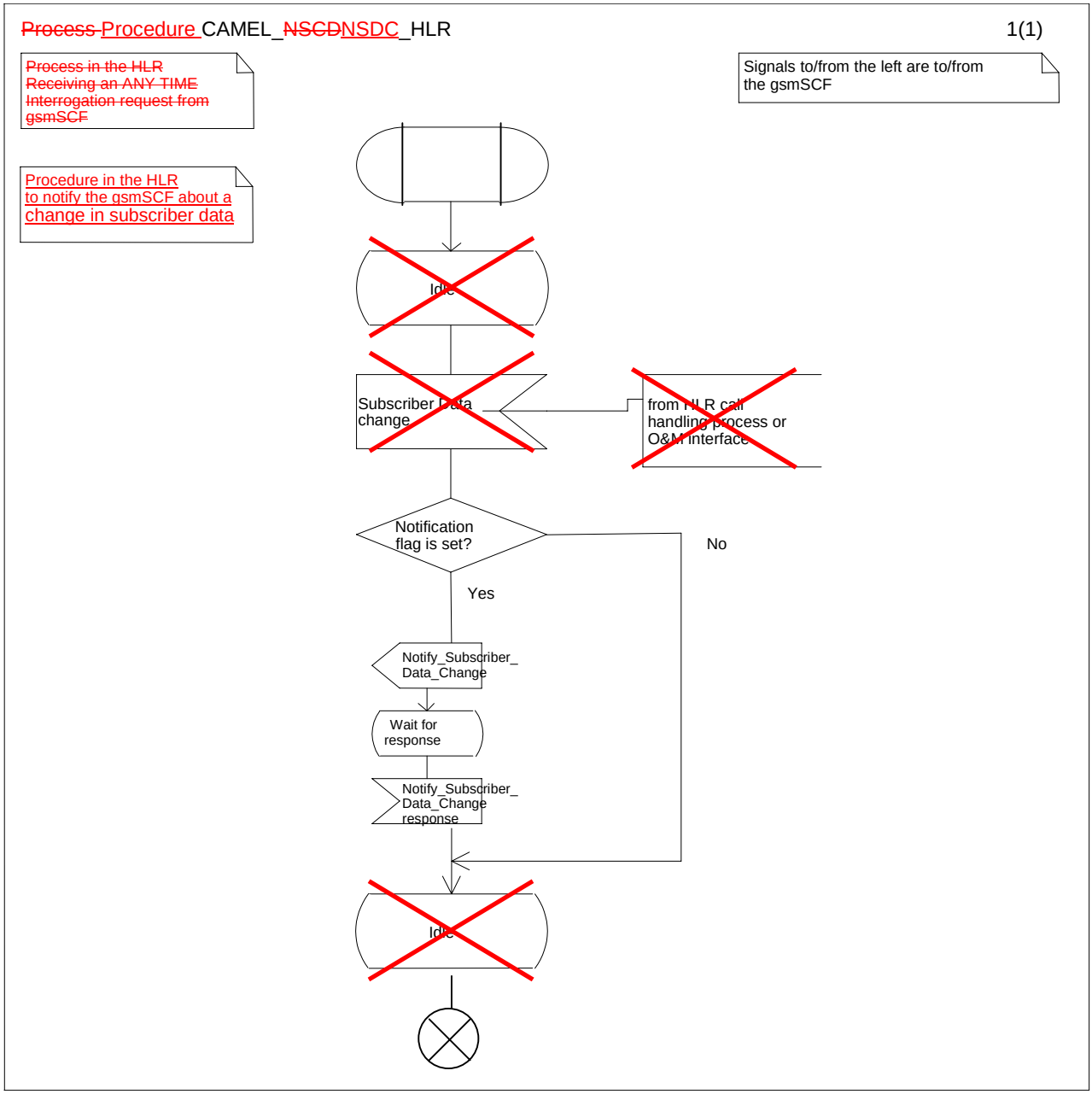


Figure 10.4: ~~Process~~ Procedure CAMEL_NSDC_HLR (sheet1)

10.3 Description of information flows

This clause contains the detailed description of the information flows used by CAMEL.

Each Information Element, IE is marked as Mandatory (M), Conditional (C), Optional (O) or Not applicable (-). This categorisation is a functional classification, i.e., stage 2 information and not a stage 3 classification to be used for the ASN.1 syntax of the protocol.

The following principles apply for the handling of the IEes by the receiving entity:

- The gsmSCF may silently discard any IE which it does not functionally support
- The HLR shall return an error if it does not functionally support an IE which it receives.

Details of errors and exceptions to these rules are specified in in 3G TS 29.002 [4].

10.3.1 gsmSCF to HLR information flows

10.3.1.1 Any Time Subscription Interrogation Request

10.3.1.1.1 Description

This IF is used to request subscription information from the HLR at any time.

10.3.1.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
gsmSCF Address	M	This IE indicates the address of the interrogating gsmSCF.
Requested Info	M	This IE indicates the type of subscriber information being requested: This can be one of: - supplementary service, described in a table below - Operator Determined Barring - CAMEL Subscription Information, described in a table below - supported CAMEL phases in VLR - supported CAMEL phases in SGSN
Subscriber Identity	M	This IE identifies the subscriber for which the information is requested. The identity can be one of: - IMSI - MSISDN

M Mandatory (The IE shall always be sent)

Supplementary service contains the following information:

Information element name	Required	Description
SS code	CM	This IE indicates a supplementary service or a set of supplementary services as defined in 3G TS 22.004 [25]. Only the Call Forwarding and Call Barring supplementary services are allowed for this IE.
Basic Service	CO	See 3G TS 22.002 [24].

C Conditional (The IE shall be sent, if requested and available)

M Mandatory (The IE shall always be sent)

O Optional (Service Logic Dependent)

CAMEL subscription information contains the following information:

Information element name	Required	Description
CAMEL subscription information	~~C~~M	This IE indicates ~~what information about CSI~~which CAMEL Subscription Information is requested. It may be one ~~or more elements~~ of the following elements:~~.~~ ~~–~~O-CSI/T-CSI/VT-CSI/TIF-CSI/GPRS-CSI/SMS-CSI/SS-CSI/M-CSI/D-CSI

~~C Conditional (The IE shall be sent, if requested and available)~~

M Mandatory (The IE shall always be sent)

10.3.1.2 Any Time Modification Request

10.3.1.2.1 Description

This IF is used to modify information in the HLR at any time.

10.3.1.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
g~~G~~smSCF Address	M	This IE indicates the address of the interrogating gsmSCF.
Subscriber Identity	M	This IE identifies the subscriber for which the information is requested. The identity can be one of: - IMSI - MSISDN
Modification Request for Call F~~f~~orwarding SS data	C~~(~~*~~)~~	This IE indicates the data of C~~c~~all F~~f~~orwarding data to be modified. It is described in a table below.
Modification Request for Call B~~b~~arring SS data	C~~(~~*~~)~~	This IE indicates the data of C~~c~~all B~~b~~arring data to be modified. It is described in a table below.
Modification request for CAMEL S~~s~~ubscription I~~i~~nformation	C~~(~~*~~)~~	This IE indicates the modification request for CAMEL S~~s~~ubscription I~~i~~nformation. It is described in a table below.

M Mandatory (The IE shall always be sent)

C~~(~~*~~)~~ Conditional (~~The IE shall be sent, if available~~Only one of these elements shall be present)

Modification request for Call F~~f~~orwarding SS data contains the following information:

Information element name	Required	Description
SS Code	M~~C~~	This IE indicates ~~a~~ Call Forwarding supplementary service ~~or a set of supplementary services~~ as defined in 3G TS 22.004 [25].
Basic Service	~~C~~O	See 3G TS 22.002 [24].
SS Status	~~C~~O	See 3G TS 23.011 [26].

Forwarded-to Number	~~C~~O	See 3G TS 23.082 [27].
Forwarded-to Subaddress	~~C~~O	See 3G TS 23.082 [27].
No Reply Condition Time	~~C~~O	See 3G TS 23.082 [27].
Modify Notification Flag	~~C~~O	~~This IE indicates whether the change of data of call forwarding SS is notified to the gsmSCF or not.~~ This IE contains an instruction to activate or de-activate the Notification-to-CSE flag.

M Mandatory (The IE shall always be sent)

O Optional (Service Logic dependent)

~~C Conditional (The IE shall be sent, if available)~~

Modification request for Call B~~b~~arring SS data contains the following information:

Information element name	Required	Description
SS Code	M~~C~~	This IE indicates ~~a~~ Call Barring supplementary service ~~or a set of supplementary services~~ as defined in 3G TS 22.004 [25].
Basic Service	O~~C~~	See 3G TS 22.002 [24].
SS Status	O~~C~~	See 3G TS 23.011 [26].
Password	O~~C~~	See 3G TS 23.011 [26].
Wrong password attempts counter	O~~C~~	See 3G TS 23.011 [26].
Modify Notification flag	O~~C~~	~~This IE indicates whether the change of data of call barring SS is notified to the gsmSCF or not.~~ This IE contains an instruction to activate or de-activate the Notification-to-CSE flag.

M Mandatory (The IE shall always be sent)

O Optional (Service Logic dependent)

~~C Conditional (The IE shall be sent, if available)~~

Modification request for CAMEL S~~s~~ubscription I~~i~~nformation contains the following information:

Information element name	Required	Description
~~O-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the O-CSI.~~
~~T-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the T-CSI.~~
~~VT-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the TVMSC-CSI.~~
~~TIF-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the TIF-CSI.~~
~~GPRS-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the GPRS-CSI.~~
~~SMS-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the SMS-CSI.~~
~~SS-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the SS-CSI.~~

~~M-CSI~~	~~C~~	~~This IE indicates the activation and notification status of the M-CSI.~~
Requested CSI	M	This IE indicates which CSI shall be modified. Only one CSI may be changed in one ATM Request.
Modify Notification flag	O	This IE contains an instruction to activate or de-activate the Notification-to-CSE flag.
Modify CSI state	O	This IE contains an instruction to activate or de-activate the CSI.

~~C Conditional (The IE shall be sent, if available)~~

M Mandatory (The IE shall always be sent)

O Optional (Service Logic dependent)

~~O-CSI/T-CSI/VT-CSI/GPRS-CSI/SMS-CSI/SS-CSI/M-CSI contains the following information:~~

~~Information element name~~	~~Required~~	~~Description~~
~~CSI state~~	~~C~~	~~This IE indicates whether the CSI is active or not.~~
~~Notification flag~~	~~C~~	~~This IE indicates whether the change of CSI is notified to the gsmSCF or not.~~

~~C Conditional (The IE shall be sent, if available)~~

~~TIF-CSI contains the following information:~~

~~Information element name~~	~~Required~~	~~Description~~
~~Translation Information Flag~~	~~C~~	~~See 4.3.2.2.~~
~~Notification flag~~	~~C~~	~~This IE indicates whether the change of TIF-CSI is notified to the gsmSCF or not.~~

~~C Conditional (The IE shall be sent, if available)~~

10.3.2 HLR to gsmSCF information flows

10.3.2.1 Any Time Subscription Interrogation ack

10.3.2.1.1 Description

This IF is used by the HLR to provide the requested subscription information to the gsmSCF.

10.3.2.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Call Ffforwarding SS data	C	This IE ~~indicates the data related to the call forwarding~~is described in a table below.
Call Bbarring SS data	C	This IE is described in a table below~~indicates the data related to the call barring~~.
Operator Ddetermined Bbarring data	C	This IE is described in a table below~~indicates the data related to the operator determined barring~~.
CAMEL Ssubscription Iinformation	C	This IE is described in a table below~~indicates the data related to the CAMEL subscription information~~.
Supported CAMEL phases in VLR	C	This IE indicates the CAMEL phase supported ~~at~~ in the ~~VPLMN~~VLR.
Supported CAMEL phases in SGSN	C	This IE indicates the CAMEL phase supported ~~at~~in the SGSN.

C Conditional (The IE shall be sent, if requested and available)

Call Ffforwarding SS data contains the following information:

Information element name	Required	Description
Basic Service	C	See 3G TS 22.002 [24].
SS Status	C	See 3G TS 23.011 [26].
Forwarded-to Number	C	See 3G TS 23.082 [27].
Forwarded-to Subaddress	C	See 3G TS 23.082 [27].
Subscription Options	C	See 3G TS 23.082 [27].
No Reply Condition Time	C	See 3G TS 23.082 [27].
Notification-to-CSE Flag	C	This IE indicates whether the gsmSCF is notified of a change ~~of data~~ of Ccall Ffforwarding SS data~~is notified to the gsmSCF or not~~.

C Conditional (The IE shall be sent, if available)

Call Bbarring SS data contains the following information:

Information element name	Required	Description
Basic Service	C	See 3G TS 22.002 [24].
SS Status	C	See 3G TS 23.011 [26].
Password	C	See 3G TS 23.011 [26].
Wrong password attempts counter	C	See 3G TS 23.011 [26].
Notification-to-CSE flag	C	This IE indicates whether the gsmSCF is notified of a change ~~of data~~ of Ccall Bbarring SS data~~this IE is notified to the gsmSCF or not~~.

C Conditional (The IE shall be sent, if available)

Operator determined barring data contains the following information:

Information element name	Required	Description
ODB General Data	C	This IE indicates the set of subscribers features that the network operator or the service provider can regulate.

ODB HPLMN Specific Data	C	This IEe indicates the set of subscribers features that the network operator or the service provider can regulate only when the subscriber is registered in the HPLMN.
Notification-to-CSE flag	C	This IE indicates whether the gsmSCF is notified of a change ~~of data~~ of ODB data~~is notified to the gsmSCF or not~~.

C Conditional (The IE shall be sent, if available)

CAMEL Ssubscription Iinformation contains the following information:

Information element name	Required	Description
O-CSI	C	See section 4.3.1.
D-CSI	C	See section 4.3.2.
T-CSI	C	See section 4.3.4.
VT-CSI	C	See section 4.3.5.
TIF-CSI	C	See section 4.3.6.2.
GPRS-CSI	C	See section 6.3.1.
SMS-CSI	C	See section 7.3.1.
SS-CSI	C	See section 8.2.1.1.
M-CSI	C	See section 9.2.1.1

C Conditional (The IE shall be sent, if requested and ~~if~~ available)

10.3.2.2 Any Time Modification ack

10.3.2.2.1 Description

This IF is used by the HLR to provide the modified information to the gsmSCF.

10.3.2.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Call Fforwarding SS data	C	This IE ~~indicates the data related to call forwarding~~is described in a table below.
Call Bbarring SS data	C	This IE is described in a table below~~indicates the data related to call barring~~.
CAMEL Ssubscription Iinformation	C	This IE is described in a table below~~indicates the data related CAMEL subscription information~~.

C Conditional (The IE shall be sent if it was modified~~, if requested and available~~)

Call Fforwarding SS data contains the following information:

Information element name	Required	Description
SS Code	C	This IE indicates ~~a~~ Call Forwarding supplementary service ~~or a set of supplementary services~~ as defined in 3G TS 22.004 [25].
Basic Service	C	See 3G TS 22.002 [24].

SS Status	C	See 3G TS 23.011 [26].
Forwarded-to Number	C	See 3G TS 23.082 [27].
Forwarded-to Subaddress	C	See 3G TS 23.082 [27].
Subscription Options	C	See 3G TS 23.082 [27].
No Reply Condition Time	C	See 3G TS 23.082 [27].
Notification-to-CSE Flag	C	This IE indicates whether the gsmSCF is notified of a change ~~of data~~ of Ceall Fforwarding SS datais ~~notified to the gsmSCF or not~~.

C Conditional (The IE shall be sent, if available)

Call B~~b~~arring SS data contains the following information:

Information element name	Required	Description
SS Code	C	This IE indicates ~~a~~ Call Barring supplementary ~~service or a set of supplementary services~~ as defined in 3G TS 22.004 [25].
Basic Service	C	See 3G TS 22.002 [24].
SS Status	C	See 3G TS 23.011 [26].
Password	C	See 3G TS 23.011 [26].
Wrong password attempts counter	C	See 3G TS 23.011 [26].
Notification-to-CSE flag	C	This IE indicates whether the gsmSCF is notified of a change ~~of data~~ of Ceall B~~b~~arring SS datais ~~notified to the gsmSCF or not~~.

C Conditional (The IE shall be sent, if available)

CAMEL S~~s~~ubscription I~~i~~nformation contains the following information:

Information element name	Required	Description
O-CSI	C	See section 4.3.1.
D-CSI	C	See section 4.3.2.
T-CSI	C	See section 4.3.4.
VT-CSI	C	See section 4.3.5.
TIF-CSI	C	See section 4.3.6.2.
GPRS-CSI	C	See section 6.3.1.
SMS-CSI	C	See section 7.3.1.
SS-CSI	C	See section 8.2.1.1.
M-CSI	C	See section 9.2.1.1

C Conditional (The IE shall be sent, if it was modified~~available~~)

10.3.2.3 Notify Subscriber Data Change

10.3.2.3.1 Description

This IF is used by the HLR to notify to the gsmSCF of the change of subscriber data.

10.3.2.3.2 Information Elements

The following information elements are required:

Information element name	Required	Description
~~Subscriber Identity~~	~~M~~	~~This IE identifies the subscriber for which the information is requested. The identity can be one of:~~ ~~- IMSI~~ ~~- MSISDN~~
IMSI	M	The IMSI is used to identify the subscriber.
MSISDN	M	The MSISDN is used to identify the subscriber.
Changed Data	M	This IE identifies the data that has changed. The data can be one of: - Call Forwarding SS Data - Call Barring SS Data - Operator Determined Barring - CAMEL Susbcription Information

M Mandatory (The IE shall always be sent)

3GPP-CN2 WGA Meeting #2
Sophia Antipolis, France, 21 – 25 February 2000

Document N2A00-0265
(revision of N2A00-0126)

CHANGE REQUEST

23.078 CR 043r2 Current Version: 3.3.0

For submission to: CN#7 for approval [X] strategic [ ]
for information [ ] non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: CN WG2 **Date:** 23-02-2000

Subject: Technical and editorial corrections to Location Services and Any Time Interrogation

Work item: CAMEL Phase 3

Category:

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

Reason for change: The present CR proposes a number of technical and editorial corrections to chapter 11 of 3G TS 23.078 (Location Services).

Clauses affected: 11

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: This CR also contains relevant changes contained in Tdoc N2A00-0008.

****** First Modified Section ******

2 Normative 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] 3G TS 22.078: "Digital cellular telecommunications system (Phase 2+); Customized Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3. Service description. Stage 1

[3] 3G TS 23.018: "Digital cellular telecommunications system (Phase 2+); Basic call handling ; Technical realisation".

[4] 3G TS 29.002: "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

[5] 3G TS 29.078: "Digital cellular telecommunications system (Phase 2+); CAMEL Application Part (CAP) specification - Phase 3".

[6] ITU-T Q.1214, May 1995: "Distributed Functional Plane for Intelligent Network CS-1"

[7] EN 301 070-1 (V1.1.1): "Integrated Services Digital Network (ISDN) ; Signalling System No.7 ; ISDN User Part (ISUP) version 3 interactions with the Intelligent Network Application Part (INAP) ; Part 1 : Protocol specification [ITU-T Recommendation Q.1600 (1997), modified]".

[8] 3G TS 23.090: "Digital cellular telecommunication system (Phase 2+); Unstructured Supplementary Service Data (USSD) - Stage 2".

[9] 3G TS 23.085: "Digital cellular telecommunications system (Phase 2+); Closed User Group (CUG) supplementary services - Stage 2".

[10] ANSI T1.113-1995 Signalling System No. 7(SS7) – Integrated Services Digital Network (ISDN) User Part.

[11] 3G TS 23.060: "Digital cellular telecommunication system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 2"

[12] ITU-T Q.1290, May 1998: "Glossary of terms used in the definition of intelligent networks"

[13] ITU-T Q.850, May 1998: "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part"

[14] EN 300 403-1 (V1.3.?): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified] "

[15] ITU-T Q.762, September 1997: "Signalling System No. 7 – ISDN user part general functions of messages and signals"

[16] ITU-T Q.763, December 1999: "Signalling System No. 7 – ISDN user part formats and codes"

[17] 3G TS 22.071: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Service description, Stage 1".

[18] 3G TS 23.071: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Functional description, Stage 2".

[19] 3G TS 27.001: "Digital cellular telecommunications system (Phase 2+); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[20] EN 300 356-1 (V3.2.2): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 1: Basic services[ITU-T Recommendations Q.761 to Q.764 (1997), modified]"

[21] 3G TS 23.040: " Digital cellular telecommunications system (Phase 2+); Technical realization of the Short Message Service (SMS); Point-to-Point (PP) (3G TS 23.040 version 7.1.0 Release 1998)".

[22] 3G TS 22.030: "Digital cellular telecommunications system (Phase 2+); Man-Machine Interface (MMI) of the Mobile Station (MS)"

[23] 3G TS 23.073: "Digital cellular telecommunications system (Phase 2+); Support of Localised Service Area (SoLSA); Stage 2".

[24] 3G TS 22.002: "Bearer Services supported by a GSM PLMN (3G TS 22.002 version 3.0.0 Release 1999)".

[25] 3G TS 22.004: "General on suppelementary services (3G TS 22.004 version 3.0.0 Release 1999)".

[26] 3G TS 23.011: "Technical realization of supplementary services - General Aspects (3G TS 23.011 version 3.0.0 Release 1999)".

[27] 3G TS 23.082: "Call Forwarding (CF) Supplemantary Services - Stage2 (3G TS 23.082 version 3.0.0 Release 1999)".

[28] 3G TS 23.084: "Digital cellular telecommunications system; Multi Party (MPTY) supplementary services - Stage 2".

[29] 3G TS 23.091: "Digital cellular telecommunications system; Explicit Call Transfer (ECT) supplementary service – Stage 2"

[30] ITU-T Q.1224, May 1999: "Distributed Functional Plane for Intelligent Network Capability Set 2"

[31] 3G TS 22.024: "3rd Generation Partnership Project;Technical Specification Group Services and System Aspects;Description of Charge Advice Information (CAI)"

[32] 3G TS 23.012: "3rd Generation Partnership Project; Technical Specification Group Core Network; Location management procedures"

[33] 3G TS 24.008: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification"

[34] 3G TS 23.032: "3rd Generation Partnership Project; Technical Specification Group Core Network; Universal Geographical Area Description (GAD)"

[35] 3G TS 23.072: "Digital cellular telecommunications system (Phase 2+); Call Deflection (CD) Supplementary Service; Stage 2"

[36] 3G TS 23.079: "Support of Optimal Routeing (SOR); Technical realisation"

[37] 3G TS 23.003: “Numbering, addressing and identification”

****** Next Modified Section ******

11 ~~Location Services~~Subscriber Location and State ~~Interrogation~~Retrieval

Support of the procedures described in this chapter~~Location Subscriber Interrogation Services~~ in CAMEL Phase 3 is a network operator option.

11.1 Architecture

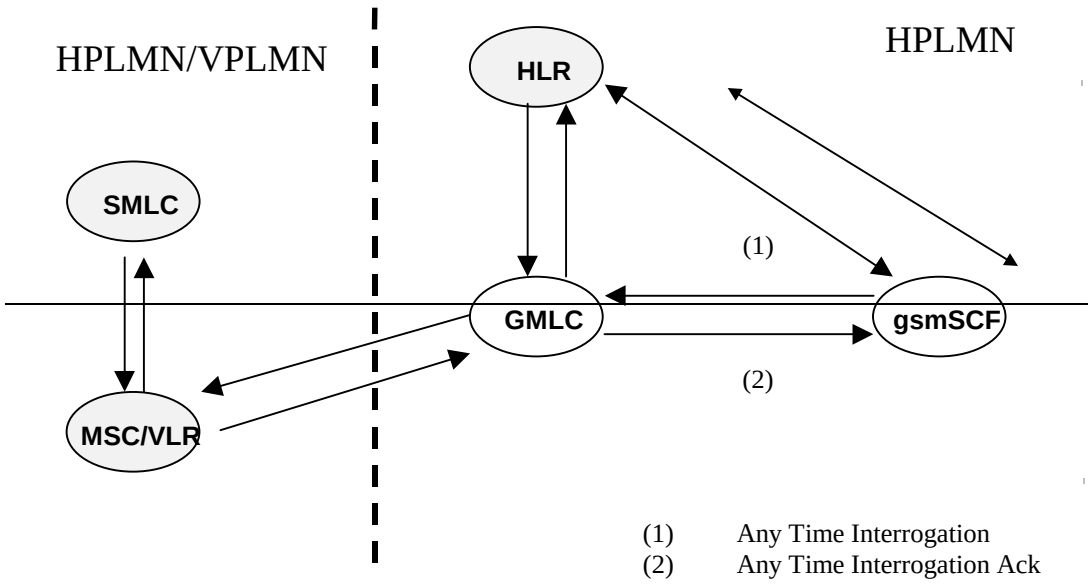
11.1.1 Functional Entities used for CAMEL

This subclause describes Any Time Interrogation and CAMEL support of Location Services. Location Services is only supported in CAMEL Phase 3.
Figure **Error! Reference source not found.** indicates the functional entities involved in Any Time Interrogation and Location Services.

This chapter defines two procedures for Location Services:

(1) The interface~~s~~ between gsmSCF and GMLC ~~and HLR~~ for Location Services via the GMLC~~are defined in this chapter~~.

The interface between gsmSCF and HLR for Any Time Interrogation and Active Location Retrieval.
The ~~principle~~ operation of Location Services is described in 3G -TS 22.071 [17].
~~The interfaces between GMLC, HLR, MSC/VLR and SGSN are described in 3G TS 23.071 [18].~~



~~Figure 11.1: Functional architecture for support of CAMEL~~

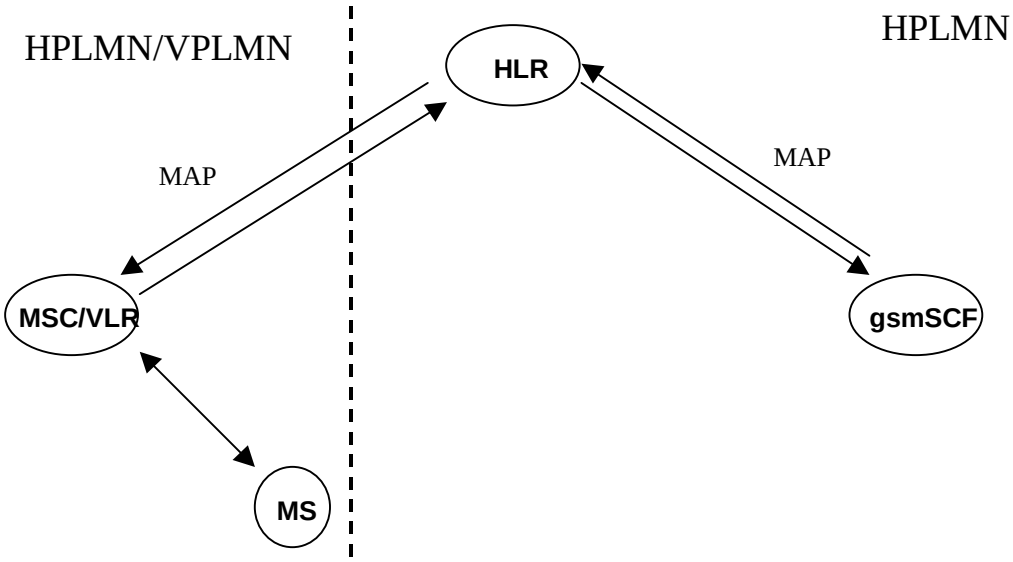


Figure 11.1a: Functional architecture for Any Time Interrogation

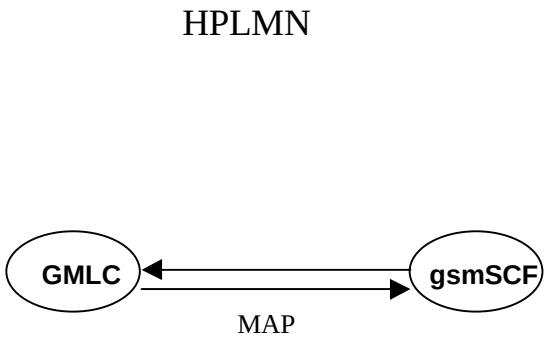


Figure 11.1b: Functional architecture for CAMEL Support of Location Services

gsmSCF: see subclause 4.1.

GMLC: A functional entity that allows external LCS Clients to request real-time information about a Mobile Station. The information that can be requested from the GMLC is the location of the mobile station**.**

~~**SMLC:** A functional entity that performs positioning activities for Mobile Stations. The SMLC interfaces with the MSC/VLR where the subscriber is currentlt registered.~~

HLR: see subclause 4.1.

MSC/VLR: see subclause 4.1.

The information flows between the GMLC and ~~other~~ functional entities other than the gsmSCF, have not been indicated in the functional architecture ~~as~~ shown in figure 1. These information flows ~~fall~~ are outside the scope of ~~the~~ this specification~~present document~~.

~~Refer to [17] and [18] for a description of the functioning of Location Services.~~

11.1.2 Interfaces defined for CAMEL

This subclause describes the ~~different~~ interfaces applicable to CAMEL. It specifies on a high level the functions specific to CAMEL.

11.1.2.1 gsmSCF - GMLC interface

This interface is used by the gsmSCF to request information (Mobile Station location) from the GMLC at any time.

11.1.2.2 GMLC - gsmSCF interface

This interface is used by the GMLC to return the requested information (Mobile Station location) to the gsmSCF as~~. The gsmSCF had~~ requested by the gsmSCF~~this information~~ via the Any Time Interrogation procedure ~~before~~.

11.1.2.3 gsmSCF - HLR

This interface is used by the gsmSCF to interrogate the HLR. As a network operator option, the HLR may refuse to provide the information requested by the gsmSCF.

11.1.2.4 HLR - gsmSCF

This interface is used by the HLR to return the requested information (Mobile Station location and/or Mobile Station state) to the gsmSCF as requested by the gsmSCF via the Any Time Interrogation procedure.

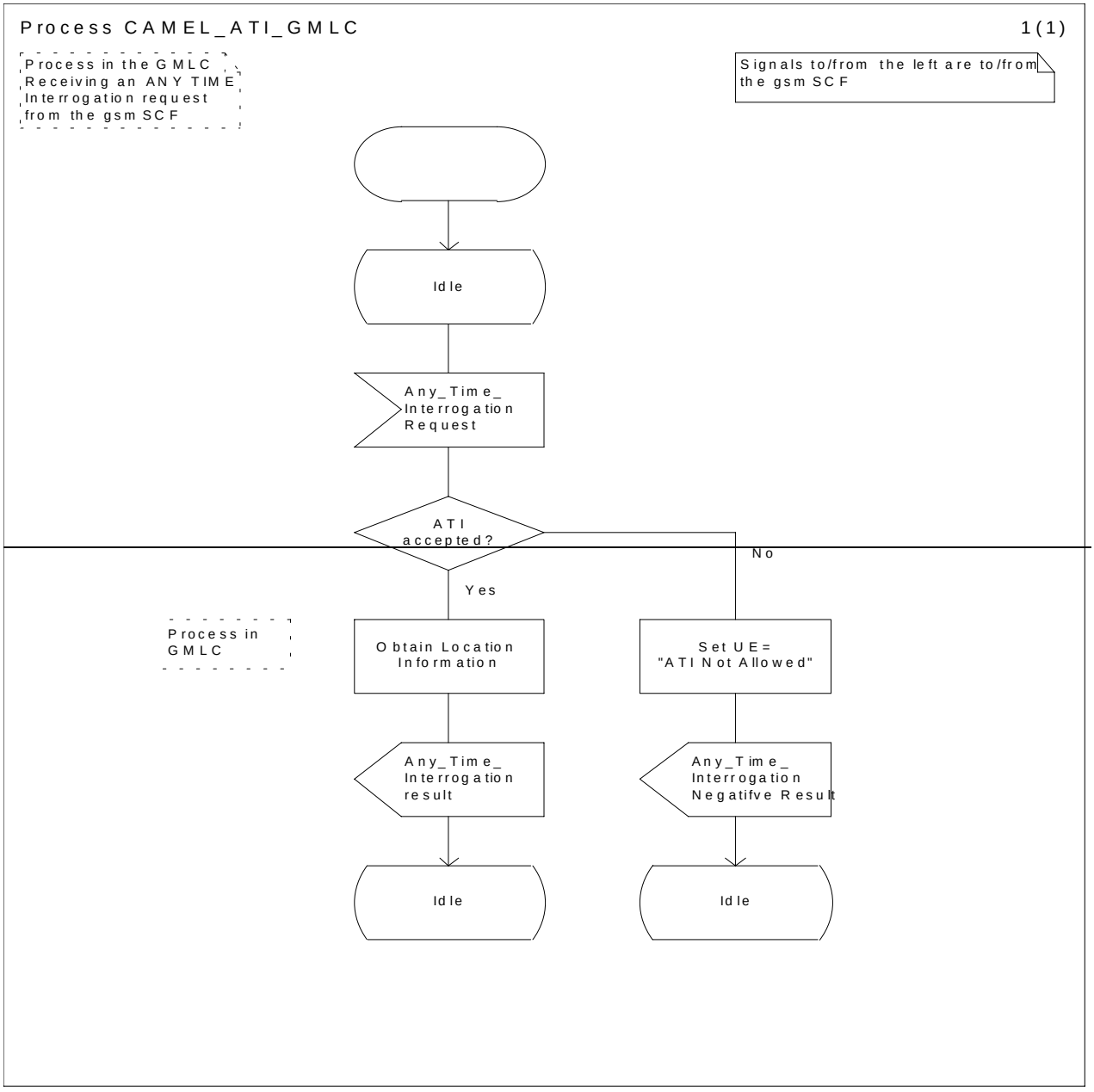
11.2 Procedures for CAMEL

11.2.1 ~~Any Time Interrogation~~Location Services

Handling of Any Time Interrogation to obtain Location Information involves the following process:

- CAMEL_ATI_GMLC

If an OSS needs to retrieve the active location of a Mobile Station, the gsmSCF initiates a transaction to the GMLC by sending a Any ~~-~~Time ~~-~~Interrogation Request.


Process CAMEL_ATI_GMLC
1(1)
Process in the GMLC Receiving an ANY TIME Interrogation request from the gsm SCF
Signals to/from the left are to/from the gsm SCF
Idle
Any_Time_ Interrogation Request
ATI accepted?
No
Yes
Process in GMLC
Obtain Location Information
Set UE= "ATI Not Allowed"
Any_Time_ Interrogation result
Any_Time_ Interrogation Negatifve Result
Idle
Idle

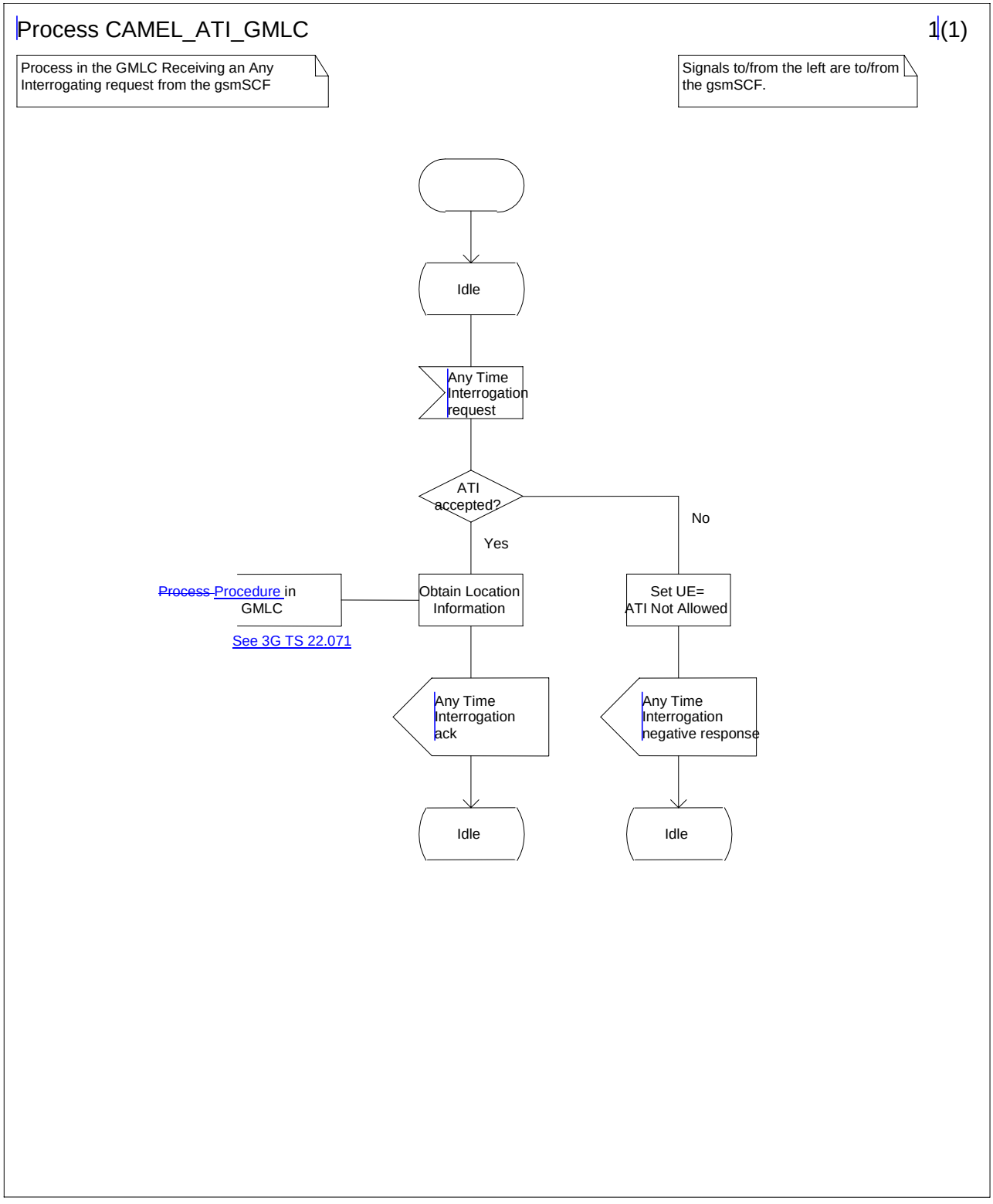


Figure *** *Next Modified Section* *******

11.3: Process CAMEL_ATI_GMLC

11.2.2 Any Time Interrogation ~~for Subscriber State and Location Information~~

Handling of Any Time Interrogation to obtain ~~for~~ Subscriber State and Location Information involves the following process:

- CAMEL_ATI_HLR.

