3GPP TSG_CN **Tdoc NP-000246**
Plenary Meeting #8, Dusseldorf, Germany
21st – 23rd June 2000.

Source: **TSG_N WG 2**

Title: **CRs to 3G Work Item CAMEL phase 3 - Stage 2, Category F (3)**

Agenda item: **6.2.2**

Document for: **APPROVAL**

Introduction:

This document contains **9** CRs on **Work Item CAMEL phase 2,** that have been agreed by **TSG_N WG 2,** and are forwarded to **TSG_N Plenary** meeting #8 for approval.

Tdoc	Spec	CR	Rev	CAT	Rel.	Old Ver	New Ver	Subject
N2A000404	23.078	145	1	F	R99	3.4.0	3.5.0	Invocation of O-BCSM in case of GSM call forwarding
N2-000236	23.078	147	2	F	R99	3.4.0	3.5.0	CAMEL Subscription Info
N2-000252	23.078	150	2	F	R99	3.4.0	3.5.0	Correction on Quality of Service (GPRS)
N2-000121	23.078	153		F	R99	3.4.0	3.5.0	Alignment of the EventSpecificInformationBCSM Stage 2&3 definitions
N2-000122	23.078	154		F	R99	3.4.0	3.5.0	Clean-up the Monitoring state User Interaction
N2-000237	23.078	156	1	F	R99	3.4.0	3.5.0	Correction of MM paragraph
N2-000141	23.078	157		F	R99	3.4.0	3.5.0	Editorial correction of the GPRS_activate_PDP_context SDL
N2-000238	23.078	158	1	F	R99	3.4.0	3.5.0	Removal of ActivityTestSMS operation
N2-000205	23.078	159	1	F	R99	3.4.0	3.5.0	PDPid in the EntityReleasedGPRS operation

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

N2A000404
Document rev of N2A000358
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**	**145r1**	Current Version:	3.4.0

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

For submission to: CN #08 *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: N2 **Date:** 30.03.2000

Subject: Invocation of O-BCSM in case of GSM call forwarding

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: If a GSM call forwarding supplementary service forwards the call to C a O-BCSM is always invoked for the forwarding party if an O-CSI or D-CSI has been received by the GMSC or VMSC from the HLR or VLR respectively or N-CSI is available in the GMSC or VMSC, and the trigger criteria are satisfied.

Clauses affected: 4.6.1.5 Initial DP;

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 —

4.4.5.3 Call Forwarding at the GMSC / VMSC

The T-BCSM for the call from A to B (labelled "T(A-B)") is invoked if the B-party has an active T-CSI (in GMSC) or VT-CSI (in VMSC). A control relationship with gsmSCF (1) will be created. Following processing at the GMSC / VMSC the call will be extended to the VMSC serving the B-party. This VMSC may be physically integrated with the GMSC.

A new call leg to a "C" party is created if:

- a GSM call forwarding supplementary service forwards the call to C. In this case O-BCSM O(B-C) is always invoked for the forwarding party if an O-CSI or D-CSI has been received by the GMSC or VMSC from the HLR or VLR respectively or N-CSI is available in the GMSC or VMSC, and the trigger criteria are satisfied; or
- a CAMEL service in a control relationship with T(A-B) performs a CAMEL-based call forwarding by using a Connect information flow. In this case O-BCSM O(B-C) is created.
- The O-BCSM opens a control relationship if the following conditions are met:
  - The subscriber has an active O-CSI or there is an active N-CSI or there is an active D-CSI.
  - The triggering criteria are satisfied.
  - The last Connect operation included the "O-CSI applicable" flag. This flag affects to O-CSI only.

A control relationship with gsmSCF (2) will be created.

The relationships with gsmSCF (1) and gsmSCF(2) may exist simultaneously. The two relationships are treated independently at the GMSC. The BCSM T(A-B) and BCSM O(B-C) are linked by an internal interface which is assumed to behave in a similar way to an ISUP interface.

The nodes gsmSCF (1) and gsmSCF (2) may be the same or different physical entities.

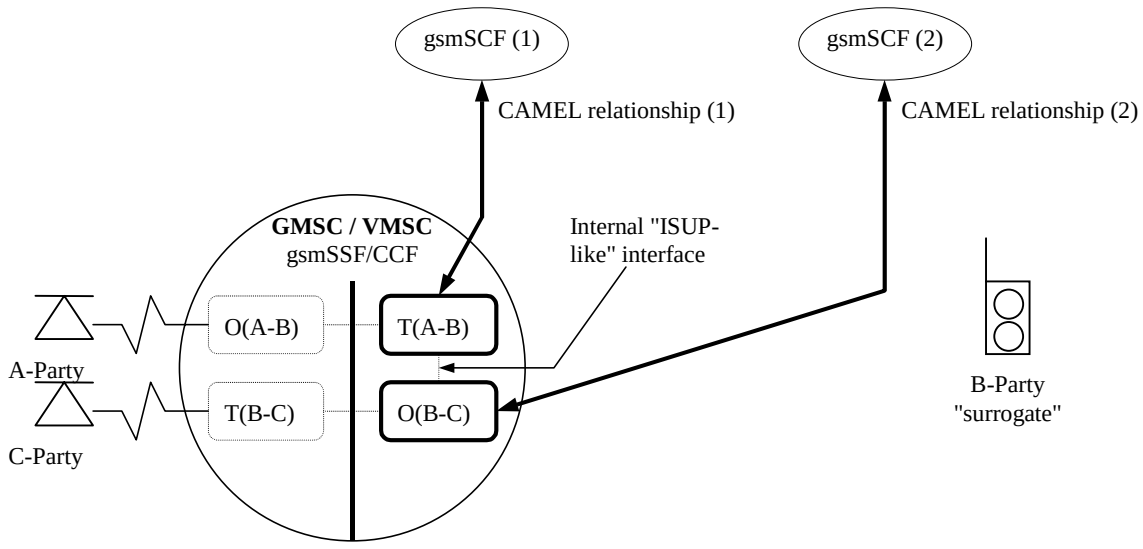

Figure 4.7: BCSM Scenario for Call Forwarding at the GMSC / VMSC

3GPP N2 Meeting
Rotenburg, Germany, 22-26 May 2000

Document N2-000236
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	147r2	Current Version:	3.4.0

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

For submission to: N2 *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: N2 **Date:** 26 May 2000

Subject: CAMEL Subscription Info

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:

When CAMEL Subscription Information in the HLR has been changed, the Stand Alone Insert Subscriber Data message is used to update the data in the VLR. The standard mandates that the complete new VLR CAMEL Subscription Information is sent within one dialogue from the HLR to the VLR and that the VLR replaces the complete old VLR CAMEL Subscription Info with the new VLR CAMEL Subscription Info. This updating procedure was introduced with CAMEL phase 1 when the only elements of VLR CAMEL Subscription Info were O-CSI and Extension Container. The reason for this was to simplify O-CSI updating (i.e. not to allow partial updating of an O-CSI).
In CAMEL phase 2 R97 the SS-CSI has been added to VLR CAMEL Subscription Info, and in R98 the TIF-CSI has been added to VLR CAMEL Subscription Info, but still the complete CAMEL Subscription Info has to be sent within the stand alone dialogue.

In CAMEL phase 3 (R99) the m-CSI, sms-CSI, vt-CSI, and d-CSI have been added to the VLR CAMEL Subscription Info.
This CR proposes to modify the updating procedure for the R99-CSIs and allow partial updating of the VLR CAMEL Subscription Info (note: Not partial updating of a CSI).
Furthermore it is proposed to modify the Delete Subscriber Data message to allow for removal of specific R99-CSIs.
The same approach is proposed for SGSN CAMEL Subcsription Info which contains gprs-CSI, sms-CSI and extensionContainer.

Based on the agreed CR to 29.002-124, this CR proposes the changes to TS 23.078.
Description of Delete Subscriber Data IF for GPRS interworking in the clause 6 is also added. (currently missing)

Clauses affected: 4, 6, 7, 8, 9 (Delete Subscriber Data IF)

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	29.002-124
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******

4.6.7 HLR to VLR information flows

4.6.7.1 Delete Subscriber Data

4.6.7.1.1 Description

This IF is used by an HLR to remove certain subscriber data from a VLR if the subscription of one or more supplementary services or basic services is withdrawn. Note that this IF is not used in case of erasure or deactivation of supplementary services. This IF is specified in 3G TS 29.002 [4].

4.6.7.1.2 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 VLR.
Specific CSI Withdraw	C	This IE indicates that one or more specific elements of CAMEL Subscription Info shall be deleted from the VLR. The specific elements of CAMEL Subscription Info which may be deleted are: - O-CSI with TDP criteria for O-CSI; - TIF-CSI; - D-CSI; - VT-CSI with TDP criteria for VT-CSI; This IE should not be sent when CAMEL Subscription Info Withdraw is present.

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

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

6.6.3 HLR to SGSN Information Flows

6.6.3.x Delete Subscriber data

6.6.3.x.1 Description

This IF is specified in 3G TS 29.002 [4] and is used by the HLR to delete subscriber data in the SGSN.

6.6.3.x.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 SGSN.
Specific CSI Withdraw	C	This IE is used to indicate that only GPRS-CSI shall be deleted from the SGSN. This IE should not be sent when CAMEL Subscription Info Withdraw is present.

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

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

7.6.3 HLR to VLR information flows

7.6.3.1 Delete Subscriber data

7.6.3.1.1 Description

This IF is specified in 3G TS 29.002 [4] and is used by the HLR to delete subscriber data in the VLR.

7.6.3.1.2 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 VLR.
Specific CSI Withdraw	C	This IE is used to indicate that only SMS-CSI shall be deleted from the VLR. This IE should not be sent when CAMEL Subscription Info Withdraw is present.

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

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

7.6.5 HLR – SGSN information flows

This interface is used to send CAMEL related subscriber data to a visited GPRS network, e.g. GPRS-CSI.

7.6.5.1 Delete Subscriber data

7.6.5.1.1 Description

This IF is specified in 3G TS 29.002 [4] and is used by the HLR to delete subscriber data in the SGSN.

7.6.5.1.2 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 SGSN.
Specific CSI Withdraw	C	This IE is used to indicate that only SMS-CSI shall be deleted from the SGSN. This IE should not be sent when CAMEL Subscription Info Withdraw is present.

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

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

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.
Specific CSI Withdraw	C	This IE is used to indicate that only SS-CSI shall be deleted from the VLR. This IE should not be sent when CAMEL Subscription Info Withdraw is present.

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

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

9.4.2 HLR to VLR information flows

9.4.2.1 Delete Subscriber Data

9.4.2.1.1 Description

This IF is used by an HLR to remove certain subscriber data from a VLR if the subscription of one or more supplementary services or basic services is withdrawn. Note that this IF is not used in the case of erasure or de-activation of supplementary services. This IF is specified in 3G TS 29.002 [4].

9.4.2.1.2 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 VLR.
Specific CSI Withdraw	C	This IE is used to indicate that only M-CSI shall be deleted from the VLR. This IE should not be sent when CAMEL Subscription Info Withdraw is present.

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

3GPP N2 Meeting
Rothenburg, Germany, 22-26 May 2000

Document N2-000252

CHANGE REQUEST

23.078	**CR**	**150r2**	Current Version:	3.4.0

For submission to: CN#8 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ]

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

Source: N2 **Date:** 26 05 2000

Subject: Correction on Quality of Service (GPRS)

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 current specification does not clearly indicate which types of Quality of Service for GPRS shall be sent by the SGSN to the SCP at various occasions:

- Requested QoS (the QoS requested by the terminal at PDP Context Establishment)
- Subscribed QoS (the QoS stored in the SGSN for the subscriber)
- Negotiated Qos (the QoS indicated by the GGSN at PDP Context Establishment Acknowledgement)

The present CR addresses this deficiency, by specifying exactly which QoS('s) shall be reported in the various Information Flows from gprsSSF to gsmSCF.

Clauses affected: 6.6.1

Other specs: **affected:**

Other 3G core specifications	[X]	→ List of CRs: CR 29.078, CR 22.078
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: The stage 1 for CAMEL Phase 3 has the same deficiency. This shall be corrected by means of a corrective CR on the stage 1.

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

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

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.
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. This IE shall only be present if sending of the Apply Charging Report was triggered by a change in Quality of Service.~~ This IE is described in the table below.
Active	M	This IE indicates if the GPRS session or PDP context is still established, 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 GPRS session or to one single PDP context.

M Mandatory (The IE shall always be sent).

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

Quality of Service contains the following information elements:

Information element name	Required	Description
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN, as a result of a 'Modify PDP Conext' request. This IE shall be included only if sending of the Apply Charging Report was triggered by a change in Quality of Service.

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 gsmSCF at any phase that a GPRS session or PDP context has been terminated 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 indicates to the gsmSCF the requested CAMEL Service. It is used to address the required 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).~~ This IE is described in the table below.
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).

Quality of Service contains the following information elements:

Information element name	Required	Description

Requested QoS	C	This IE identifies the QoS requested by the subscriber for a new PDP Context. It shall be included if the InitialDPGPRS is sent at PDP Context Establishment, at PDP Context Establishment Acknowledgement and at Change of Position Context.
Subscribed QoS	C	This IE identifies the subscribed QoS. It shall be included if the InitialDPGPRS is sent at PDP Context Establishment, at PDP Context Establishment Acknowledgement and at Change of Position Context.
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN. It shall be included if the InitialDPGPRS is sent at PDP Context Establishment Acknowledgement and at Change of Position Context.