If an OSS needs the Subscriber State and/or the Location Information, the gsmSCF initiates a transaction to the HLR by sending an Any_Time_Interrogation Request. Support for this procedure is a network operator option.

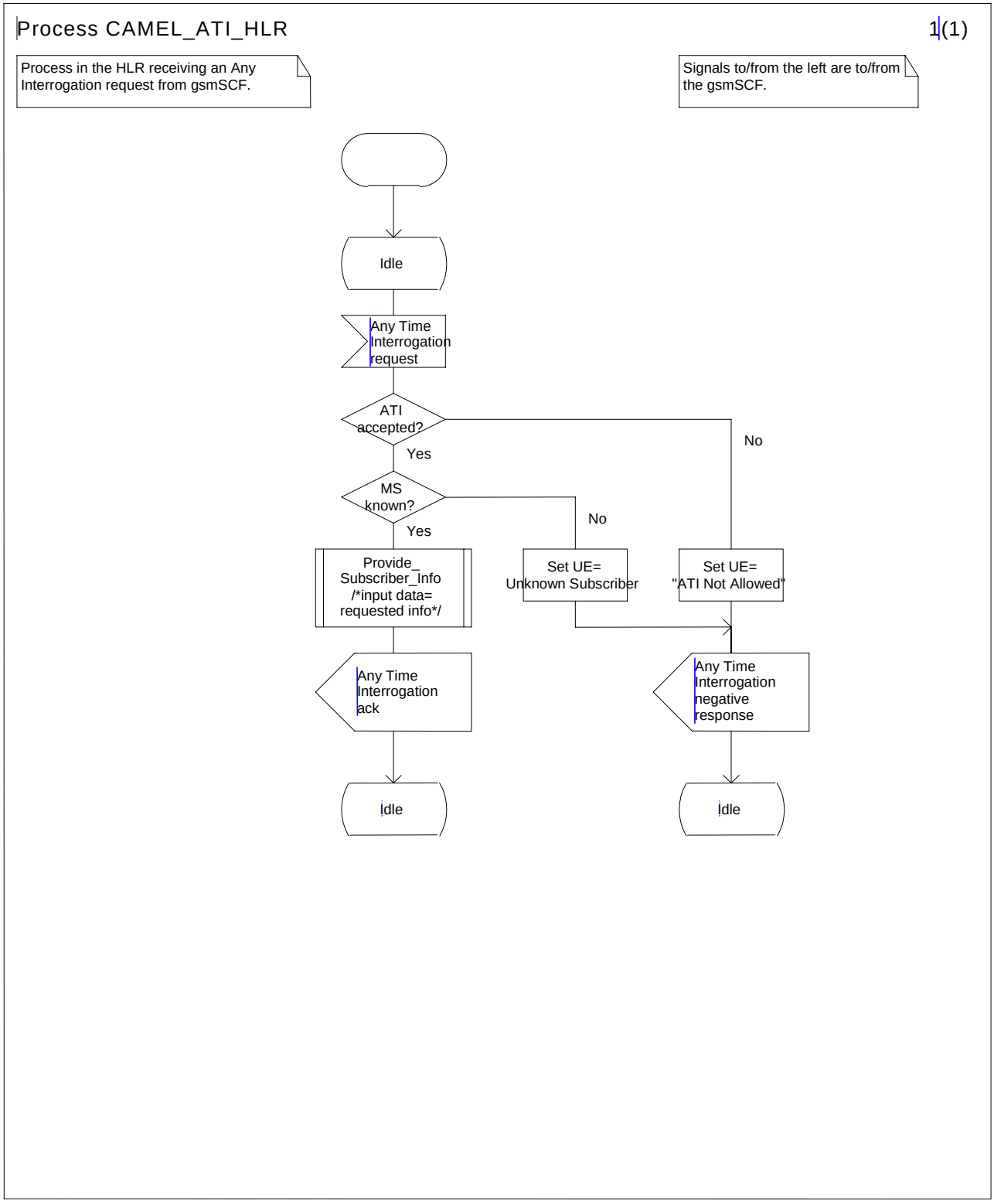
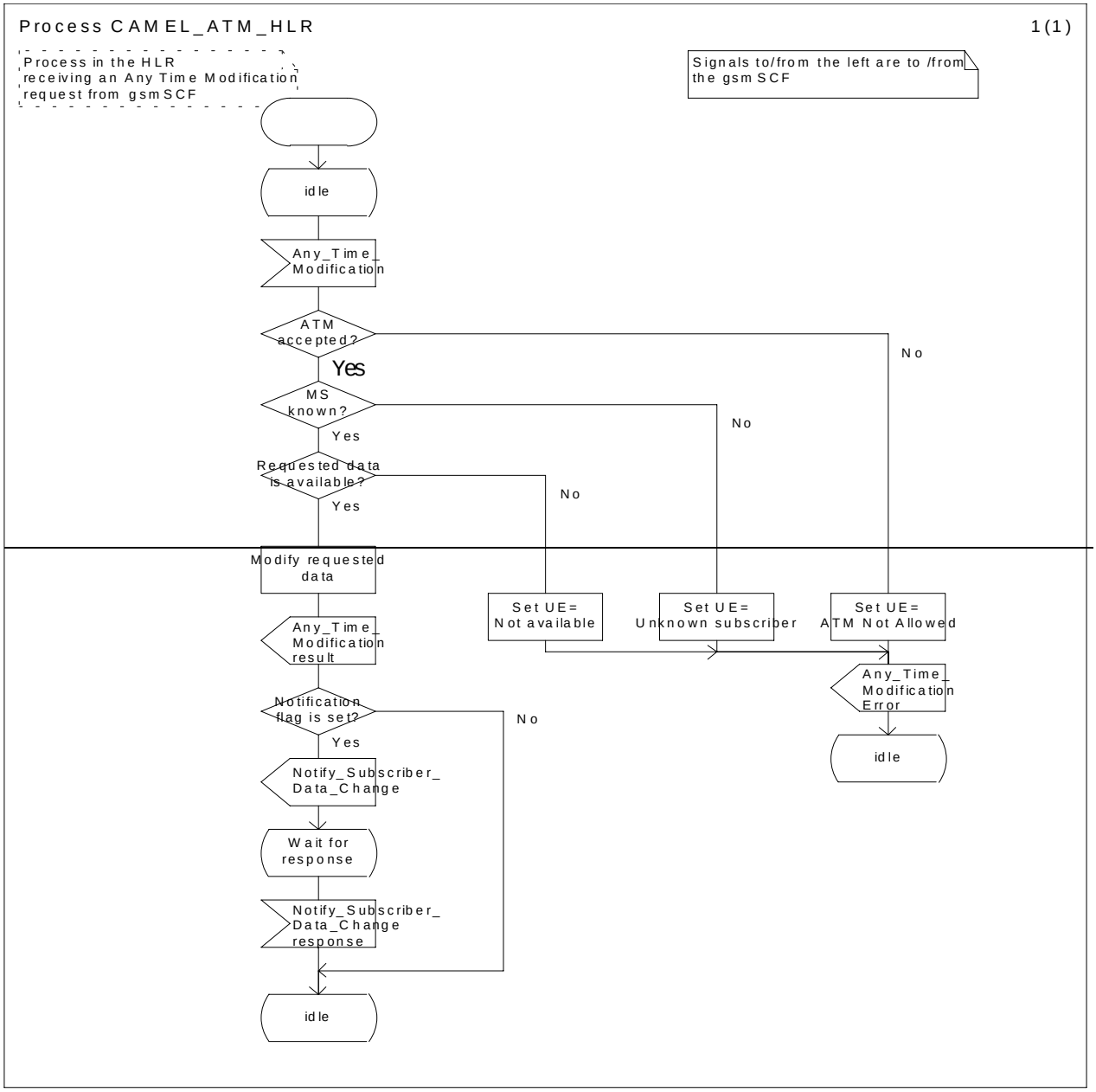


Figure *** ***Next Modified Section*** ***

11.4: Process CAMEL_ATI_HLR



~~Figure 11.3: Process CAMEL_ATI_HLR~~

11.3 Description of information flows

This clause contains the detailed description of the information flows used by CAMEL.

Each Information Element~~, (IE),~~ is marked as Mandatory (M), Conditional (C), Optional (O) or Not applicable (-). This categorisation is a functional classification, i.e.~~,~~ stage 2 information and not a stage 3 classification to be used for the ASN.1 syntax of the protocol.

The following principles apply for the handling of the IEs by the receiving entity~~-~~:

- The gsmSCF may silently discard any IE which it does not functionally support
- The GMLC shall return an error if it does not functionally support an IE which it receives.

Details of errors and exceptions to these rules are specified in ~~are specified in~~ 3G TS 29.002 [4].

11.3.1 gsmSCF to GMLC information flows

11.3.1.1 Any Time Interrogation Request

11.3.1.1.1 Description

This IF is used to request information (Mobile Station location) from the GMLC.

11.3.1.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
gsmSCF Address	M	This IE indicates the address of the interrogating gsmSCF.
Requested Info	M	This IE indicates the type of information that is requested. It shall have the following value: - Mobile Station location
Mobile Station Identity	M	This IE identifies the Mobile Station of which the information is requested. The identity can be one of the following list: - IMSI - MSISDN

M Mandatory (The IE shall always be sent)

11.3.2 GMLC to gsmSCF information flows

11.3.2.1 Any Time Interrogation ack

11.3.2.1.1 Description

This IF is used by the GMLC to provide the requested information to the gsmSCF. ~~The gsmSCF requested the information previously with the Any Time Interrogation IF.~~

11.3.2.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Location Information	C	This IE indicates the location of the Mobile Station.

C Conditional (The IE shall be sent if requested and available)

Location Information contains the following information:

Information element name	Required	Description
~~Location Number~~	~~-~~	~~See 3G TS 23.018 [3].~~
~~CellIdOrLAI~~	~~-~~	~~See 3G TS 23.018 [3].~~
Geographical Information	C	See 3G TS 23.032 [x]. The GMLC receives Extend~~t~~ed Geographical Information from the MSC. The Extend~~t~~ed Geographical Information shall be converted to the Geographical Information by the GMLC.
Geodetic Information	C	See 3G TS 23.018 [3].
Age Of Location Information	C	See 3G TS 23.018 [3].
~~VLR number~~	~~-~~	~~See 3G TS 23.018 [3].~~
~~Selected LSA Identity~~	~~-~~	~~See 3G TS 23.018 [3].~~
MSC number	C	See 3G TS 23.032~~.~~ [34~~x~~]. The GMLC receives the MSC number from the HLR in the Send Routing Info For LCS MAP ~~operation~~message.

C Conditional (The IE shall be sent, if available)

11.3.3 gsmSCF to HLR information flows

11.3.3.1 Any Time Interrogation Request

11.3.3.1.1 Description

This IF is used to request information (subscriber state and/or location) from the HLR at any time.

11.3.3.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
GsmSCF Address	M	This IE indicates the address of the interrogating gsmSCF.
Requested Info	M	This IE indicates the type of subscriber information being requested: - Location Information~~subscriber location~~ - S~~s~~ubscriber S~~s~~tate - Current Location C~~c~~urrent Location shall not be present if L~~l~~ocation Information is not present in ~~the~~ Requested Info ~~parameter~~)
Subscriber Identity	M	This IE identifies the subscriber for which the information is requested. The identity can be one of: - IMSI - MSISDN

M Mandatory (The IE shall always be sent)

11.3.4 HLR to gsmSCF information flows

11.3.4.1 Any Time Interrogation ack

11.3.4.1.1 Description

This IF is used by the HLR to provide the requested subscriber location and/or subscriber state information to the gsmSCF.

11.3.4.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Location Information	C	This IE indicates the location of the served subscriber.
Subscriber State	C	This IE indicates the status of the MS. The possible values of the IE are: - CAMELBusy: The VLR has indicated that the MS is engaged in~~on~~ a transaction for a mobile originating or terminated circuit-switched call. - NetworkDeterminedNotReachable: The VLR has indicated that the network can determine from its internal data that the MS is not reachable. - AssumedIdle: The VLR has indicated that the state of the MS is neither “CAMELBusy” nor “NetworkDeterminedNotReachable”. - NotProvidedFromVLR: The VLR did not provide any information on subscriber state even though it was requested.

C Conditional (The IE shall be sent, if requested and available)

Location Information contains the following information:

Information element name	Required	Description
Location Number	C	See 3G TS 23.018 [3].
CellIdOrLAI	C	See 3G TS 23.018 [3].
Geographical Information	C	See 3G TS 23.018 [3].
Geodetic Information	C	See 3G TS 23.018 [3].
Age Of Location Information	C	See 3G TS 23.018 [3].
VLR number	C	See 3G TS 23.018 [3].
Selected LSA Identity	C	See 3G TS 23.018[3]
Current Location Retrieved	C	See 3G TS 23.018[3]

C Conditional (The IE shall be sent, if available)

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Kyoto, Japan, 17 - 21 January 2000

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(revision of N2A00-0016)

CHANGE REQUEST

23.078 CR 044r1 Current Version: 3.3.0

For submission to: CN#7 for approval [X] for information [ ] strategic [ ] non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: CN WG2 **Date:** 17-01-2000

Subject: Technical and editorial corrections to chapter circuit switched call control

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: This CR proposes a number of technical and editorial corrections to chapter 4 of 3G TS 23.078 (Circuit Switched Call Control).

Clauses affected: 4

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: -

****** First Modified Section ******

2 Normative 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] 3G TS 22.078: "Digital cellular telecommunications system (Phase 2+); Customized Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3. Service description. Stage 1

[3] 3G TS 23.018: "Digital cellular telecommunications system (Phase 2+); Basic call handling ; Technical realisation".

[4] 3G TS 29.002: "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

[5] 3G TS 29.078: "Digital cellular telecommunications system (Phase 2+); CAMEL Application Part (CAP) specification - Phase 3".

[6] ITU-T Q.1214, May 1995: "Distributed Functional Plane for Intelligent Network CS-1"

[7] EN 301 070-1 (V1.1.1): "Integrated Services Digital Network (ISDN) ; Signalling System No.7 ; ISDN User Part (ISUP) version 3 interactions with the Intelligent Network Application Part (INAP) ; Part 1 : Protocol specification [ITU-T Recommendation Q.1600 (1997), modified]".

[8] 3G TS 23.090: "Digital cellular telecommunication system (Phase 2+); Unstructured Supplementary Service Data (USSD) - Stage 2".

[9] 3G TS 23.085: "Digital cellular telecommunications system (Phase 2+); Closed User Group (CUG) supplementary services - Stage 2".

[10] ANSI T1.113-1995 Signalling System No. 7(SS7) – Integrated Services Digital Network (ISDN) User Part.

[11] 3G TS 23.060: "Digital cellular telecommunication system (Phase 2+); General Packet Radio Service (GPRS); Service Description; Stage 2"

[12] ITU-T Q.1290, May 1998: "Glossary of terms used in the definition of intelligent networks"

[13] ITU-T Q.850, May 1998: "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part"

[14] EN 300 403-1 (V1.3.?): "Integrated Services Digital Network (ISDN); Digital Subscriber Signalling System No. one (DSS1) protocol; Signalling network layer for circuit-mode basic call control; Part 1: Protocol specification [ITU-T Recommendation Q.931 (1993), modified] "

[15] ITU-T Q.762, September 1997: "Signalling System No. 7 – ISDN user part general functions of messages and signals"

[16] ITU-T Q.763, December 1999: "Signalling System No. 7 – ISDN user part formats and codes"

[17] 3G TS 22.071: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Service description, Stage 1".

[18] 3G TS 23.071: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Functional description, Stage 2".

[19] 3G TS 27.001: "Digital cellular telecommunications system (Phase 2+); General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[20] EN 300 356-1 (V3.2.2): "Integrated Services Digital Network (ISDN); Signalling System No.7; ISDN User Part (ISUP) version 3 for the international interface; Part 1: Basic services[ITU-T Recommendations Q.761 to Q.764 (1997), modified]"

[21] 3G TS 23.040: " Digital cellular telecommunications system (Phase 2+); Technical realization of the Short Message Service (SMS); Point-to-Point (PP) (3G TS 23.040 version 7.1.0 Release 1998)".

[22] 3G TS 22.030: "Digital cellular telecommunications system (Phase 2+); Man-Machine Interface (MMI) of the Mobile Station (MS)"

[23] 3G TS 23.073: "Digital cellular telecommunications system (Phase 2+); Support of Localised Service Area (SoLSA); Stage 2".

[24] 3G TS 22.002: "Bearer Services supported by a GSM PLMN (3G TS 22.002 version 3.0.0 Release 1999)".

[25] 3G TS 22.004: "General on suppelementary services (3G TS 22.004 version 3.0.0 Release 1999)".

[26] 3G TS 23.011: "Technical realization of supplementary services - General Aspects (3G TS 23.011 version 3.0.0 Release 1999)".

[27] 3G TS 23.082: "Call Forwarding (CF) Supplemantary Services - Stage2 (3G TS 23.082 version 3.0.0 Release 1999)".

[28] 3G TS 23.084: "Digital cellular telecommunications system; Multi Party (MPTY) supplementary services - Stage 2".

[29] 3G TS 23.091: "Digital cellular telecommunications system; Explicit Call Transfer (ECT) supplementary service – Stage 2"

[30] ITU-T Q.1224, May 1999: "Distributed Functional Plane for Intelligent Network Capability Set 2"

[31] 3G TS 22.024: "3rd Generation Partnership Project;Technical Specification Group Services and System Aspects;Description of Charge Advice Information (CAI)"

[32] 3G TS 23.012: "3rd Generation Partnership Project; Technical Specification Group Core Network; Location management procedures"

[33] 3G TS 24.008: "Digital cellular telecommunications system (Phase 2+); Mobile radio interface layer 3 specification"

[34] 3G TS 23.032: "3rd Generation Partnership Project; Technical Specification Group Core Network; Universal Geographical Area Description (GAD)"

[35] 3G TS 23.072: "Digital cellular telecommunications system (Phase 2+); Call Deflection (CD) Supplementary Service; Stage 2"

[36] 3G TS 23.079: "Support of Optimal Routeing (SOR); Technical realisation"

***** *Second Modified Section* *****

4.3.6 Other CAMEL data

4.3.6.1 Location information/Subscriber state Interrogation

This data indicates whether additional subscriber information shall be sent to the GMSC as part of the terminating call handling.

- an indication that the HLR shall send the location information of the called subscriber.
- an indication that the HLR shall send the subscriber state of the called subs__criber.

4.3.6.2 Translation Information Flag CAMEL Subscription Information (TIF-CSI)

4.3.6.2.1 Translation Information Flag

A flag (TIF) in the CAMEL Subscriber data in the HLR indicates, when the subscriber registers a forwarded-to number, that the HLR shall not attempt to perform any translation, number format checks, prohibited FTN checks, call barring checks (cf. 4.7.2).

If the flag is absent, this indicates that a translation is needed in the HLR and the usual procedure applies as defined in the current version of ~~TS GSM 03.82~~3G TS 23.082 [27]. In particular, the interaction with barring services shall be performed by the HLR at the registration of the FTN.

A flag (TIF) in the CAMEL Subscriber data in the VLR indicates, when the subscriber ~~registers a forwarded-to number~~submits a deflected-to-number, that the VLR shall not attempt to perform any translation, number format checks, prohibited DTN checks, call barring checks (cf. 4.7.2).

If the flag is absent, this indicates that a translation is needed in the VLR and the usual procedure applies as defined in the current version of ~~TS GSM 03.82~~3G TS 23.072 [35]. In particular, the interaction with barring services shall be performed by the VLR at the ~~registration~~ submission of the DTN.

4.3.6.2.2 Notification flag

The notification flag indicates whether the change of the TIF-CSI is notified to the gsmSCF or not.

****** Next Modified Section ******

4.5.3.3 Handling of provide roaming number request in the VLR

The functional behaviour of the VLR is specified in ~~GSM 03.18~~ 3G TS 23.018[3]. The procedure specific to CAMEL is specified in this subclause:

- CAMEL_SET_SOA.

****** Next Modified Section ******

4.6.1.4 Event Report BCSM

4.6.1.4.1 Description

This IF is used to notify the gsmSCF of a call-related event (i.e., BCSM events as answer and disconnect) previously requested by the gsmSCF in a Request Report BCSM Event IF.

4.6.1.4.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Event type BCSM	M	M	M	M	This IE specifies the type of event that is reported.
Event Specific Information BCSM	C	C	C	C	This IE indicates the call related information specific to the event.
Leg ID	M	M	M	M	This IE indicates the party in the call for which the event is reported.
Misc Call Info	M	M	M	M	This IE indicates the DP type.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

Event Specific Information BCSM contains the following information for the O Answer and T Answer cases:

Information element name	MO	MF	MT	VT	Description
Destination address	M	M	M	M	This IE specifies the destination address for the call leg.
OR	-	C	C	-	This IE indicates that the call was subject to basic Optimal Routeing as specified in ~~GSM 03.79~~3G TS 23.079 [36].
Forwarded call	-	M	C	C	This IE indicates that the call has been subject to GSM call forwarding.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent if its value is True, otherwise it shall not be sent)

- Not applicable

****** Next Modified Section ******

4.6.2.14 Reset Timer

4.6.2.14.1 Description

This IF is used to refresh a timer.

4.6.2.14.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Timer Value	M	M	M	M	~~This IE specifies the value to which the timer Tssf shall be set.~~ This IE specifies the value to which the indicated timer shall be set.
Timer ID	O	O	O	O	~~This IE has a default value indicating the Tssf value.~~ This IE indicates which timer shall be reset. It shall be set to 'Tssf'.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

****** Next Modified Section ******

4.6.2.15 Send Charging Information

4.6.2.15.1 Description

This IF is used to send e-parameters from the gsmSCF to the gsmSSF. If charge advice information is received from the gsmSCF, it shall replace the charge advice information which would be generated by the MSC and inhibit any further generation of CAI by the MSC. Further processing of the charge advice information by the MSC shall be in accordance with the GSM Advice of Charge Supplementary Service.

The IF is only used in the MO case or in the VT case.

NOTE: If charge advice information is received from the gsmSCF after charge information has been generated by the MSC and sent to the MS, the behaviour of the service may be unpredictable or incorrect ; the service designer should therefore ensure that the first set of charge advice information is sent to the gsmSSF before charge information is sent to the to the MS.

4.6.2.15.2 Information Elements

The following information elements are only used for the MO case and for the VT case:

Information element name	MO	MF	MT	VT	Description
SCI Billing Charging Characteristics	M	-	-	M	This IE defines the Advice Of Charge related information to be provided to the Mobile Station
Leg ID	M	-	-	M	This IE indicates where the charging information shall be sent.

M Mandatory (The IE shall always be sent)

SCI Billing Charging Characteristics is defined as:

Information element name	MO	MF	MT	VT	Description
AOC After Answer	C	-	-	C	This IE is sent after an Answer from event has been detected from the called party, the current connected SRF or the temporary connection.
AOC Before Answer	C	-	-	C	This IE is sent before an Answer event has been detected from the called party, the current connected SRF or the temporary connection.

C Conditional (only one of these IEs may be sent)

AOC Before Answer is defined as:

Information element name	MO	MF	MT	VT	Description
AOC Initial	M	-	-	M	This IE contains CAI elements as defined in ~~GSM 02.24~~3G TS 22.024 [31].
AOC Subsequent	O	-	-	O	See definition in the next table.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

AOCSubsequent is defined as:

Information element name	MO	MF	MT	VT	Description
CAI Elements	M	-	-	M	This IE contains CAI elements as defined in 3G TS 22.024 [31]~~GSM 02.24~~.
Tariff Switch Interval	O	-	-	O	This IE indicates the tariff switch time until the next tariff switch applies.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

AOCAfterAnswer is defined as:

Information element name	MO	MF	MT	VT	Description
CAI Elements	M	-	-	M	This IE contains CAI elements as defined in 3G TS 22.024 [31]~~GSM 02.24~~.
Tariff Switch Interval	O	-	-	O	This IE indicates the tariff switch time until the next tariff switch applies.

M Mandatory (The IE shall always be sent)

****** Next Modified Section ******

4.6.3.3 Play Announcement

4.6.3.3.1 Description

This IF is used for inband interaction.

4.6.3.3.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Information To Send	M	M	M	M	This IE indicates an announcement or a tone to be sent to the end user by the gsmSRF.
Disconnect From IP Forbidden	M	M	M	M	This IE indicates whether or not the gsmSRF may be disconnected from the user when all information has been sent.
Request Announcement Complete	M	M	M	M	This IE indicates whether or not a SpecializedResourceReport shall be sent to the gsmSCF when all information has been sent.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

Information To Send contains the following information:

Information element name	MO	MF	MT	VT	Description
Inband Info	~~O~~C	~~O~~C	~~O~~C	~~O~~C	This IE indicates the inband information to be sent.
Tone	~~O~~C	~~O~~C	~~O~~C	~~O~~C	This IE indicates the tone to be sent. The mapping from the code points of this IE to tones is a matter for agreement between the gsmSCF operator and the gsmSRF operator.

~~O Optional (Service logic dependent)~~

C Conditional (only one element shall be present)

Inband Info contains the following information:

Information element name	MO	MF	MT	VT	Description
Message ID	M	M	M	M	This IE is described in the next table.
Number Of Repetitions	M	M	M	M	This IE indicates the maximum number of times the message shall be sent to the end-user.
Duration	O	O	O	O	This IE indicates the maximum duration time in seconds that the message shall be played/repeated. Zero indicates endless repetition.
Interval	O	O	O	O	This IE indicates the time interval in seconds between two repetitions.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

Message ID contains the following information:

Information element name	MO	MF	MT	VT	Description
Elementary Message ID	~~O~~C	~~O~~C	~~O~~C	~~O~~C	This IE indicates a single announcement
Text	~~O~~C	~~O~~C	~~O~~C	~~O~~C	This IE indicates a text to be sent. The text shall be transformed to inband information (speech) by the gsmSRF.
Elementary Message IDs	~~O~~C	~~O~~C	~~O~~C	~~O~~C	This IE indicates a sequence of announcements
Variable Message	~~O~~C	~~O~~C	~~O~~C	~~O~~C	This IE indicates an announcement with one or more variable parts.

~~O Optional (Service logic dependent)~~

C Conditional (only one element shall be present)

Tone contains the following information:

Information element name	MO	MF	MT	VT	Description
Tone ID	M	M	M	M	This IE indicates the tone to be sent.
Duration	O	O	O	O	This IE indicates the maximum duration time in seconds that the message shall be played/repeated. Zero indicates endless repetition.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

****** Next Modified Section ******

4.6.3.4 Prompt And Collect User Information (received information)

4.6.3.4.1 Description

This IF is used to interact with a call party in order to collect information.

4.6.3.4.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Collected Info	M	M	M	M	This IE is described in the next table.
Information To Send	O	O	O	O	This IE indicates an announcement or a tone to be sent to the end user by the gsmSRF.
Disconnect From IP Forbidden	O	O	O	O	This IE indicates whether the gsmSRF ~~should~~ shall be disconnected from the user when all information has been sent.

O Optional (Service logic dependent)

…

…

***** *Next Modified Section* *****

4.6.11 VMSC to GMSC information flows

4.6.11.1 Resume Call Handling

4.6.11.1.1 Description

This IF is described in ~~GSM 03.79~~3G TS 23.079 [36] and is used to request the GMSC to take over handling the call so that it can be forwarded from the GMSC.

4.6.11.1.2 Information Elements

Resume Call Handling contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	This IE contains O-CSI without triggering criteria. It indicates that CAMEL handling applies for a forwarded call. Shall be present if CAMEL handling applies; otherwise shall be absent.

C Conditional (The IE shall be sent if applicable)

***** *Next Modified Section* *****

4.6.13.2 Process Call Waiting

4.6.13.2.1 Description

This IF is described in ~~GSM 03.18~~3G TS 23.018 [3] and is used to instruct the MSC to continue the connection of a waiting call.

4.6.13.2.2 Information Elements

Process Call Waiting contains the following CAMEL specific IE:

Information element name	Required	Description
Call Reference Number	M	This IE carries the Call Reference Number provided by the HLR in the Provide Roaming Number IF.
GMSC Address	M	This IE is the E.164 address of the GMSC.

M Mandatory (The IE shall always be sent)

****** Next Modified Section ******

4.7.2 Call forwarding services

4.7.2.1 Registration of Call Forwarding

The functional behaviour for the registration of the Call Forwarding supplementary service is defined in ~~GSM 03.82~~3G TS 23.082 [27]. The procedure specific to CAMEL is defined in this subclause:

- CAMEL_Check_CF_Interaction

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CHANGE REQUEST

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for approval [X] strategic [ ]
for information [ ] non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: CN WG2 **Date:** 05-01-2000

Subject: Technical and editorial corrections to USSD

Work item: CAMEL Phase 3

Category:

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

Reason for change: This CR proposes a number of technical and editorial corrections to chapter 5 of 3G TS 23.078 (USSD).

Clauses affected: 5

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:

*** First Modified Section ***

5 USSD to/from gsmSCF

5.1 Architecture

5.1.1 Functional Entities used for CAMEL

This subclause describes the functional architecture needed to support CAMEL handling of USSD to/from gsmSCF. The functional model of USSD in an HLR that supports CAMEL is shown in figure 5.1.

The phase 2 USSD handler is defined in 3G TS 23.090 [8]. Phase 1 USSD messages may be relayed from the HLR to the gsmSCF. CAMEL introduces a "CAMEL USSD application" which is invoked by the USSD handler. The CAMEL USSD functional entities and application behaviour is specified in this section.

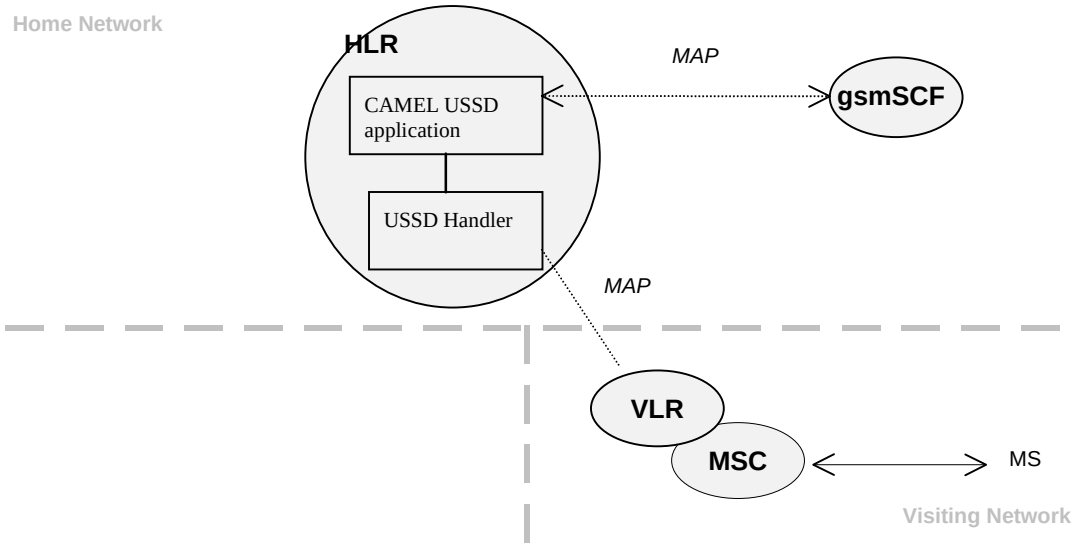

Figure 5.1: Handling of USSD to and from a CAMEL subscriber

HLR: The HLR stores for subscribers requiring CAMEL support the information relevant to the current subscription regarding U-CSI. The UG-CSI is stored as global data applicable to all ~~CAMEL~~ subscribers. The U-CSI and the UG-CSI are stored in the HLR only.

gsmSCF: see subclause 3.1.

*** Next Modified Section ***

5.1.2 Interfaces defined for CAMEL

This subclause describes the different interfaces applicable to CAMEL. It specifies on a high level the functions specific to CAMEL.

~~5.1.2.1 HLR - VLR interface~~

~~This interface is used to send the CAMEL related subscriber data to the visited PLMN.~~

CR editor's note: The HLR does not send USSD CAMEL Subscription Information (U-CSI) to the VPLMN.

5.1.2.2 gsmSCF - HLR interface

This interface is used for USSD operations, both for gsmSCF-initiated dialogues and MS-initiated dialogues (relayed via HLR). It is a network operator option whether to support or not USSD operations on this interface.

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(revision of N2A00-0018)

CHANGE REQUEST

23.078	CR	046r1	Current Version:	3.3.0

For submission to: CN#7 — for approval [X] / for information [ ] — strategic [ ] / non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: CN WG2 **Date:** 17-01-2000

Subject: Technical and editorial corrections to GPRS

Work item: CAMEL Phase 3

Category:

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

Reason for change: This CR proposes an editorial correction to chapter 6 of 3G TS 23.078 (CAMEL interworking with GPRS).

Clauses affected: 6

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:

****** First Modified Section ******

6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

This IF is used by the gprsSSF to report to the gsmSCF the information requested in the Apply Charging GPRS IF. In addition, this IF is used to notify the gsmSCF of user initiated change in QoS. Note that there are several possible QoS profiles defined by the combinations of the different QoS attributes as defined in 3G TS 23.060, see reference [11]. A PLMN may only support and charge on a limited subset of those QoS. It is recommended that changes in QoS are only reported in Apply Charging Report GPRS for those QoS profiles.

6.6.1.2.2 Information Elements

Information element name	Required	Description
Charging Result	M	This IE contains the charging information for the PDP provided by the gsmSSF. It is a choice between elapsed time and data volume.
Quality of Service	C	This IE identifies the QoS requested by the user and granted by the SGSN due to 'Modify PDP Context request. ~~If not present the report is sent due to PDP context or GPRS session termination or Charging threshold reached.~~ This IE shall only be present if sending of the Apply Charging Report was ~~the~~ triggered by a change in Quality of Service.
Active	M	This IE indicates if the GPRS session or PDP context is still established~~-e~~, or if it has been detached or deactivated.
PDP ID	C	This IE identifies the PDP context which the Apply Charging Report is applicable for. If not present the dialogue corresponds to the session or to one single PDP context.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

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Kyoto, Japan, 17 - 21 January 2000

Document ***N2A000019***

CHANGE REQUEST

23.078	**CR**	**047**	Current Version:	3.3.0

For submission to: CN#7 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: CN WG2 **Date:** 05-01-2000

Subject: Technical and editorial corrections to MO-SMS

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: This CR proposes an editorial correction to chapter 7 of 3G TS 23.078 (CAMEL interaction with MO-SMS).

Clauses affected: 7

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:

****** First Modified Section ******

7.6.2.4 Furnish Charging Information SMS

7.6.2.4.1 Description

This IF is used to request the gsmSSF/gprsSSF to include information in the CAMEL specific logical MO SMS record.

The logical call record is created when FCI-SMS is received and a logical call record for that short message does not exist. For modelling purposes the logical call record is buffered in the gsmSSF/gprsSSF. The gsmSSF/gprsSSF completes logical call records as defined in the SDLs. Once the logical call record is completed, then its free format data is moved to the corresponding CDR and the logical call record is deleted.

The CSE can send multiple concatenated FCIs per Short Message for completion. The total maximum of free format data is 160 octets per SM. The 160 octets may be sent in one or more FCI operations. If there is non-completed free format data and new FCI operation(s) is/are received to overwrite the non-completed data, then the non-completed data is discarded and the gsmSCF can send another 160 octets per SM.

7.6.2.4.1 Information Elements

Information element name	MO SMS	Description
FCI Billing Charging Characteristics	M	This IE is described in the next table.

M Mandatory (The IE shall always be sent)

FCI Billing Charging Characteristics contains the following information:

Information element name	MO SMS	Description
FCIBCCCAMEL Sequence 1	M	This IE is described in the next table.

M Mandatory (The IE shall always be sent)

FCIBCCCAMEL Sequence 1 contains the following information:

Information element name	MO SMS	Description
Free Format Data	M	~~This IE indicates that the gsmSSF/gprsSSF shall insert the free format data in the CAMEL logical SM charging record without overwriting any free format data that may already have been received for that transaction. When this IE is not present then the gsmSSF/gprsSSF shall override free format data in a non-completed CAMEL logical SM record of the previous FCI operations.~~ This IE is a free format data to be inserted in the CAMEL logical call record.
Append Free Format Data	O	This IE indicates that the gsmSSF/gprsSSF shall append the free format data to the Logical MO SMS record. • If this IE is present indicating “Append”, the gsmSSF/gprsSSF shall append the free format data received in this IF to the free format data already present in the Logical MO SMS record. • If this IE is absent or in value “Overwrite”, then the gsmSSF shall overwrite all free format data already present in the Logical MO SMS record, by the free format data received in

		this IF. If no Logical MO SMS record exists yet, then the gsmSSF/gprsSSF shall ignore this IE.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

3GPP-CN2 Meeting #13
Kyoto, Japan, 17 - 21 January 2000

Document N2A000122
(revision of N2A00-0020)

CHANGE REQUEST

23.078	**CR**	**048r1**	Current Version:	3.3.0

For submission to: CN#7 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ]

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

Source: CN WG2 **Date:** 18-01-2000

Subject: Inclusion of O-CSI trigger criteria in Resume Call Handling

Work item: CAMEL Phase 3

Category:

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change:

In CAMEL Phase 3 it is possible to trigger a CAMEL Service on Route Select Failure. O-CSI may contain a set of trigger conditions for Route Select Failure triggering.

When a call is subject to Optimal Routeing – Late Call Forwarding, then the handling of that call is resumed by the GMSC, with the ResumeCallHandling (RCH) MAP message.

When Route Select Failure is defined as a TDP in O-CSI and trigger conditions apply for Route Select Failure, then these trigger conditions need to be sent to the GMSC in RCH.

D-CSI shall also be transported in RCH. D-CSI in RCH is already specified in 3G TS 29.002; it shall be reflected in 3G TS 23.078.

The present CR introduces O-CSI trigger criteria and D-CSI in RCH.

Clauses affected: 4.6.11

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	29.002
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:

****** First Modified Section ******

4.6.11 VMSC to GMSC information flows

4.6.11.1 Resume Call Handling

4.6.11.1.1 Description

This IF is described in ~~GSM 03.79~~ 3G TS 23.079 ~~[4]~~[36] and is used to request the GMSC to take over handling the call so that it can be forwarded from the GMSC.

4.6.11.1.2 Information Elements

Resume Call Handling contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	~~This IE contains O-CSI without triggering criteria.~~ This IE ~~It~~ indicates that CAMEL handling applies for an optimally routed late forwarded call. ~~Shall~~ This IE shall be present if CAMEL handling applies; otherwise it shall be absent. Trigger criteria for DP Collected Information, if present, ~~may~~ shall be omitted in this IF. Trigger criteria for DP Route Select Failure, if present, shall be included in this IF.
D-CSI	C	This IE indicates that CAMEL handling applies for an optimally routed late forwarded call. This IE shall be present if CAMEL handling applies; otherwise it shall be absent.

C Conditional (The IE shall be sent if applicable)

3GPP TSG CN WG2 Subgroup A adhoc
Sophia Antipolis, France 21-25 February 2000

Document N2A000268
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.

23.078	CR	051r4	Current Version:	3.3.0

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

For submission to:	CN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		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: CN WG2 **Date:** 25/02/00

Subject: Correction of SDL related to CAMEL Phase3 for D-CSI.

Work item: CAMEL Phase 3

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

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

Reason for change:
- In gsmSSF SDL for Procedure Check_Criteria_Analyzed_Info: Because the condition to become a path when there is not Destination number triggering criterion isn't contained, when the criteria doesn't exist. The Destination number triggering criteria check box is deleted.
- There is not Int_DP_O_Analyzed Info reception when not invoked by D-CSI.

Clauses affected: 4.5.2, 4.5.5

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:

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

<<first modified section>>

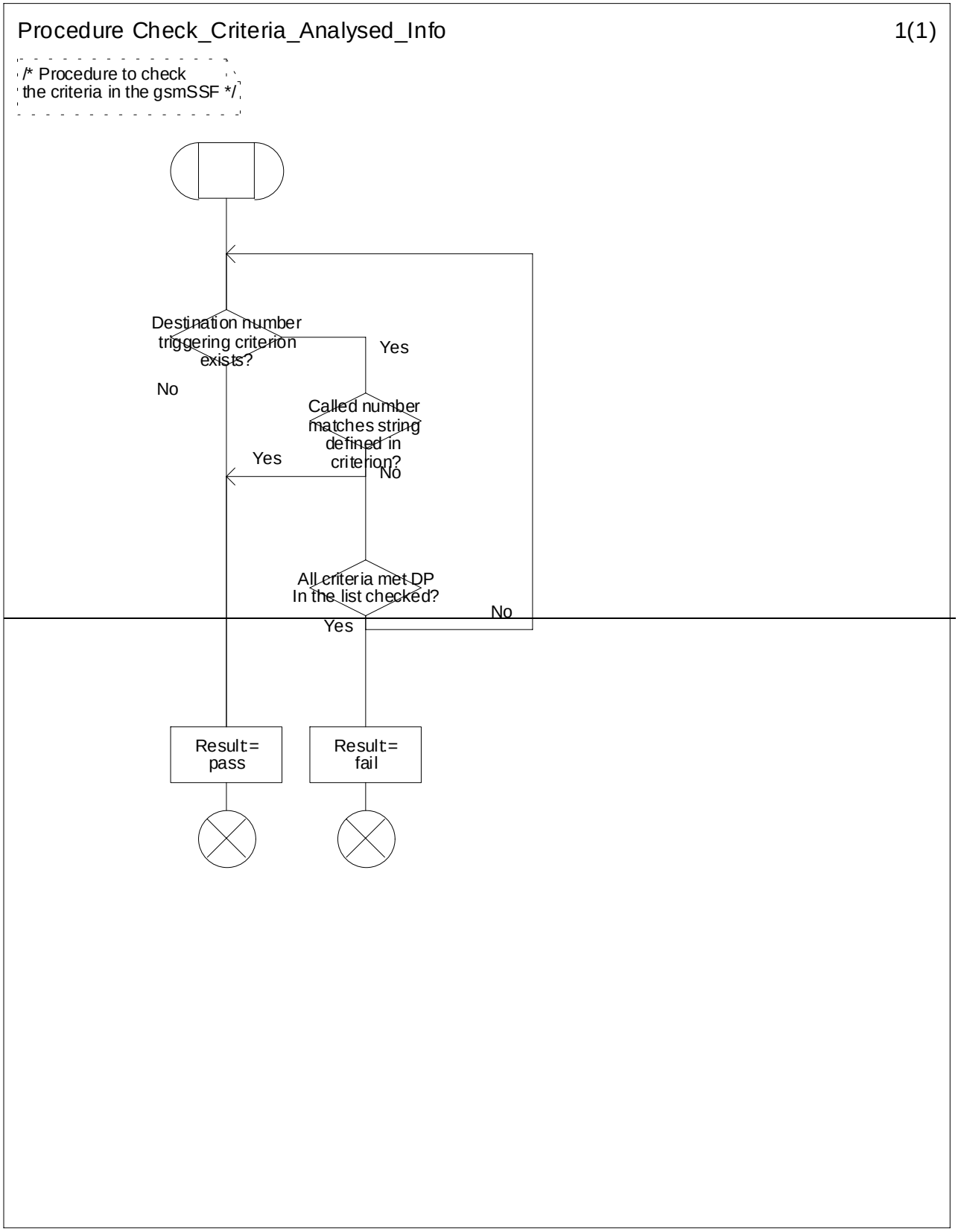


Figure 4.59a: Procedure Check_Criteria_Analysed_Info(sheet 1)

Procedure Check_Criteria_Analysed_Info 1(1)

/* Procedure to check
the criteria in the gsmSSF */

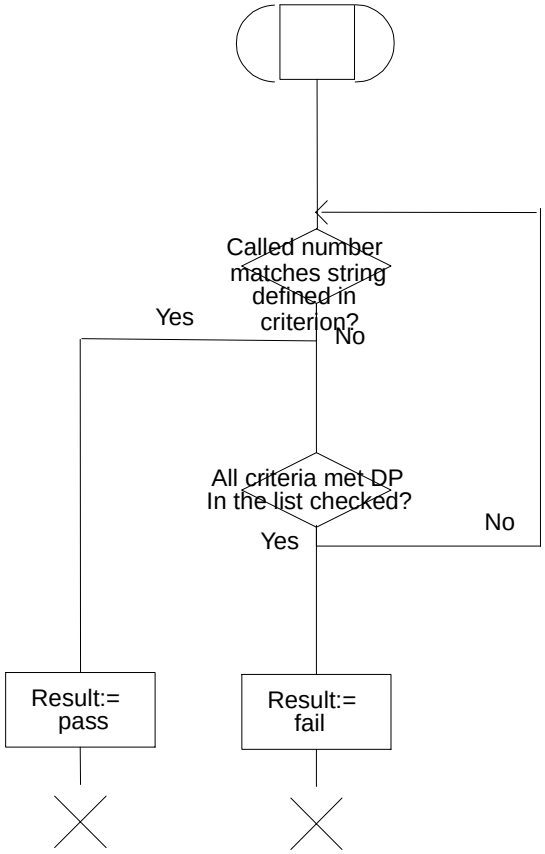
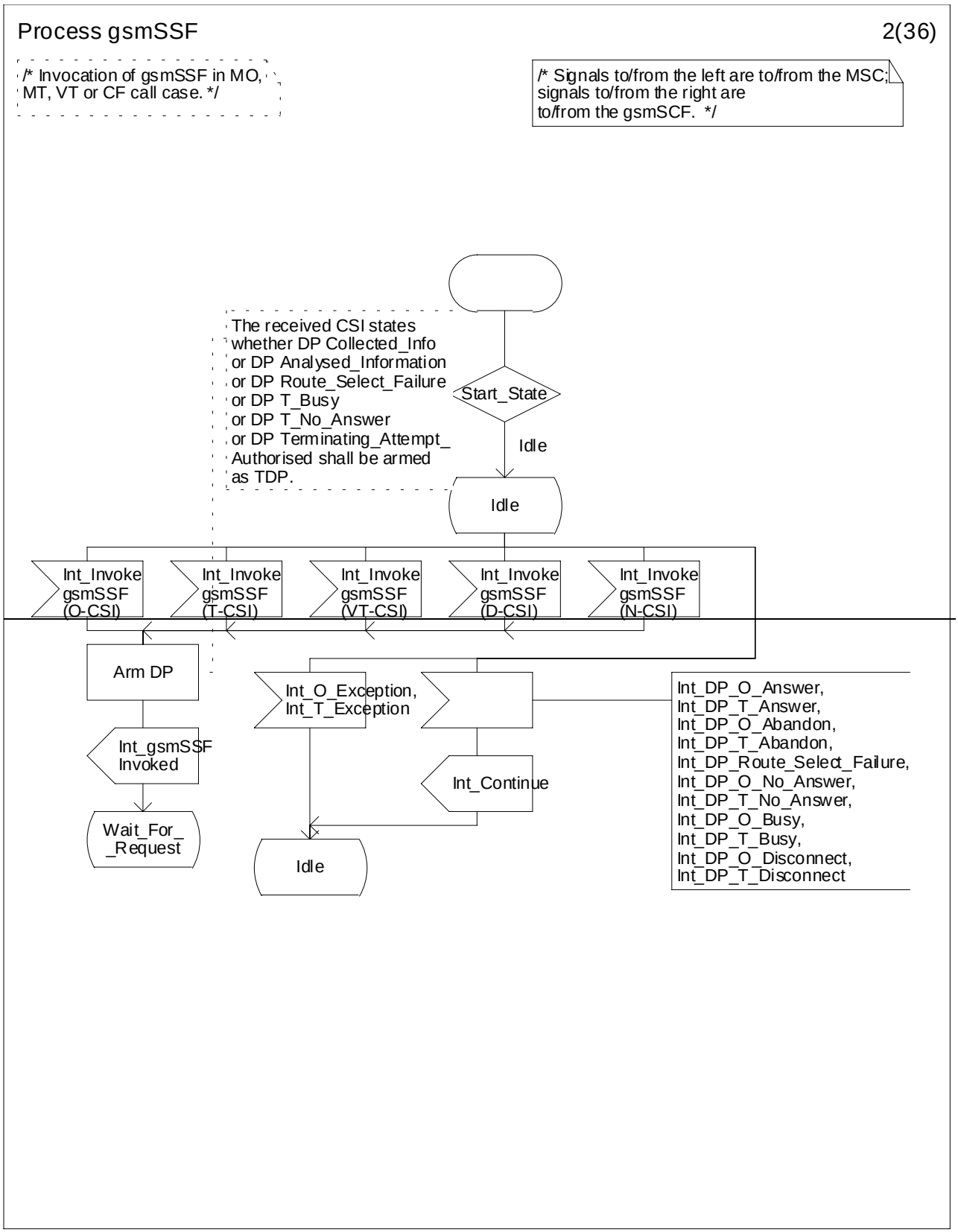
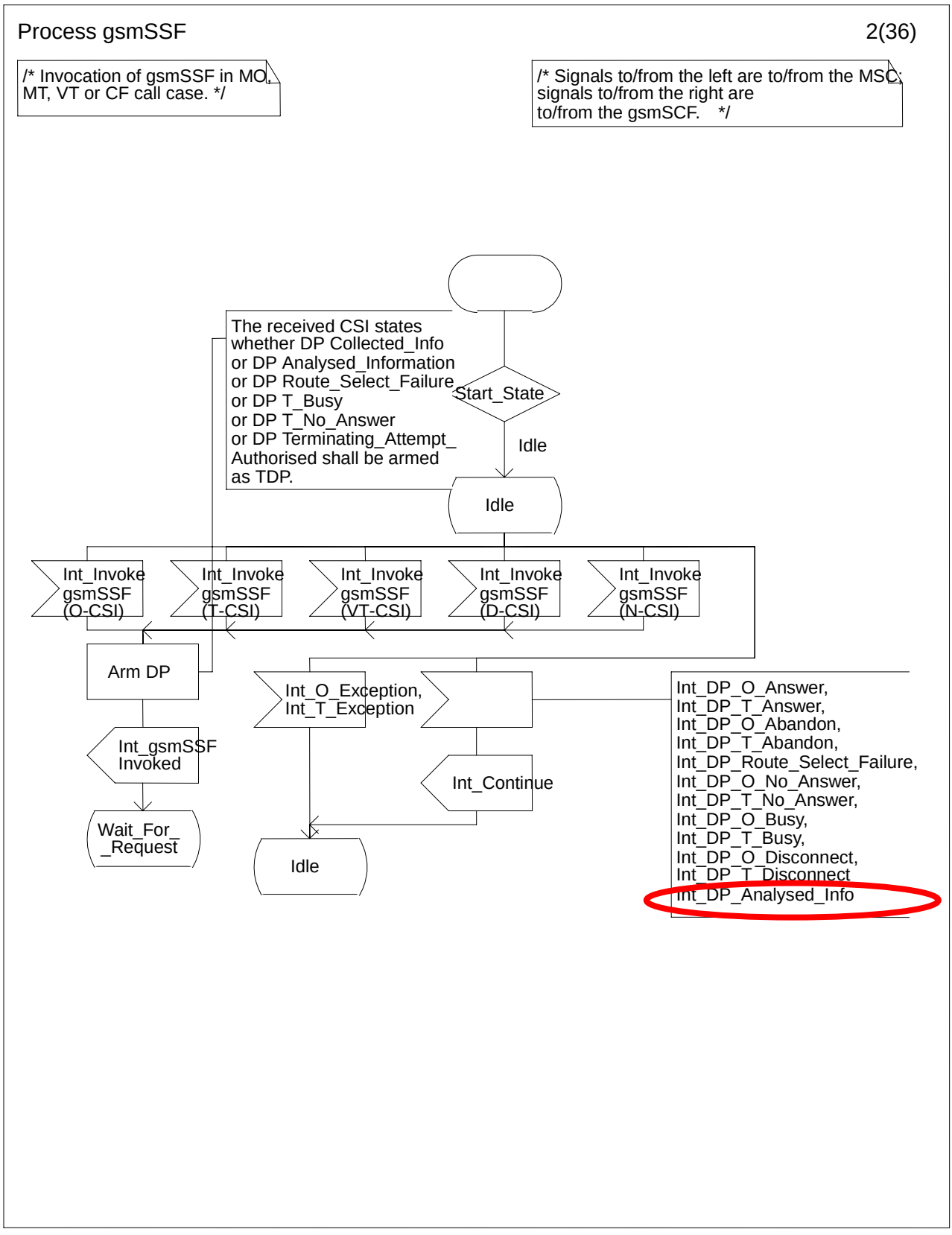


Figure 4.59a: Procedure Check_Criteria_Analysed_Info(sheet 1)

<<Next modified section>>



4.57b: Process gsmSSF (sheet 2)



4.57b: Process gsmSSF (sheet 2)

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Sophia Antipolis, France 21-25 February 2000

Document N2A000269
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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23.078	**CR**	**052r4**	Current Version:	3.3.0

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

For submission to: CN#7 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

strategic [ ]
non-strategic [ ]
(for SMG use only)

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: CN WG2 **Date:** 25/02/00

Subject: Addition to description of D-CSI in MO Calls

Work item: CAMEL Phase 3

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

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change:
- The detail description of handling of MO Calls in section 4.5.2.1 is modified, because the action of MSC is different in the DP_Collected_Info condition and the DP_Analyaed_Info condition.
- The description when receiving Release in the Analyzed Info state is contained in Procedure MO_Dialled_Services. The description overlaps.
- Addition to description of Information Elements in the Information Flows.

Clauses affected: 4.5.2.1, 4.6.7.2

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.

<<First modified section>>

4.5.2 Handling of mobile originated calls

4.5.2.1 Handling of mobile originated calls in the originating MSC

The functional behaviour of the originating VMSC is specified in 3G TS 23.018 [3]. The procedures specific to CAMEL are specified in this subclause :

- Procedure CAMEL_OCH_MSC_INIT,
- Procedure CAMEL_OCH_MSC_ANSWER,
- Procedure CAMEL_OCH_MSC1,
- Procedure CAMEL_OCH_MSC2,
- Procedure CAMEL_OCH_MSC_DISC1,
- Procedure CAMEL_OCH_MSC_DISC2,
- Procedure CAMEL_OCH_MSC_DISC4,
- Procedure CAMEL_OCH_ETC,
- Procedure CAMEL_OCH_CTR,
- Procedure CAMEL_Start_TNRy,
- Procedure CAMEL_Stop_TNRy.
- Procedure CAMEL_Store_Destination_Address

The procedure Send_Access_Connect_If_Required is specified in 3G TS 23.018 [3].

The following paragraphs gives details on the behaviour of the MSC in the procedure CAMEL_OCH_MSC_INIT, CAMEL_OCH_ETC, CAMEL_OCH_ANSWER and CAMEL_Store_Destination_Address.

4.5.2.1.1 Actions of the MSC on receipt of Int_Error

The MSC checks the default Call Handling parameter in the relevant CSI.

If the default call handling is release call, a Release is sent to the MS and an Abort to the VLR. The MSC then releases all call resources and the procedure CAMEL_OCH_MSC_INIT ends.

If the default call handling is continue call, the MSC continues processing without CAMEL support. It sends Send_Info_For_Ougoing_Call to the VLR and waits in state Wait_For_MO_Call_Result.

4.5.2.1.2 Actions of the MSC on receipt of Int_Continue

The MSC continues processing without any modification of call parameters. At DP_Analysed_Information it sends Send_Info_For_Ougoing_Call to the VLR and waits in state Wait_For_MO_Call_Result.

4.5.2.1.3 Actions of the MSC on receipt of Int_Continue_With_Argument

The MSC continues processing with modified call parameters. The MSC shall replace the call parameters by the information received in the Int_Continue_With_Argument message. Call parameters which are not included in the Int_Continue_With_Argument message are unchanged.

Signalling limitations or regulatory requirements may require the Calling Partys Category, Generic Number, Original Called Party Number and Redirecting Party ID to be ignored or modified.

4.5.2.1.4 Actions of the MSC on receipt of Int_Connect

The MSC continues processing with modified call parameters. The MSC shall transparently modify the call parameters with the received information. The MSC then sends a PROGRESS message to the MS. Call parameters which are not included in the Int_Connect message are unchanged.

Signalling limitations or regulatory requirements may require the Calling Partys Category, Generic Number, Original Called Party Number and Redirecting Party ID to be ignored or modified.

The network signalling system shall indicate that this is an internal network number.

At ~~DP_Analysed_Information~~ DP_Collected_Information the MSC sets the O-CSI suppression parameter~~,~~. If D-CSI and N-CSI are not present, the MSC sends a Send Info For Outgoing Call to the VLR and waits in state Wait_For_MO_Call_Result.

At DP_Analysed_Information it sets the D-CSI suppression parameter, sends a Send Info For Outgoing Call to the VLR and waits in state Wait_For_MO_Call_Result.

4.5.2.1.5 Actions of the MSC on receipt of Int_Release_Call

A Release is sent to the MS, an abort to the VLR and a Release is sent to the destination exchange. The release cause received in the Int_Release_Call is used. The MSC then releases all call resources and the procedure CAMEL_OCH_MSC_INIT ends.

4.5.2.1.6 Action of the MSC in procedure CAMEL_OCH_MSC_ANSWER

If the MSC received a destination address from the GMSC in the ISUP Answer or Connect message, the MSC relays the destination address to the gsmSSF in the Int_DP_O_Answer message.

NOTE: The sending of e-parameters by the gsmSCF after receiving the DP_O_Answer indication may be to late.

4.5.2.1.7 Action of the MSC in procedure CAMEL_OCH_ETC

In procedure CAMEL_OCH_ETC (sheet 2) the MSC will remain in the Wait_For_Assisting_Answer state until it receives an ISUP Answer Message (ANM) or timeout occurs. This is to ensure that a call record is always generated for every successful establishment of a temporary connection to a gsmSRF, especially in the case where the connection is between PLMNs.

NOTE: This means that it may not be possible to access an SRF which does not generate an ISUP Answer Message (ANM).

If a Progress message is sent towards the MS the progress indicator shall indicate "In Band Information".

4.5.2.1.8 Action of the MSC in procedure CAMEL_Store_Destination_Address

The Int_Store_DA message carries the value of the global variable Destination address and the parameters OR and Forwarding received in the procedure call.

<<Next modified section>>

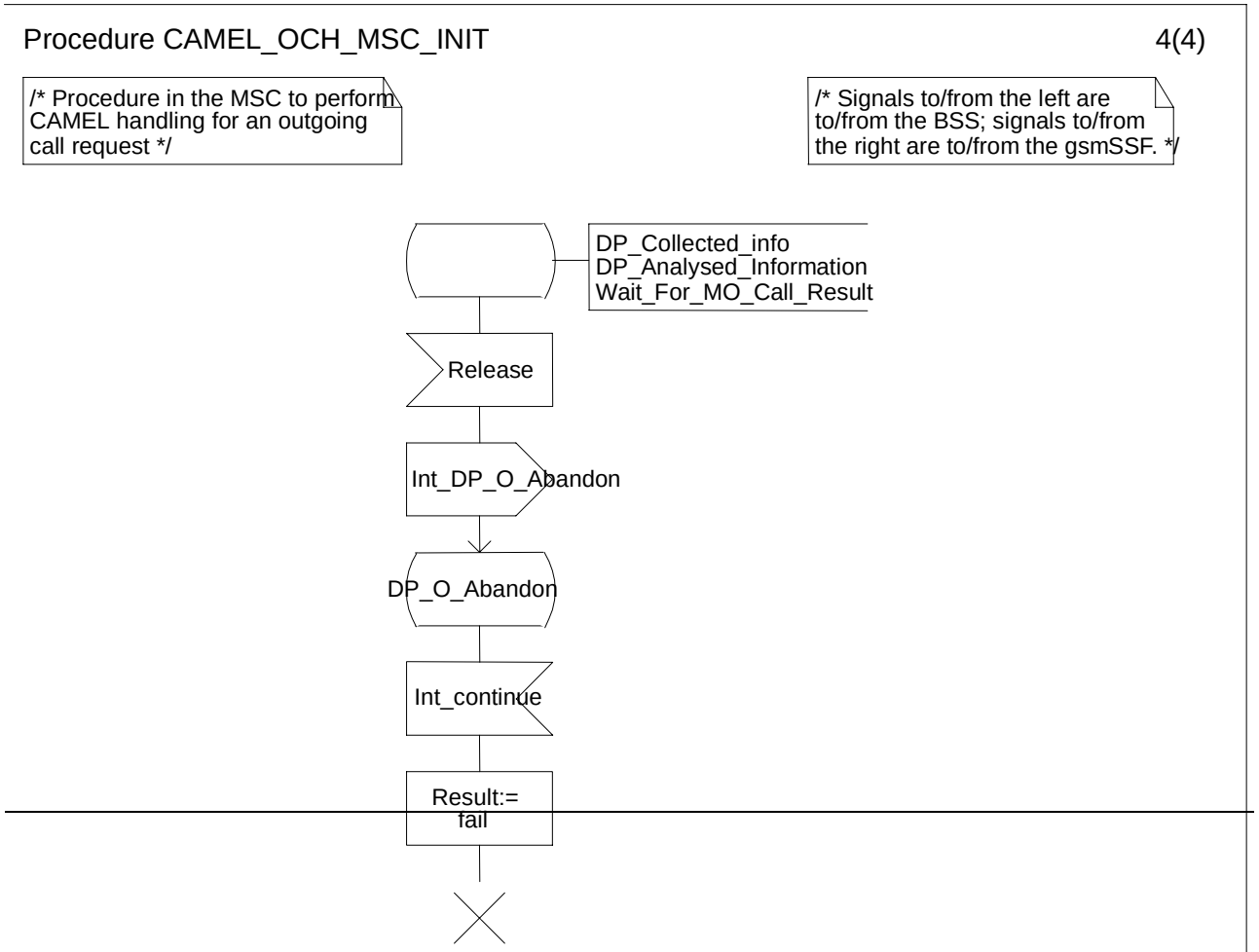

Figure 4.10e: Procedure CAMEL_OCH_MSC_INIT (sheet 4)

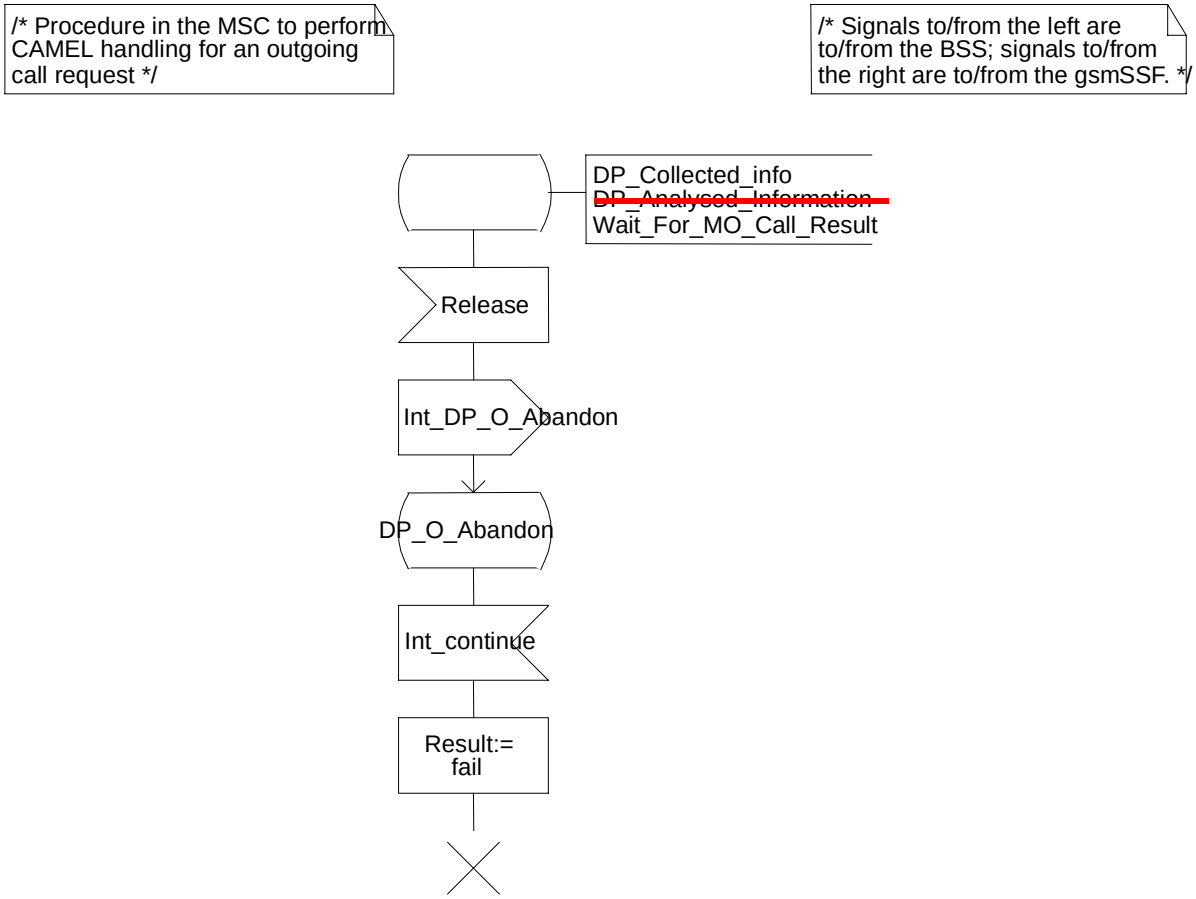

Figure 4.10e: Procedure CAMEL_OCH_MSC_INIT (sheet 4)

<<Next modified section>>

4.6.7.2 Insert Subscriber Data

4.6.7.2.1 Description

This IF is used by an HLR to update a VLR with certain subscriber data. This IF is specified in 3G TS 29.002 [4].

4.6.7.2.2 Information Elements

Insert Subscriber Data contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	This IE identifies the subscriber as having originating CAMEL services.
D-CSI	C	This IE identifies the subscriber as having originating CAMEL dialled services.
VT-CSI	C	This IE identifies the subscriber as having terminating CAMEL services in the VMSC.

C Conditional (The IE shall be sent, if required)

O-CSI contains the following information:

Information element name	Required	Description
gsmSCF Address	M	This IE is described in section 4.3.1
Service Key	M	This IE is described in section 4.3.1.
Default Call Handling	M	This IE is described in section 4.3.1.
TDP List	M	This IE is described in section 4.3.1.
DP Criteria	O	This IE is described in section 4.3.1.
CAMEL Capability Handling	C	This IE is described in section 4.3.1. If this IE is absent, this indicates that CAMEL phase 1 is asked.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent when required)

O Optional (service logic dependant)

D-CSI contains the following information:

Information element name	Required	Description
gsmSCF Address	M	This IE is described in section 4.3.2.
Service Key	M	This IE is described in section 4.3.2.
Default Call Handling	M	This IE is described in section 4.3.2.
DP Criteria	M	This IE is described in section 4.3.2.
CAMEL Capability Handling	M	This IE is described in section 4.3.2. The CAMEL Capability Handling shall indicate CAMEL phase 3 or higher.

M Mandatory

VT-CSI contains the following information:

Information element name	Required	Description
gsmSCF Address	M	This IE is described in section 4.3.4.
Service Key	M	This IE is described in section 4.3.4.
Default Call Handling	M	This IE is described in section 4.3.4.
TDP List	M	This IE is described in section 4.3.4.
DP Criteria	O	This IE is described in section 4.3.4.
CAMEL Capability Handling	M	This IE is described in section 4.3.4. The CAMEL Capability Handling shall indicate CAMEL phase 3 or higher.

M Mandatory

O Optional (service logic dependant)

<<Next modified section>>

4.6.12.1 Send Info For Outgoing Call

4.6.12.1.1 Description

This IF is described in 3G TS 23.018 [3] and is used to request the VLR to provide information to handle an outgoing call.

4.6.12.1.2 Information Elements

Send Info For Outgoing Call contains the following CAMEL specific IE

Information element name	Required	Description
Suppress O-CSI	C	This IE indicates that O-CSI shall be suppressed. Shall always be sent in the second interrogation.
Suppress D-CSI	C	This IE indicates that D-CSI shall be suppressed. Shall always be sent in the second interrogation.

C Conditional (The IE shall be sent if applicable)

<<Next modified section>>

4.6.13.1 Complete Call

4.6.13.1.1 Description

This IF is described in 3G TS 23.018 [3] and is used to instruct the MSC to continue the connection of a call.

4.6.13.1.2 Information Elements

Complete Call contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	This IE indicates that CAMEL handling applies for an MO call. Shall be present in the response to the first interrogation for an MO call if CAMEL handling applies; otherwise shall be absent. Shall be absent in the response to the second interrogation for an MO call and in the response to the interrogation for an MT call.
D-CSI	C	This IE identifies the subscriber as having originating CAMEL dialled services.
VT-CSI	C	This IE identifies the subscriber as having terminating CAMEL services in the VMSC.
Call Reference Number	M	This IE carries the Call Reference Number provided by the HLR in the Provide Roaming Number IF.
GMSC Address	M	This IE is the E.164 address of the GMSC.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent if applicable)

3GPP/SMG Meeting #8
Kyoto, Japan, 17-21 Jan 2000

Document N2A000033
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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23.078	**CR**	**055**	Current Version:	3.3.0

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

For submission to: CN#7 *list expected approval meeting # here ↑*

for approval [ ] for information [ ]

strategic [ ] non-strategic [ ] *(for SMG use only)*

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: CN WG2 **Date:** 6 Jan 2000

Subject: 23.078 Cr on reporting of T_Busy when absent subscriber

Work item: CAMEL phase 3

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

F	Correction	
A	Corresponds to a correction in an earlier release	
B	Addition of feature	
C	Functional modification of feature	X
D	Editorial modification	

Release:

Phase 2	
Release 96	
Release 97	
Release 98	
Release 99	X
Release 00	

Reason for change:

In CAMEL phase 2 SDLs modelled that GMSC should report T_Abandon when the called party was absent. However, reporting of calling party DP is incorrect when the called party is absent. In CAMEL3 there could be the following problems;

– T_Abandon is in EDP-R as well. What happens if the calling party clears during the T_Abandon DP?

– T_Busy is also a TDP in CAMEL3. It should be possible to trigger in a TDP in this case.

Clauses affected:

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:

****** FIRST MODIFIED SECTION ******

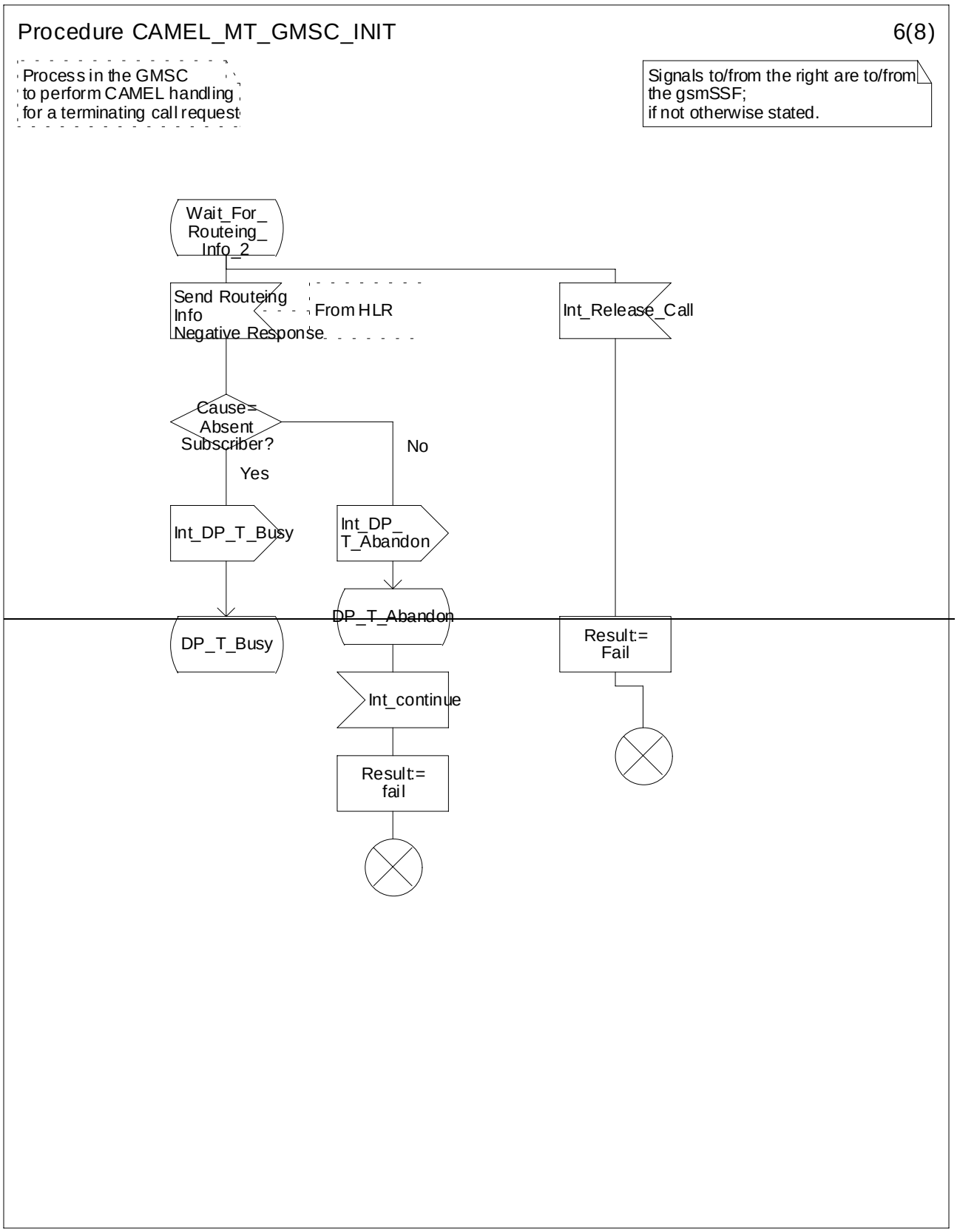
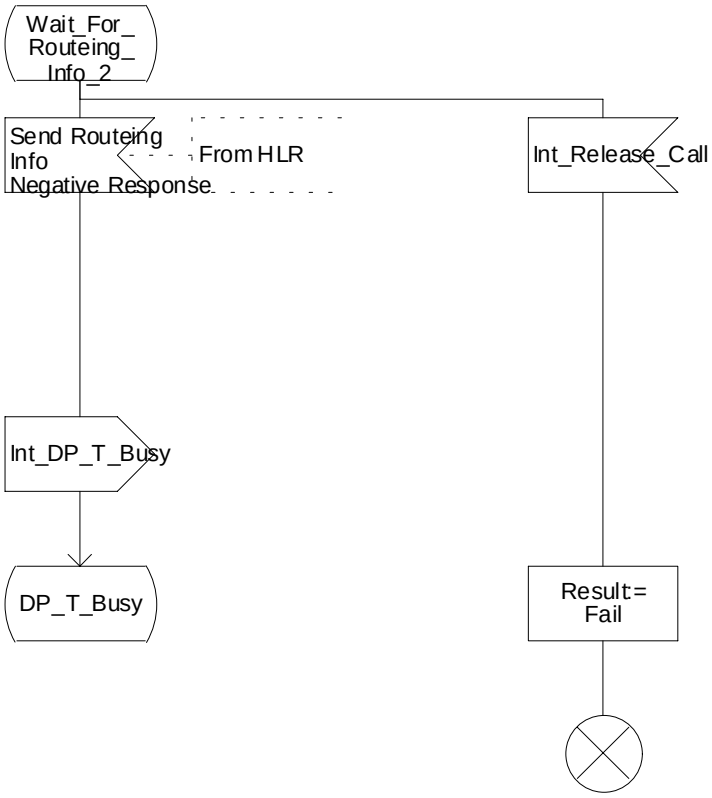


Figure 4.27f: Procedure CAMEL_MT_GMSC_INIT (sheet 1)

Procedure CAMEL_MT_GMSC_INIT 6(8)

Process in the GMSC to perform CAMEL handling for a terminating call request

Signals to/from the right are to/from the gsmSSF; if not otherwise stated.