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

****** END OF DOCUMENT ******

3GPP/SMG Meeting #?
Rotenburg, Germany, 22-26 May 2000

Document ***N2-000121***

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**	**153**	Current Version:	3.4.0

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

For submission to:	CN#8	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: N2 **Date:** 26.04.2000

Subject: Alignment of the EventSpecificInformationBCSM Stage 2&3 definitions

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 stage 2 IEs will be aligned with the stage 3 EventSpecificInformationBCSM definitions.

Clauses affected: 4.6.1.4.2

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:

****** FIRST 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).

If the Event Type BCSM IE contains either O_Answer or T_Answer, then the Event Specific Information BCSM IE contains the following information ~~for the O-Answer and T-Answer cases~~elements:

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 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.

If the Event Type BCSM IE contains one of Route_Select_Failure, O_Called_Party_Busy, O_Disconnect or T_Disconnect, then the Event Specific Information BCSM IE contains the following information element:

Information element name	MO	MF	MT	VT	Description
Cause	C	C	C	C	This IE indicates the cause.

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

If the Event Type BCSM IE contains T_Busy then the Event Specific Information BCSM IE contains the following information elements:

Information element name	MO	MF	MT	VT	Description
Cause	C	C	C	C	This IE indicates the cause.
Call forwarded	-	-	C	C	This IE indicates that the call may be forwarded by the appropriate GSM Call Forwarding supplementary service.

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

- Not applicable.

If the Event Type BCSM IE contains T_No_Answer then the Event Specific Information BCSM IE contains the following information element:

Information element name	MO	MF	MT	VT	Description
Call forwarded	-	-	C	C	This IE indicates that the call may be forwarded by the appropriate GSM Call Forwarding supplementary service.

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

- Not applicable.

If the Event Type BCSM IE contains O_No_Answer then the Event Specific Information BCSM IE is not included.

3GPP/SMG Meeting #?
Rotenburg, Germany, 22-26 May 2000

Document ***N2-000122***
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**	**154**	Current Version:	3.4.0

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

For submission to:	CN #8	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: N2 **Date:** 06.04.2000

Subject: Clean-up the Monitoring state User Interaction

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 call set-up phase User Interaction does not exists in Stage 1 3G TS 22.078 version 3.3.0.

The Call set-up phase User Interaction co-operation with the DP3 User Interaction is not specified.

And last but not insignificant reason; the call set-up phase User Interaction is not correctly modelled in Basic Call Handling SDLs. For example during DP_Collected_Info when the Int_Connect_To_Resource is reveived, the CAMEL_OCH_CTR procedure is called and there the Basic Call Handling is not capable to receive the Int_Continue.

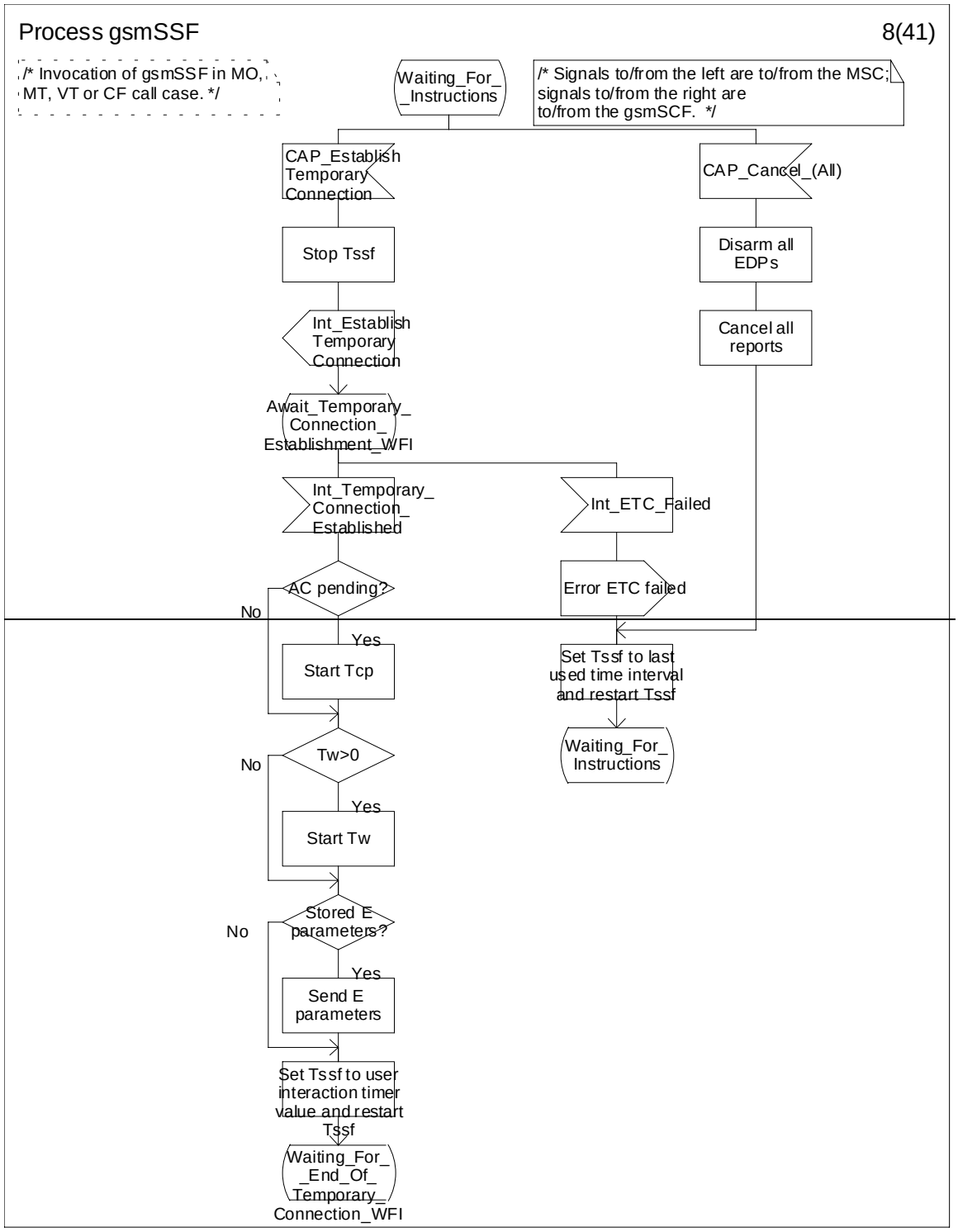
Clauses affected:

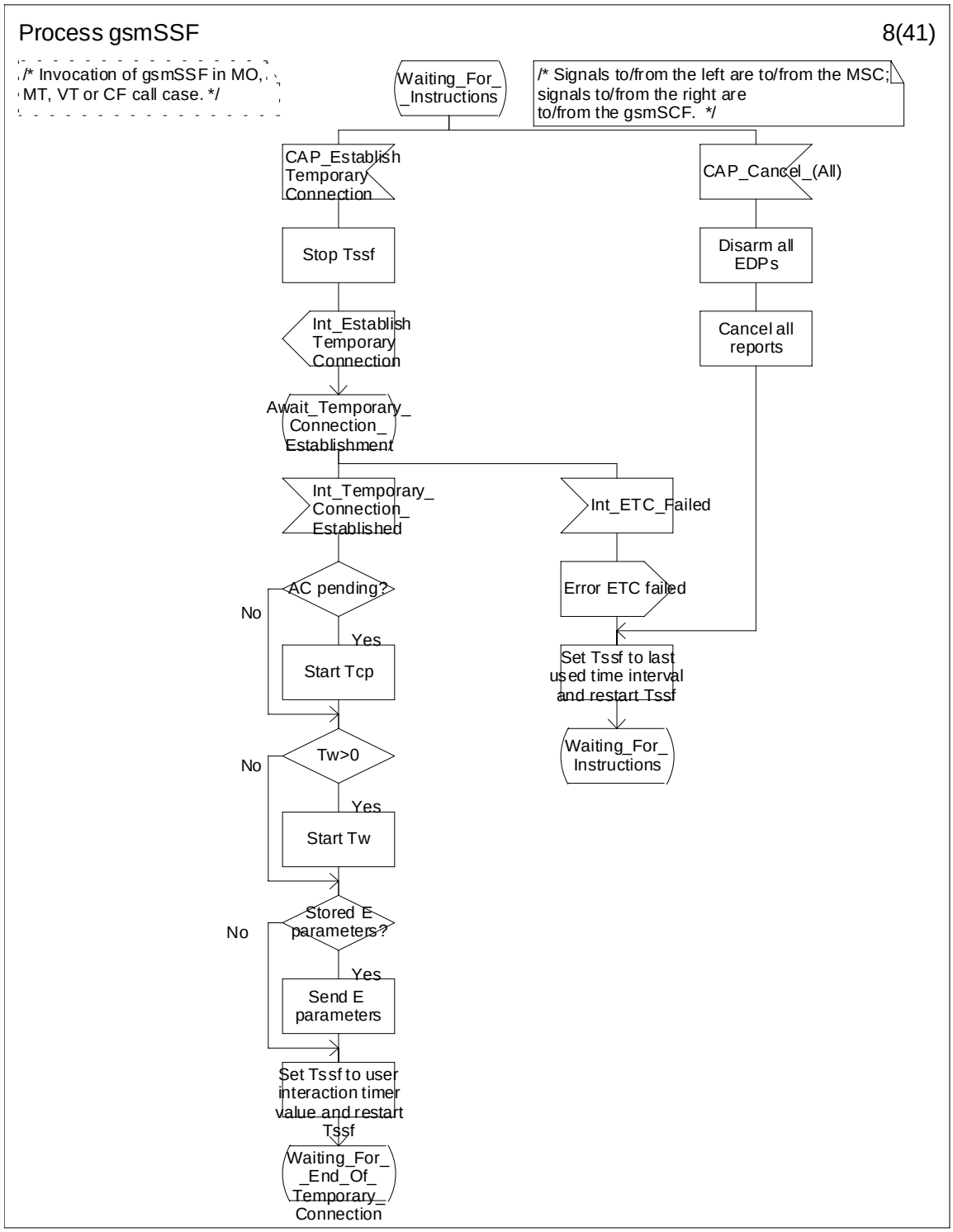
Other specs affected:

Other 3G core specifications	X	→ List of CRs:	CR079 (29.078 v.3.3.0)
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:	

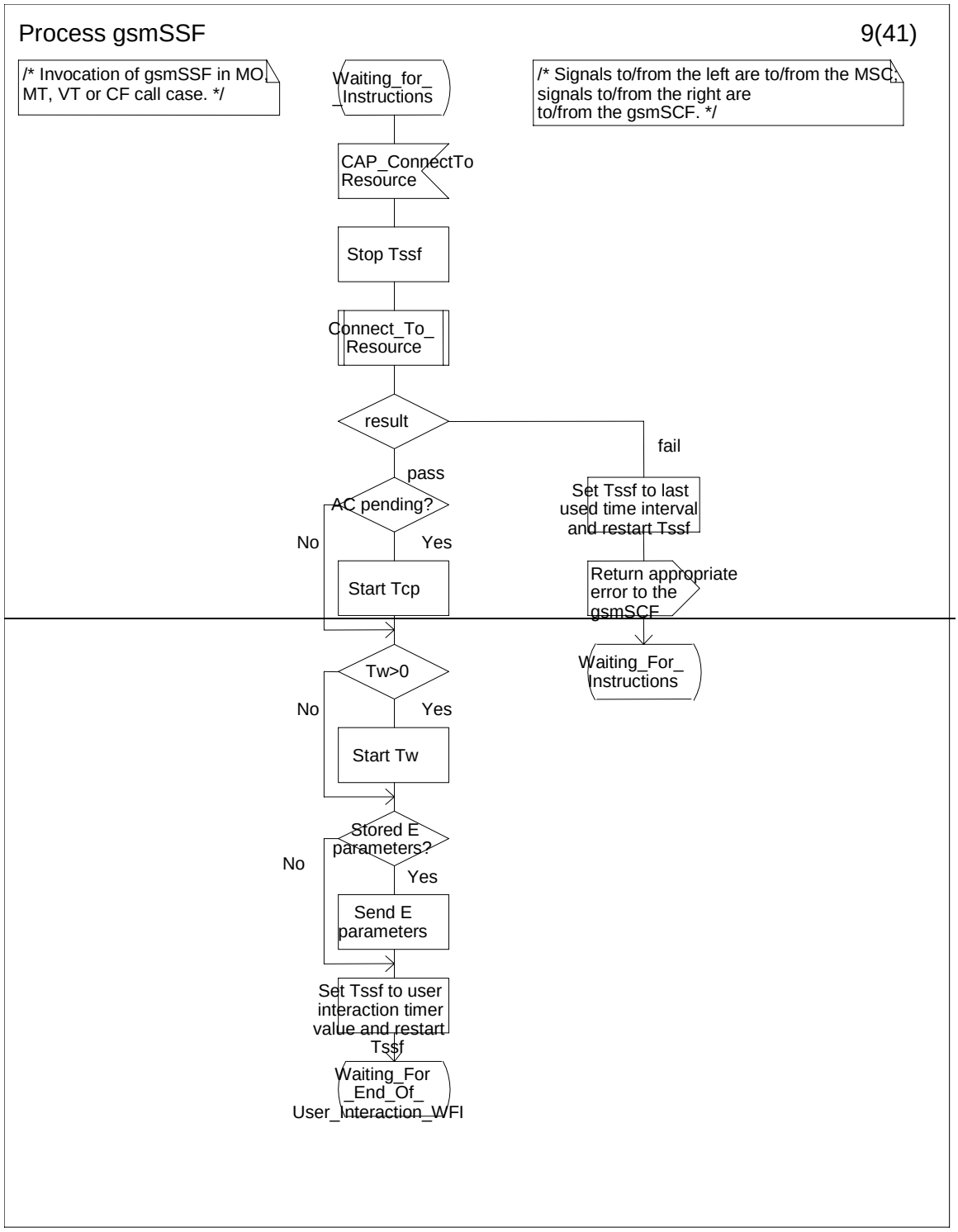
Other comments:

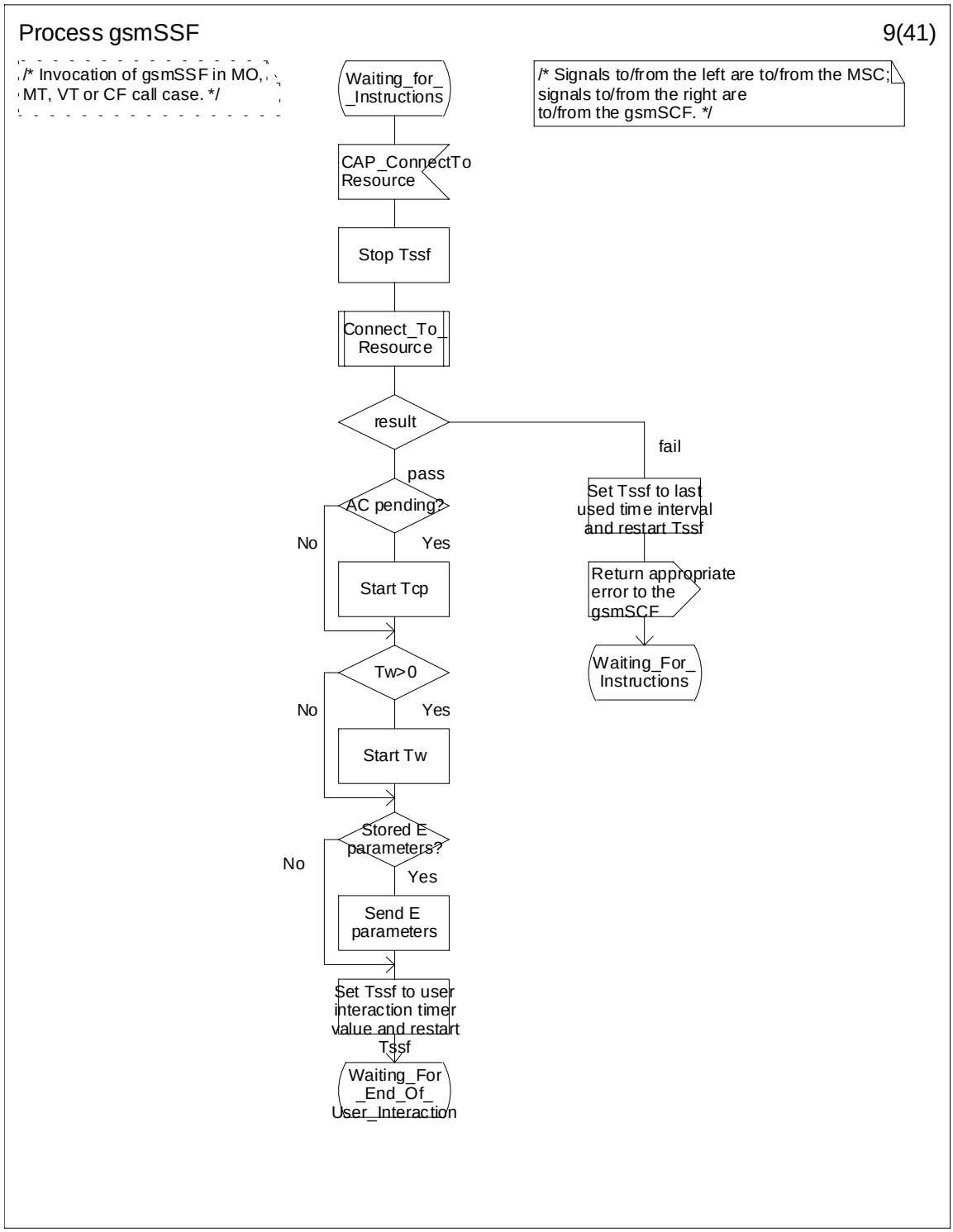
****** FIRST MODIFIED SECTION ******



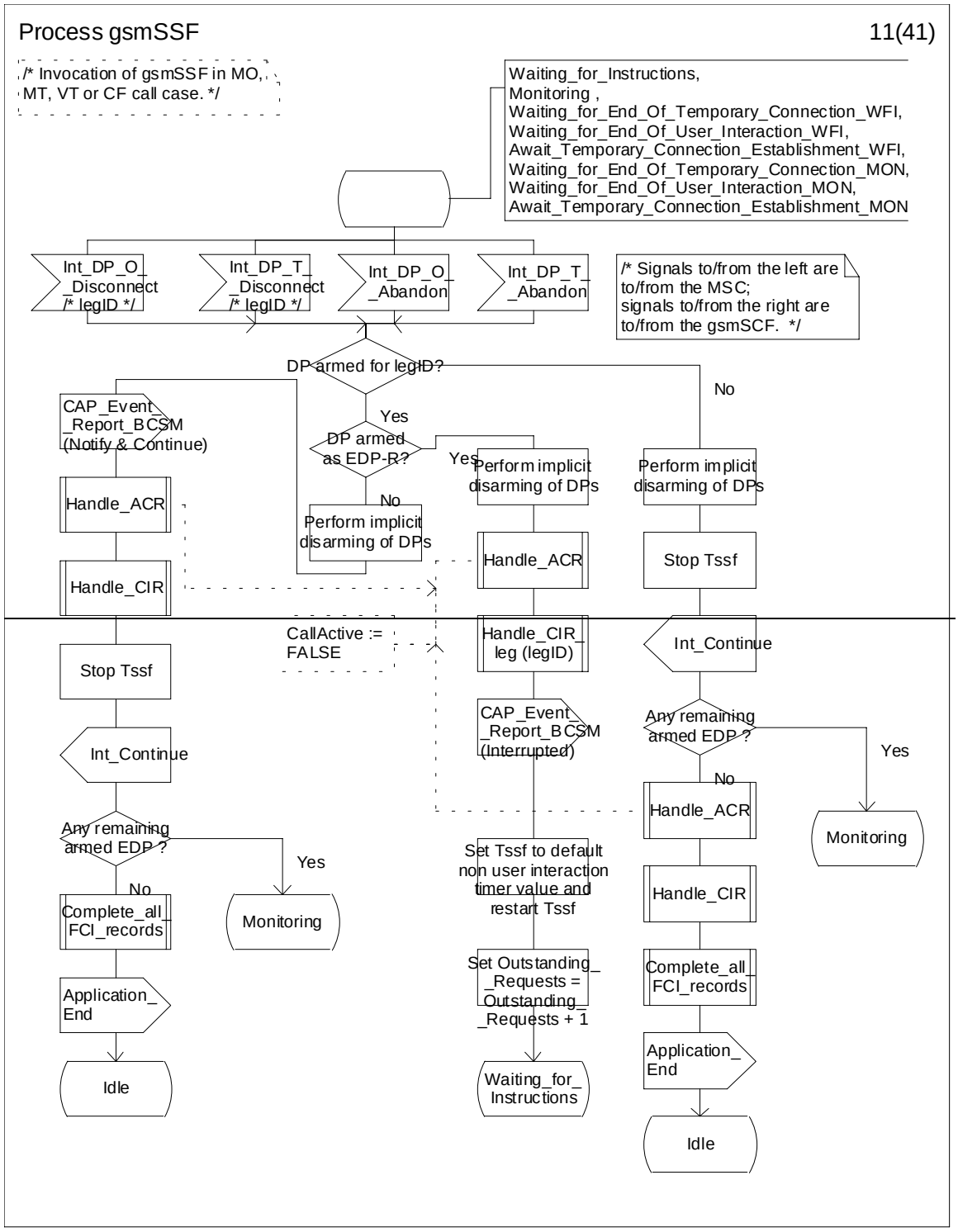

Process gsmSSF
8(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
Waiting_For_ _Instructions
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
CAP_Establish Temporary Connection
CAP_Cancel_(All)
Stop Tssf
Disarm all EDPs
Int_Establish Temporary Connection
Cancel all reports
Await_Temporary_ Connection_ Establishment
Int_Temporary_ Connection_ Established
Int_ETC_Failed
AC pending?
Error ETC failed
No
Yes
Start Tcp
Set Tssf to last used time interval and restart Tssf
Tw>0
Waiting_For_ Instructions
No
Yes
Start Tw
Stored E parameters?
No
Yes
Send E parameters
Set Tssf to user interaction timer value and restart Tssf
Waiting_For_ _End_Of_ Temporary_ Connection