3GPP Meeting #
Sophia Antipolis, France, 21-25 Feb 2000

Document N2a000277
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.

23.078	CR	056r3	Current Version:	3.3.0

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

For submission to: CN#7 *list expected approval meeting # here ↑*

for approval [X]
for information [ ]

strategic [ ]
non-strategic [ ]

(for SMG use only)

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: CN WG2 **Date:** 22 Feb 2000

Subject: GPRS TCAP dialogues

Work item: CAMEL phase 3

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

F	Correction	[X]
A	Corresponds to a correction in an earlier release	[ ]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: See introduction

Clauses affected:

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:

Introduction

The GPRS attach and PDB contexts can take for hours, even for days. For each TCAP dialogue the SGSN and SCP must maintain resources in order to link Transaction Id to correct software instance. Depending on the implementation of TCAP there may be also some other semi-permanent resources allocated for each ongoing TCAP dialogue.

The routeing area update and change in QoS are not expected to occur in such great frequency that they would justify maintenance of long idle TCAP dialogues. In addition, long periods of silence in a TCAP connection add need to use ActivityTest and thus the savings in the signalling are somewhat reduced.

The proposal below is a similar approach to MAP in which dialogues are opened and closed in an efficient manner.

Proposal

In order to restrict long idle of TC dialogues Nokia proposes that

1. In general, the CAMEL Stage 2 (23.078) parameters are not modified except in the application level must be a “gprsReference” in all operations. The gprsReference would be allocated by the SGSN and sent in InitialDP-GPRS operation for the first time. The gprsReference would include an integer and the SGSN address.

2. The CAMEL Stage 3 (29.078) is defined so that both GPRS mobility management (MM) and PDP context open and close TC-dialogue between the idle periods.

3. When an entity has no result nor error to send, it would send an empty TC-END.

4. Due to possible load sharing between SCPs the SGSN must memorise the SCP address in the InitialDP-GPRS-result. This address must be used in all other subsequent TCAP dialogues of that particular SSF instance.

5. In the SCP to SGSN direction multiple operations maybe packed to into a single TC-message or multiple TC-messages when the gprsSSF is in a DP. When there is multiple operations to sent then to maintain the correct sequnce of operations the SCCP class 1 shall be used. If one of the following operations need to be sent, they are sent as the last operation: ContinueGPRS, CancelGPRS or ConnectGPRS.

6. The usage of TCAP would affect to Stage 3 section “12.1 Services assumed from TCAP” and possibly in each GPRS operation procedure section in Stage 3.

7. The ordering of reports and EventReportBCSM-GPRS would be similar as in call related cases, i.e. depends whether the DP is an EDP-R or EDP-N.

8. If there are no reports or EDPs armed then the service logic would make a final end and make a termination

9. Prearranged end would be used in a similar manner as in call related cases, not to terminate *dialogue*, but to terminate the *relationship*. In addition CAP operation ContinueGPRS and ConnectGPRS could mean pre-arranged end (of the *relationship*) in the end of DP. Concepts dialogue and relationship are explained in the section 12.1.x. of 29.078 CR.

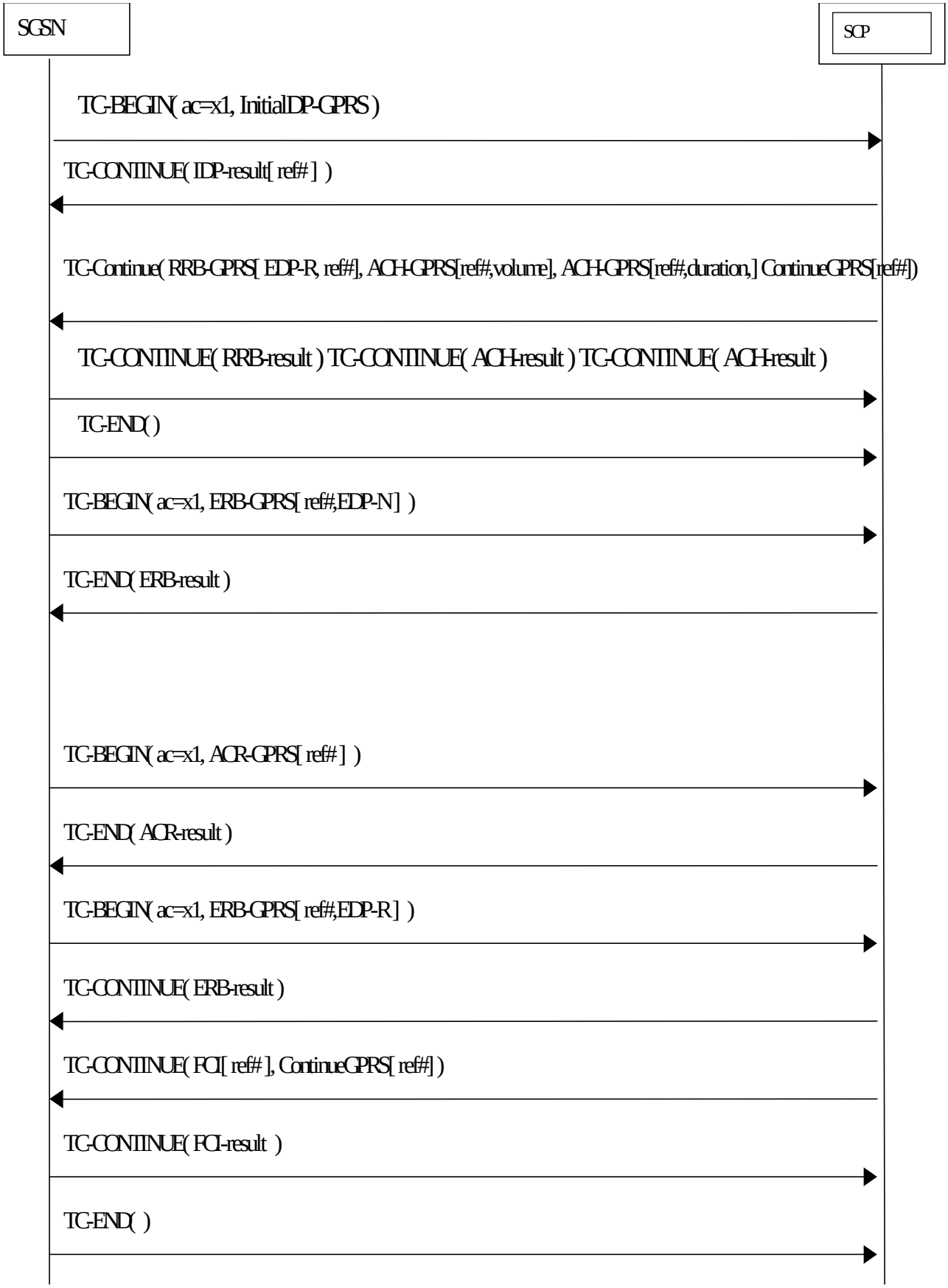
10. At each moment of time there shall be only one TC dialogue open for each relation. In the case of a clitch problem the SCP opened dialogue should be closed and the SGSN opened dialogue is maintained. After the handling of the SGSN/gprsSSF operations, the SCP may have to resent the CAP operations, e.g. CancelGPRS or ReleaseGPRS. In some cases the resending is not needed / possible, e.g. when a Detach DP is reported as an EDP-N. The clitch problem in the case of ActivityTestGPRS needs to be discussed and resolved.

11. When the gprsSSF is in state WaitingForInstructions the dialogue is maintained. Once the gsmSSf received the last ContinueGPRS, ConnectGPRS or CancelGPRS, it shall send TC-END with zero components. For each ApplychargingReportGPRS and EDP-N a separate TC-dialogue is used.

The operations in each application context; (* = may open a dialogue)

SGSN -> SCP	**SCP -> SGSN**
ApplyChargingReportGPRS *	ActivityTestGPRS *
EntityReleasedGPRS *	ApplyChargingGPRS *
EventReportGPRS *	CancelGPRS *
InitialEventGPRS *	ConnectGPRS
	ContinueGPRS
	FurnishChargingInformationGPRS *
	ReleaseGPRS *
	RequestReportGPRSEvent *
	ResetTimerGPRS
	SendChargingInformationGPRS *

An example


SGSN
SCP
TC-BEGIN(ac=x1, InitialDP-GPRS)
TC-CONTINUE(IDP-result[ref#])
TC-Continue(RRB-GPRS[EDP-R, ref#], ACH-GPRS[ref#,volume], ACH-GPRS[ref#,duration,] ContinueGPRS[ref#])
TC-CONTINUE(RRB-result) TC-CONTINUE(ACH-result) TC-CONTINUE(ACH-result)
TC-END( )
TC-BEGIN(ac=x1, ERB-GPRS[ref#,EDP-N])
TC-END(ERB-result)
TC-BEGIN(ac=x1, ACR-GPRS[ref#])
TC-END(ACR-result)
TC-BEGIN(ac=x1, ERB-GPRS[ref#,EDP-R])
TC-CONTINUE(ERB-result)
TC-CONTINUE(FCI[ref#], ContinueGPRS[ref#])
TC-CONTINUE(FCI-result)
TC-END( )

****** FIRST MODIFIED SECTION ******

6.5.6 GPRS SSF

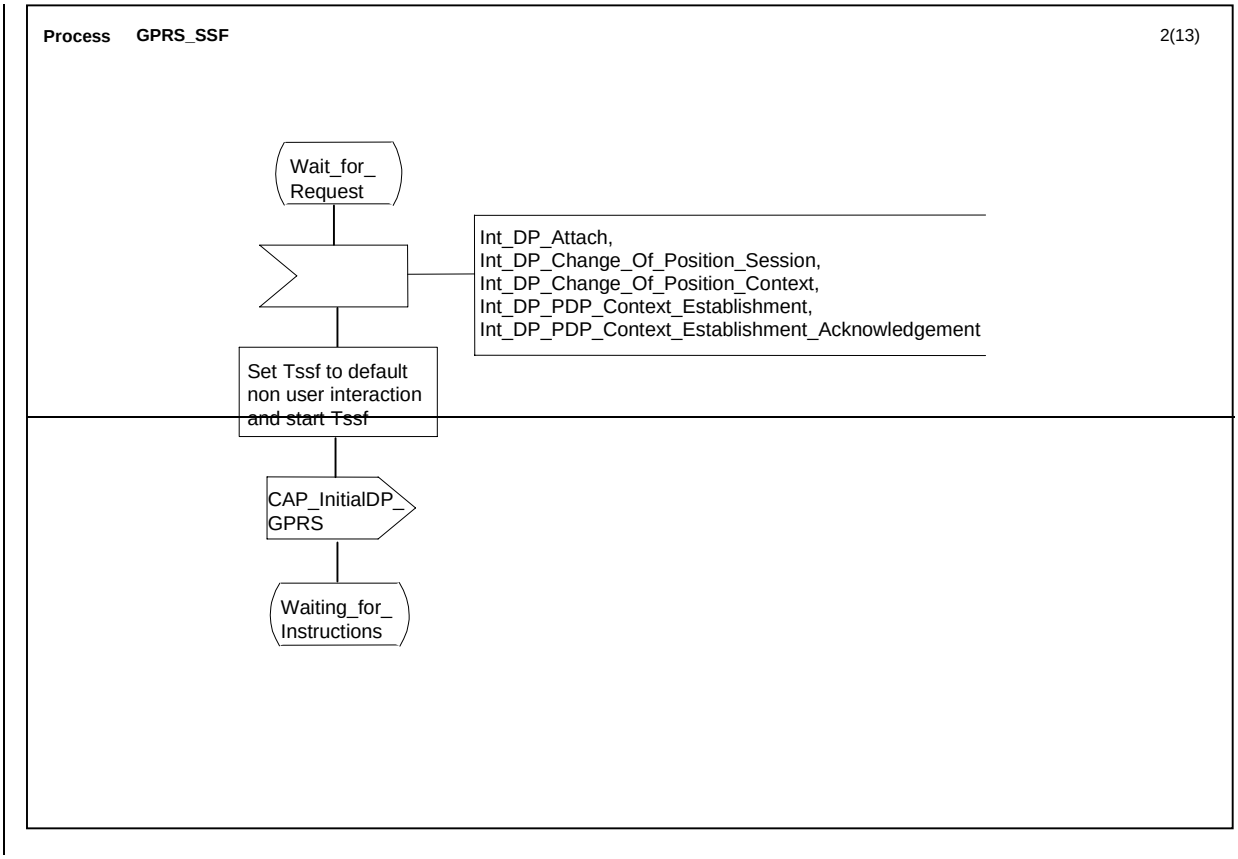
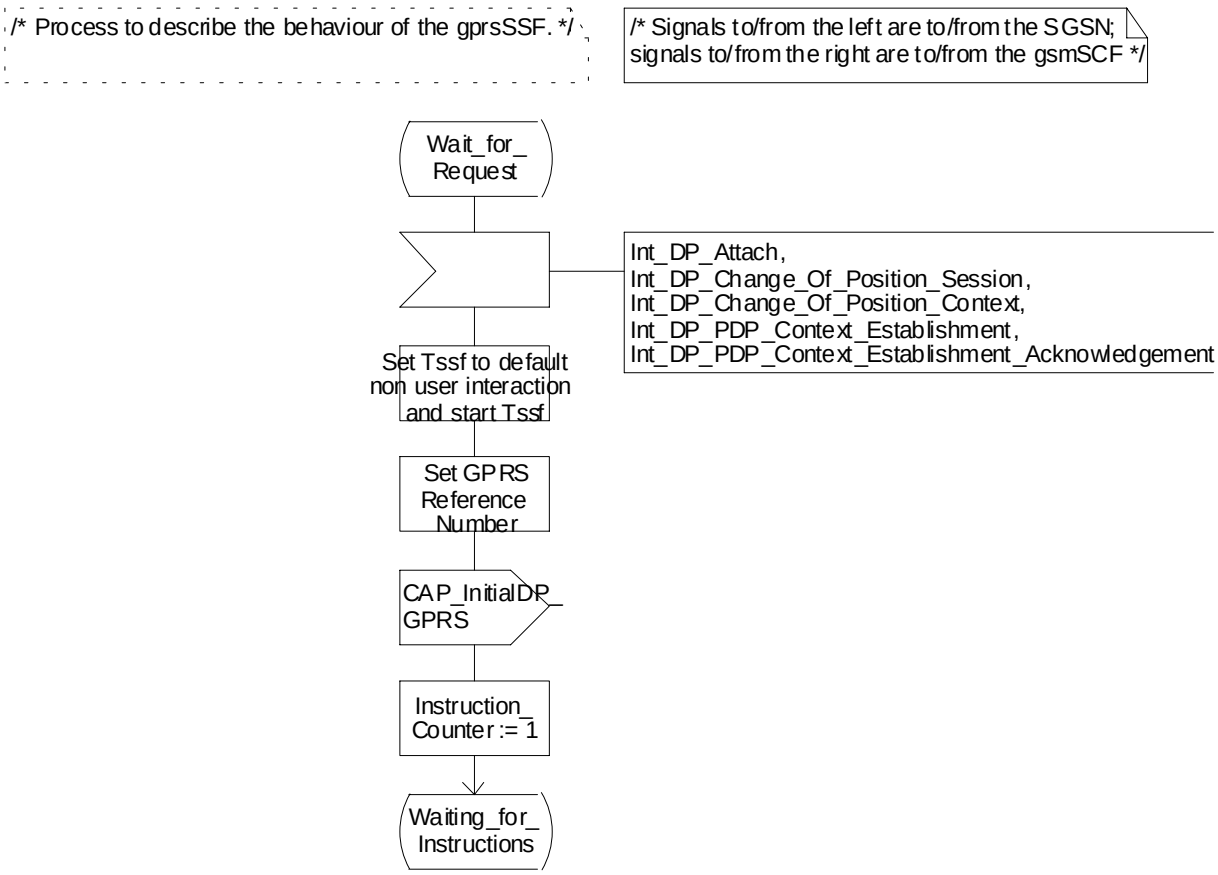


Figure 6.15 a: Process GPRS_SSF (sheet 2)

Process GPRS_SSF 2(13)



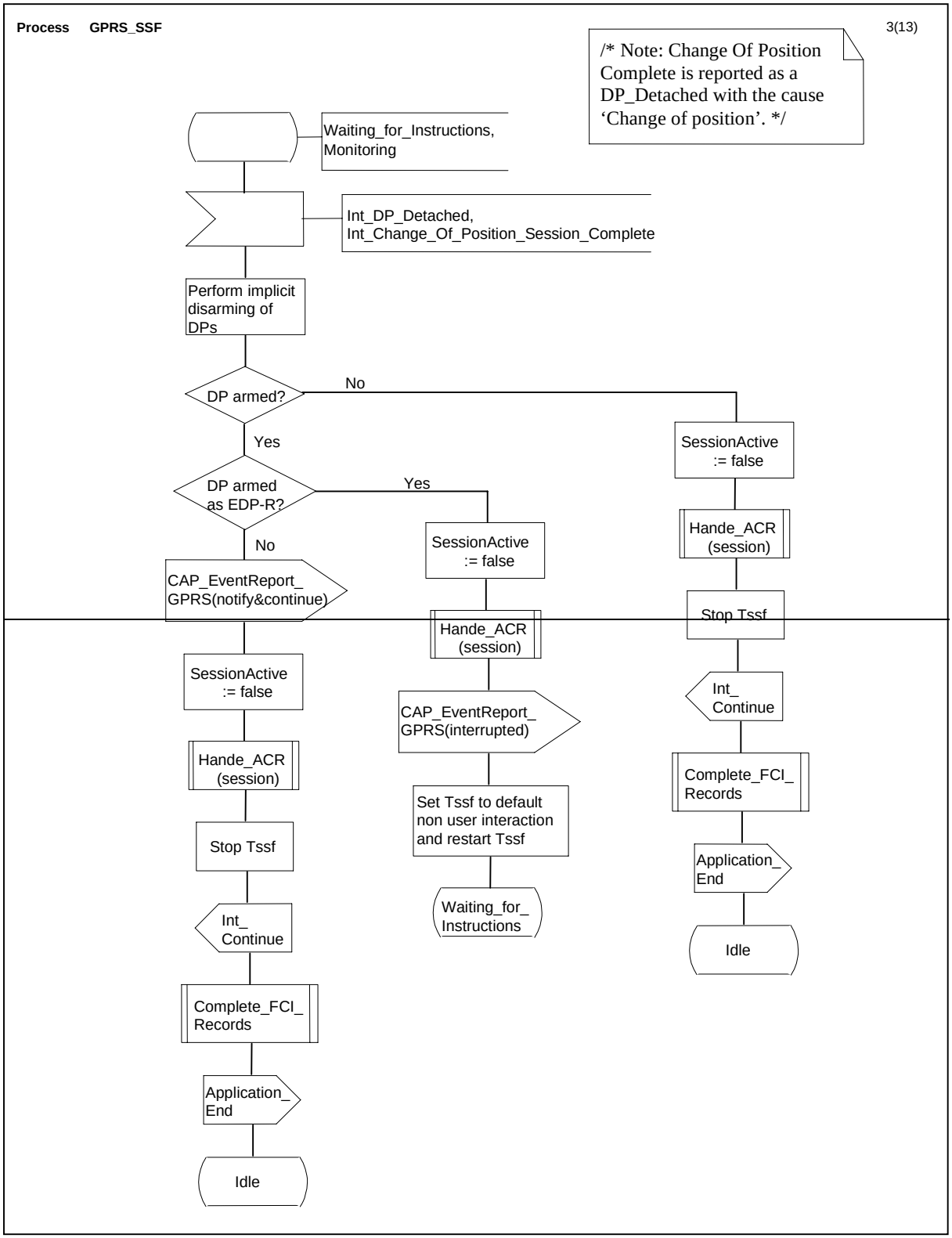
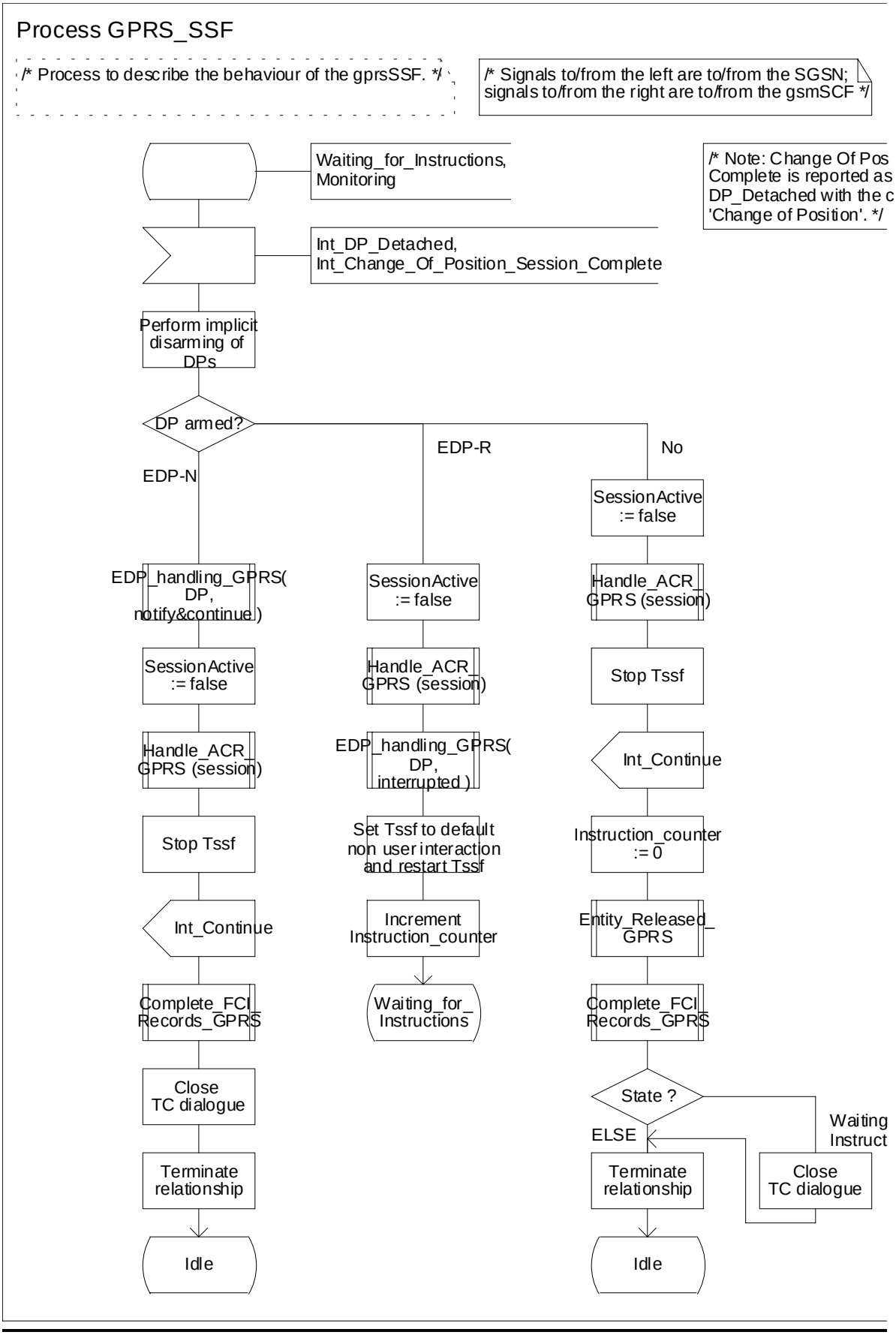


Figure 6.15 b: Process GPRS_SSF (sheet 3)


Process GPRS_SSF
/* Process to describe the behaviour of the gprsSSF. */
/* Signals to/from the left are to/from the SGSN; signals to/from the right are to/from the gsmSCF */
Waiting_for_Instructions, Monitoring
/* Note: Change Of Pos Complete is reported as DP_Detached with the c 'Change of Position'. */
Int_DP_Detached, Int_Change_Of_Position_Session_Complete
Perform implicit disarming of DPs
DP armed?
EDP-N
EDP-R
No
EDP_handling_GPRS(DP, notify&continue)
SessionActive := false
Handle_ACR_ GPRS (session)
Stop Tssf
Int_Continue
Complete_FCI_ Records_GPRS
Close TC dialogue
Terminate relationship
Idle
SessionActive := false
Handle_ACR_ GPRS (session)
EDP_handling_GPRS(DP, interrupted)
Set Tssf to default non user interaction and restart Tssf
Increment Instruction_counter
Waiting_for_ Instructions
SessionActive := false
Handle_ACR_ GPRS (session)
Stop Tssf
Int_Continue
Instruction_counter := 0
Entity_Released_ GPRS
Complete_FCI_ Records_GPRS
State ?
ELSE
Waiting
Instruct
Terminate relationship
Close TC dialogue
Idle

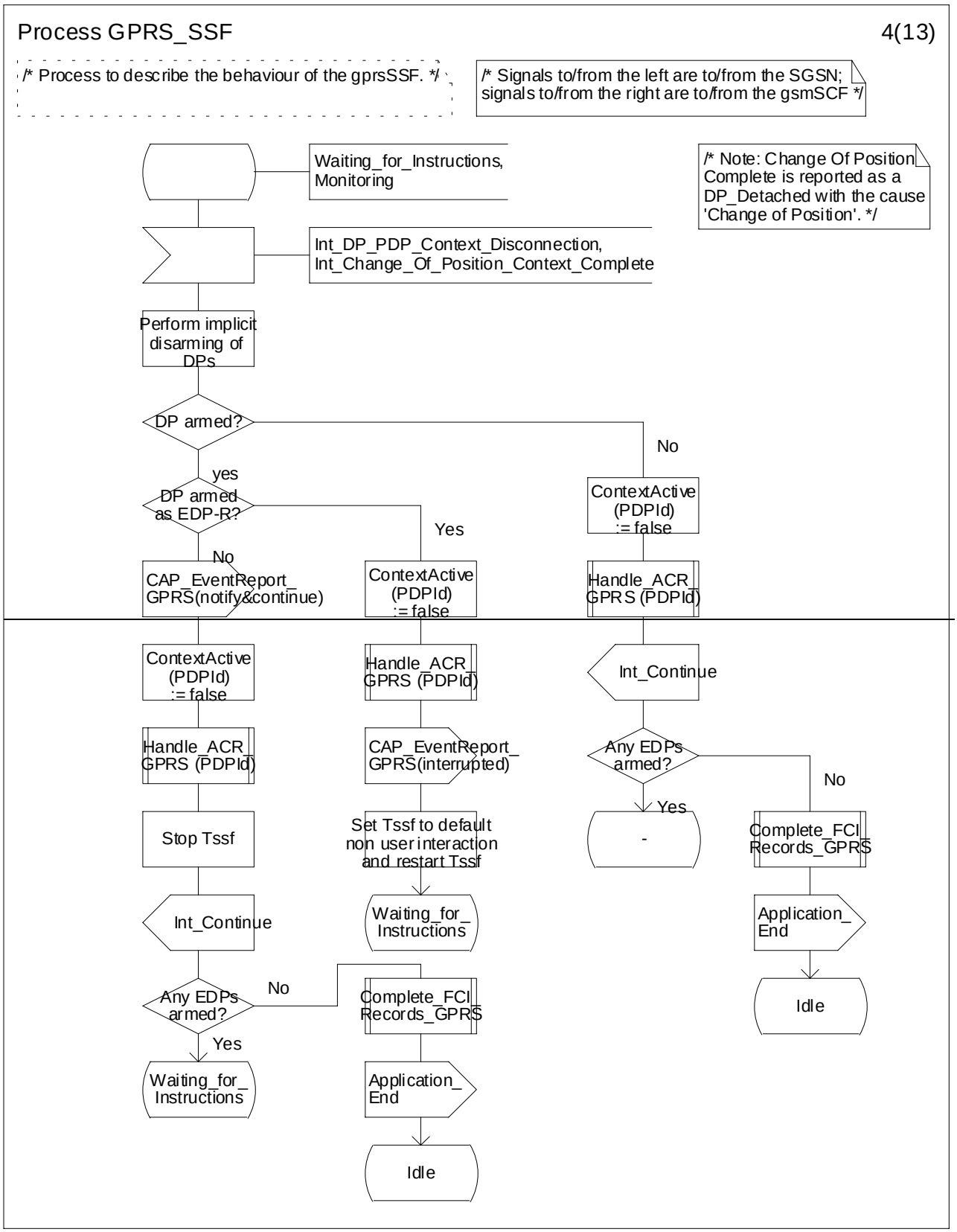
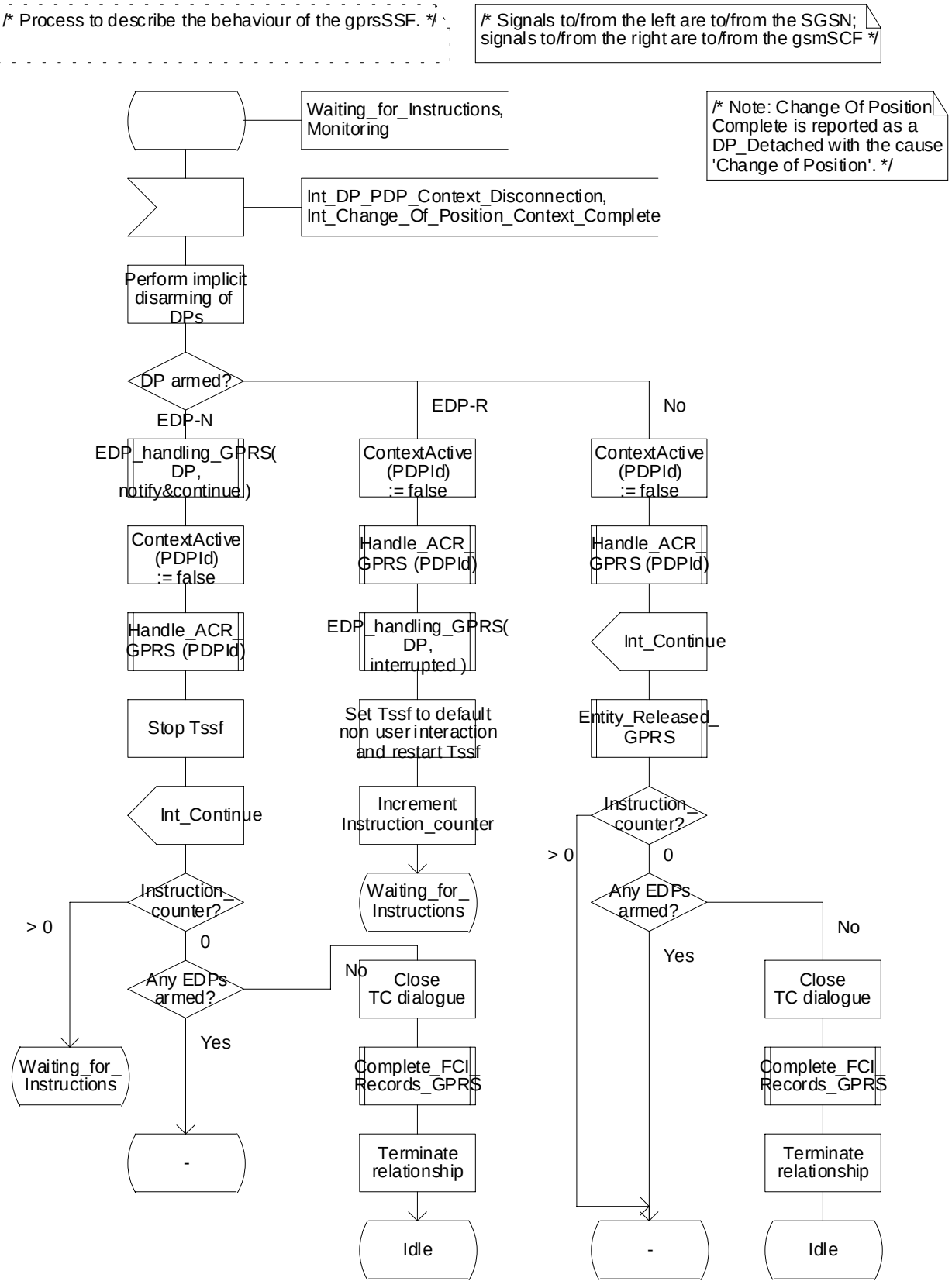


Figure 6.15d: Process GPRS_SSF (sheet 4)

Process GPRS_SSF 4(13)



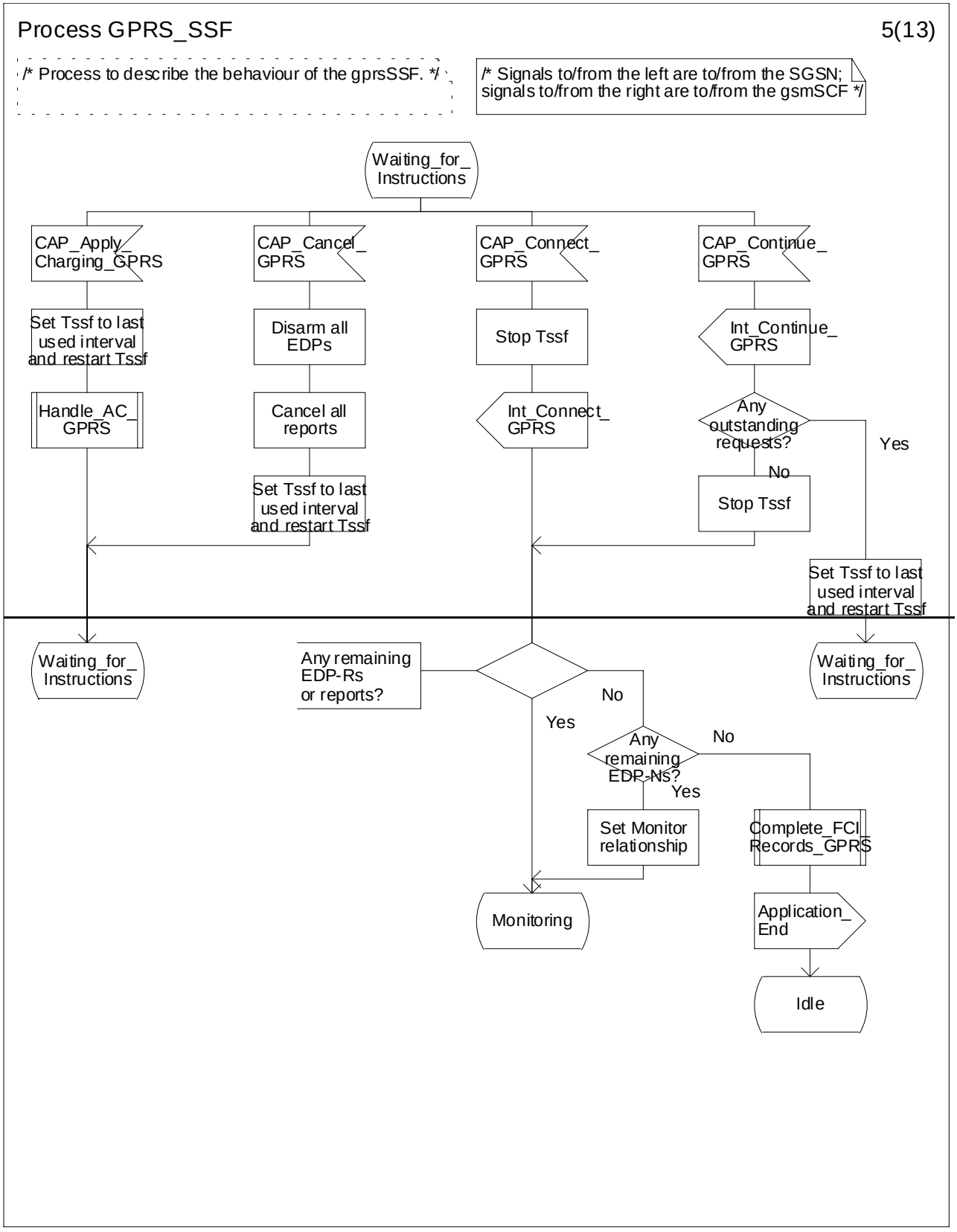
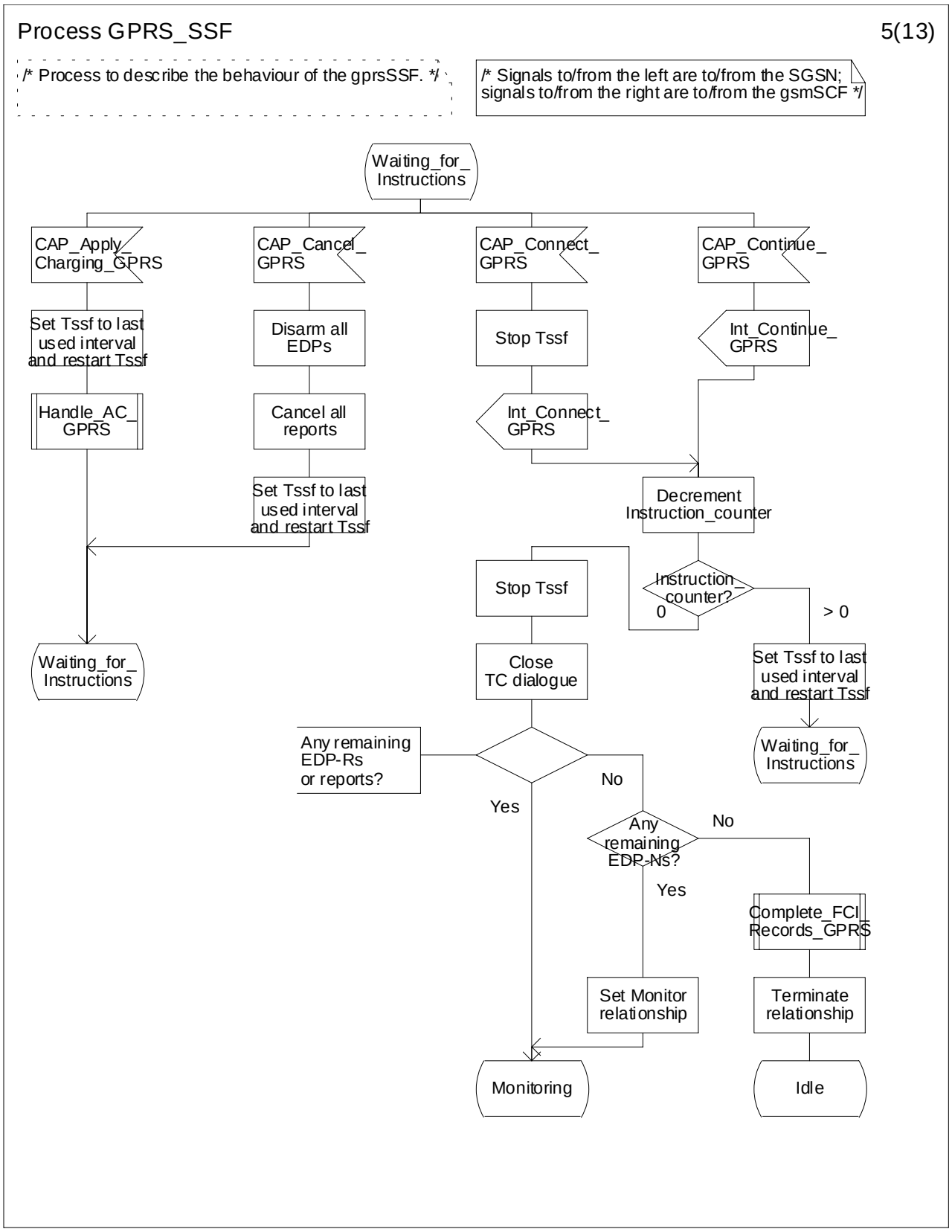


Figure 6.15e: Process GPRS_SSF (sheet 5)


Process GPRS_SSF
5(13)
/* Process to describe the behaviour of the gprsSSF. */
/* Signals to/from the left are to/from the SGSN; signals to/from the right are to/from the gsmSCF */
Waiting_for_ Instructions
CAP_Apply_ Charging_GPRS
CAP_Cancel_ GPRS
CAP_Connect_ GPRS
CAP_Continue_ GPRS
Set Tssf to last used interval and restart Tssf
Disarm all EDPs
Stop Tssf
Int_Continue_ GPRS
Handle_AC_ GPRS
Cancel all reports
Int_Connect_ GPRS
Set Tssf to last used interval and restart Tssf
Decrement Instruction_counter
Stop Tssf
Instruction_ counter?
0
> 0
Waiting_for_ Instructions
Close TC dialogue
Set Tssf to last used interval and restart Tssf
Any remaining EDP-Rs or reports?
Waiting_for_ Instructions
No
Yes
Any remaining EDP-Ns?
No
Yes
Complete_FCI_ Records_GPRS
Set Monitor relationship
Terminate relationship
Monitoring
Idle

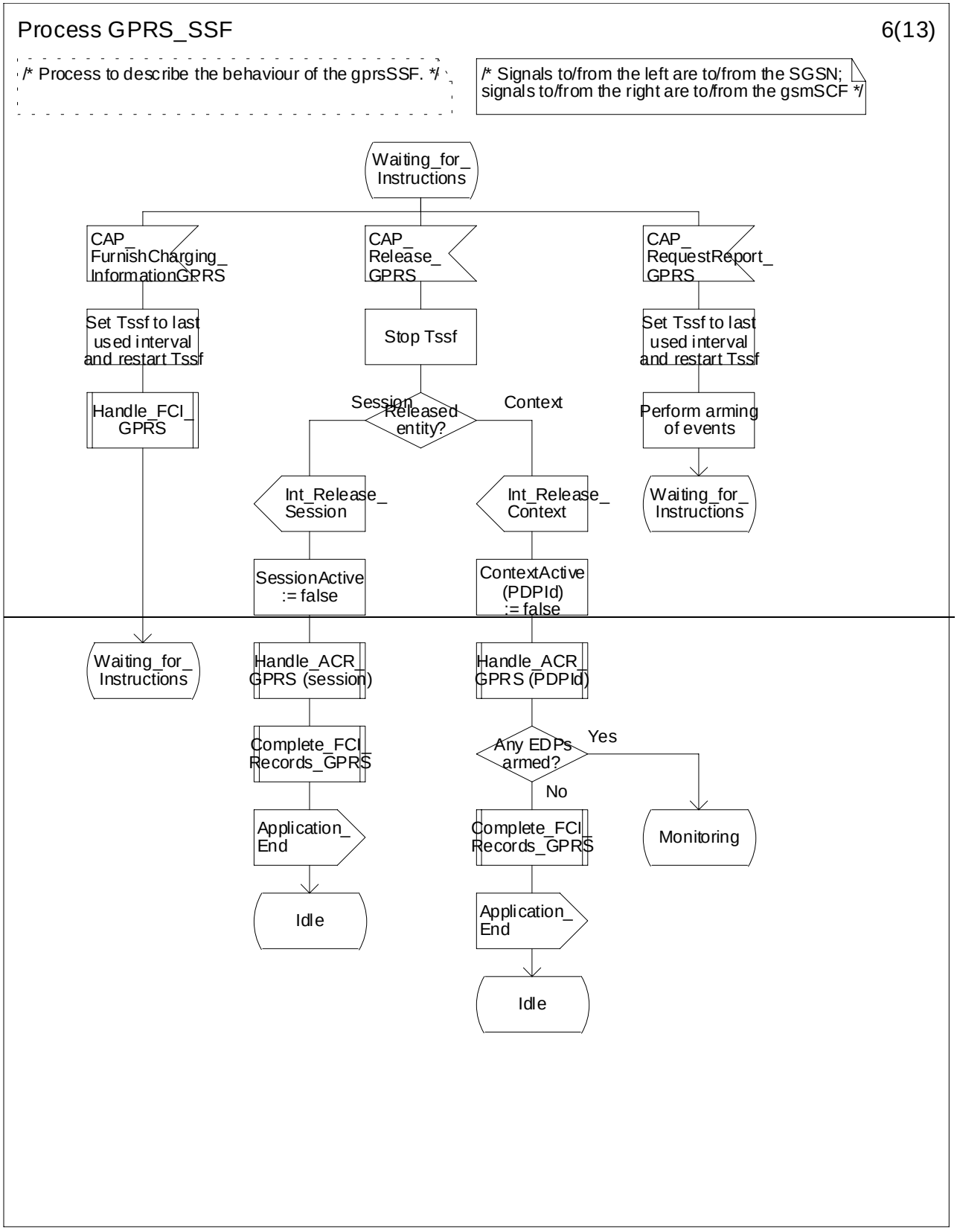
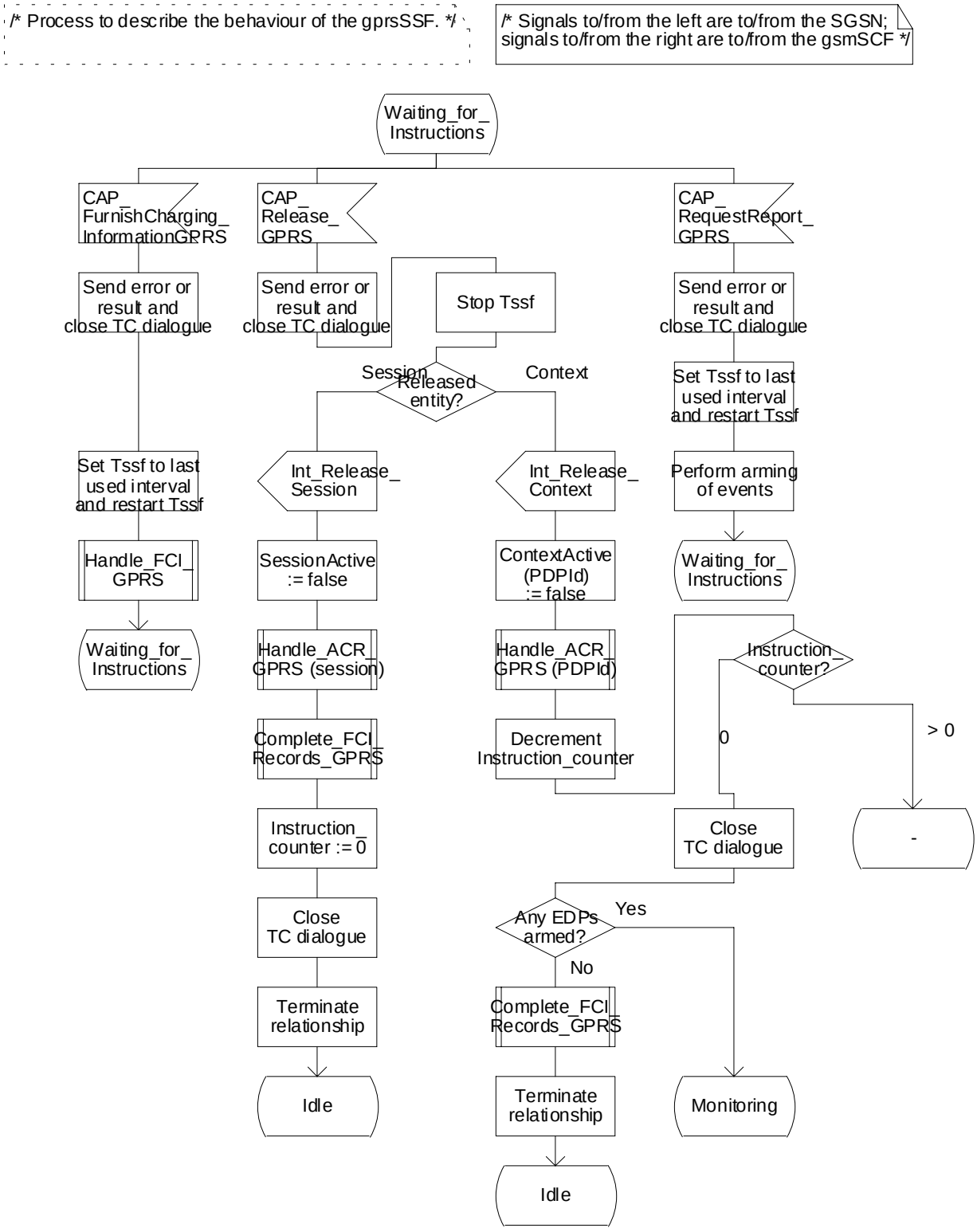


Figure 6.15f: Process GPRS_SSF (sheet 6)

Process GPRS_SSF 6(13)



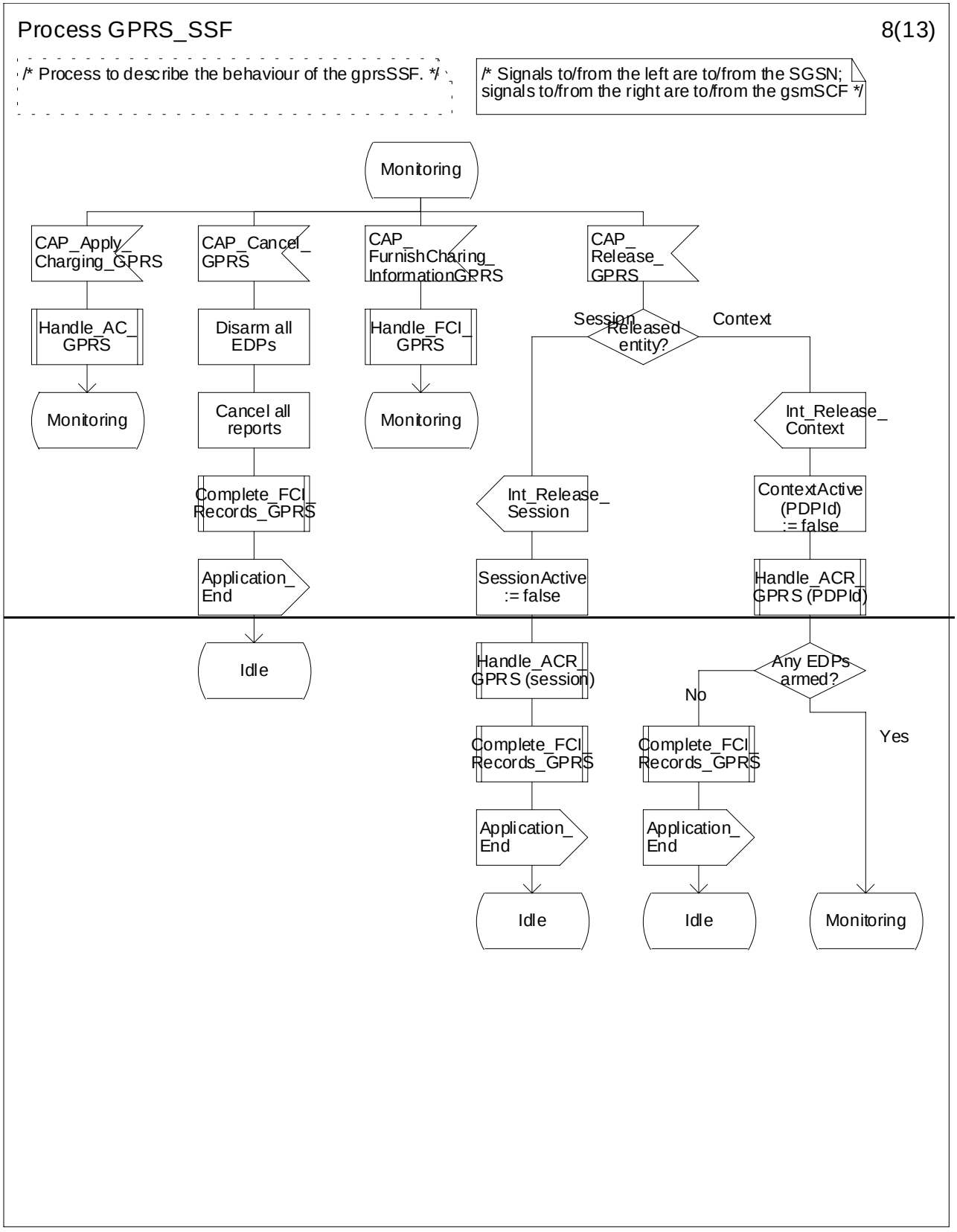
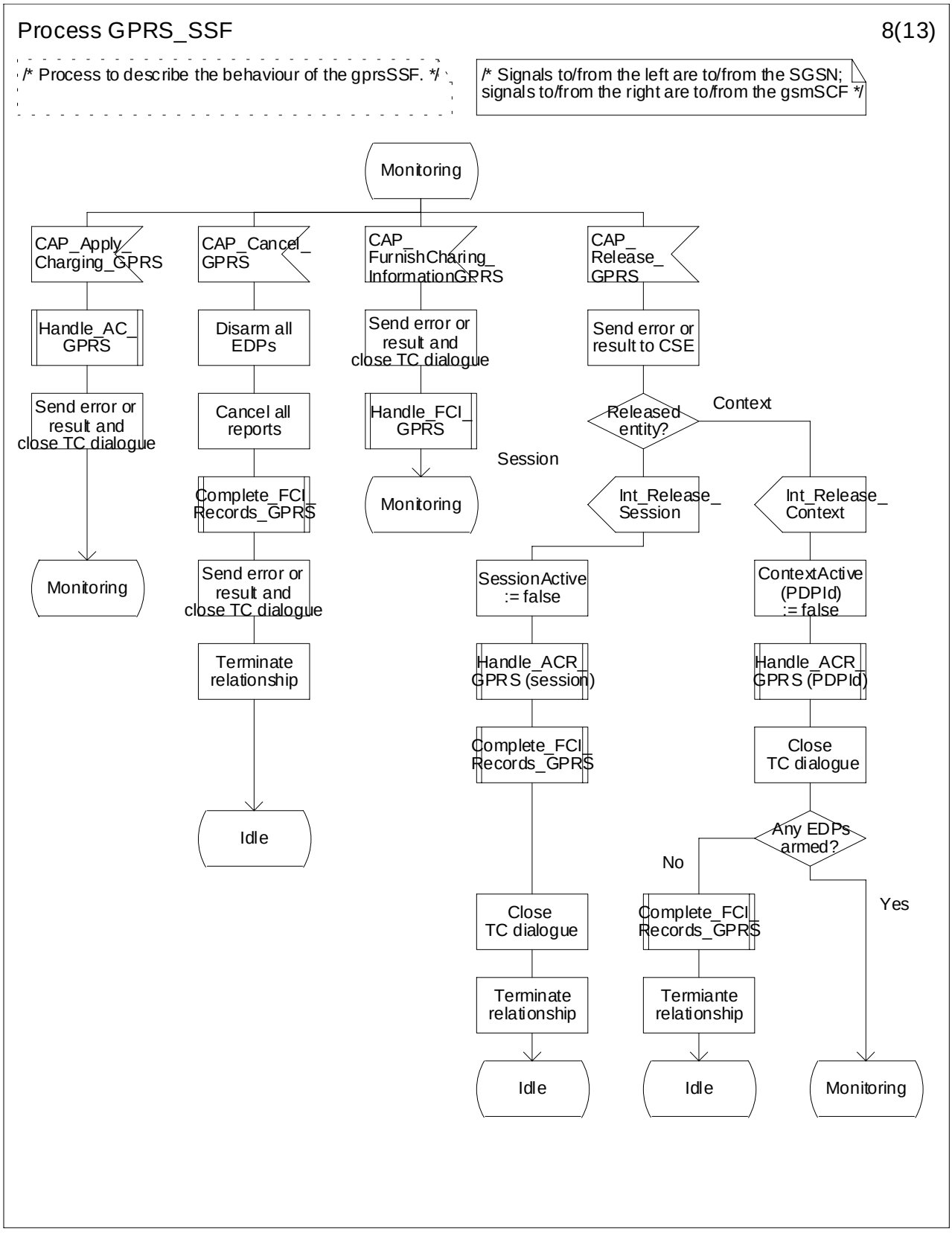


Figure 6.15h: Process GPRS_SSF (sheet 8)


Process GPRS_SSF
8(13)
/* Process to describe the behaviour of the gprsSSF. */
/* Signals to/from the left are to/from the SGSN; signals to/from the right are to/from the gsmSCF */
Monitoring
CAP_Apply_Charging_GPRS
CAP_Cancel_GPRS
CAP_FurnishCharing_InformationGPRS
CAP_Release_GPRS
Handle_AC_GPRS
Disarm all EDPs
Send error or result and close TC dialogue
Send error or result to CSE
Send error or result and close TC dialogue
Cancel all reports
Handle_FCI_GPRS
Released entity?
Context
Session
Complete_FCI_Records_GPRS
Monitoring
Int_Release_Session
Int_Release_Context
Monitoring
Send error or result and close TC dialogue
SessionActive := false
ContextActive (PDPId) := false
Terminate relationship
Handle_ACR_GPRS (session)
Handle_ACR_GPRS (PDPId)
Complete_FCI_Records_GPRS
Close TC dialogue
Idle
Any EDPs armed?
No
Yes
Close TC dialogue
Complete_FCI_Records_GPRS
Terminate relationship
Termiante relationship
Idle
Idle
Monitoring

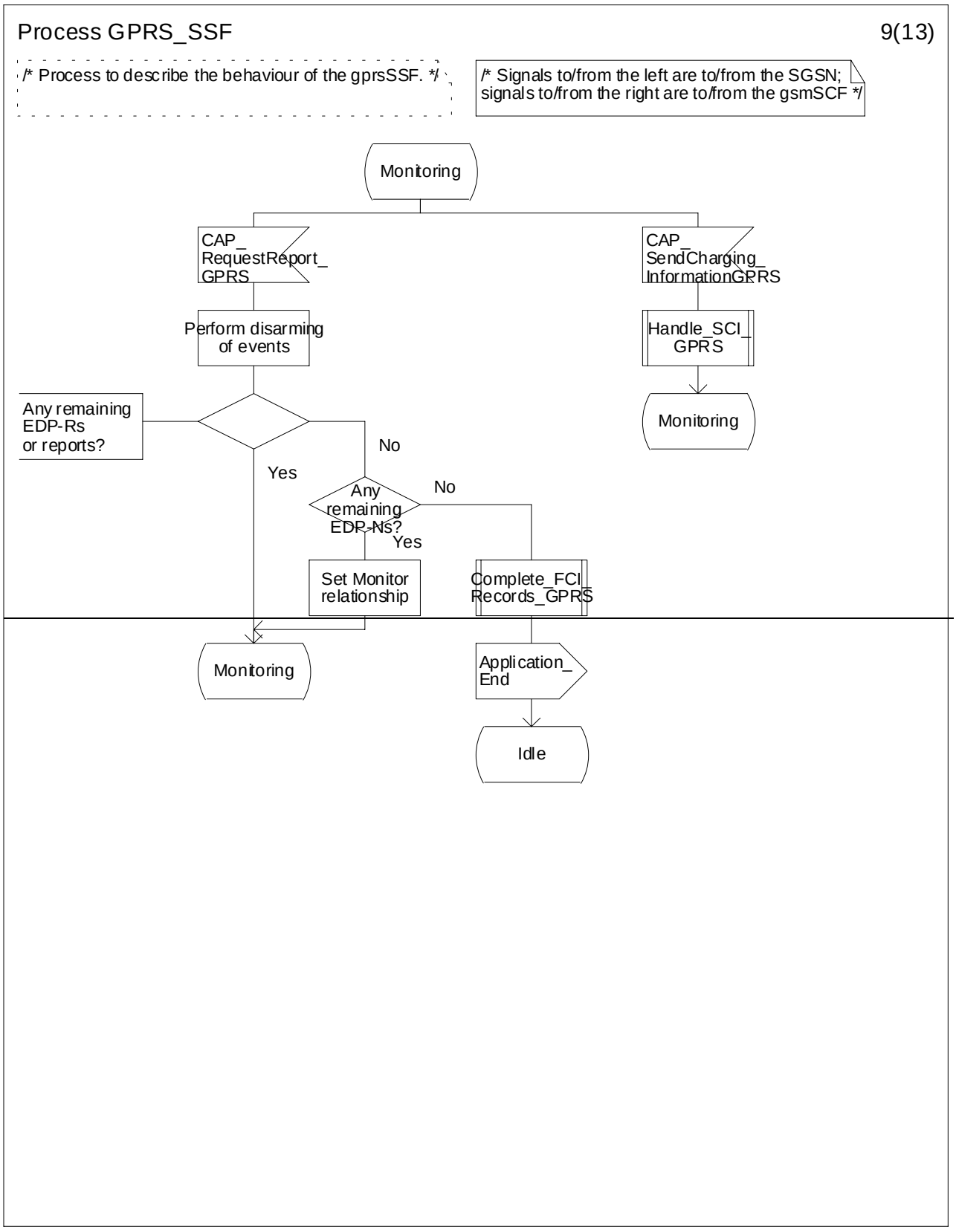
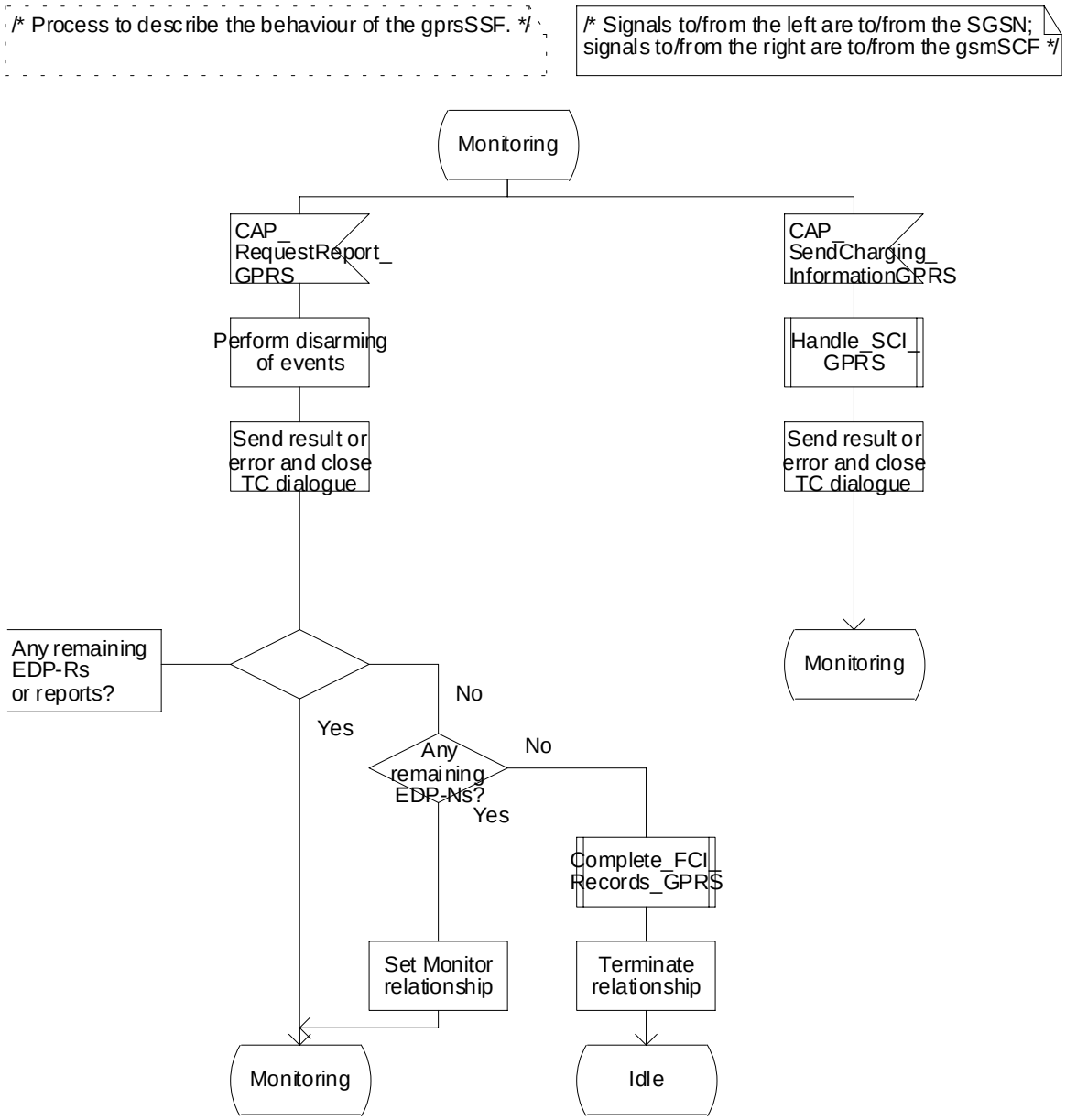


Figure 6.15i: Process GPRS_SSF (sheet 9)

Process GPRS_SSF 9(13)



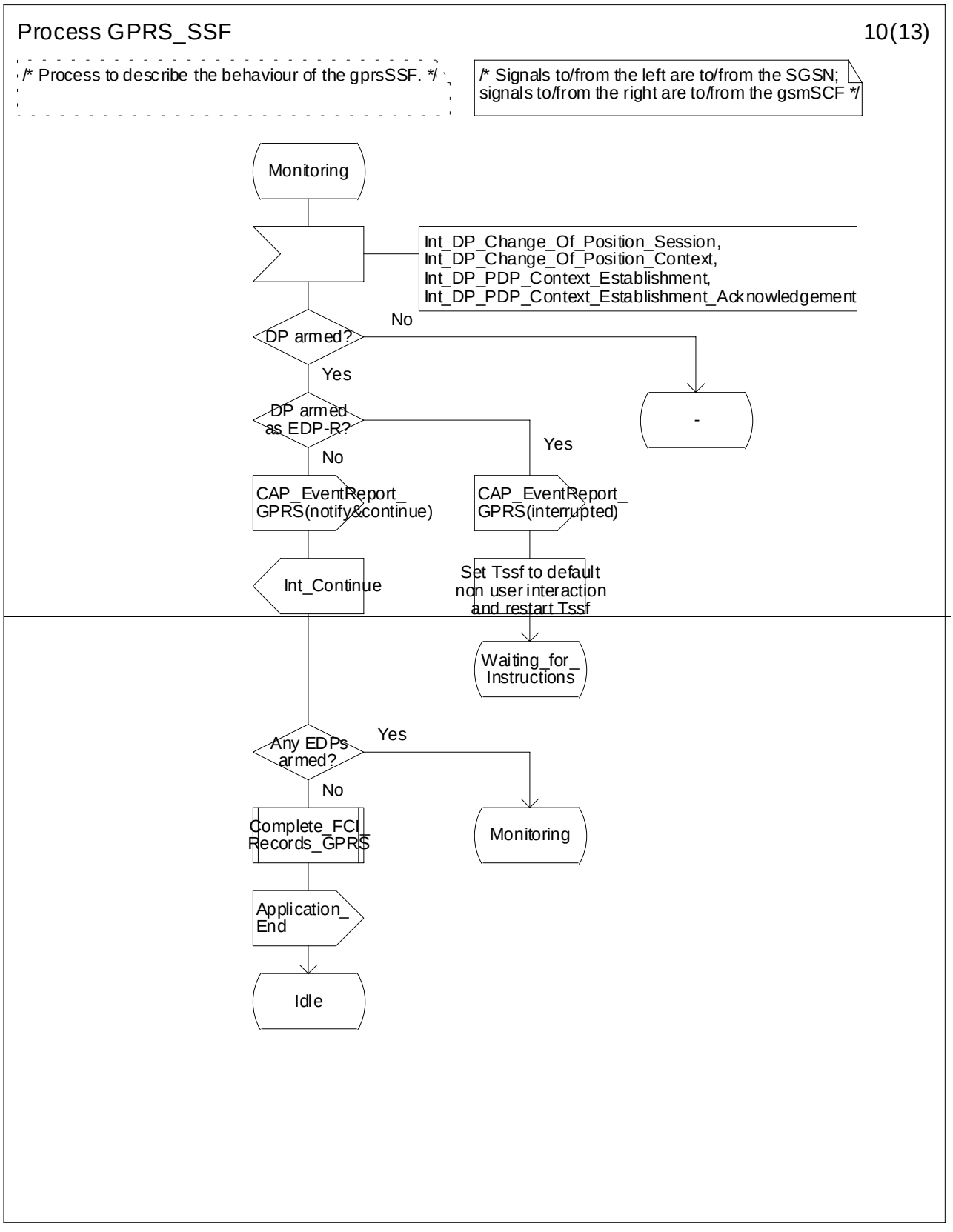
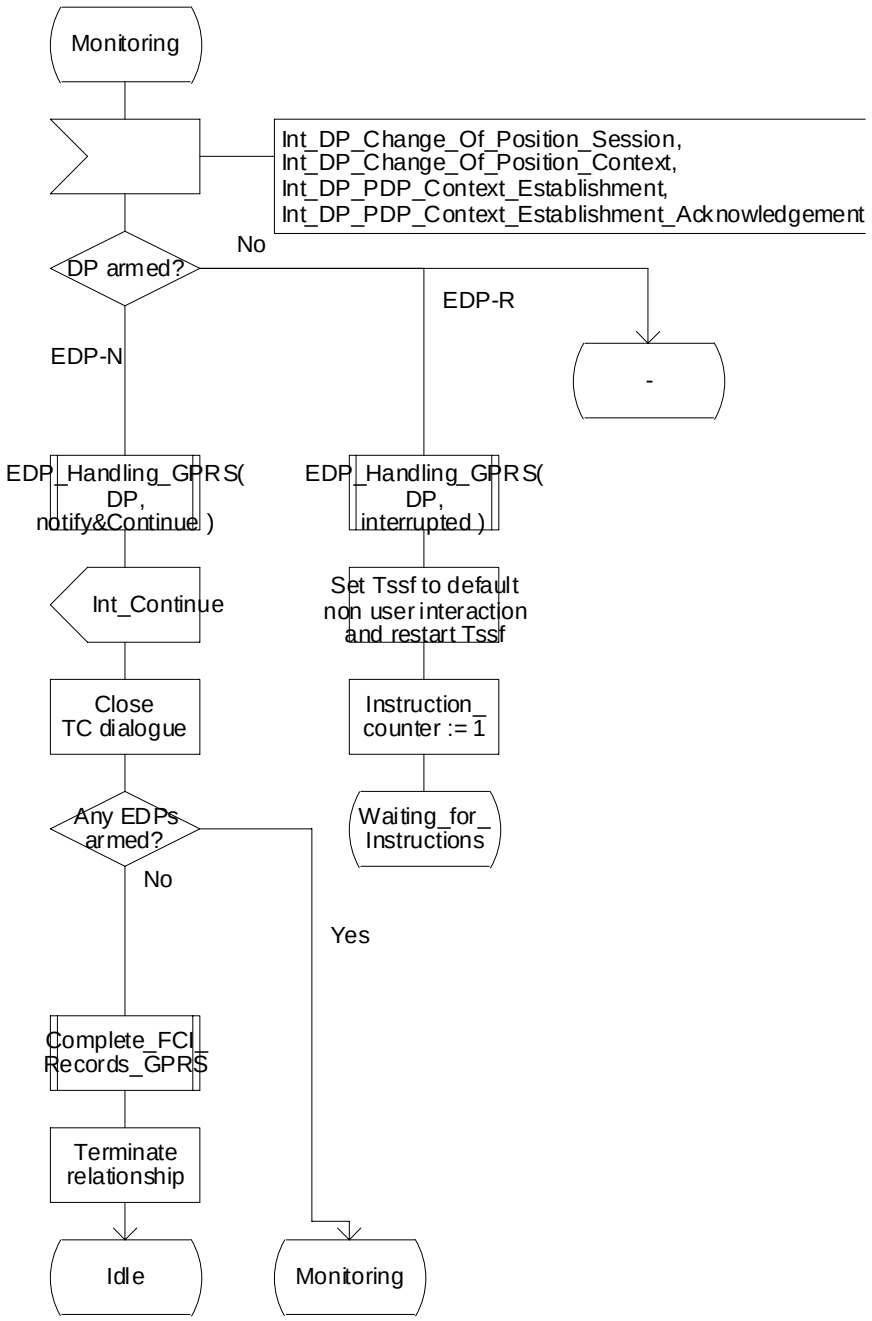


Figure 6.15j: Process GPRS_SSF (sheet 10)

Process GPRS_SSF 10(13)

/* Process to describe the behaviour of the gprsSSF. */

/* Signals to/from the left are to/from the SGSN; signals to/from the right are to/from the gsmSCF */