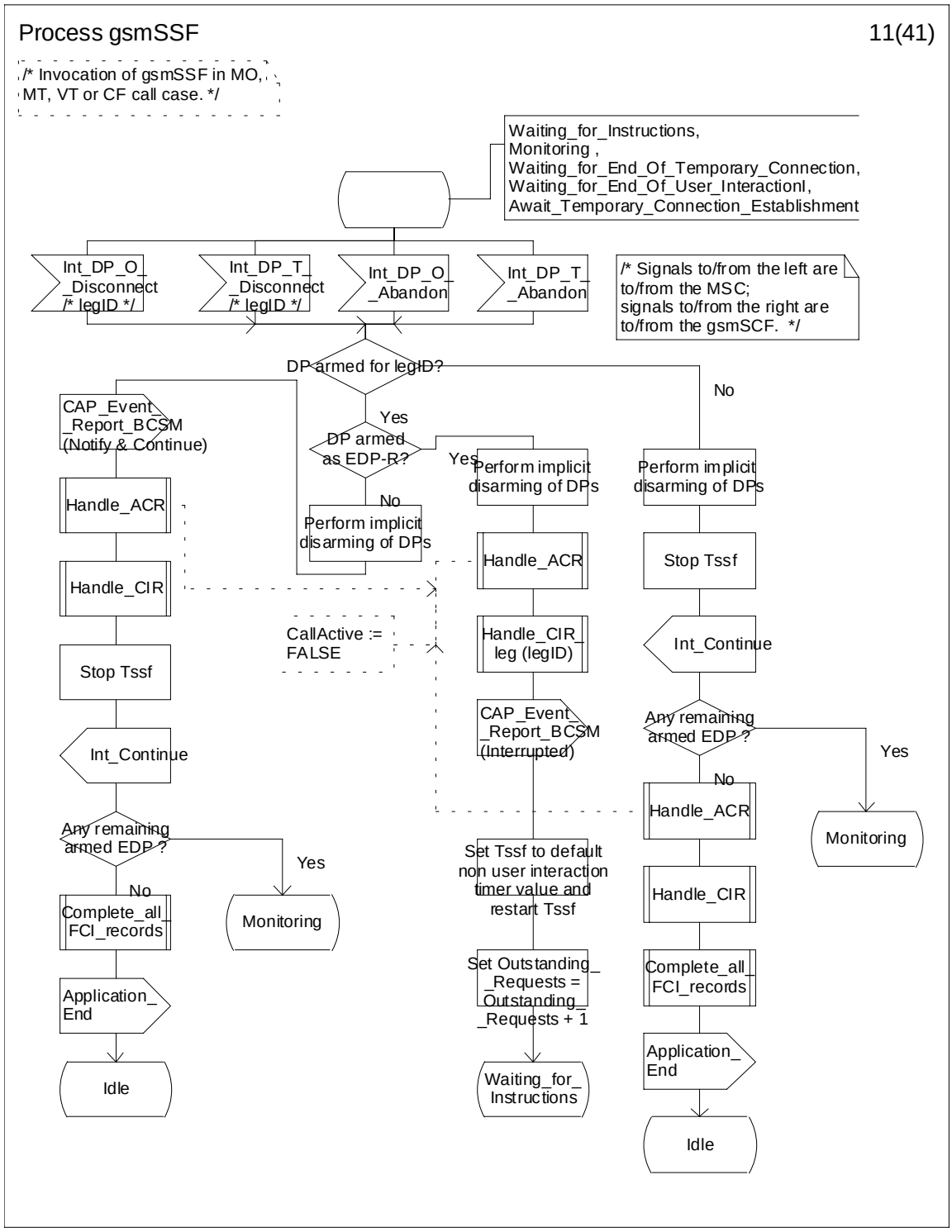
****** NEXT MODIFIED SECTION ******



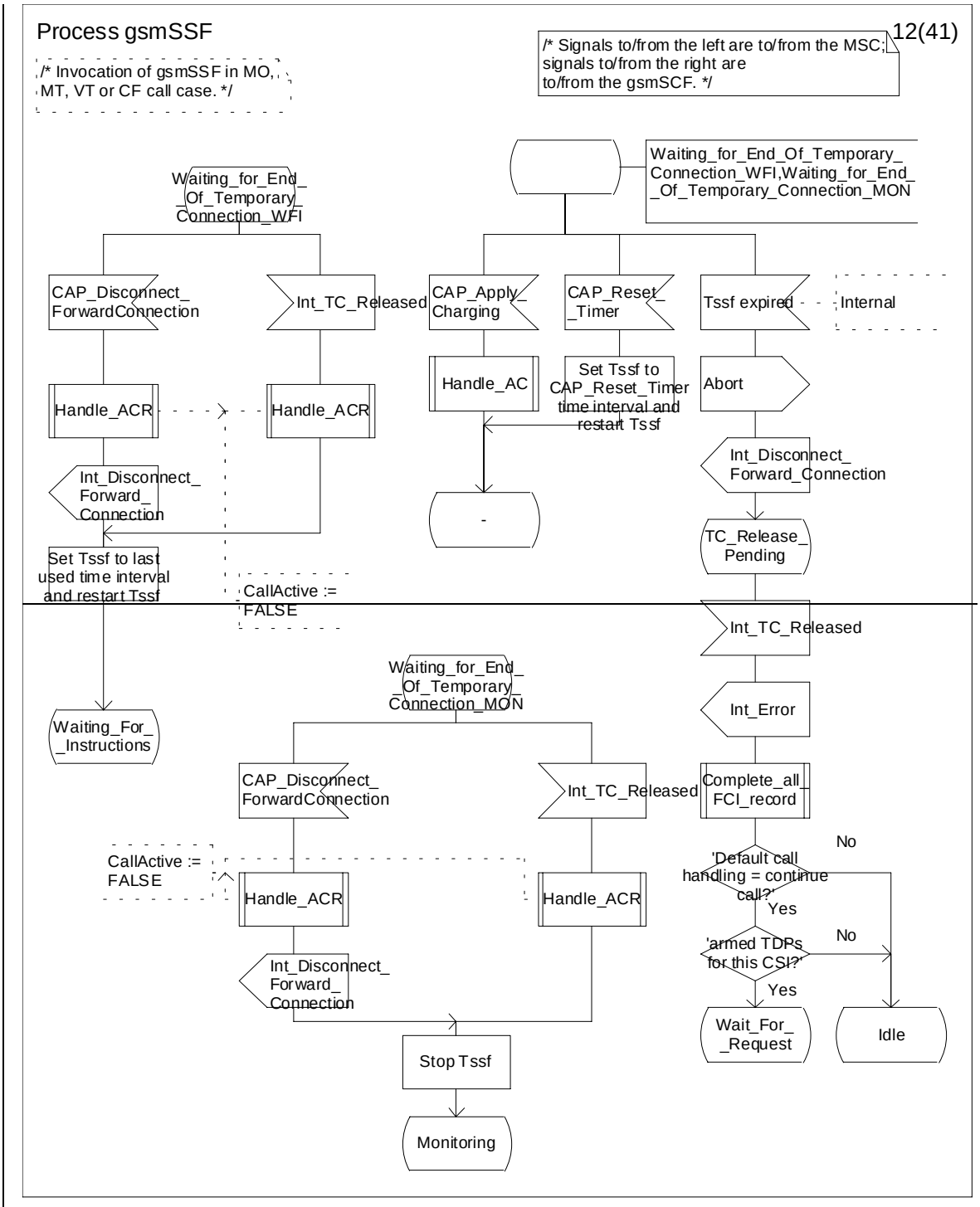

Process gsmSSF
9(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
Waiting_for_Instructions
CAP_ConnectToResource
Stop Tssf
Connect_To_Resource
result
fail
pass
AC pending?
No
Yes
Start Tcp
Tw>0
No
Yes
Start Tw
Stored E parameters?
No
Yes
Send E parameters
Set Tssf to user interaction timer value and restart Tssf
Waiting_For_End_Of_User_Interaction
Set Tssf to last used time interval and restart Tssf
Return appropriate error to the gsmSCF
Waiting_For_Instructions

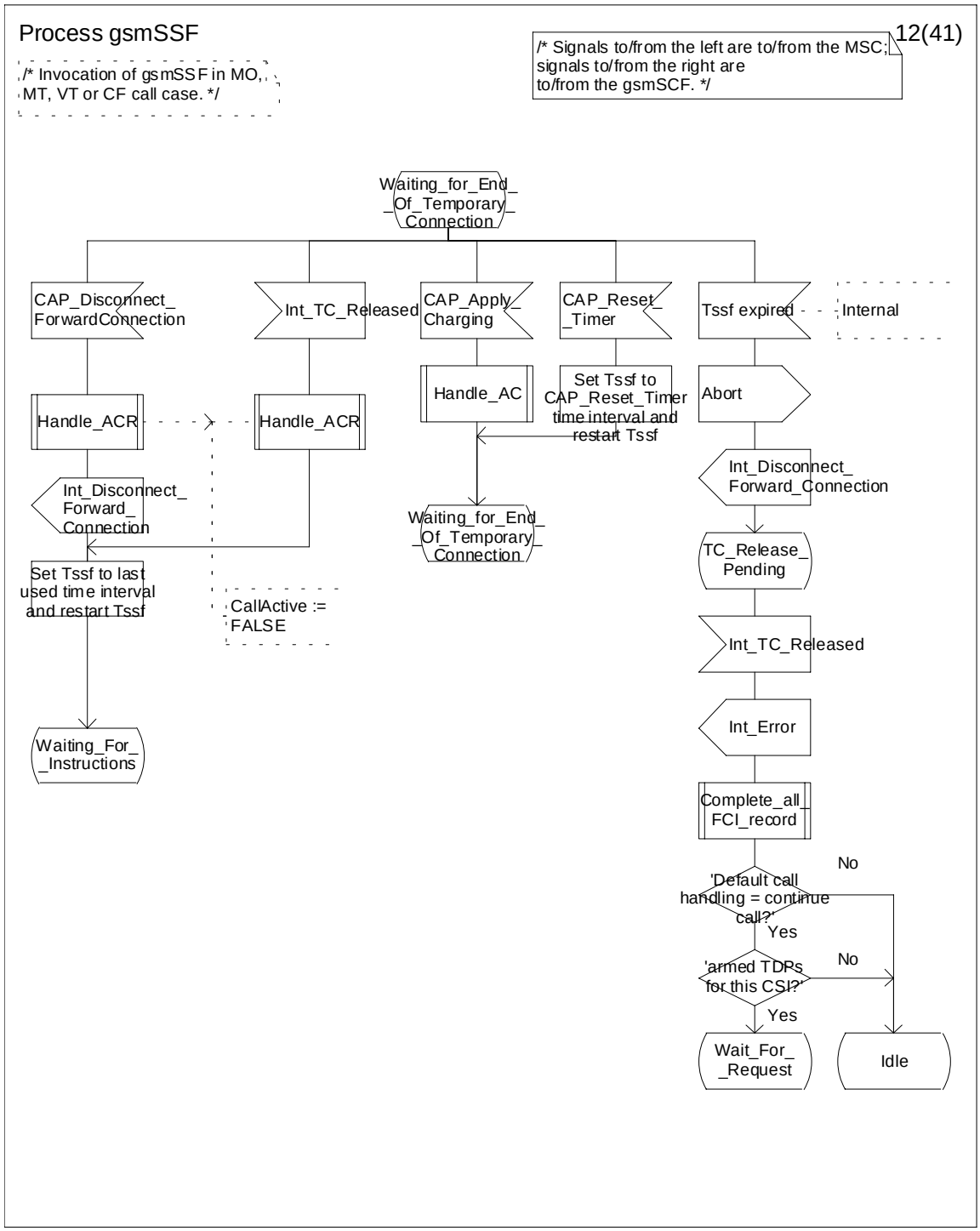
****** NEXT MODIFIED SECTION ******



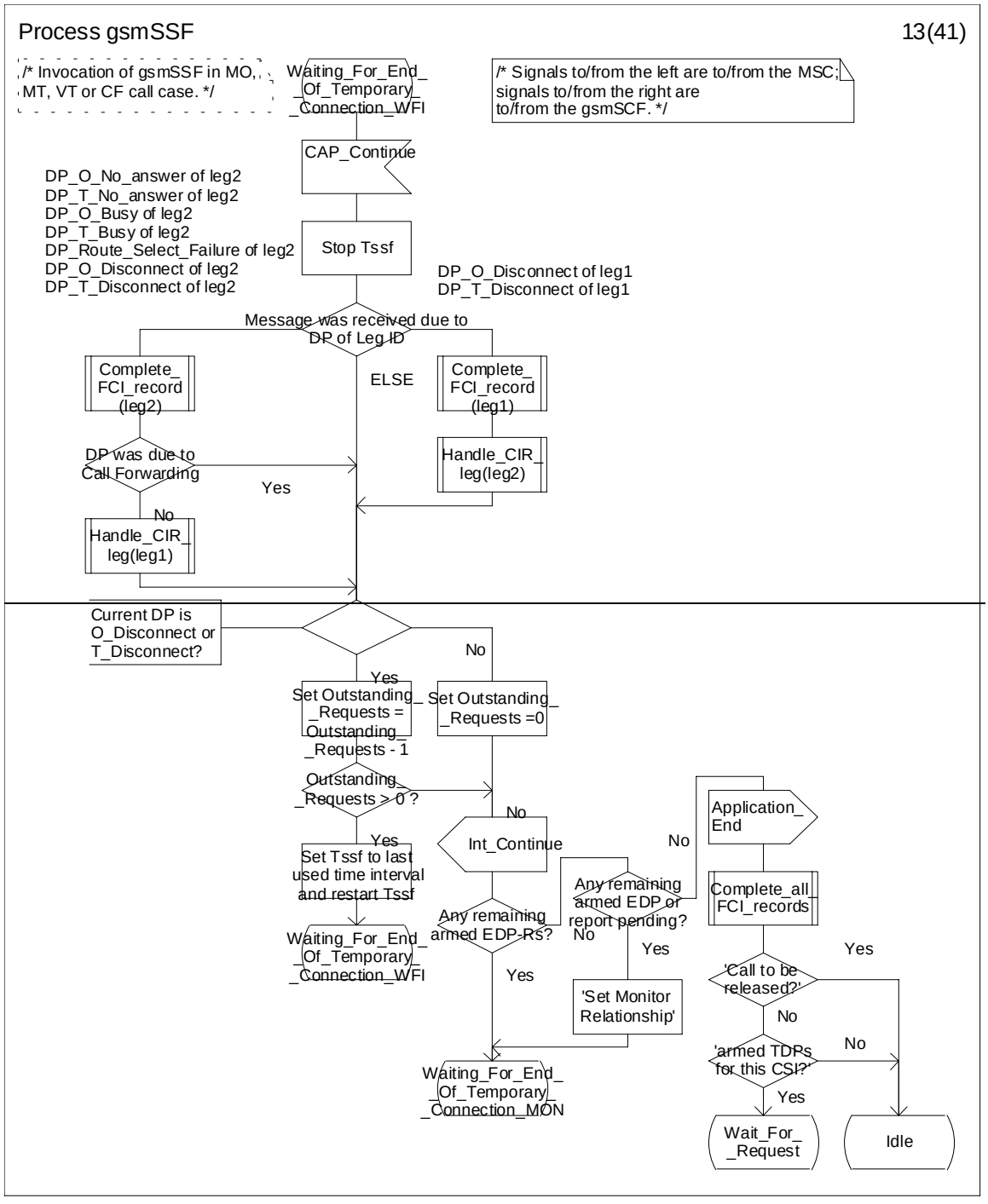

Process gsmSSF
11(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
Waiting_for_Instructions, Monitoring , Waiting_for_End_Of_Temporary_Connection, Waiting_for_End_Of_User_InteractionI, Await_Temporary_Connection_Establishment
Int_DP_O_ _Disconnect /* legID */
Int_DP_T_ _Disconnect /* legID */
Int_DP_O_ _Abandon
Int_DP_T_ _Abandon
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
DP armed for legID?
Yes
No
CAP_Event_ _Report_BCSM (Notify & Continue)
DP armed as EDP-R?
Yes
No
Perform implicit disarming of DPs
Perform implicit disarming of DPs
Perform implicit disarming of DPs
Handle_ACR
Handle_CIR
Stop Tssf
Int_Continue
Any remaining armed EDP ?
Yes
No
Monitoring
Complete_all_ FCI_records
Application_ End
Idle
CallActive := FALSE
Handle_ACR
Handle_CIR_ leg (legID)
CAP_Event_ _Report_BCSM (Interrupted)
Set Tssf to default non user interaction timer value and restart Tssf
Set Outstanding_ _Requests = Outstanding_ _Requests + 1
Waiting_for_ Instructions
Handle_ACR
Handle_CIR
Complete_all_ FCI_records
Application_ End
Idle

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

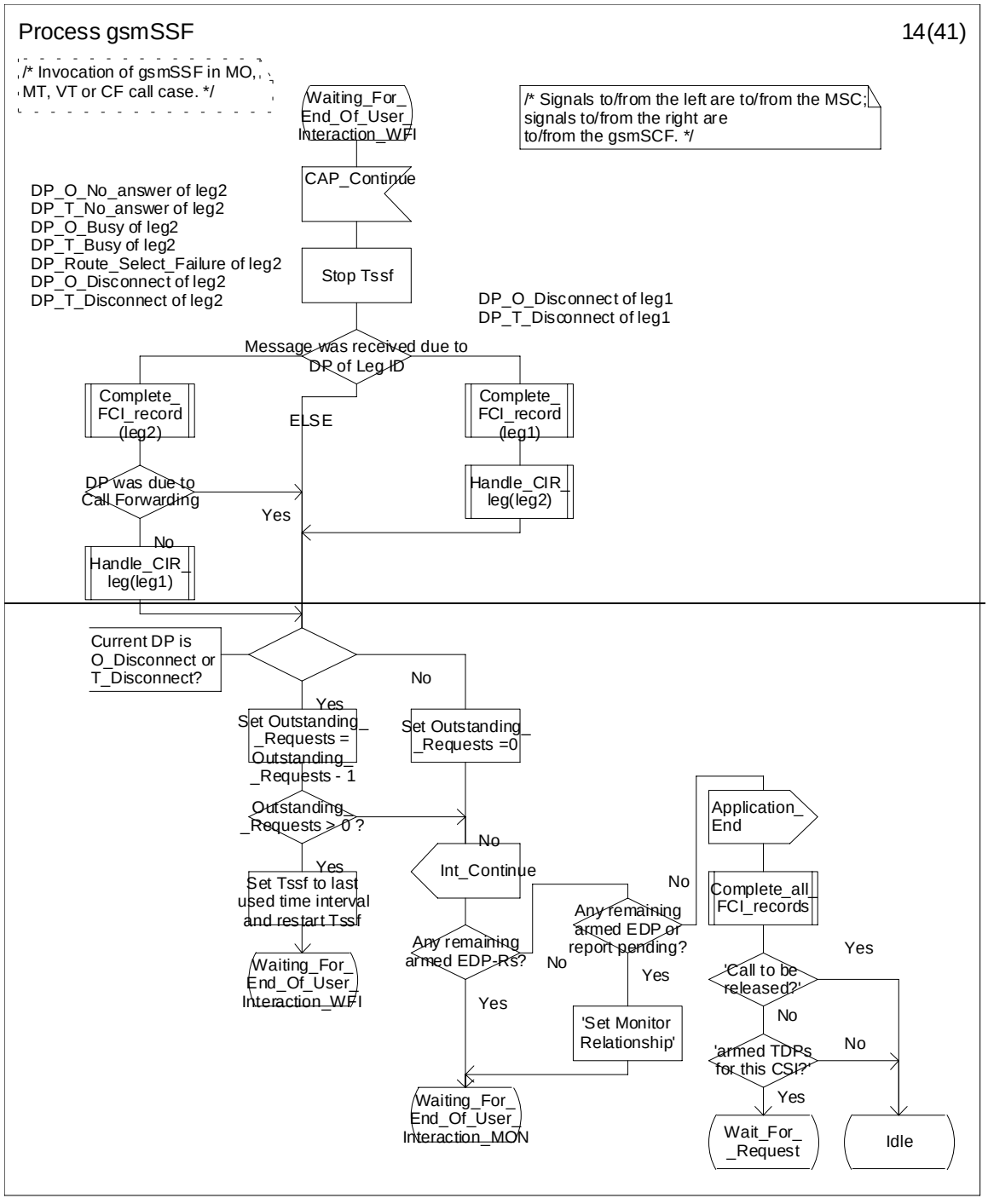



Process gsmSSF
12(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
Waiting_for_End_Of_Temporary_Connection
CAP_Disconnect_ForwardConnection
Int_TC_Released
CAP_Apply_Charging
CAP_Reset_Timer
Tssf expired
Internal
Handle_ACR
Handle_ACR
Handle_AC
Set Tssf to CAP_Reset_Timer time interval and restart Tssf
Abort
Int_Disconnect_Forward_Connection
Int_Disconnect_Forward_Connection
Waiting_for_End_Of_Temporary_Connection
TC_Release_Pending
Set Tssf to last used time interval and restart Tssf
CallActive := FALSE
Int_TC_Released
Int_Error
Waiting_For_Instructions
Complete_all_FCI_record
No
'Default call handling = continue call?'
Yes
No
'armed TDPs for this CSI?'
Yes
Wait_For_Request
Idle

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



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



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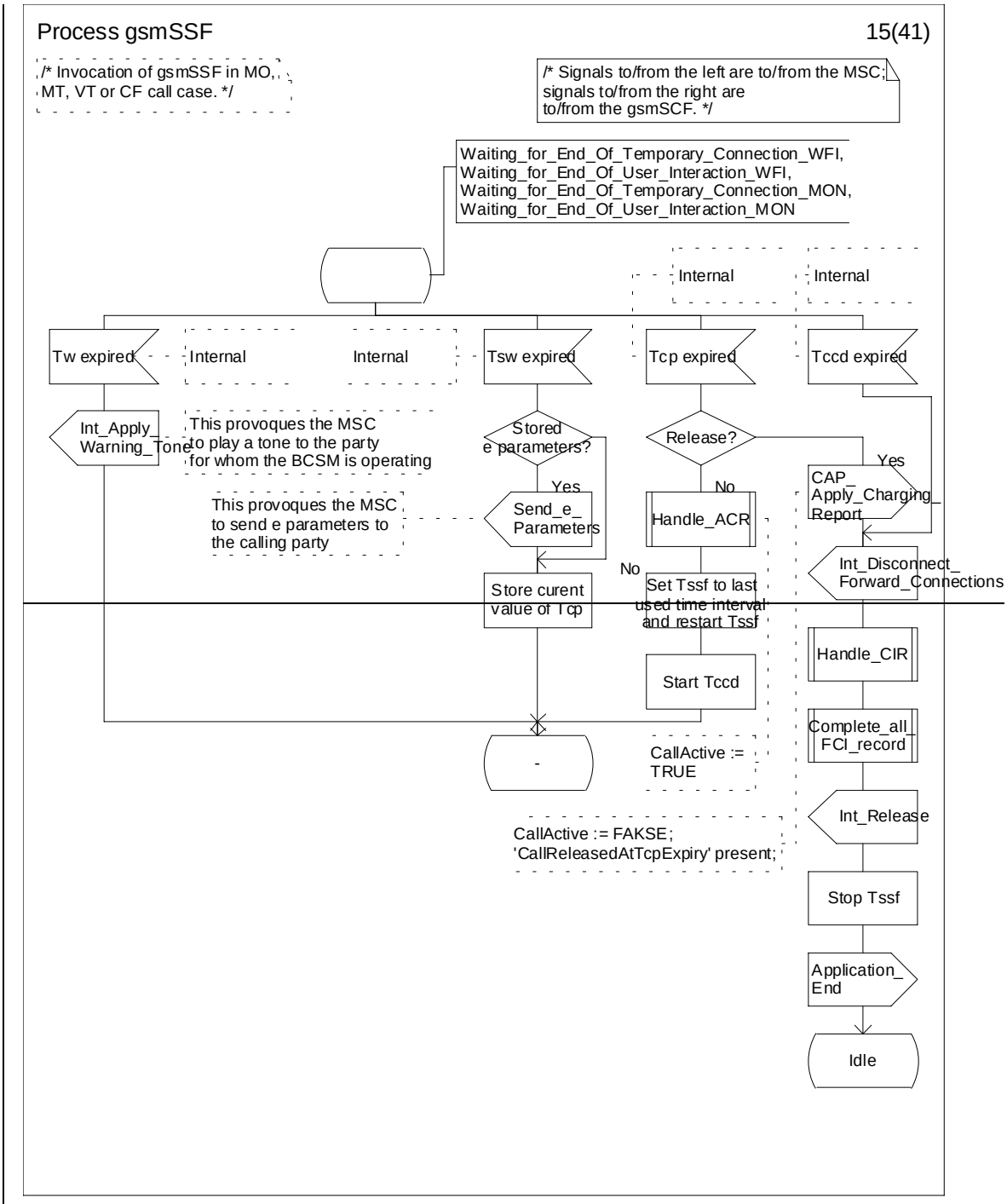
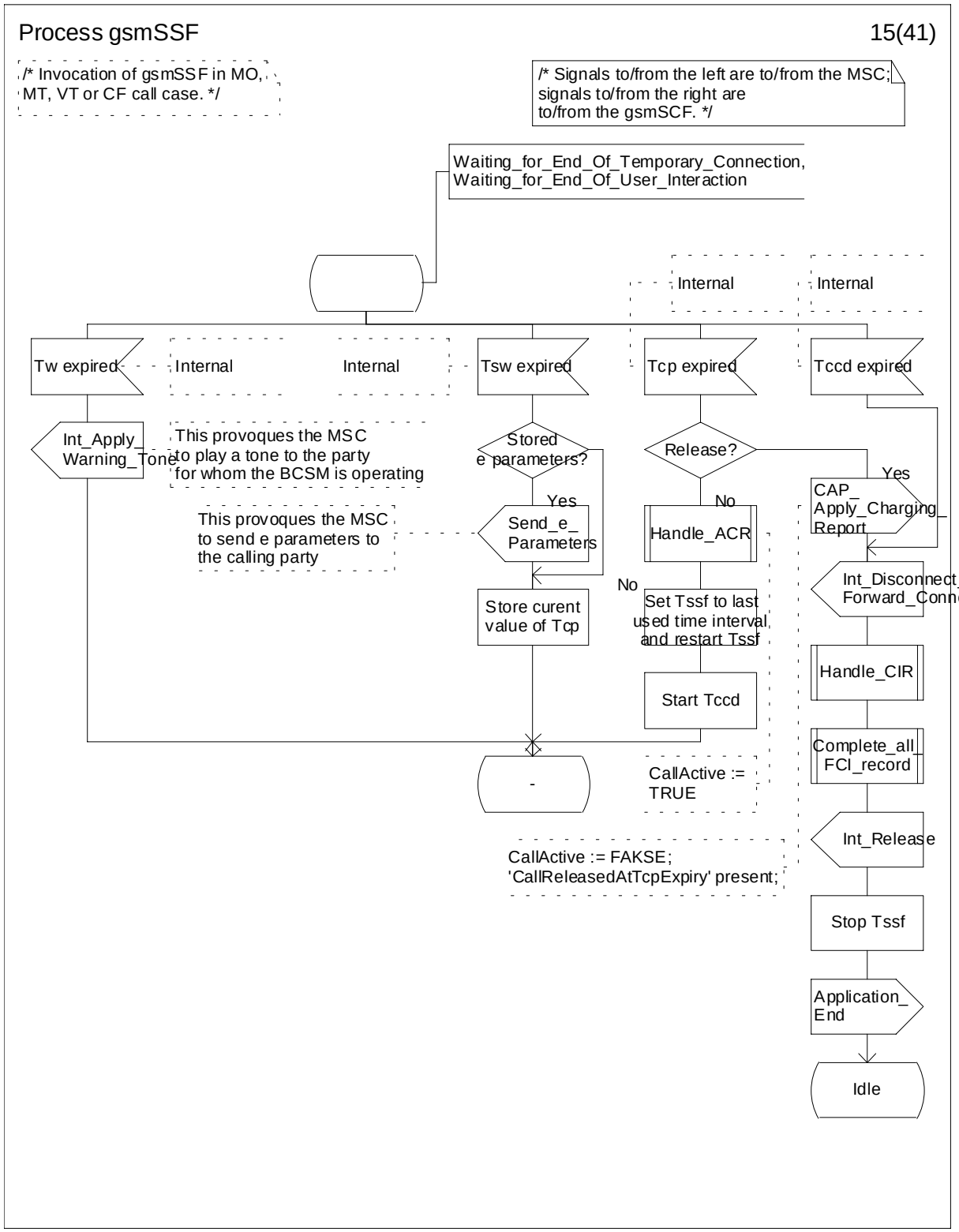
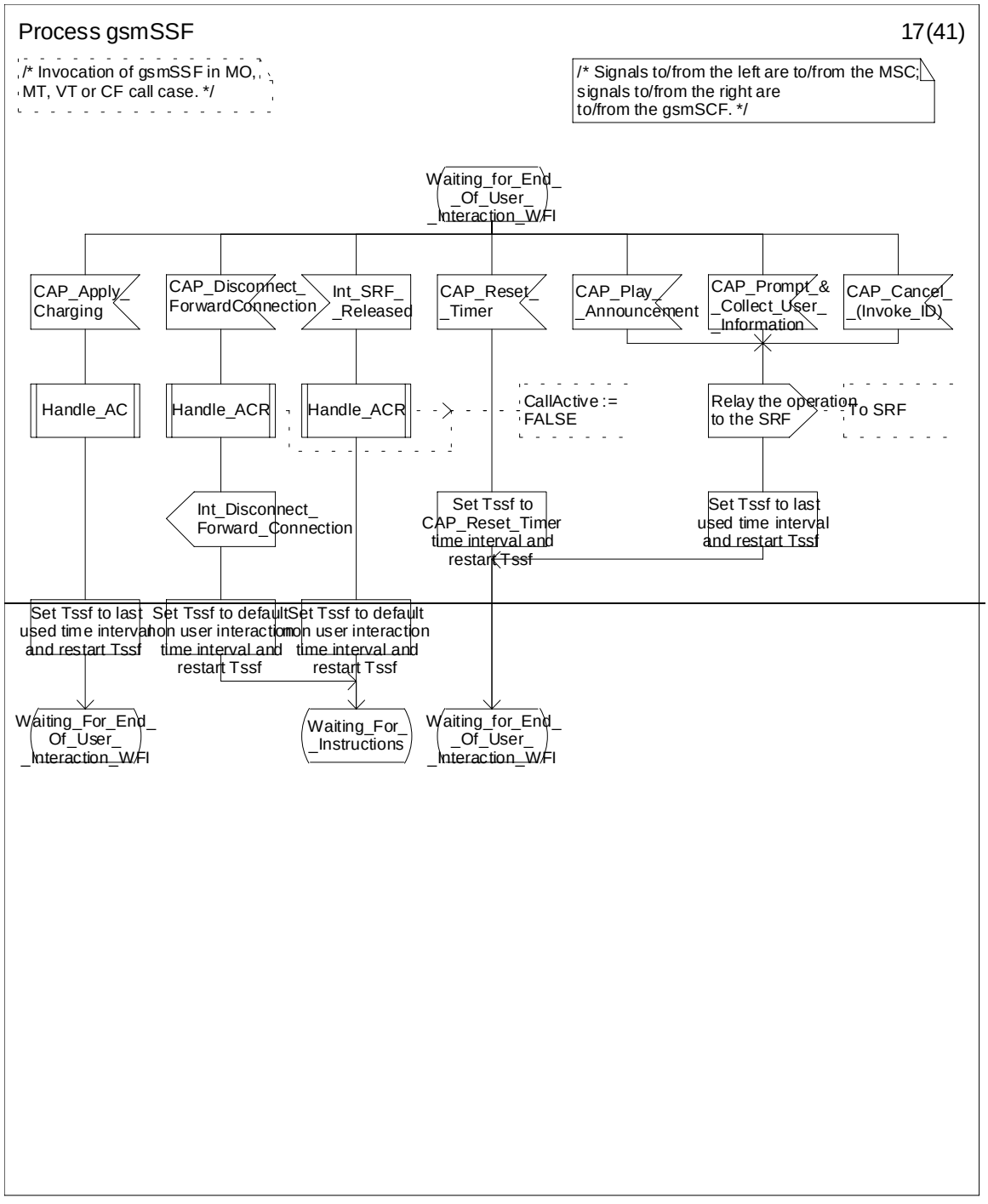
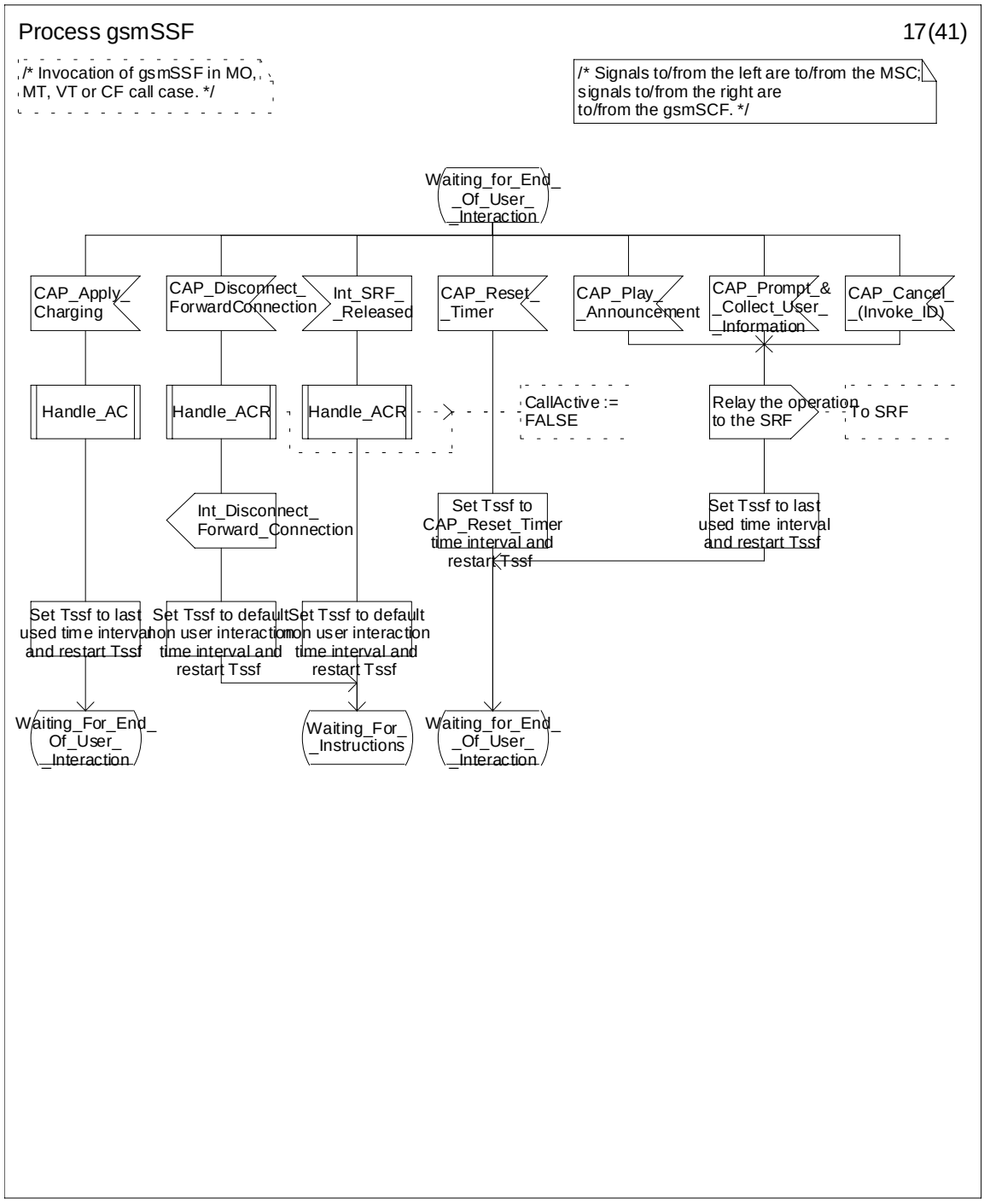