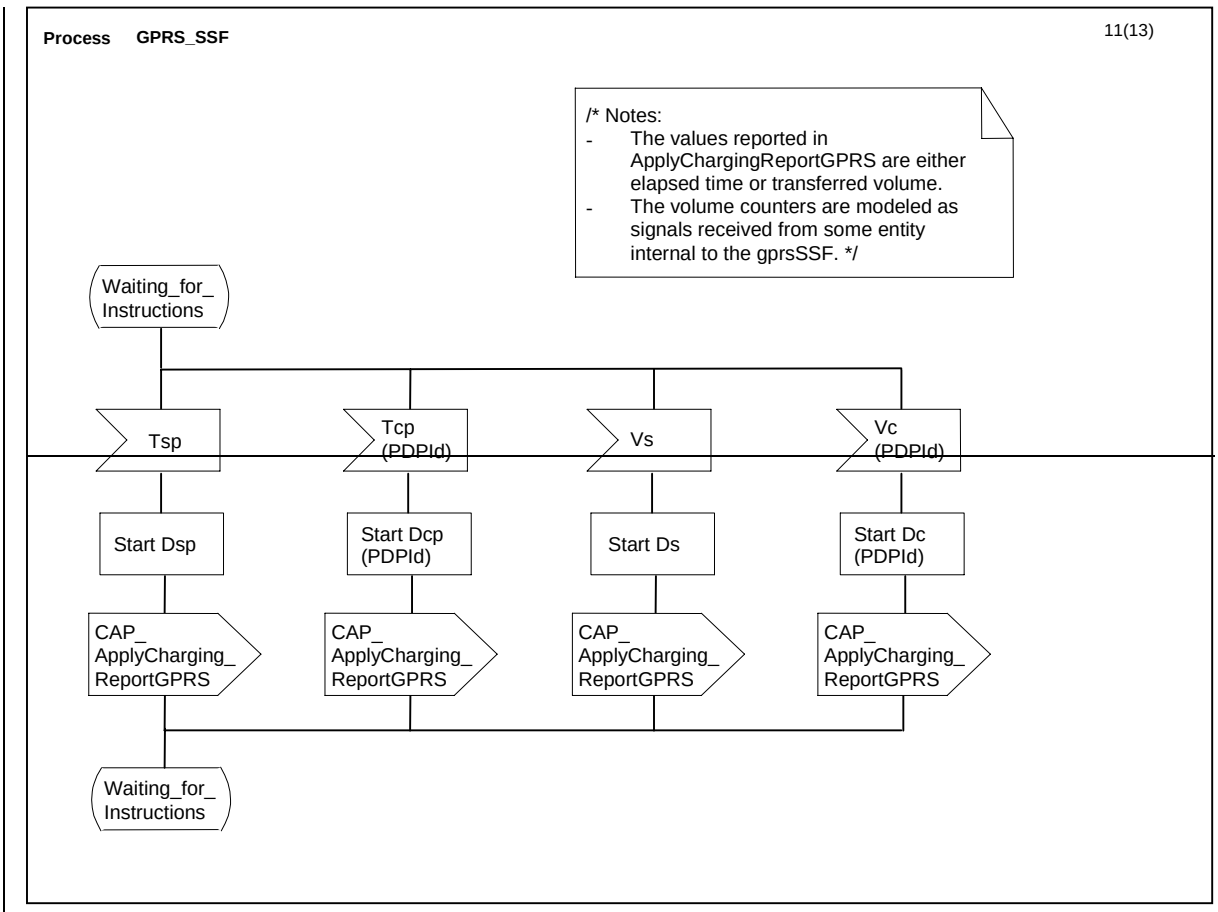


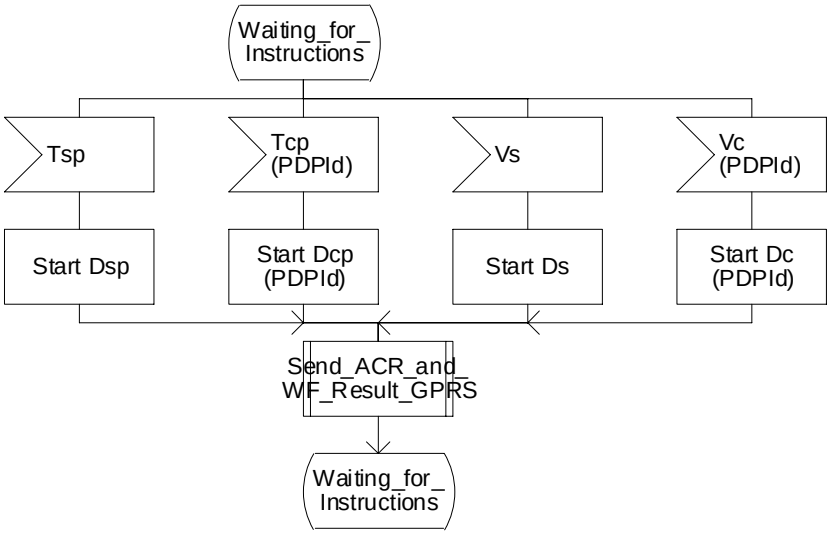
Figure 6.15k: Process GPRS_SSF (sheet 11)

Process GPRS_SSF 11(13)

/* Process to describe the behaviour of the gprsSSF. */

/* Signals to/from the left are to/from the SGSN; signals to/from the right are to/from the gsmSCF */

/* Notes:
- The values reported in ApplyChargingReportGPRS are either elapsed timer or transferred volume.
- The volume counters are modeled as signals received from some entity internal to the gprsSSF
*/



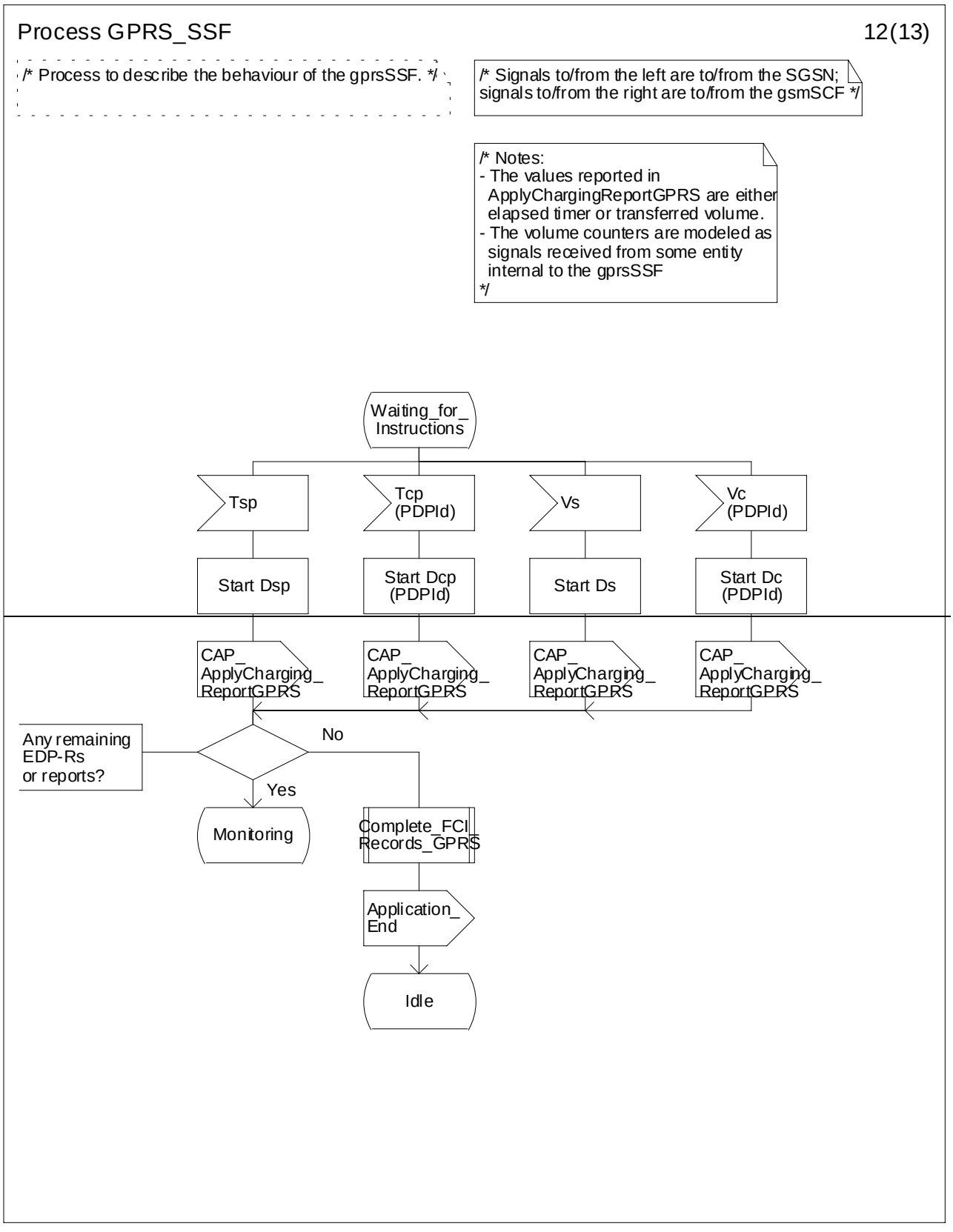


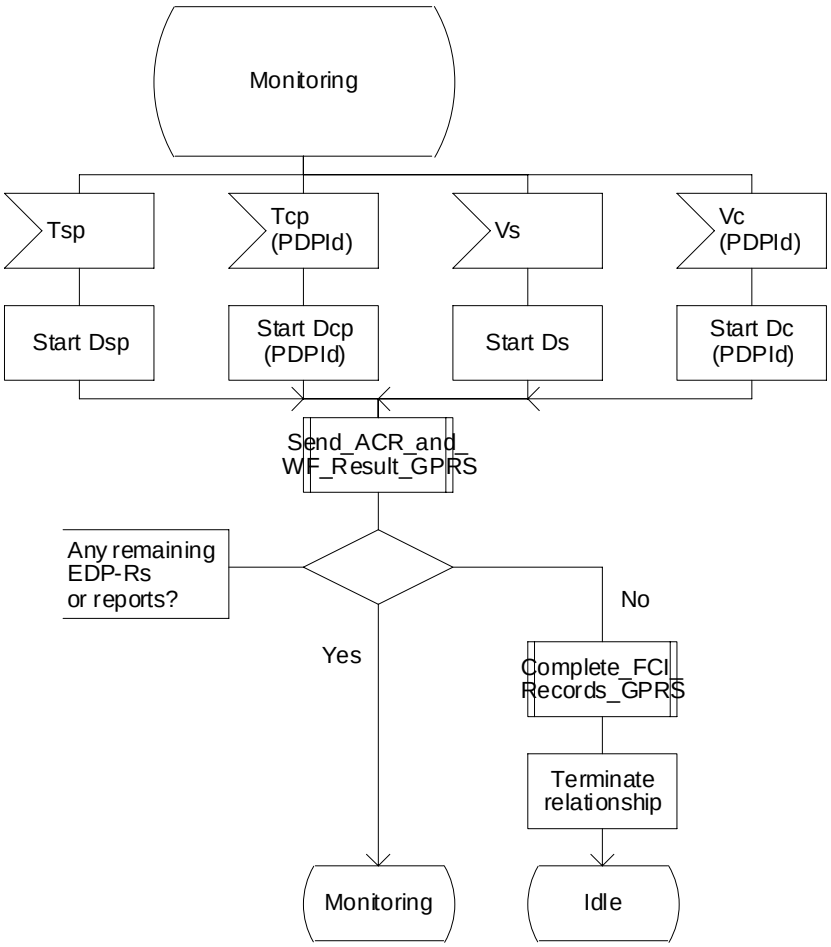
Figure 6.16l: Process GPRS_SSF (sheet 12)

Process GPRS_SSF 12(13)

/* Process to describe the behaviour of the gprsSSF. */

/* Signals to/from the left are to/from the SGSN; signals to/from the right are to/from the gsmSCF */

/* Notes:
- The values reported in ApplyChargingReportGPRS are either elapsed timer or transferred volume.
- The volume counters are modeled as signals received from some entity internal to the gprsSSF
*/



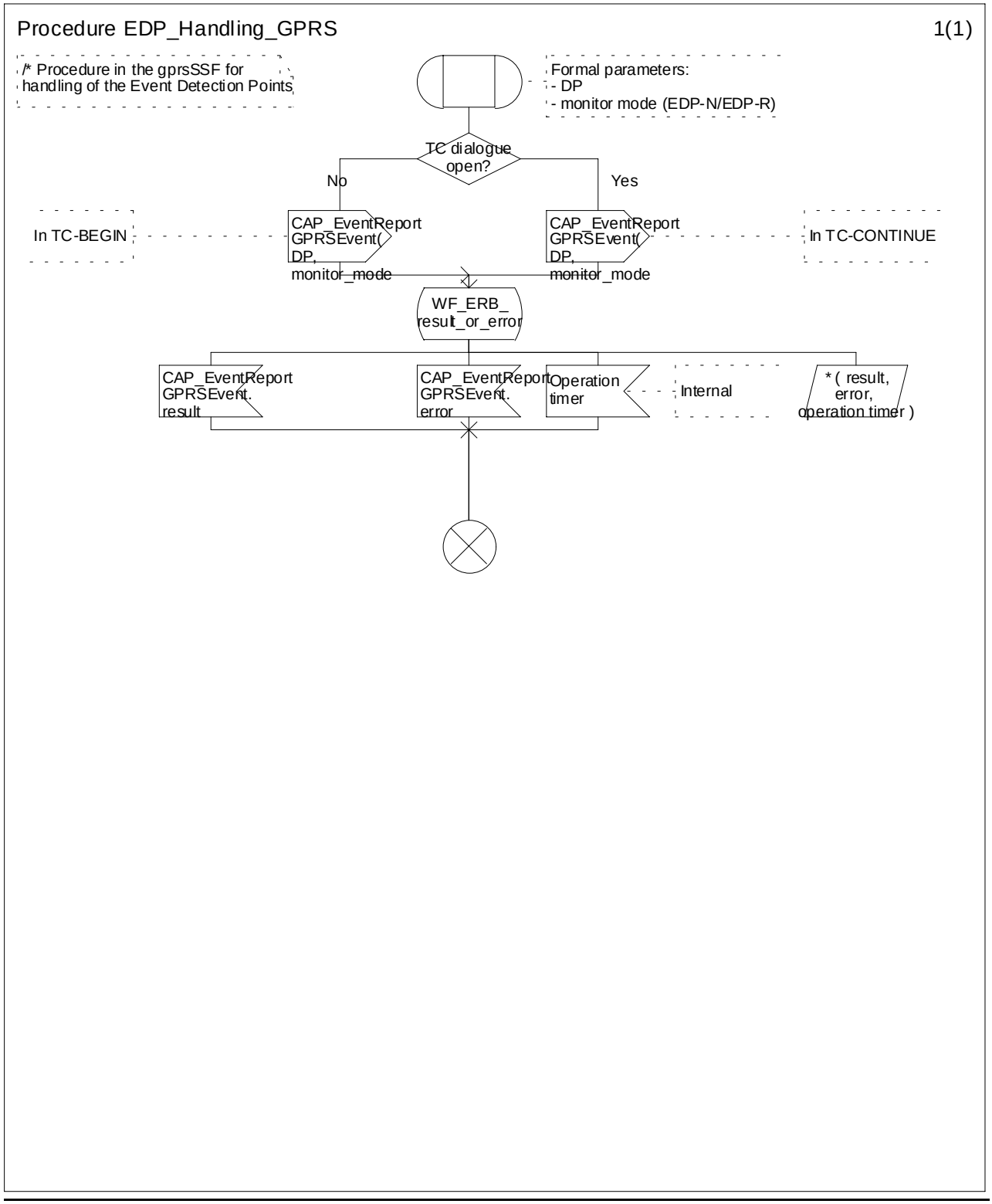


Figure 6.xx: Procedure EDP_Handling_GPRS

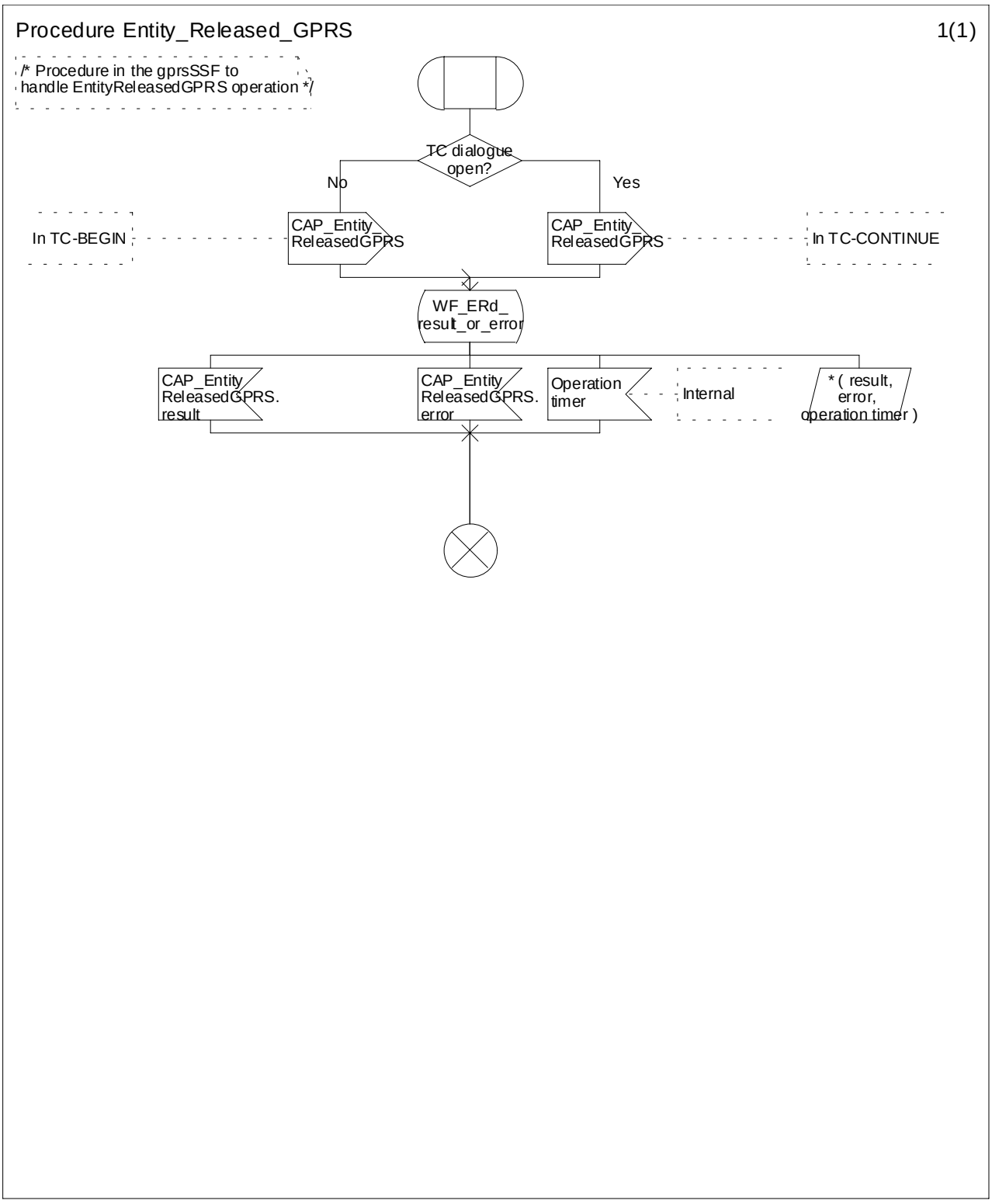


Figure 6.yy: Procedure Entity_Released_GPRS

<

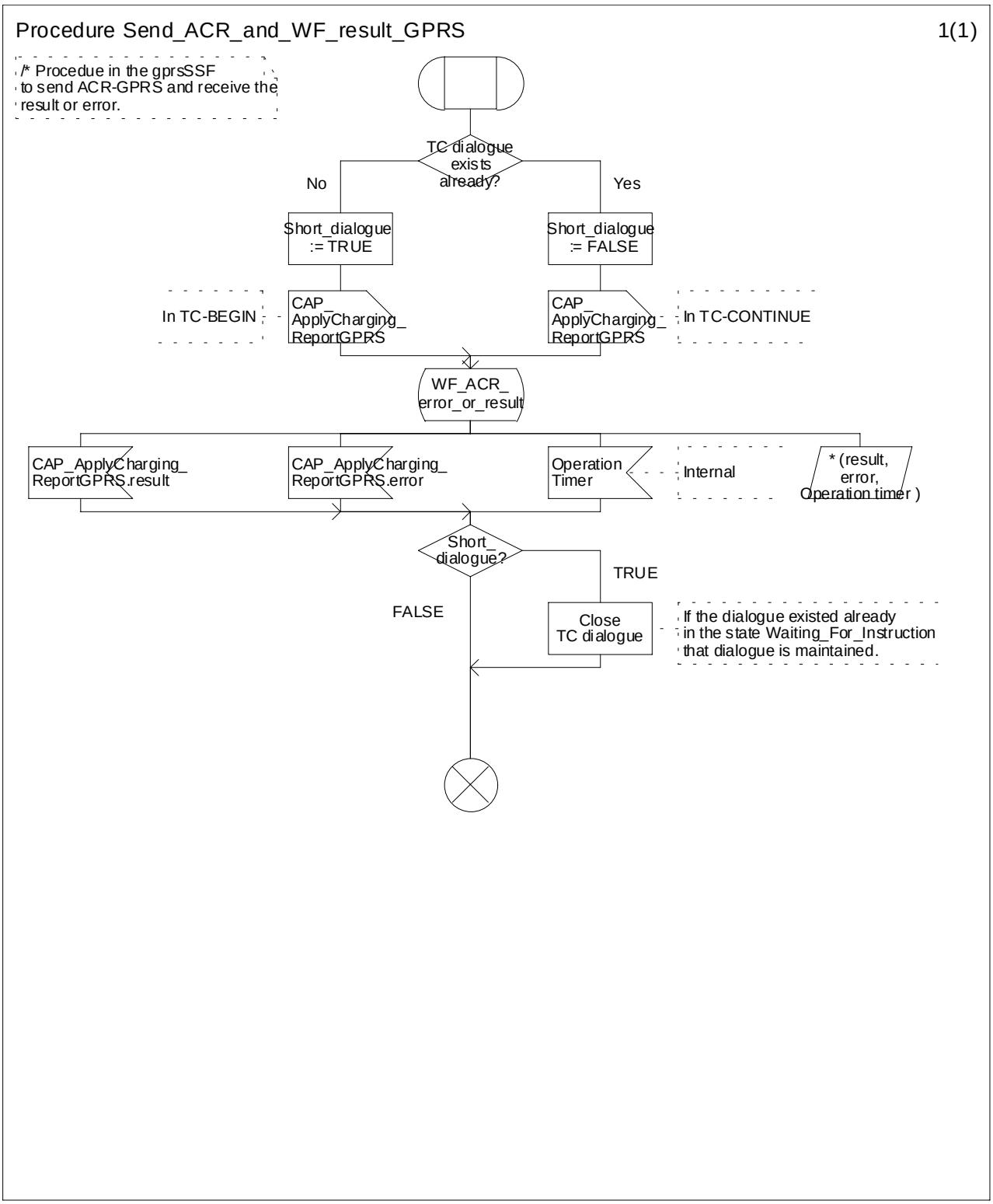


Figure 6.kk: Procedure Send_ACR_and_WF_Result_GPRS

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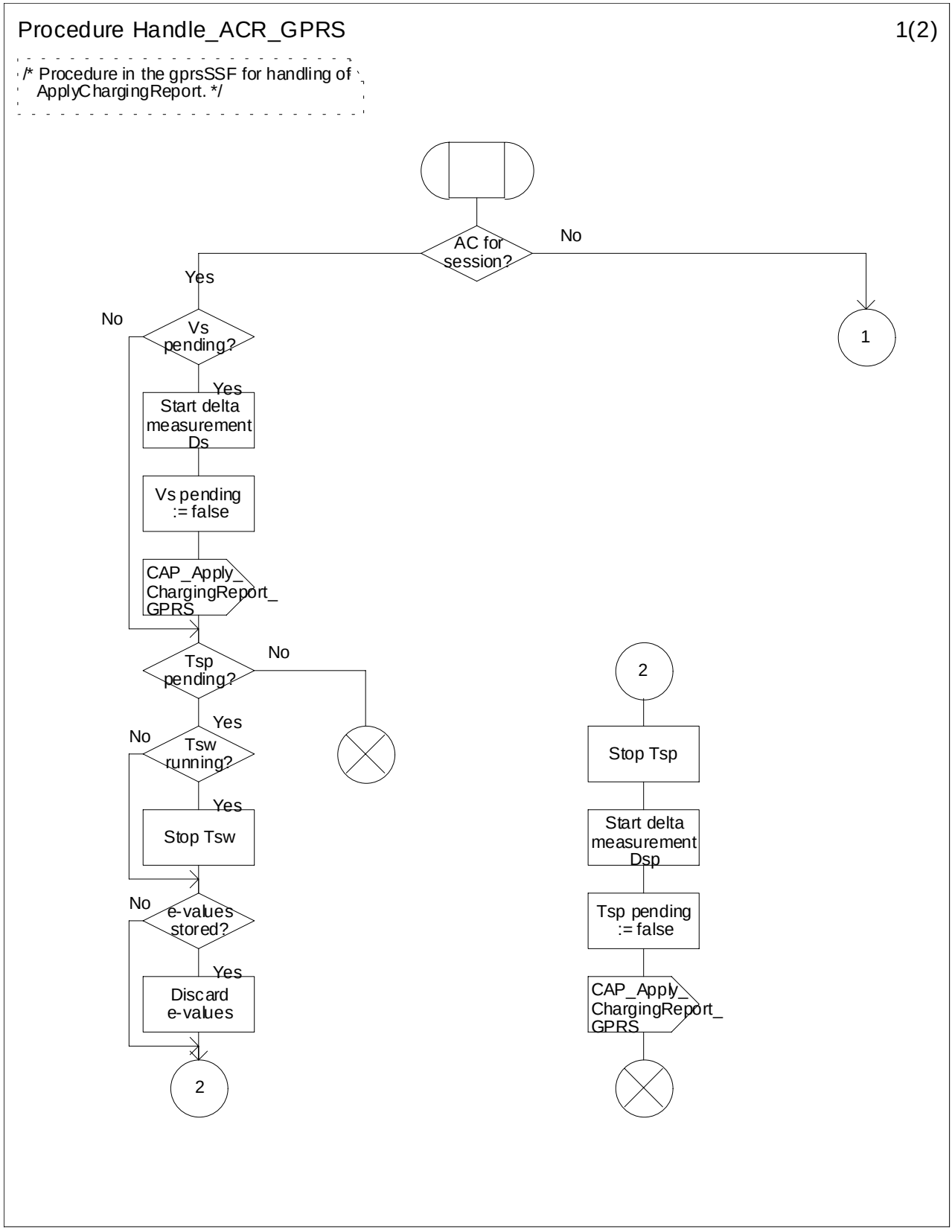
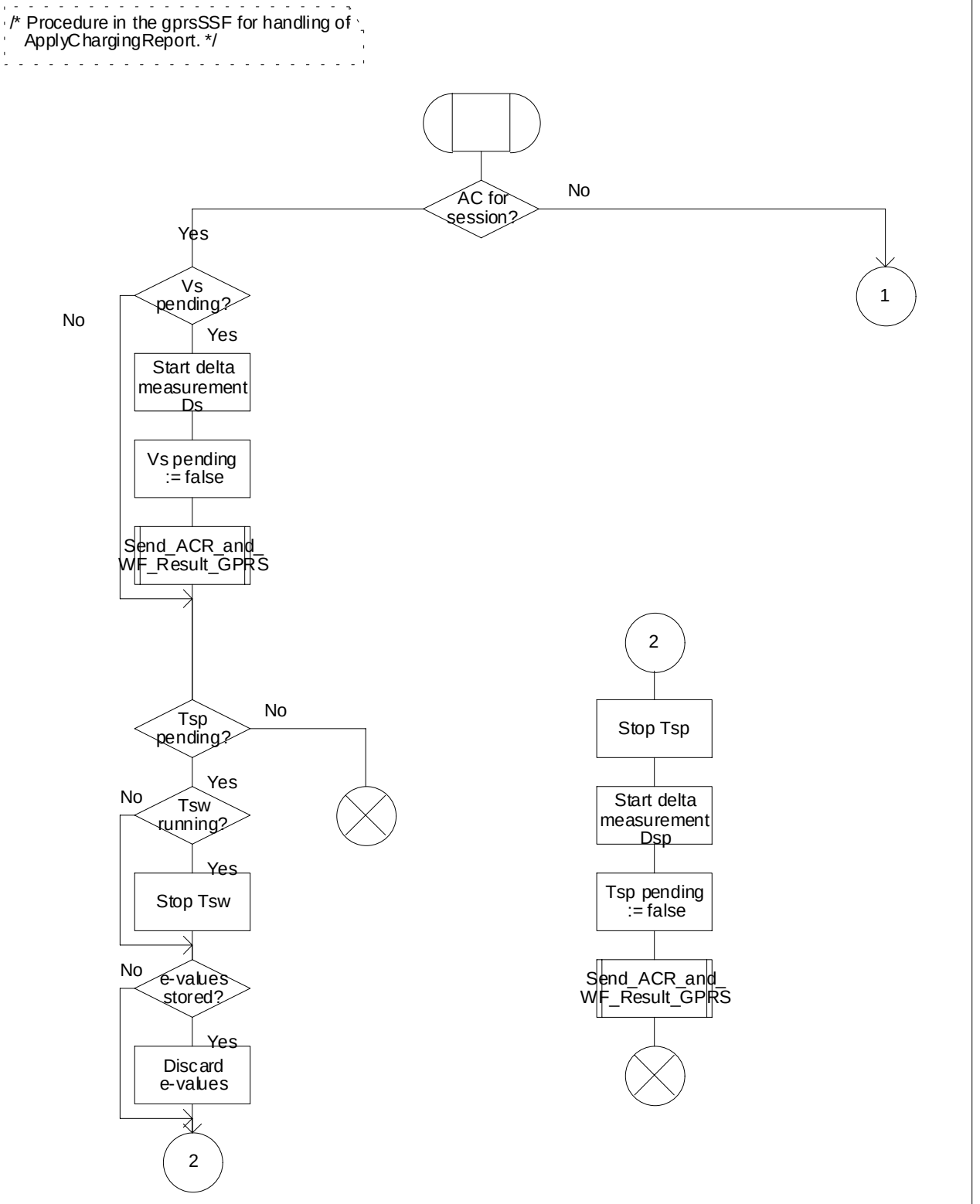


Figure 6.17a: Procedure Handle_ACR_GPRS

Procedure Handle_ACR_GPRS 1(2)



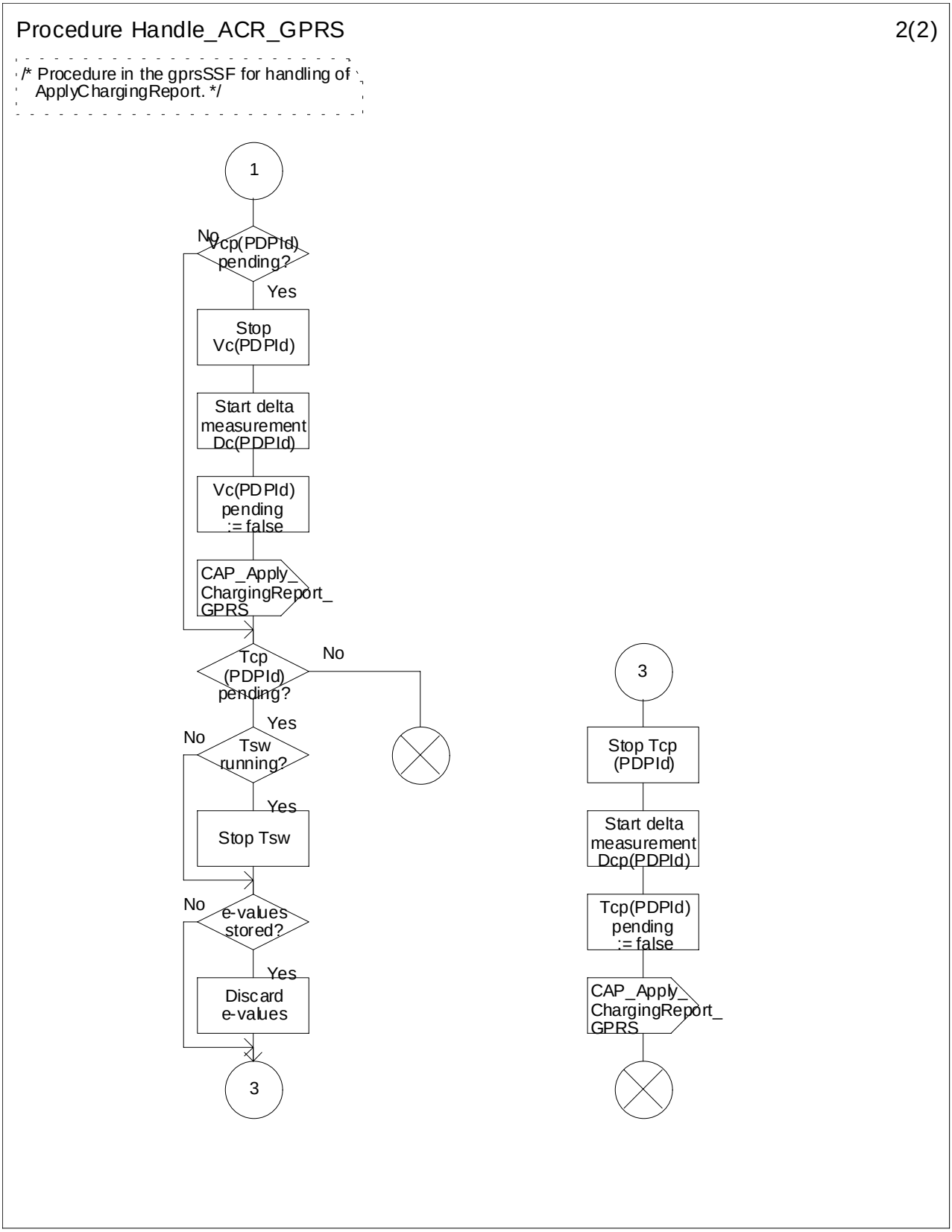
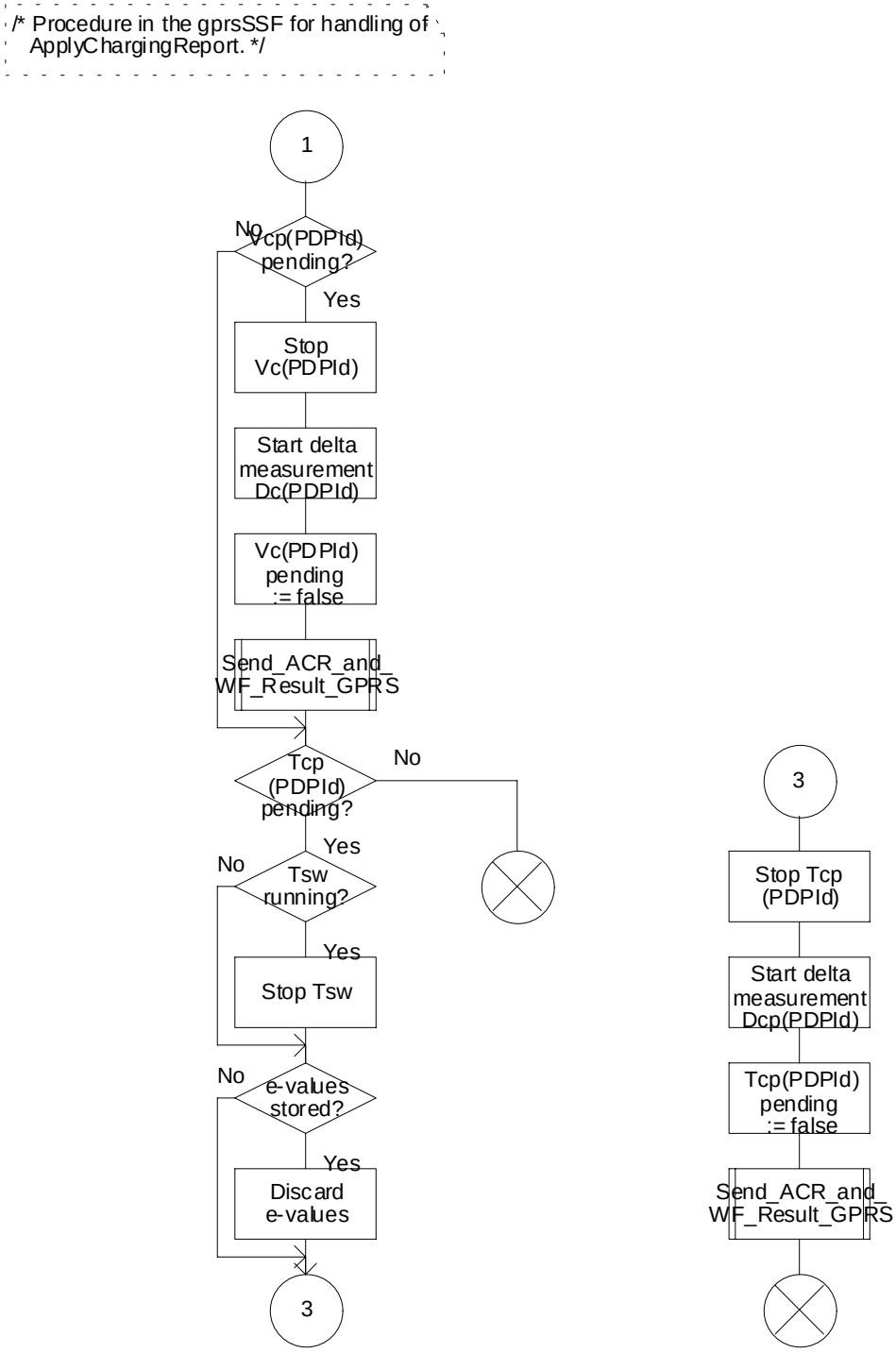


Figure 6.17b: Procedure Handle_ACR_GPRS

Procedure Handle_ACR_GPRS 2(2)



****** NEXT MODIFIED SECTION ******

6.6 Description of information flows

6.6.1 gprsSSF to gsmSCF Information Flows

6.6.1.1 Activity Test GPRS Ack

6.6.1.1.1 Description

This IF is the response to the Activity Test GPRS.