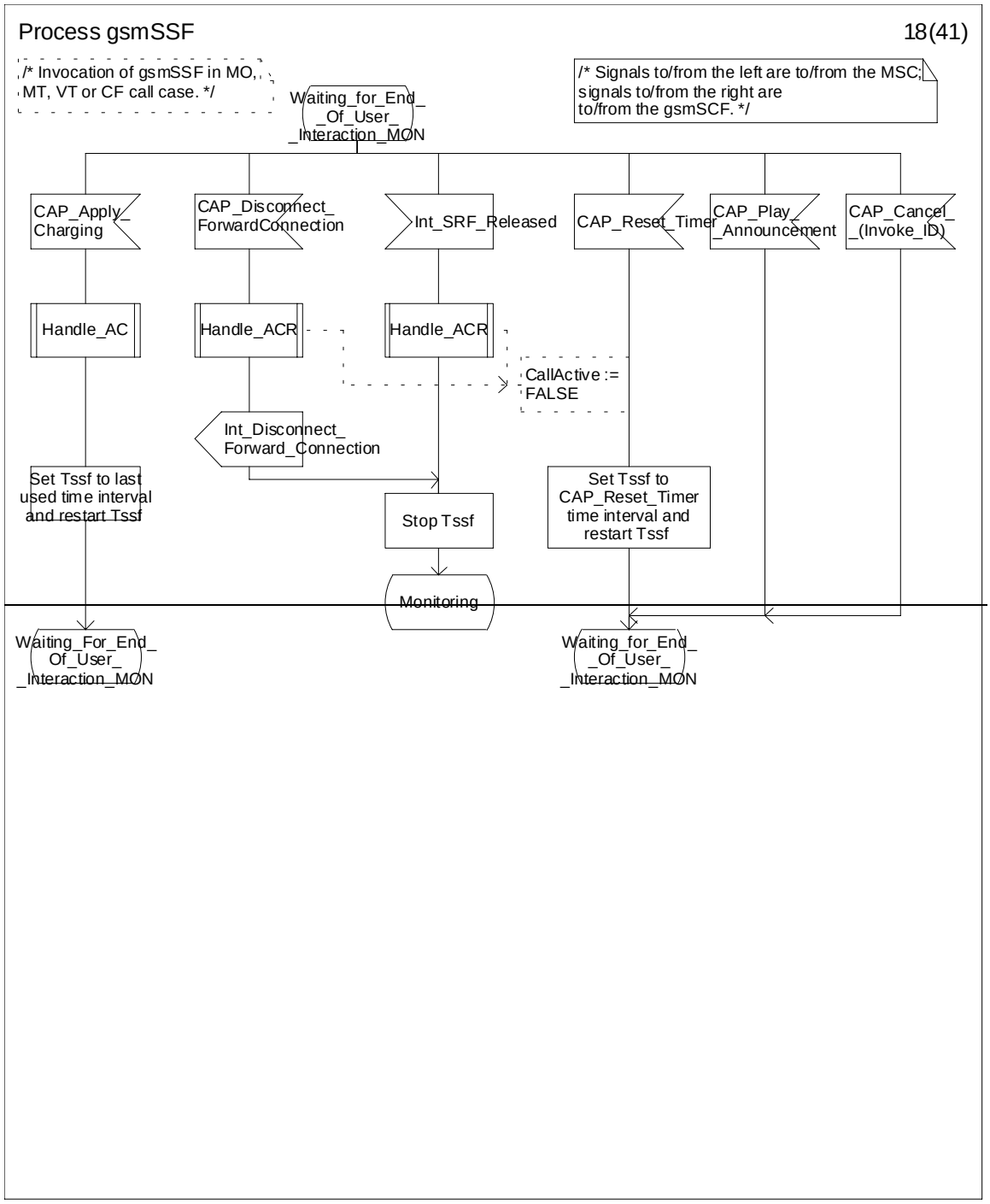

Process gsmSSF
15(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
Waiting_for_End_Of_Temporary_Connection, Waiting_for_End_Of_User_Interaction
Internal
Internal
Tw expired
Internal
Internal
Tsw expired
Tcp expired
Tccd expired
Int_Apply_ Warning_Tone
This provoques the MSC to play a tone to the party for whom the BCSM is operating
Stored e parameters?
Release?
Yes
CAP_ Apply_Charging_ Report
This provoques the MSC to send e parameters to the calling party
Yes
Send_e_ Parameters
No
Handle_ACR
No
Int_Disconnect_ Forward_Connections
Store curent value of Tcp
Set Tssf to last used time interval and restart Tssf
Handle_CIR
Start Tccd
Complete_all_ FCI_record
-
CallActive := TRUE
CallActive := FAKSE; 'CallReleasedAtTcpExpiry' present;
Int_Release
Stop Tssf
Application_ End
Idle

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




Process gsmSSF
17(41)
/* 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_End_Of_User_Interaction
CAP_Apply_Charging
CAP_Disconnect_ForwardConnection
Int_SRF_Released
CAP_Reset_Timer
CAP_Play_Announcement
CAP_Prompt_&_Collect_User_Information
CAP_Cancel_(Invoke_ID)
Handle_AC
Handle_ACR
Handle_ACR
CallActive := FALSE
Relay the operation to the SRF
To SRF
Int_Disconnect_Forward_Connection
Set Tssf to CAP_Reset_Timer time interval and restart Tssf
Set Tssf to last used time interval and restart Tssf
Set Tssf to last used time interval and restart Tssf
Set Tssf to default non user interaction time interval and restart Tssf
Set Tssf to default non user interaction time interval and restart Tssf
Waiting_For_End_Of_User_Interaction
Waiting_For_Instructions
Waiting_for_End_Of_User_Interaction