6.6.1.1.2 Information Elements

This IF contains no information elements.

6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

This IF is used by the gprsSSF to report to the gsmSCF the information requested in the Apply Charging GPRS IF. In addition, this IF is used to notify the gsmSCF of user initiated change in QoS. Note that there are several possible QoS profiles defined by the combinations of the different QoS attributes as defined in 3G TS 23.060, see reference [11]. A PLMN may only support and charge on a limited subset of those QoS. It is recommended that changes in QoS are only reported in Apply Charging Report GPRS for those QoS profiles.

6.6.1.2.2 Information Elements

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.
Charging Result	M	This IE contains the charging information for the PDP provided by the gsmSSF. It is a choice between elapsed time and data volume.
Quality of Service	C	This IE identifies the QoS requested by the user and granted by the SGSN due to 'Modify PDP Context request. If not present the report is sent due to PDP context or GPRS session termination or Charging threshold reached.
Active	M	This IE indicates if the GPRS session or PDP context is still established e, or if it has been detached or deactivated.

PDP ID	C	This IE identifies the PDP context which the Apply Charging Report is applicable for. If not present the dialogue corresponds to the session or to one single PDP context.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

6.6.1.3 Entity Released GPRS

6.6.1.3.1 Description

This IF is used by the gprsSSF to inform the gsm~~SSF~~SCF at any phase that a GPRS session or PDP context ~~within one dialogue~~ has been terminated ~~abnormally~~ by the SGSN without reporting any EDP.

6.6.1.3.2 Information Elements

The following information elements are used:

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.
GPRS Cause	M	This IE contains the Cause value indicating the reason for discontinuation of the PDP context.
PDP ID	M	This IE identifies the PDP context which has been terminated by the SGSN.

M Mandatory (The IE shall always be sent)

6.6.1.4 Event Report GPRS

6.6.1.4.1 Description

This IF is used to notify the gsmSCF of a GPRS event (e.g. Attach or Detach) previously requested by the gsmSCF in a Request Report GPRS Event IF.

6.6.1.4.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.
GPRS Event type	M	This IE specifies the type of event that is reported.
Misc GPRS Info	M	This IE indicates the DP type (EDP-N or EDP-R).

GPRS Event Specific Information	C	This IE contains information specific to the reported event, e.g. new routeing area in case of change of position or charging id in case of PDP Context Establishment Acknowledgement.
PDP ID	C	This IE identifies the PDP context, which the Report GPRS Event is applicable for. If not present the dialogue corresponds to the Attach/Detach FSM or to one single PDP context.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

6.6.1.5 Initial DP GPRS

6.6.1.5.1 Description

This IF is generated by the gprsSSF when a trigger is detected at a DP in the GPRS state machines, to request instructions from the gsmSCF.

6.6.1.5.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.
ServiceKey	M	This IE identifies for the gsmSCF the requested set of one or more CAMEL services. It is used to address the correct application/SLP within the gsmSCF.
GPRS Event Type	M	This IE indicates the armed GPRS DP event resulting in the Initial Data Event IF.
MSISDN	M	This IE contains the basic MSISDN of the MS.
IMSI	M	This IE identifies the mobile subscriber.
Time and Time zone	M	This IE contains the time that the gprsSSF was triggered, and the time zone the gprsSSF resides in.
GPRS MS Class	C	This IE contains the MS network and radio access capabilities.
PDP Type	C	This IE identifies the PDP Type, e.g. X.25 or IP.
Quality of Service	C	This IE identifies the QoS (subscribed, requested or negotiated).
Access Point Name	C	This IE identifies the address Access Point Name the MS has requested to connect to.
Routeing Area Identity	C	This IE contains the location information of the MS.
Charging ID	C	This IE contains the Charging ID received from the GGSN for the PDP context.
SGSN Capabilities	C	This IE specifies the capabilities of the SGSN node to support the CAMEL interwork, e.g. support of Advice of Charge.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

****** NEXT MODIFIED SECTION ******

6.6.2 gsmSCF to gprsSSF Information Flows

6.6.2.1 Activity Test GPRS

6.6.2.1.1 Description

This IF is used to check for the continued existence of a relationship between the gsmSCF and gprsSSF. If the relationship is still in existence, then the gprsSSF will respond. If no reply is received, then the gsmSCF will assume that the gprsSSF has failed in some way and will take the appropriate action.

6.6.2.1.2 Information Elements

~~This IF contains no information elements.~~

The following information elements are used:

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.

6.6.2.2 Apply Charging GPRS

6.6.2.2.1 Description

This IF is used for interacting from the gsmSCF with the gprsSSF charging mechanisms to control the charging of a GPRS session or PDP Context.

6.6.2.2.2 Information Elements

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.
Charging Characteristics	M	This IE specifies the charging related information to be provided by the gsmSSF and the conditions on which this information has to be provided back to the gsmSCF. It is a choice between granted volume and granted time for the data transfer.
Tariff Switch Interval	O	This information element specifies the time duration until the next tariff switch occurrence.
PDP ID	C	This IE identifies the PDP context, which the Apply GPRS Charging is applicable for. If not present the dialogue corresponds to the session or to one single PDP context.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent).

C Conditional (The IE shall be sent, if available)

6.6.2.3 Cancel GPRS

6.6.2.3.1 Description

This IF is used by the gsmSCF to request the gprsSSF to cancel all EDPs and reports.

6.6.2.3.2 Information Elements

The following information elements are used:

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.
~~all requests~~	~~M~~	~~This IE indicates that all active requests for EventReportGPRS and ApplyCharging shall be cancelled.~~
PDP ID	C	This IE identifies the PDP context which is to be cancelled. If not present the dialogue corresponds to the session or to one single PDP context.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

6.6.2.4 Connect GPRS

6.6.2.4.1 Description

This IF is used by the gsmSCF to request the gprsSSF to modify the APN used when establishing a PDP Context.

6.6.2.4.2 Information Elements

Information element name	Required	Description
Access Point Name	M	This IE contains the Access Point Name to be used when establishing the PDP Context.
PDP Id	C	This IE identifies the PDP Context where the new Access Point Name shall be used.

M Mandatory (The IE shall always be sent)

6.6.2.5 Continue GPRS

6.6.2.5.1 Description

This information flow requests the gprsSSF to proceed with processing at the DP at which it previously suspended processing to await gsmSCF instructions. The gprsSSF completes DP processing, and continues processing (i.e., proceeds to the next point in the Attach/Detach FSM or PDP Context FSM) without substituting new data from the gsmSCF.

6.6.2.5.2 Information Elements

The following information elements are used:

Information element name	Required	Description
PDP ID	C	This IE identifies the PDP context which processing shall continue for. If not present the dialogue corresponds to the session or to one single PDP context.

C Conditional (The IE shall be sent, if available)

6.6.2.6 Furnish Charging Information GPRS

6.6.2.6.1 Description

This IF is used to request the gprsSSF to include information in the CAMEL specific logical call record.

The logical call record is created when FCI-GPRS is received and a logical call record for that FSM does not exist. For modelling purposes the logical call record is buffered in the gprsSSF. The gprsSSF completes logical call records as defined in the SDLs. Once the logical call record is completed, then its free format data is moved to the corresponding CDR and the logical call record is deleted.

In the SGSN there is a separate Logical call record for the attach/detach state model and for each PDP context.

The CSE can send multiple concatenated FCIs per Logical Call Record for completion. The total maximum of free format data is 160 octets per Logical Call Record. The 160 octets may be sent in one or more FCI operations. If there is non-completed free format data and new FCI operation(s) is/are received to overwrite the non-completed data, then the non-completed data is discarded and the gsmSCF can send another 160 octets per CDR.

6.6.2.6.2 Information Elements

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and it is used to identify the gprsSSF instance taking care of GPRS session or PDP context.
FCI GPRS Billing Charging Characteristics	M	This IE is described in the next table.

M Mandatory (The IE shall always be sent)

FCI GPRS Billing Charging Characteristics contains the following information:

Information element name	Required	Description
FCIBCCCAMEL Sequence 1	M	This IE is described in the next table.

M Mandatory (The IE shall always be sent)

FCIBCCCAMEL Sequence 1 contains the following information:

Information element name	Required	Description
Free Format Data	M	This IE is a free format data to be inserted in the CAMEL logical call record.
Append Free Format Data	O	This IE indicates that the gprsSSF shall append the free format data to the Logical call record. In the SGSN there is

		a separate Logical call record for the attach/detach state model and for each PDP context. • If this IE is present indicating "Append", the gprsSSF shall append the free format data received in this IF to the free format data already present in the Logical call record for that session or PDP Context. • If this IE is absent or in value "Overwrite", then the gprsSSF shall overwrite all free format data already present in the Logical call record for that session or PDP Context, by the free format data received in this IF. If no Logical call record exists yet for that session or PDP Context, then the gprsSSF shall ignore this IE.
PDP Id	C	This IE identifies the PDP context's Logical call record to which the free format data shall be appended or overwritten. If not present, the free format data belong to a Logical call record for a session or a single PDP context for the dialogue.

M Mandatory (The IE shall always be sent)

O Optimal (Service logic dependent)

C Conditional (The IE shall be sent, if available)

6.6.2.7 Release GPRS

6.6.2.7.1 Description

This IF is used by the gsmSCF to tear down an existing GPRS session or PDP Context at any phase.

6.6.2.7.2 Information Elements

The following information elements are used:

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and used further on to identify the gprsSSF instance taking care of GPRS session or PDP context.
GPRS Cause	M	This IE contains the Cause value indicating the reason for releasing the GPRS session or PDP context.
PDP ID	C	This IE identifies the PDP context which shall be released. If not present the dialogue corresponds to the session or to one single PDP context.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

6.6.2.8 Request Report GPRS Event

6.6.2.8.1 Description

This IF is used to request the gprsSSF to monitor for an event and send a notification back to the gsmSCF when the event is detected (see Event Report Data).

6.6.2.8.2 Information Elements

The following information elements are used:

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and used further on to identify the gprsSSF instance taking care of GPRS session or PDP context.
GPRS Event	M	This IE specifies the event or events of which a report is requested.
PDP ID	C	This IE identifies the PDP context, which the Request Report GPRS Event is applicable for. If not present the dialogue corresponds to the session or to one single PDP context.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

Data Event contains the following information:

Information element name	Required	Description
GPRS Event type	M	This IE specifies the type of event of which a report is requested.
Monitor Mode	M	This IE indicates how the event shall be reported.

M Mandatory (The IE shall always be sent)

6.6.2.9 Reset Timer GPRS

6.6.2.9.1 Description

This IF is used to refresh the gprsSSF timer.

6.6.2.9.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Timer ID	M	This IE specifies the default value for the Tssf timer. <no underline>
Timer Value	M	This IE specifies the value to which the timer Tssf shall be set.

PDP ID	C	This IE identifies the PDP context, which the Reset of the timer is applicable for. If not present the dialogue corresponds to the session or to one single PDP context.

M Mandatory (The IE shall always be sent)

C Conditional (The IE shall be sent, if available)

6.6.2.10 Send Charging Information GPRS

6.6.2.10.1 Description

This IF is used to send e-parameters from the gsmSCF to the gprsSSF. If charge advice information is received from the gsmSCF, it shall replace the charge advice information which would be generated by the SGSN and inhibit any further generation of CAI by the SGSN. Further processing of the charge advice information by the SGSN shall be in accordance with the GSM Advice of Charge Supplementary Service.

NOTE: If charge advice information is received from the gsmSCF after charge information has been generated by the SGSN and sent to the MS, the behaviour of the service may be unpredictable or incorrect; the service designer should therefore ensure that the first set of charge advice information is sent to the gprsSSF before charge information is sent to the to the MS.

6.6.2.10.2 Information Elements

Information element name	Required	Description
Gprs Reference Number	M	This IE contains an identifier that is allocated by the gprsSSF and used further on to identify the gprsSSF instance taking care of GPRS session or PDP context.
SCI GPRS Billing ChargingCharacteristics	M	This IE defines the Advice Of Charge related information to be provided to the Mobile Station, if supported by the SGSN.

M Mandatory (The IE shall always be sent)

GPRS SCI Billing Charging Characteristics is defined as:

Information element name	Required	Description
AOC GPRS	M	This IE is sent after an Activate PDP Context Accept or Attach Accept has been received from the SGSN. This IE defines the Advice Of Charge related information to be provided to the Mobile Station, if supported by the SGSN.
PDP Id	C	This IE is included if the AoC is applicable to a PDP context. If not present the AoC is applicable to the session or for a single PDP context for the dialogue.

M Mandatory (The IE shall always be sent)

~~C Conditional (only one of these IEs may be sent)~~

C Conditional (The IE shall be sent, if available)

AOC GPRS is defined as:

Information element name	Required	Description
AOC Initial	M	This IE contains CAI elements as defined in 3G TS 22.024 [x].
AOC Subsequent	O	See definition in the next table.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

AOC Subsequent is defined as:

Information element name	Required	Description
CAI Elements	M	This IE contains CAI elements as defined in 3G TS 22.024 [x].
Tariff Switch Interval	O	This IE indicates the tariff switch time until the next tariff switch applies.

M Mandatory (The IE shall always be sent)

O Optional (Service logic dependent)

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Sophia Antipolis, France, 21-25 February 2000

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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.

23.078	**CR**	**059**	Current Version:	3.3.0

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

For submission to:	CN#7	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		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: CN WG2 **Date:** Jan 10th, 2000

Subject: Addition of gsmSRF disconnect handling in CCF SDL

Work item: CAMEL Phase 3

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

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

Reason for change: It is possible to indicate whether the gsmSRF should initiate disconnect in “Disconnect From IP Forbidden” parameter in Play announcement or Prompt and Collect User Information operation. Although the handling is already included in CCF(MSC/GMSC) SDL for direct path gsmSCF or assist with relay case (Establish Temporary Connection operation), the handling is missing for gsmSSF relay case (Connect To Resource operation).

Clauses affected: 4.5.2.1, 4.5.3.1, 4.5.5.1

Other specs affected:

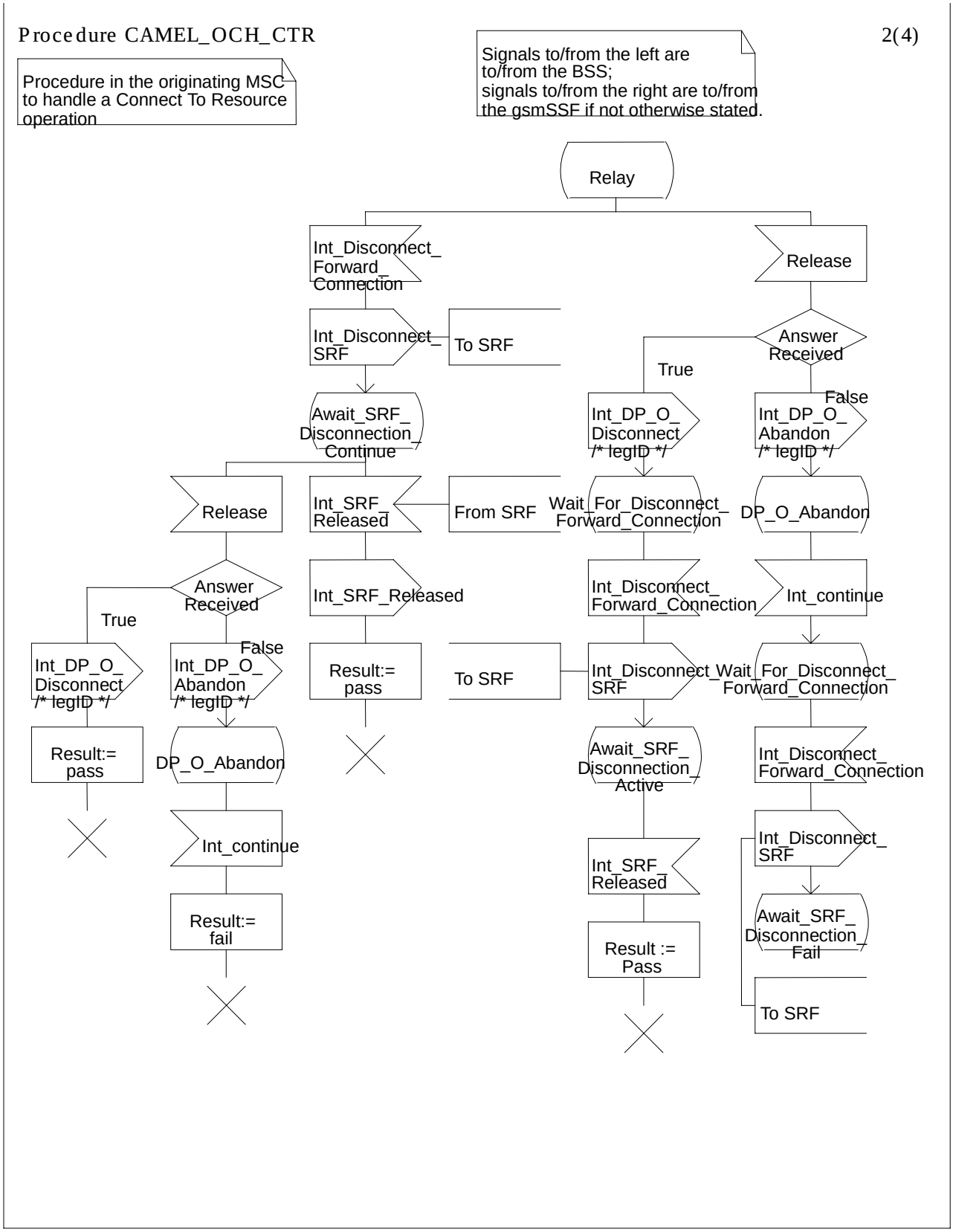
Other 3G core specifications	[ ]	→ List of CRs:
Other GSM core specifications	[ ]	→ List of CRs:
MS test specifications	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:


help.doc

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

<<First modified section>>>>



\Figure 4.20b: Process CAMEL_OCH_CTR (sheet 2) – old-

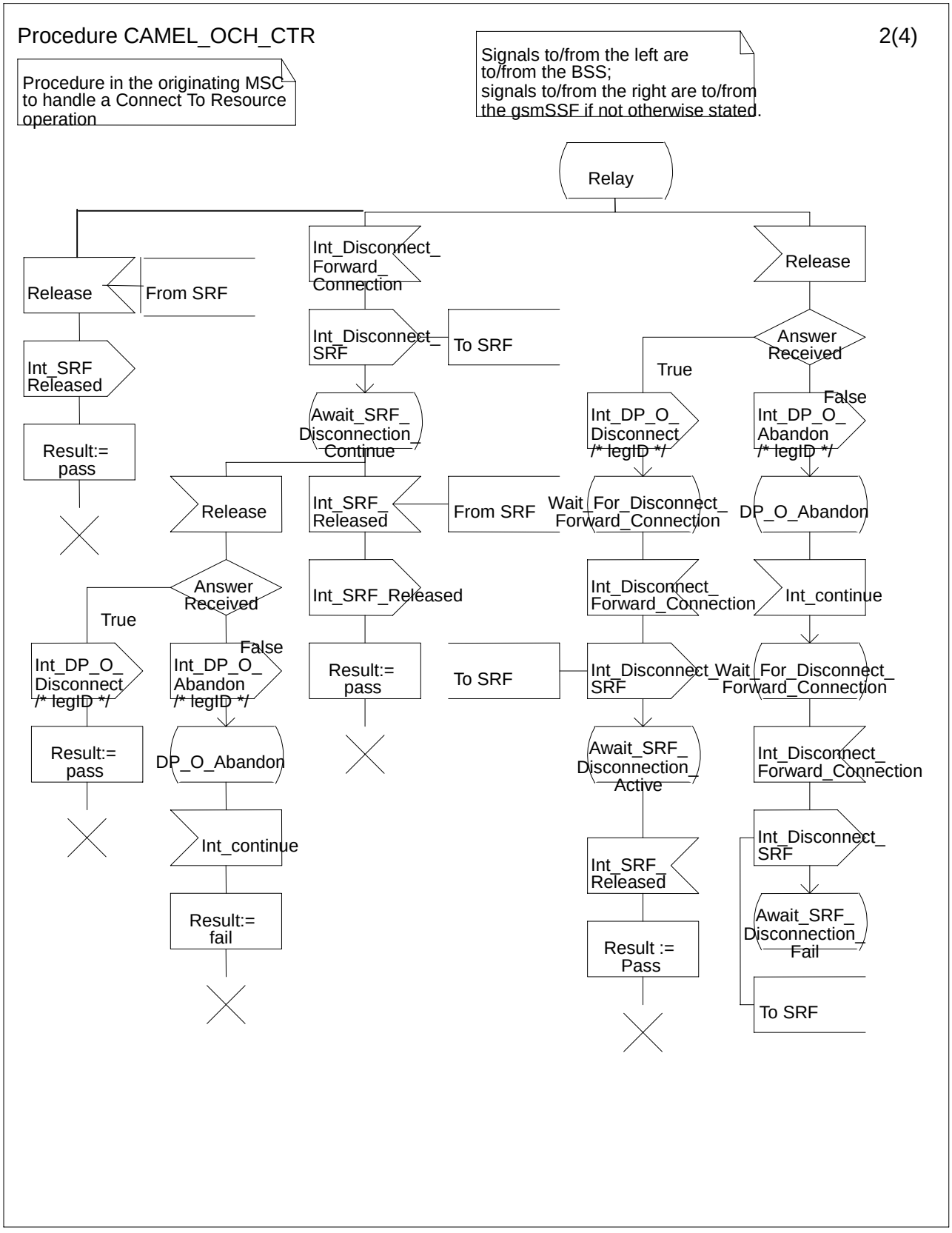


Figure 4.2b: Procedure CAMEL_OCH_CTR (sheet 2) – new-

<<Next modified section>>

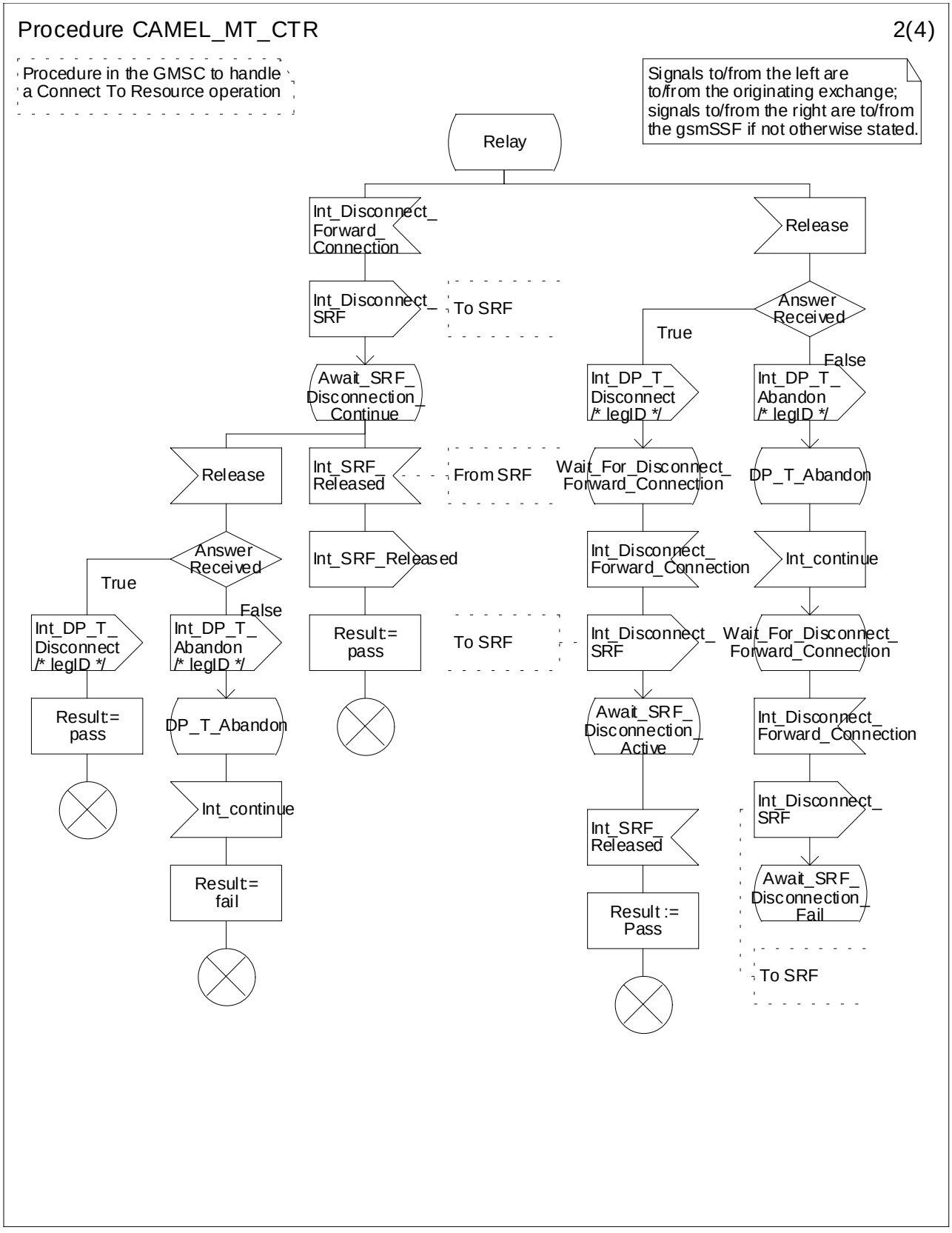


Figure 4.35b: Procedure CAMEL_MT_CTR (sheet 2) – old –

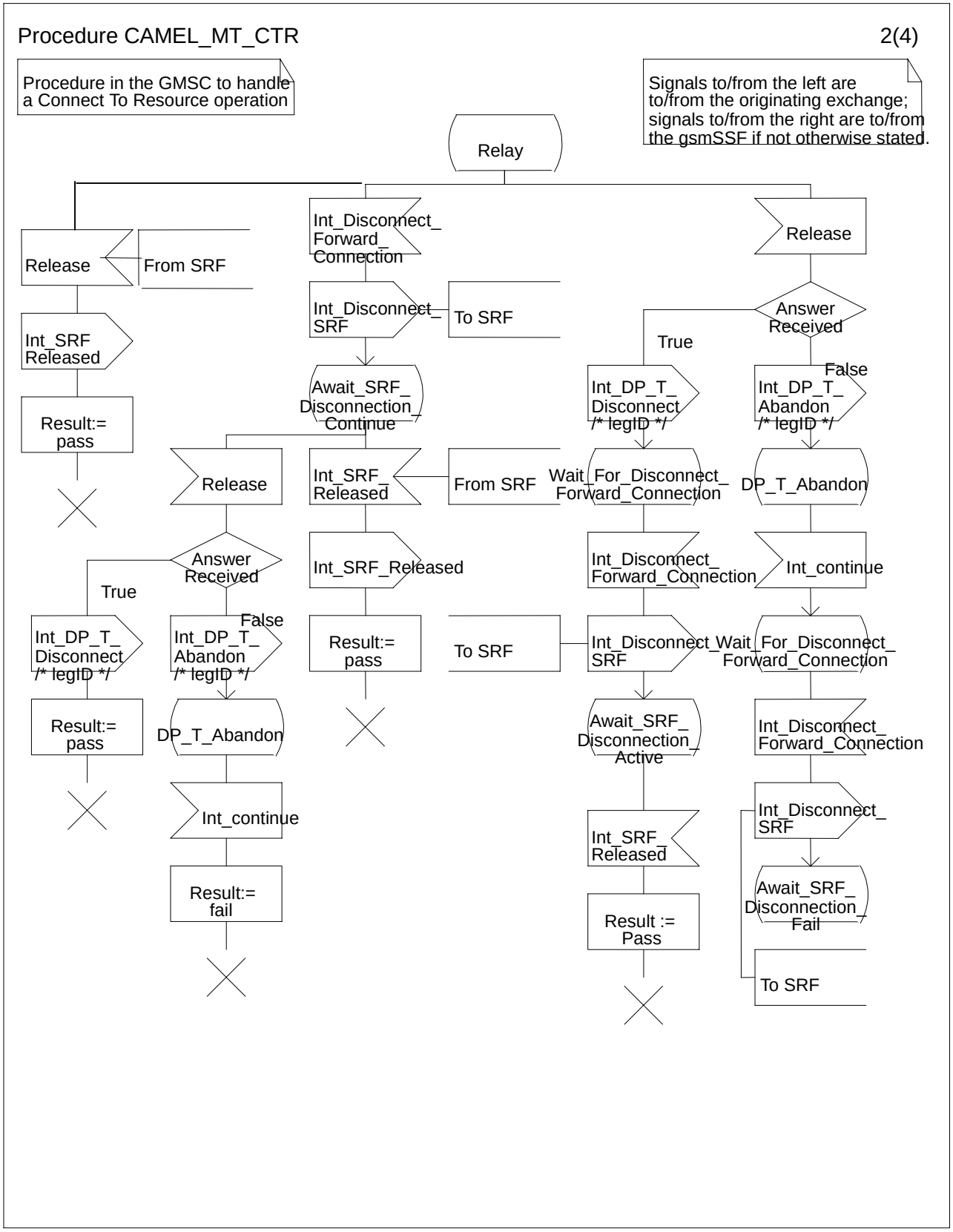


Figure 4.35b: Procedure CAMEL_MT_CTR (sheet 2) – new –

<<Next modified section>>

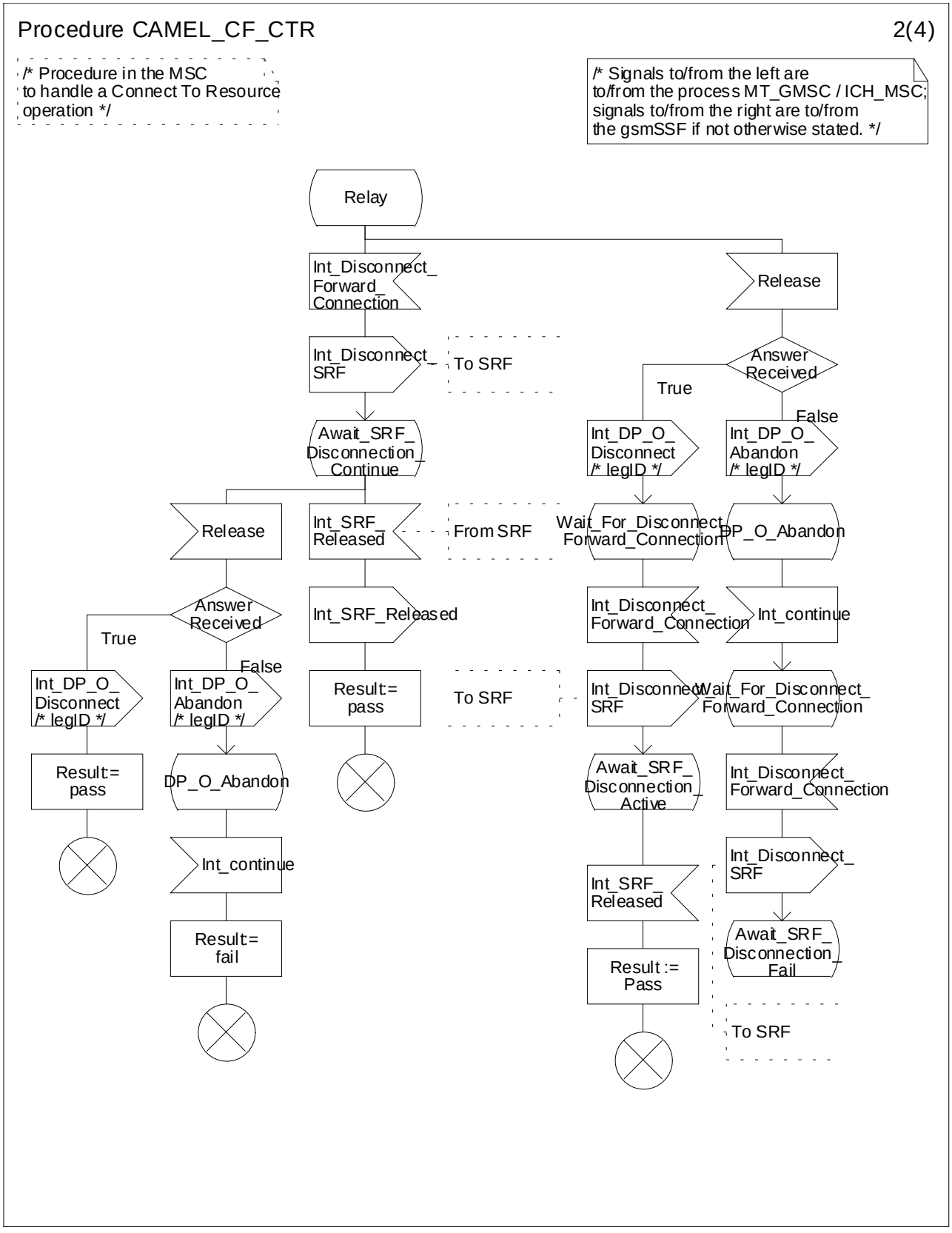


Figure 4.55b: Procedure CAMEL_CF_CTR (sheet 2) –old-

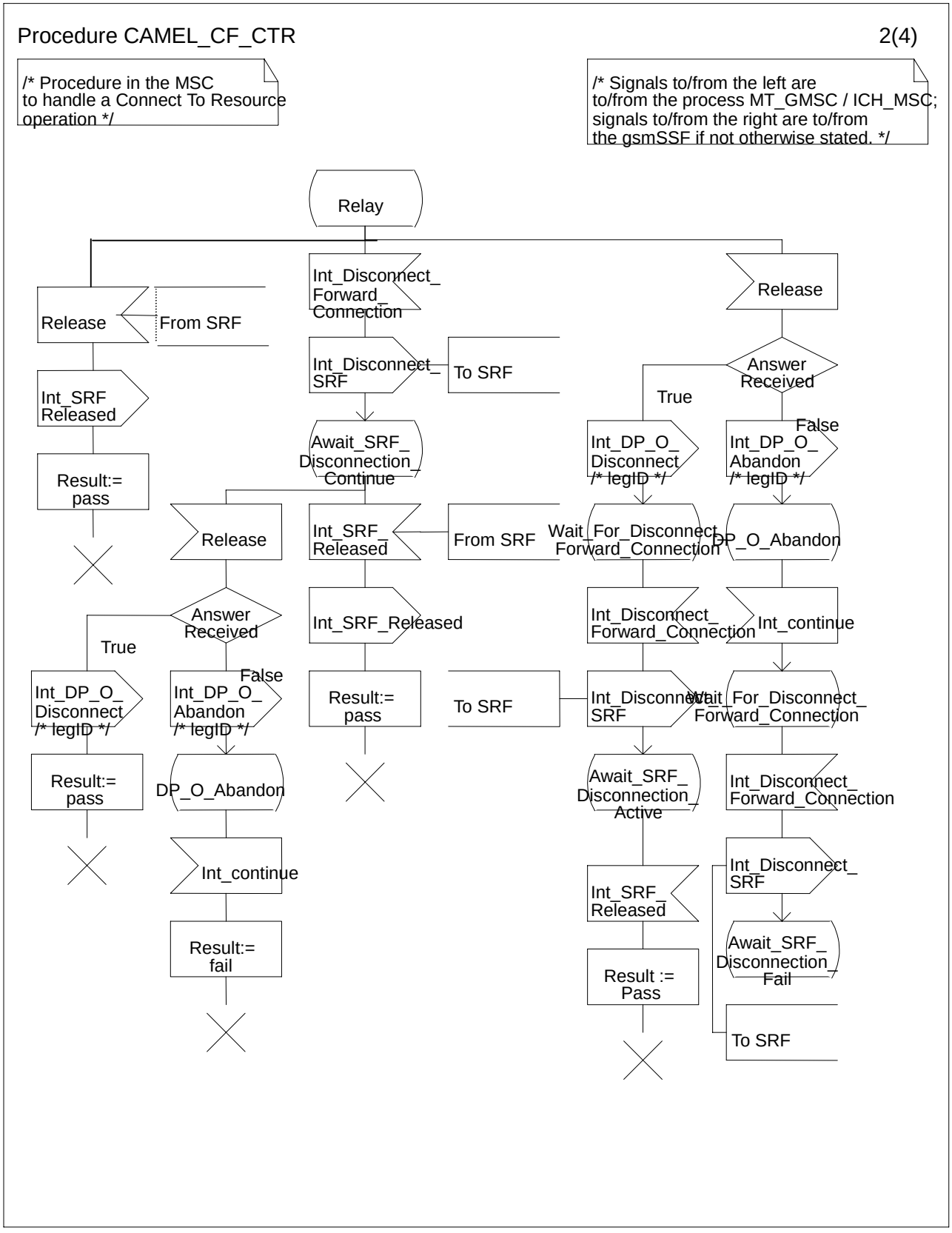


Figure 4.55b: Procedure CAMEL_CF_CTR (sheet 2) –new-

3GPP TSG CN WG2 Subgroup A
Sophia Antipolis, France, 21-25 Feburary 2000

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

CHANGE REQUEST

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23.078	CR	061r3	Current Version:	3.3.0

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

For submission to:	CN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		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: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: CN WG2 **Date:** Feb 25th, 2000

Subject: Addition of SCI handling in Waiting for Instructions For DS state

Work item: CAMEL Phase 3

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: In case the destination number is changed by CSE for dialled service, it is necessary to send e-parameters for CSE control of AoC service.