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



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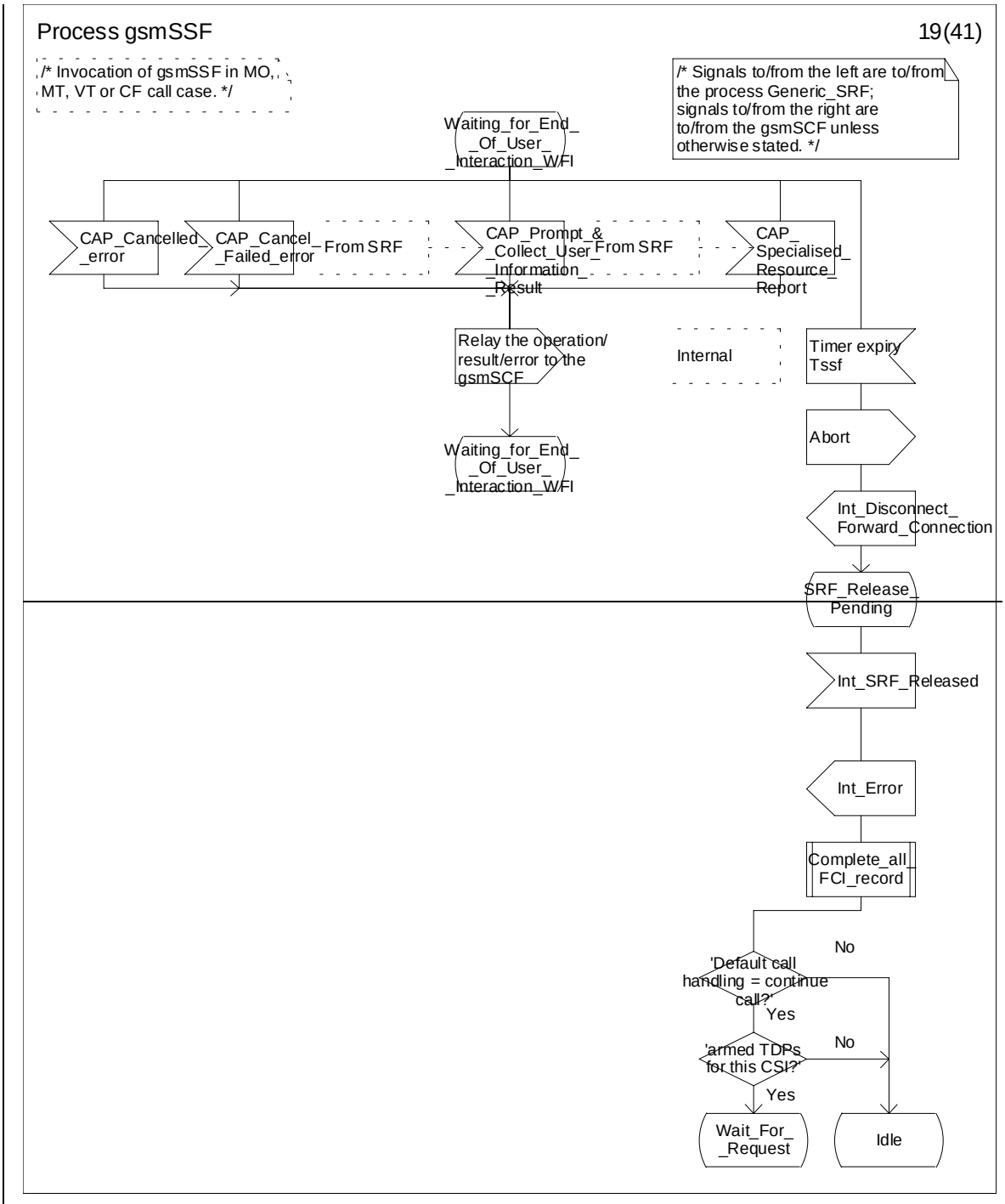
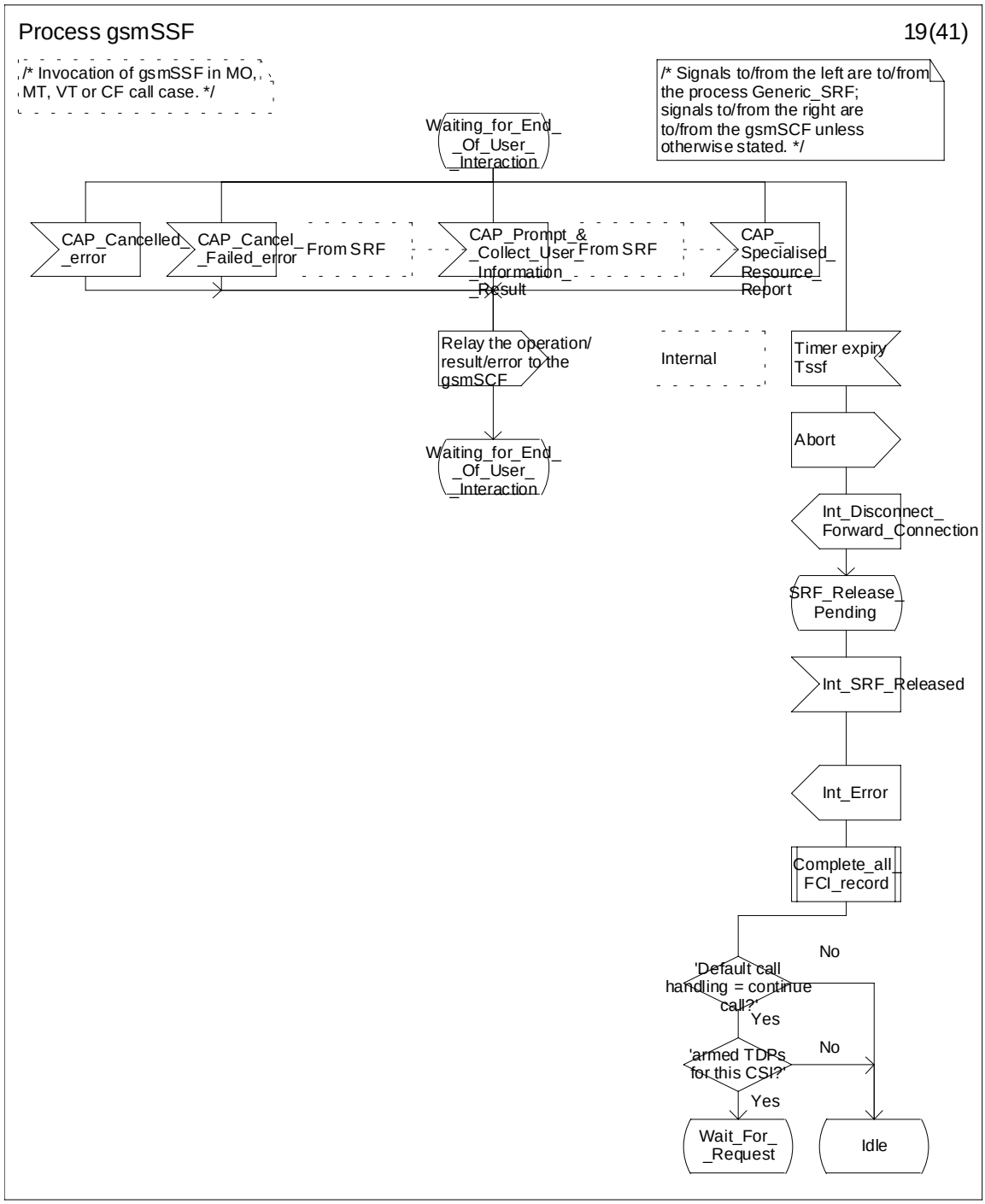
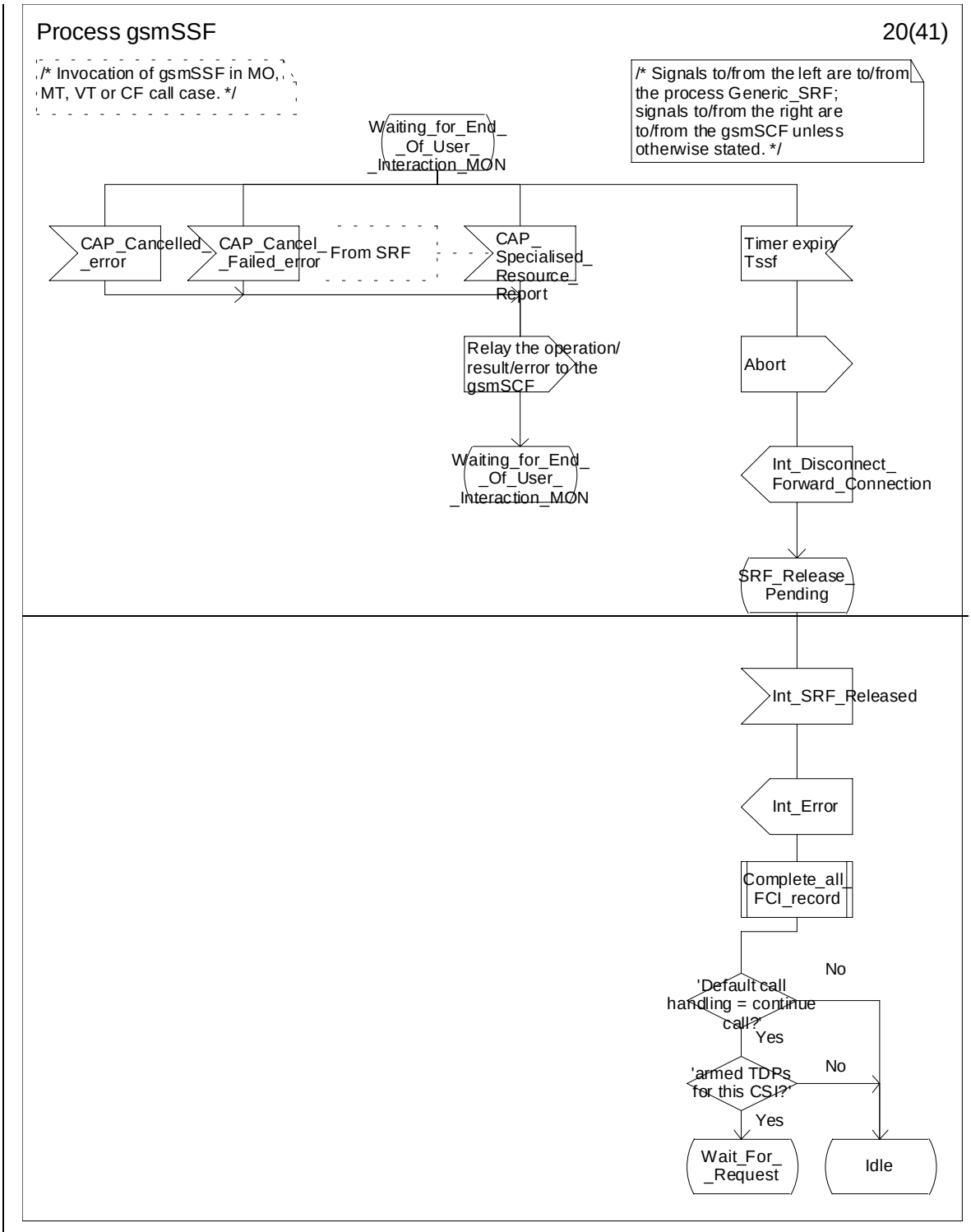
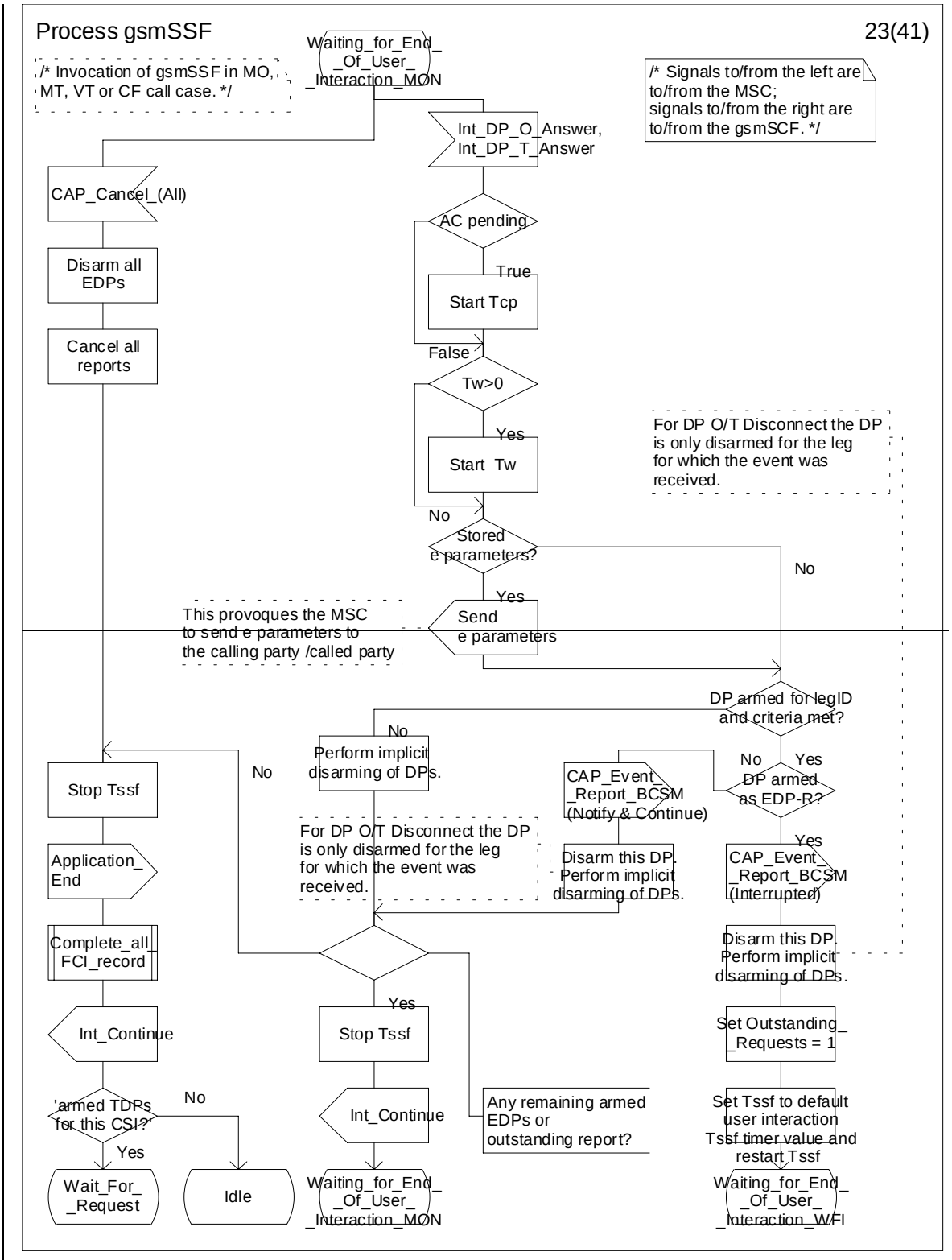



Process gsmSSF
19(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the process Generic_SRF; signals to/from the right are to/from the gsmSCF unless otherwise stated. */
Waiting_for_End_Of_User_Interaction
CAP_Cancelled_error
CAP_Cancel_Failed_error
From SRF
CAP_Prompt_&_Collect_User_Information_Result
From SRF
CAP_Specialised_Resource_Report
Relay the operation/ result/error to the gsmSCF
Internal
Timer expiry Tssf
Waiting_for_End_Of_User_Interaction
Abort
Int_Disconnect_Forward_Connection
SRF_Release_Pending
Int_SRF_Released
Int_Error
Complete_all_FCI_record
No
'Default call handling = continue call?'
Yes
No
'armed TDPs for this CSI?'
Yes
Wait_For_Request
Idle