Clauses affected: 4.5.6.3, 4.5.6.4

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: The capability is only limited to the case when no charging interworking with subscriber service occurs.

help.doc

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

<<First modified section>>

4.5.6.3 Procedure Handle_SCI

1) Precondition: before an answer event is detected and no Tsw running at collected_info DP:

   if 1 set of e-parameters received --> send to the MSC

   if 2 sets e-parameters received --> error

   if 1 set of e-parameters and Tariff Switch received --> error

   if 2 sets of e-parameters and Tariff Switch received --> send 1st/start Tsw/store 2nd

2) Precondition: before an answer event is detected and Tsw running and no e-parameters at collected_info DP:

   if 1 set of e-parameters received --> error, no e-parameters stored

   if 2 sets e-parameters received --> send 1st/store 2nd

   if 1 set of e-parameters and Tariff Switch received --> error

   if 2 sets of e-parameters and Tariff Switch received --> error

3) Precondition: before an answer event is detected and Tsw running and e-parameters stored at collected_info DP:

   if 1 set of e-parameters received --> error

   if 2 sets e-parameters received --> error

   if 1 set of e-parameters and Tariff Switch received --> error

   if 2 sets of e-parameters and Tariff Switch received --> error

4) Precondition: after an answer event is detected and no Tsw running:

   if 1 set of e-parameters received --> send to the MSC

   if 2 sets e-parameters received --> error

   if 1 set of e-parameters and Tariff Switch received --> start Tsw/store set

   if 2 sets of e-parameters and Tariff Switch received --> error

5) Precondition: after an answer event is detected and Tsw running and no e-parameters

   if 1 set of e-parameters received --> store e-parameters

   if 2 sets e-parameters received --> error

   if 1 set of e-parameters and Tariff Switch received --> error

   if 2 sets of e-parameters and Tariff Switch received --> error

6) Precondition: after an answer event is detected and Tsw running and e-parameters stored:

   if 1 set of e-parameters received --> error

   if 2 sets e-parameters received --> error

   if 1 set of e-parameters and Tariff Switch received --> error

   if 2 sets of e-parameters and Tariff Switch received --> error

7) Precondition: before an answer event is detected and no Tsw running at analysed_info DP:

   if 1 set of e-parameters received --> send to the MSC

   if 2 sets e-parameters received --> error

if 1 set of e-parameters and Tariff Switch received --> error

if 2 sets of e-parameters and Tariff Switch received --> send 1st/start Tsw/store 2nd

8) Precondition: before an answer event is detected and Tsw running and no e-parameters at analysed_info DP:

if 1 set of e-parameters received --> error

if 2 sets e-parameters received --> error

if 1 set of e-parameters and Tariff Switch received --> error

if 2 sets of e-parameters and Tariff Switch received --> error

9) Precondition: before an answer event is detected and Tsw running and e-parameters stored at analysed_info DP:

if 1 set of e-parameters received --> error

if 2 sets e-parameters received --> error

if 1 set of e-parameters and Tariff Switch received --> error

if 2 sets of e-parameters and Tariff Switch received --> error

NOTE1: The MSC shall store the received e-parameters to be sent subsequently to the MS. The MSC shall send these e parameters to the MS in a Connect message or in a Facility message.

NOTE2: Dialled service gsmSCF can only give e-parameter(s)/Tsw when it is not given previously by Subscriber Service gsmSCF. After Dialled service gsmSCF gives e-parameter(s)/Tsw, Subscriber Service gsmSCF shall not give further on-line charging instructions (i.e. Send Charging Information and Apply Charging)

For D-CSI, this is ensured by service subscription restriction by a home network operator. For N-CSI, this is ensured by a roaming agreement between home network operator and visited network operator or is only applicable within a home network.

<<Last modified section>>

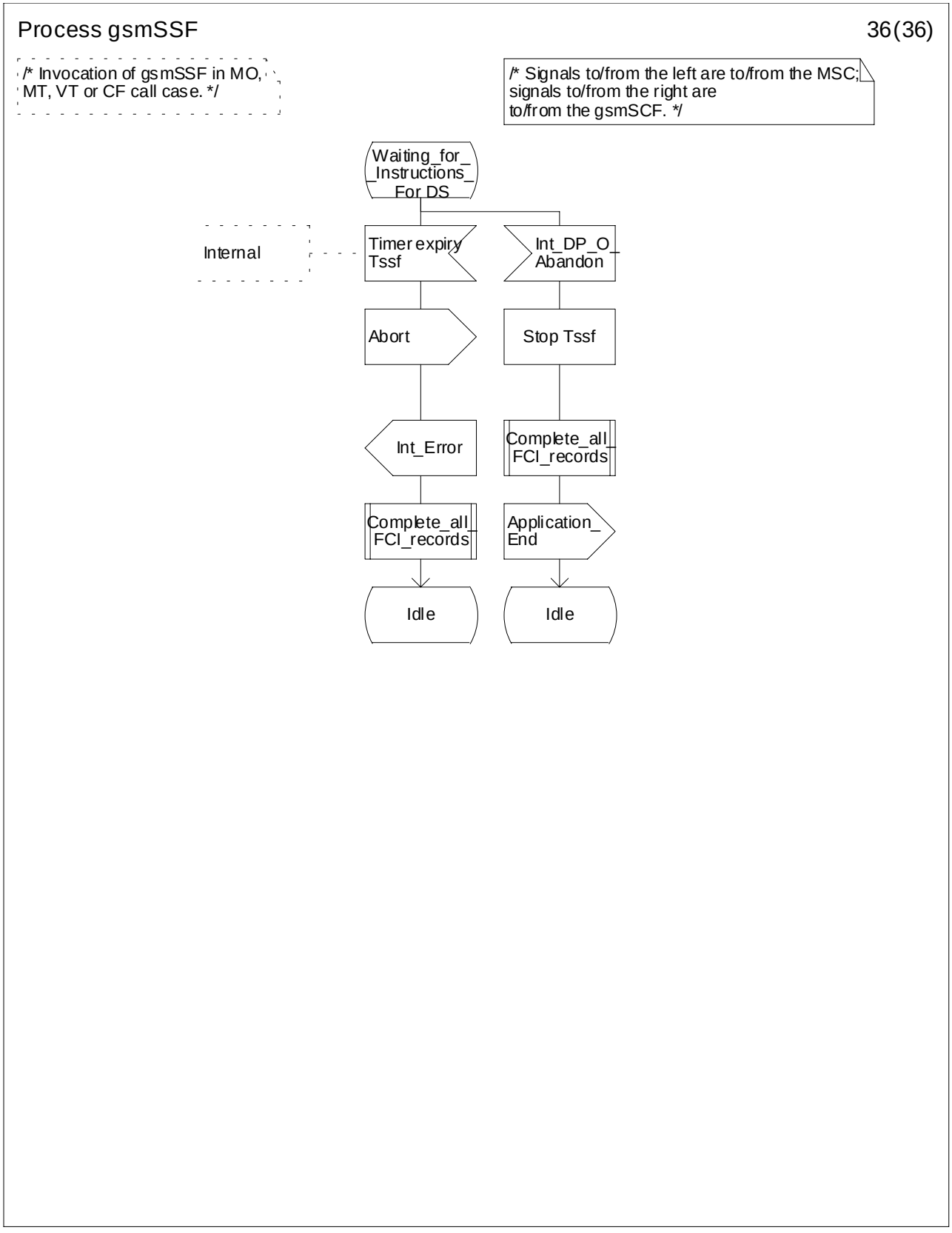

Figure 4.57ii: Process gsmSSF (sheet 35) – old-

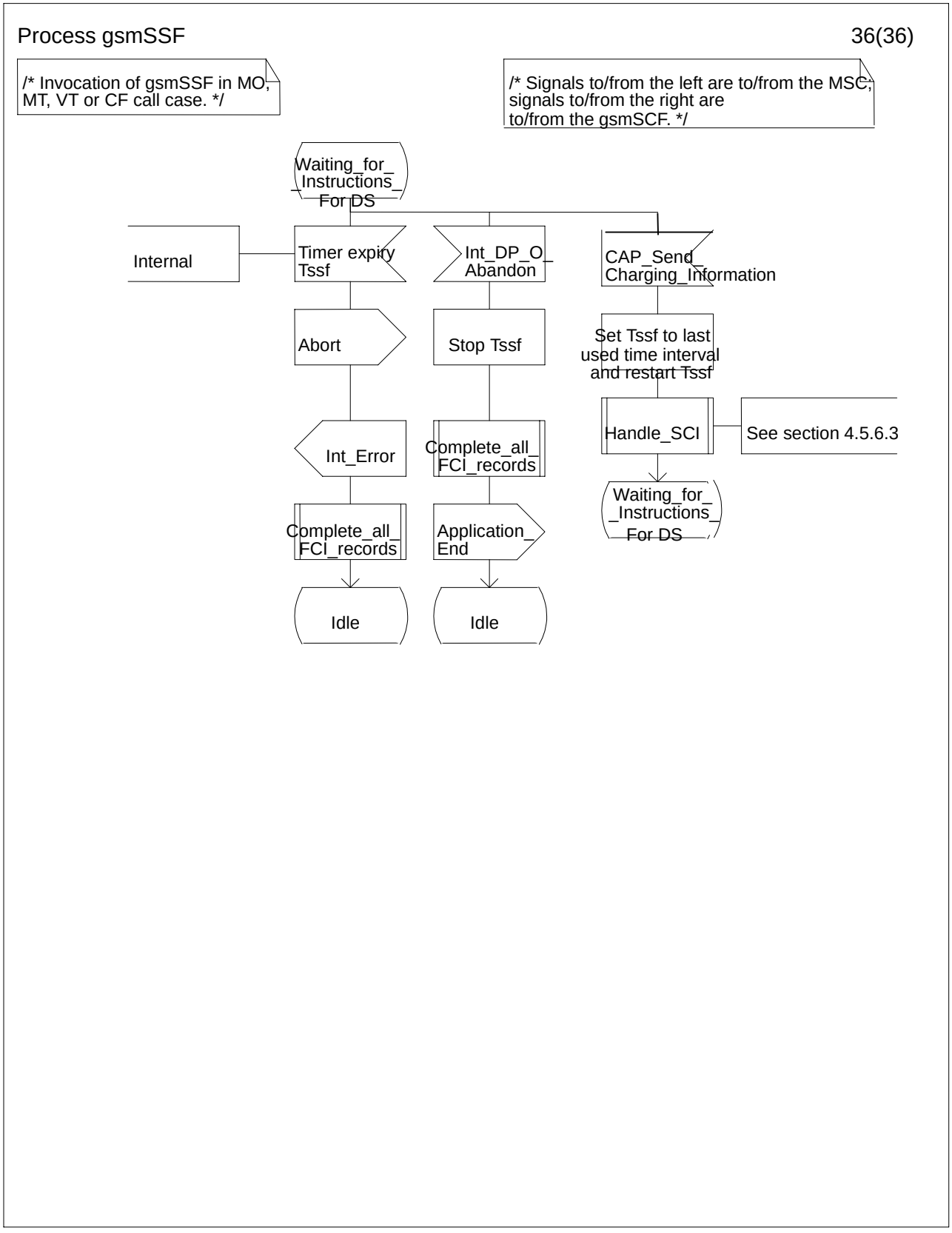

Figure 4.57ii: Process gsmSSF (sheet 35) – new-

3GPP TSG CN WG2 Subgroup A adhoc
Sophia Antipolis, France, 21-25 February 2000

***Document* N2A000151**
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.

23.078	CR	063r2	Current Version:	3.3.0

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

For submission to:	CN#7	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		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: CN WG2 **Date:**

Subject: Clarification of N-CSI in Core NW.

Work item: CAMEL Phase 3

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

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

Reason for change: In the current version specification, it is described that N-CSI is stored in VLR, N-CSI is network defined data, and is suitable to be stored in MSC.

Clauses affected: 4.3.3, 4.5.2.1, 4.5.2.2, 4.6.12.1

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.018CRXX(N2-A000146)
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.

<<First Modified Section>>

4.3.3 Network Service CAMEL Subscription Information (N-CSI)

The N-CSI identifies services offered on a per-network basis by the serving PLMN operator for all subscribers. This CSI shall be stored in MSC.

<<Next modified section>>

4.5.2.1 Handling of mobile originated calls in the originating MSC

The functional behaviour of the originating VMSC is specified in 3G TS 23.018 [3]. The procedures specific to CAMEL are specified in this subclause :

- Procedure CAMEL_OCH_MSC_INIT,
- Procedure CAMEL_OCH_MSC_ANSWER,
- Procedure CAMEL_OCH_MSC1,
- Procedure CAMEL_OCH_MSC2,
- Procedure CAMEL_OCH_MSC_DISC1,
- Procedure CAMEL_OCH_MSC_DISC2,
- Procedure CAMEL_OCH_MSC_DISC4,
- Procedure CAMEL_OCH_ETC,
- Procedure CAMEL_OCH_CTR,
- Procedure CAMEL_Start_TNRy,
- Procedure CAMEL_Stop_TNRy.
- Procedure CAMEL_Store_Destination_Address
- Procedure CAMEL_CHECK_N_CSI_MSC

The procedure Send_Access_Connect_If_Required is specified in 3G TS 23.018 [3].

The following paragraphs gives details on the behaviour of the MSC in the procedure CAMEL_OCH_MSC_INIT, CAMEL_OCH_ETC, CAMEL_OCH_ANSWER and CAMEL_Store_Destination_Address.

4.5.2.1.1 Actions of the MSC on receipt of Int_Error

The MSC checks the default Call Handling parameter in the relevant CSI.

If the default call handling is release call, a Release is sent to the MS and an Abort to the VLR. The MSC then releases all call resources and the procedure CAMEL_OCH_MSC_INIT ends.

If the default call handling is continue call, the MSC continues processing without CAMEL support. It sends Send_Info_For_Ougoing_Call to the VLR and waits in state Wait_For_MO_Call_Result.

4.5.2.1.2 Actions of the MSC on receipt of Int_Continue

The MSC continues processing without any modification of call parameters. At DP_Analysed_Information it sends Send_Info_For_Ougoing_Call to the VLR and waits in state Wait_For_MO_Call_Result.

4.5.2.1.3 Actions of the MSC on receipt of Int_Continue_With_Argument

The MSC continues processing with modified call parameters. The MSC shall replace the call parameters by the information received in the Int_Continue_With_Argument message. Call parameters which are not included in the Int_Continue_With_Argument message are unchanged.

Signalling limitations or regulatory requirements may require the Calling Partys Category, Generic Number, Original Called Party Number and Redirecting Party ID to be ignored or modified.

4.5.2.1.4 Actions of the MSC on receipt of Int_Connect

The MSC continues processing with modified call parameters. The MSC shall transparently modify the call parameters with the received information. The MSC then sends a PROGRESS message to the MS. Call parameters which are not included in the Int_Connect message are unchanged.

Signalling limitations or regulatory requirements may require the Calling Partys Category, Generic Number, Original Called Party Number and Redirecting Party ID to be ignored or modified.

The network signalling system shall indicate that this is an internal network number.

At DP_Analysed_Information the MSC sets the O-CSI suppression parameter, sends a Send Info For Outgoing Call to the VLR and waits in state Wait_For_MO_Call_Result.

4.5.2.1.5 Actions of the MSC on receipt of Int_Release_Call

A Release is sent to the MS, an abort to the VLR and a Release is sent to the destination exchange. The release cause received in the Int_Release_Call is used. The MSC then releases all call resources and the procedure CAMEL_OCH_MSC_INIT ends.

4.5.2.1.6 Action of the MSC in procedure CAMEL_OCH_MSC_ANSWER

If the MSC received a destination address from the GMSC in the ISUP Answer or Connect message, the MSC relays the destination address to the gsmSSF in the Int_DP_O_Answer message.

NOTE: The sending of e-parameters by the gsmSCF after receiving the DP_O_Answer indication may be to late.

4.5.2.1.7 Action of the MSC in procedure CAMEL_OCH_ETC

In procedure CAMEL_OCH_ETC (sheet 2) the MSC will remain in the Wait_For_Assisting_Answer state until it receives an ISUP Answer Message (ANM) or timeout occurs. This is to ensure that a call record is always generated for every successful establishment of a temporary connection to a gsmSRF, especially in the case where the connection is between PLMNs.

NOTE: This means that it may not be possible to access an SRF which does not generate an ISUP Answer Message (ANM).

If a Progress message is sent towards the MS the progress indicator shall indicate "In Band Information".

4.5.2.1.8 Action of the MSC in procedure CAMEL_Store_Destination_Address

The Int_Store_DA message carries the value of the global variable Destination address and the parameters OR and Forwarding received in the procedure call.

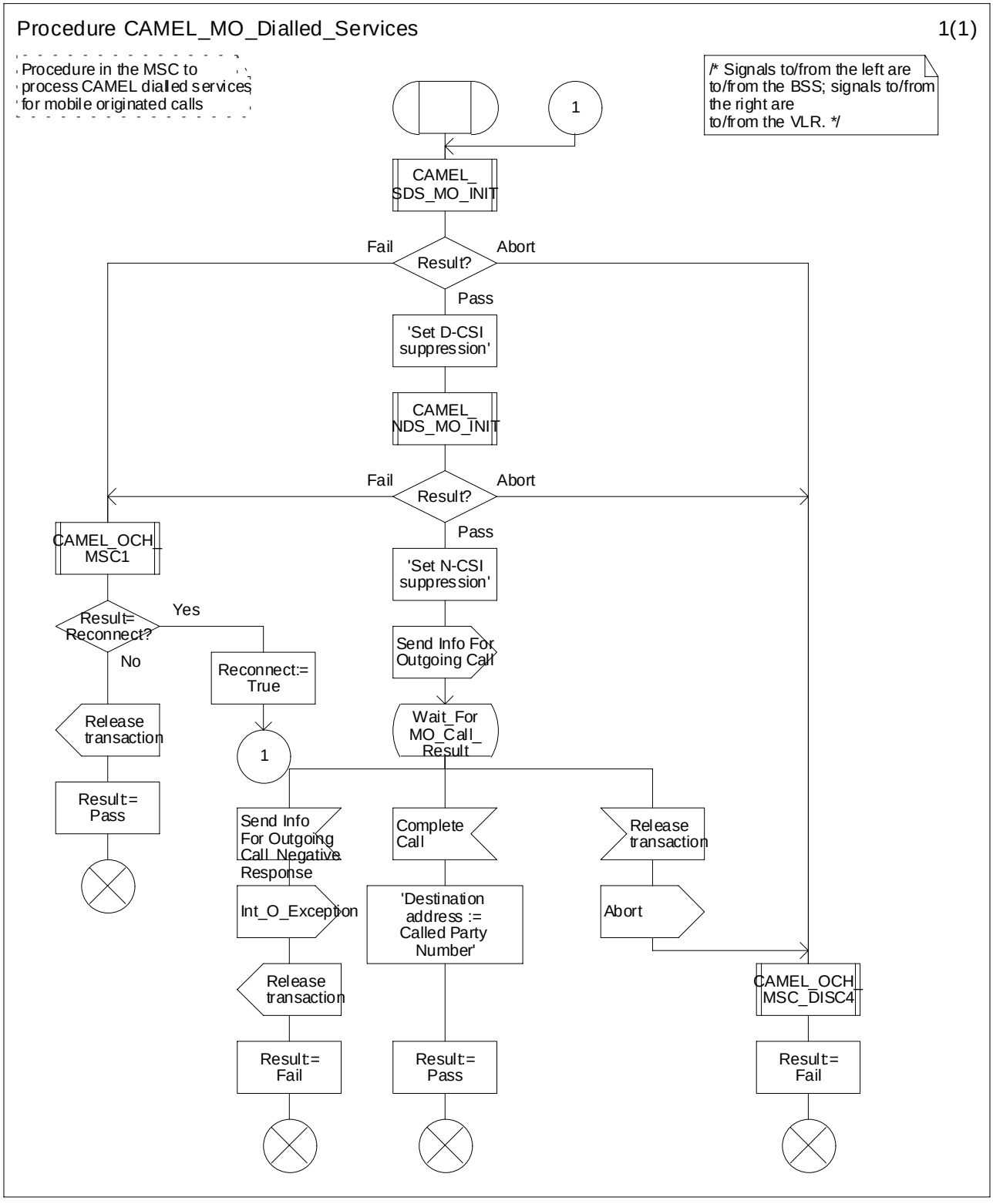

Figure 4.1a: Procedure CAMEL_MO_Dialled_Services (sheet 1) -old-

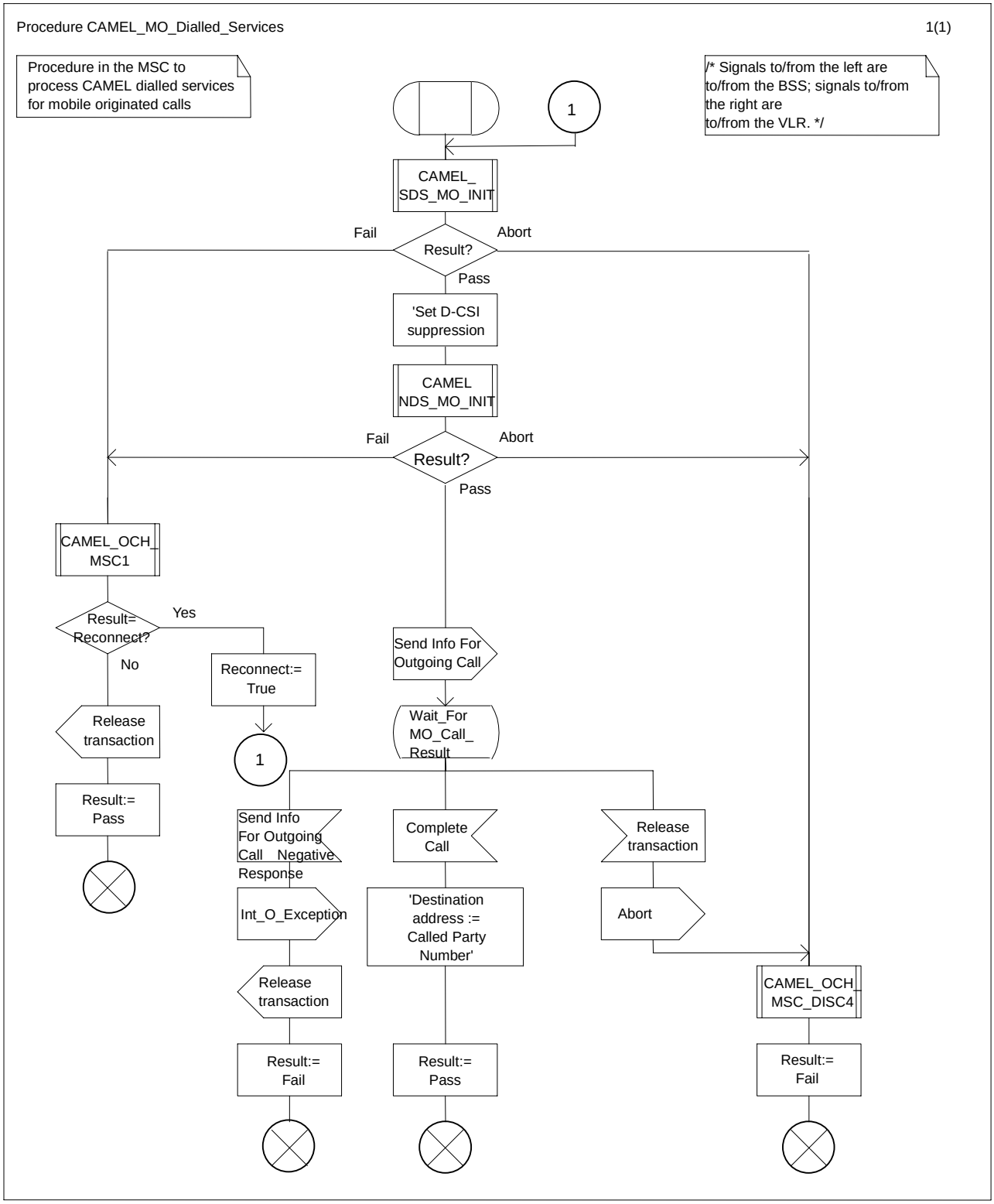

Figure 4.2a: Procedure CAMEL_MO_Dialled_Services (sheet 1) -new-

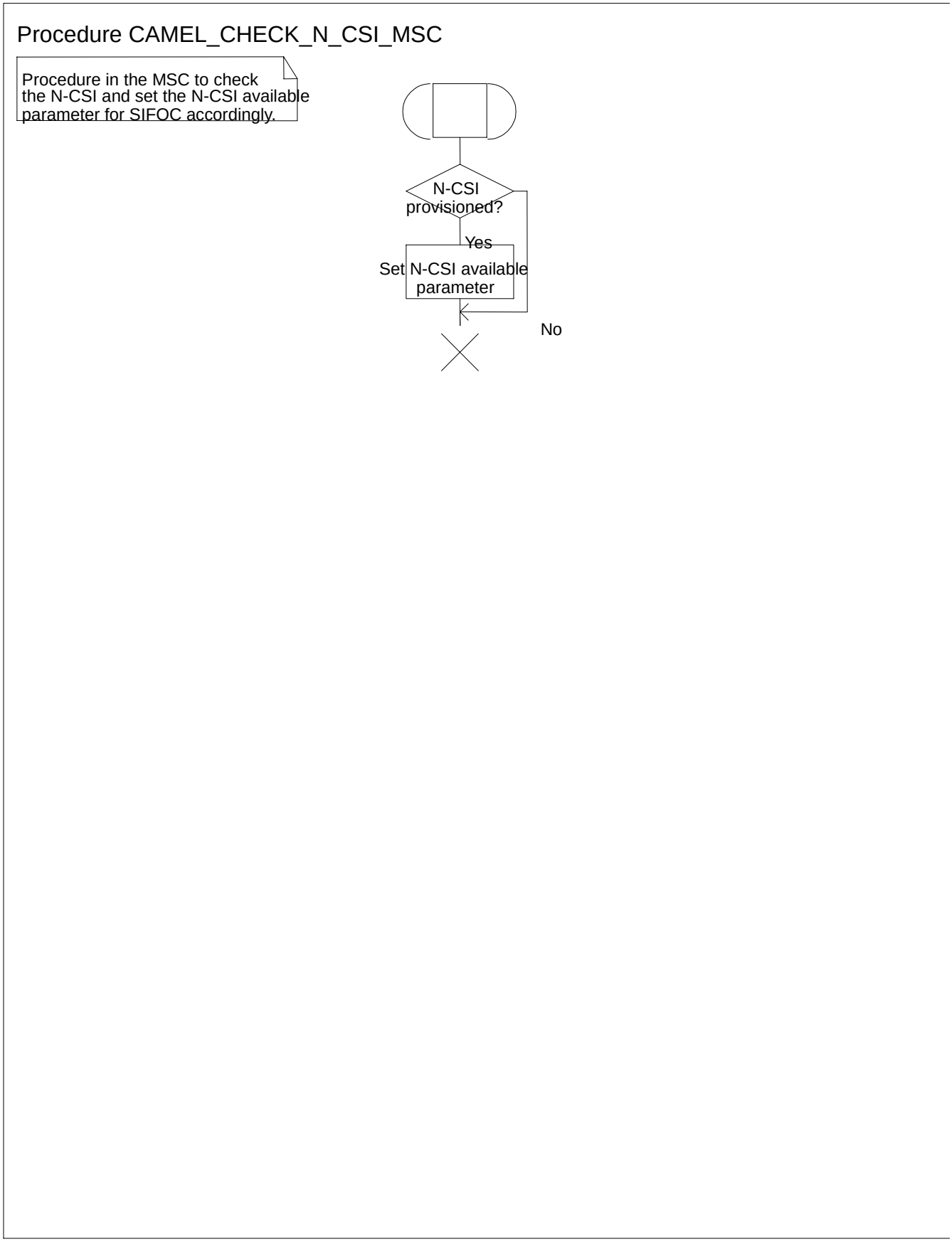

Figure 4.24a: Procedure CAMEL_CHECK_ N_CSI_MSC (sheet 1) –new-

<<Next modified section>>

4.5.2.2 Handling of mobile originating calls in the originating VLR

The functional behaviour of the originating VLR is specified in 3G TS 23.018 [3]. The procedure specific to CAMEL are specified in this subclause :

- Procedure CAMEL_OCH_VLR
- Process CAMEL_Reconnected_Call_VLR

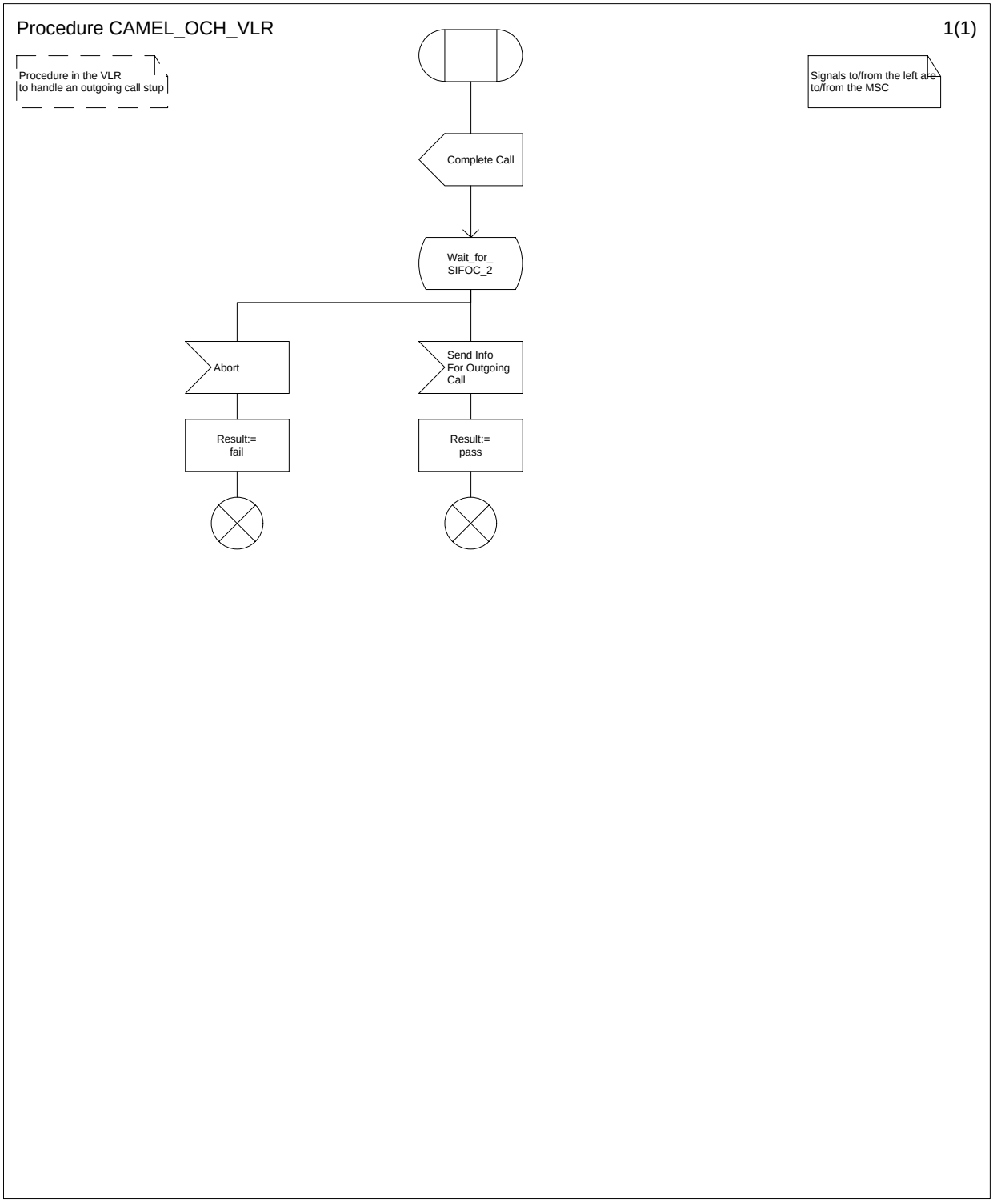

Figure 4.24a: Procedure CAMEL_OCH_VLR (sheet 1) –old-

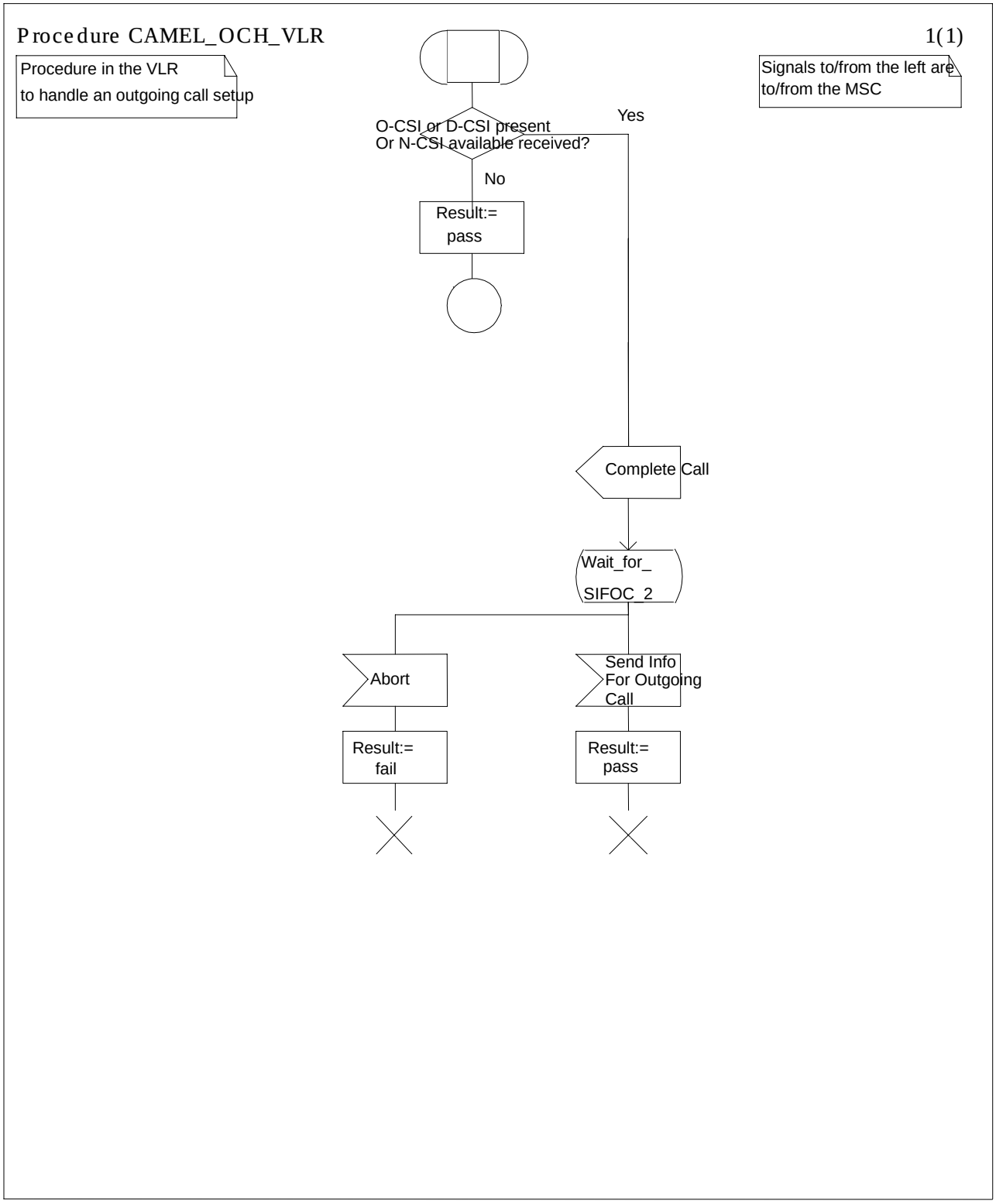

Figure 4.24a: Procedure CAMEL_OCH_VLR (sheet 1) –new-

<<Next modified section>>

4.6.12.1 Send Info For Outgoing Call

4.6.12.1.1 Description

This IF is described in 3G TS 23.018 [3] and is used to request the VLR to provide information to handle an outgoing call.

4.6.12.1.2 Information Elements

Send Info For Outgoing Call contains the following CAMEL specific IE

Information element name	Required	Description
Suppress O-CSI	C	This IE indicates that O-CSI shall be suppressed. Shall always be sent in the second interrogation.
N-CSI available	C	This IE indicates that N-CSI is available in MSC. Shall be sent in the first interrogation if N-CSI is available in MSC.

C Conditional (The IE shall be sent if applicable)