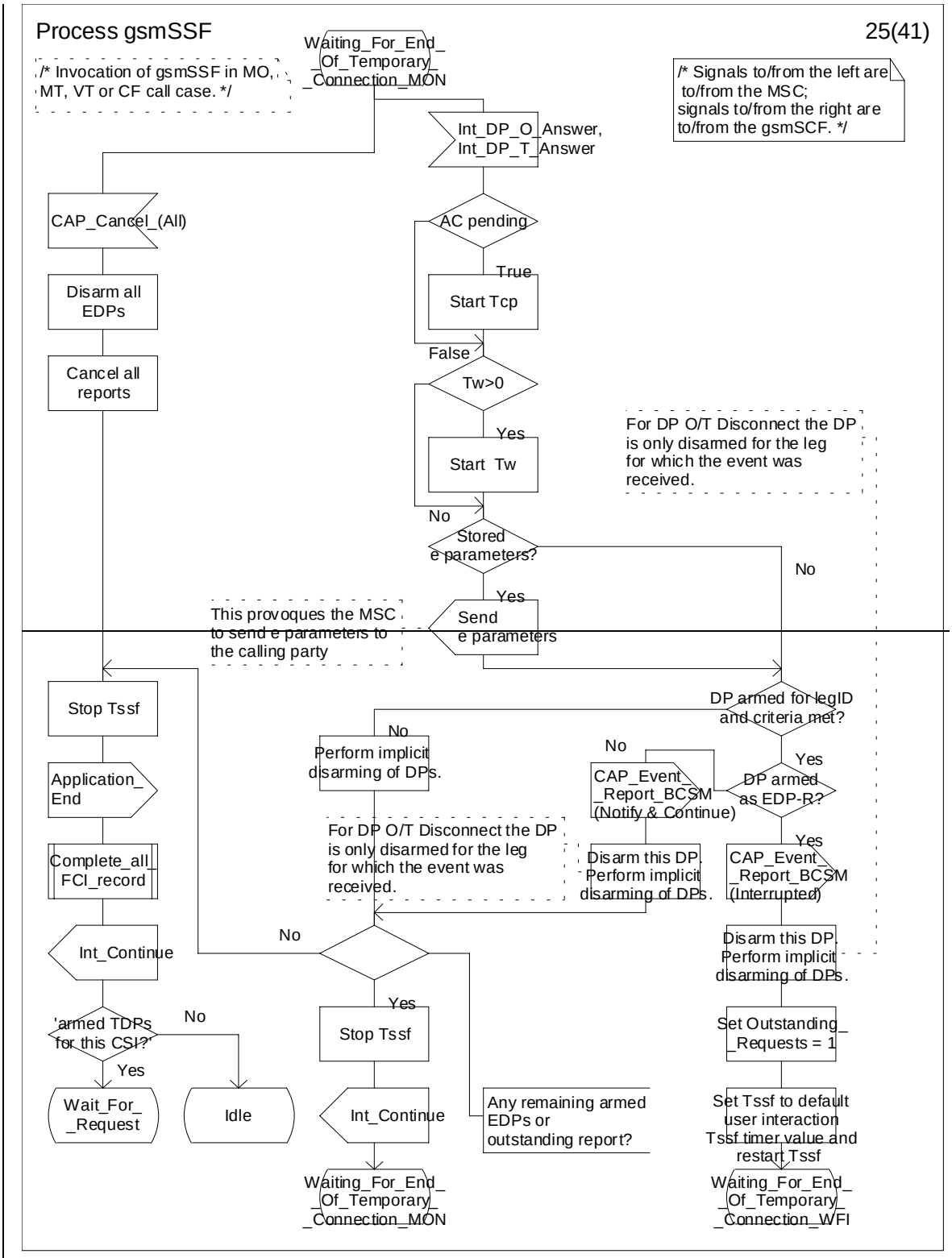
****** NEXT MODIFIED SECTION ******



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



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



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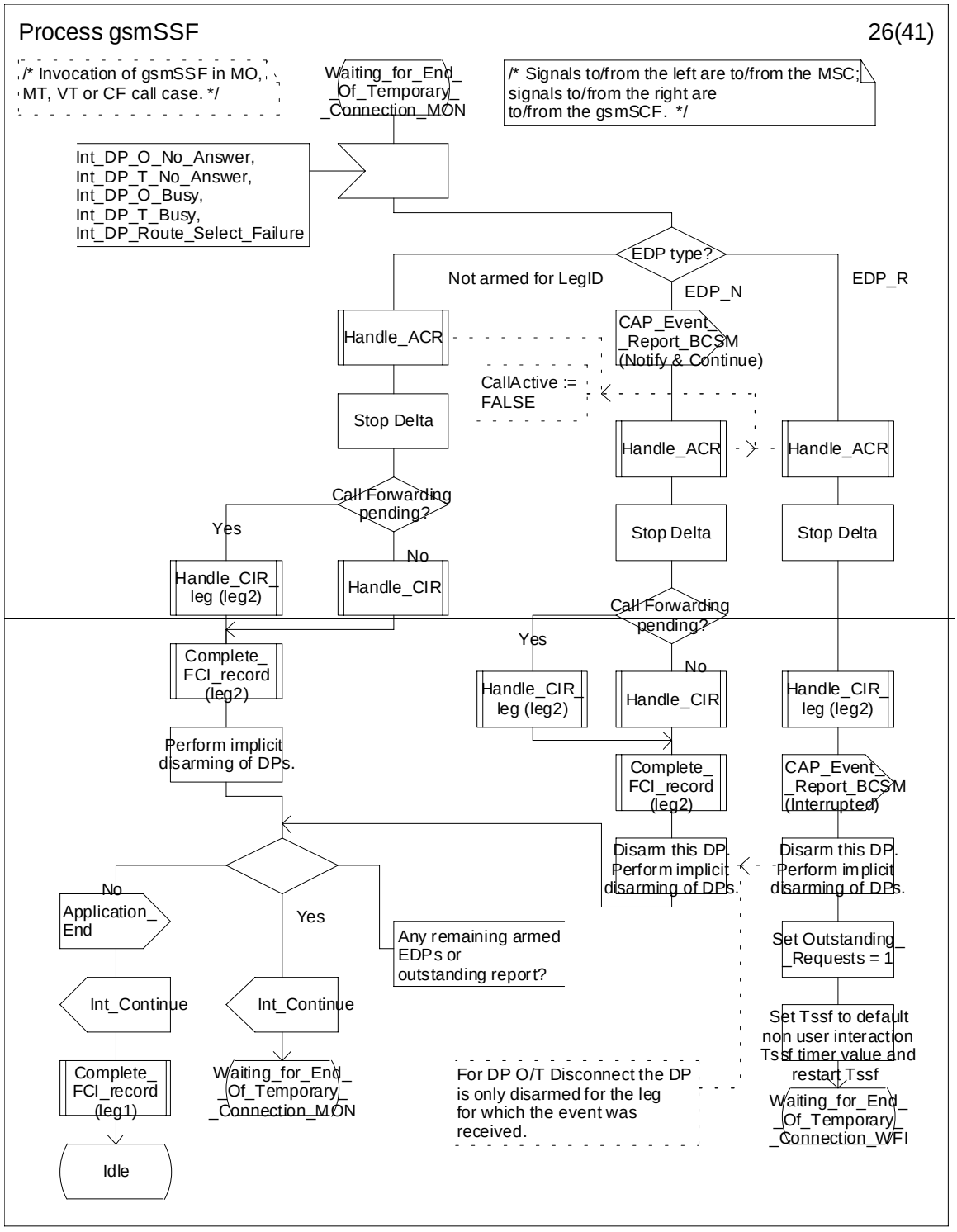
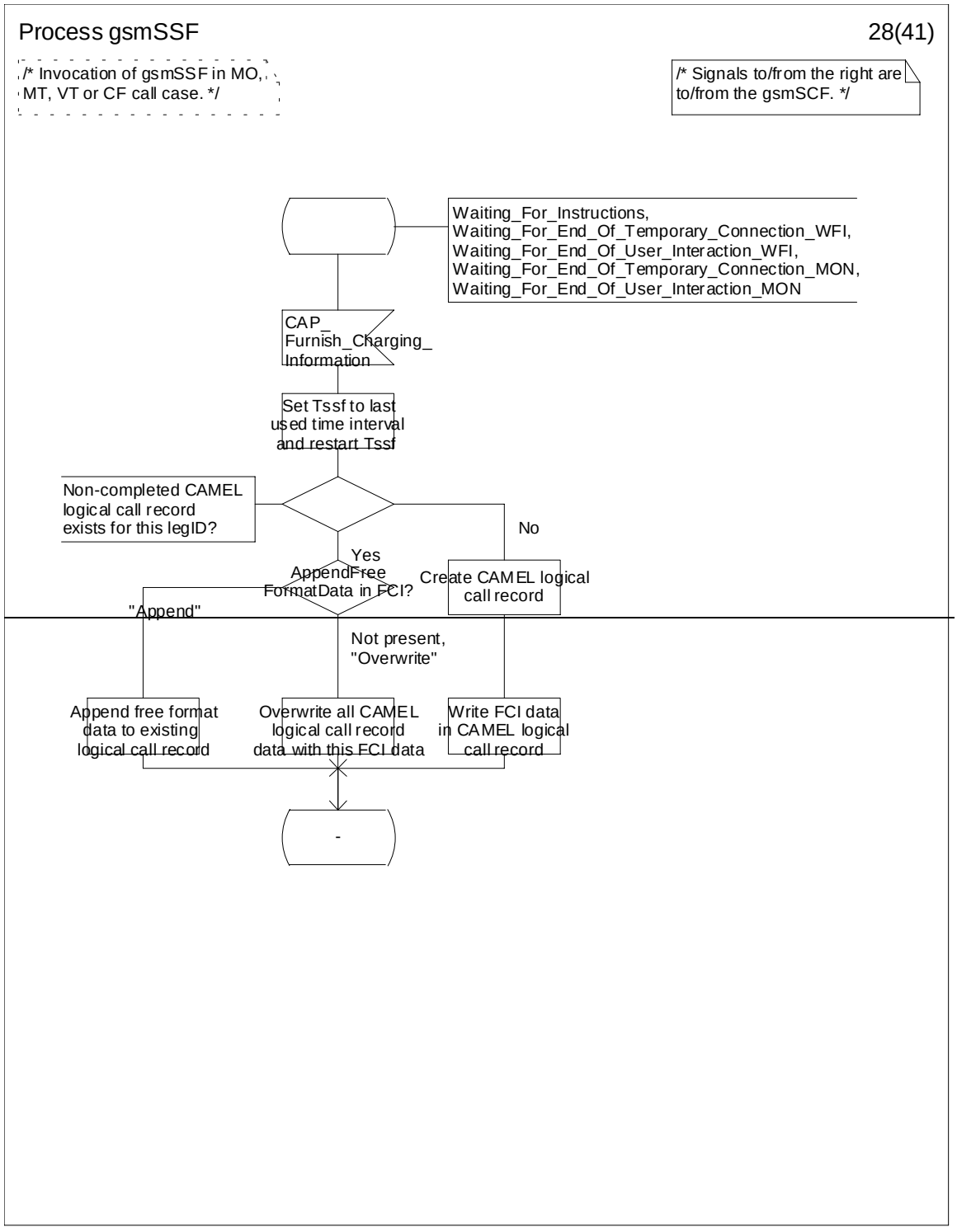
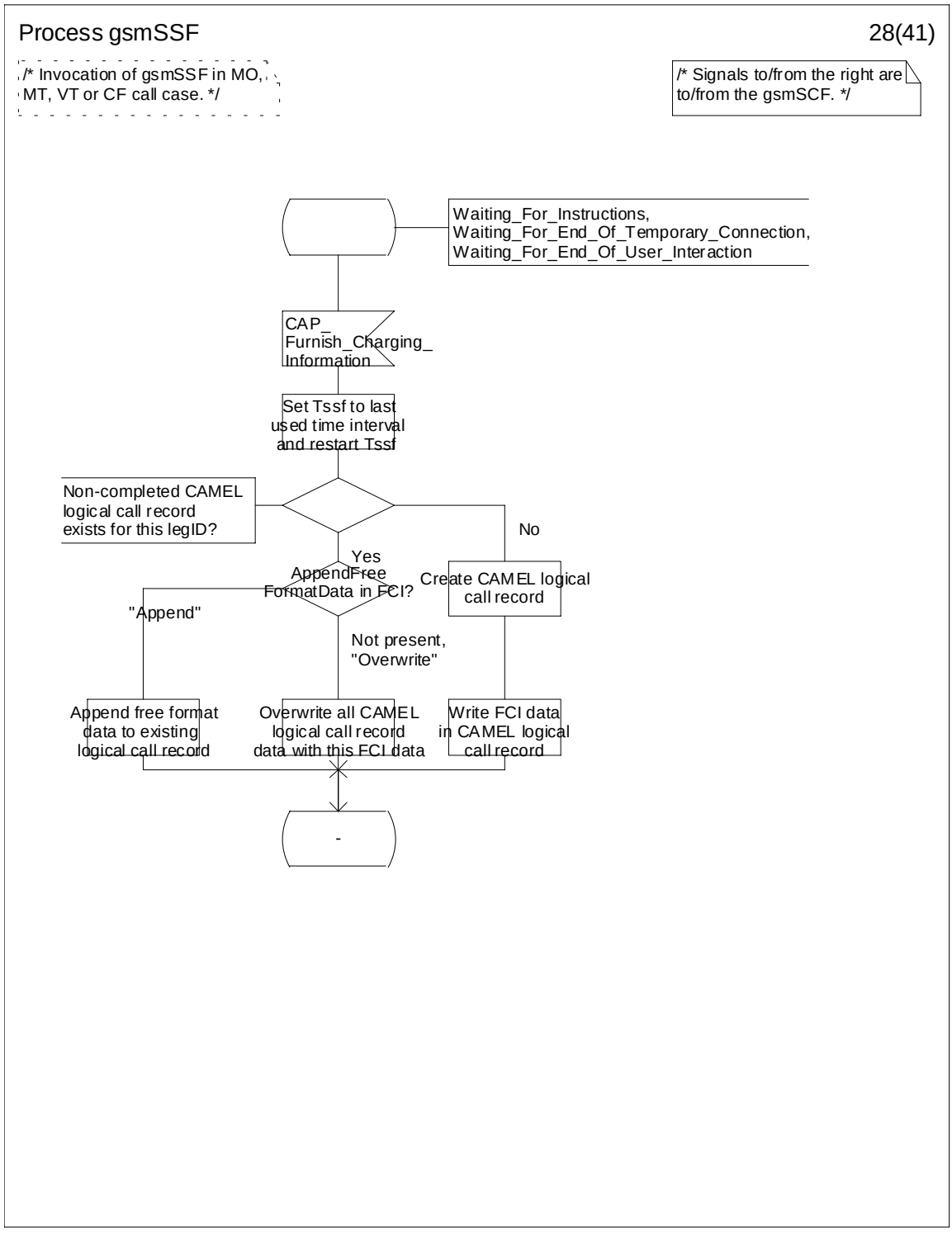
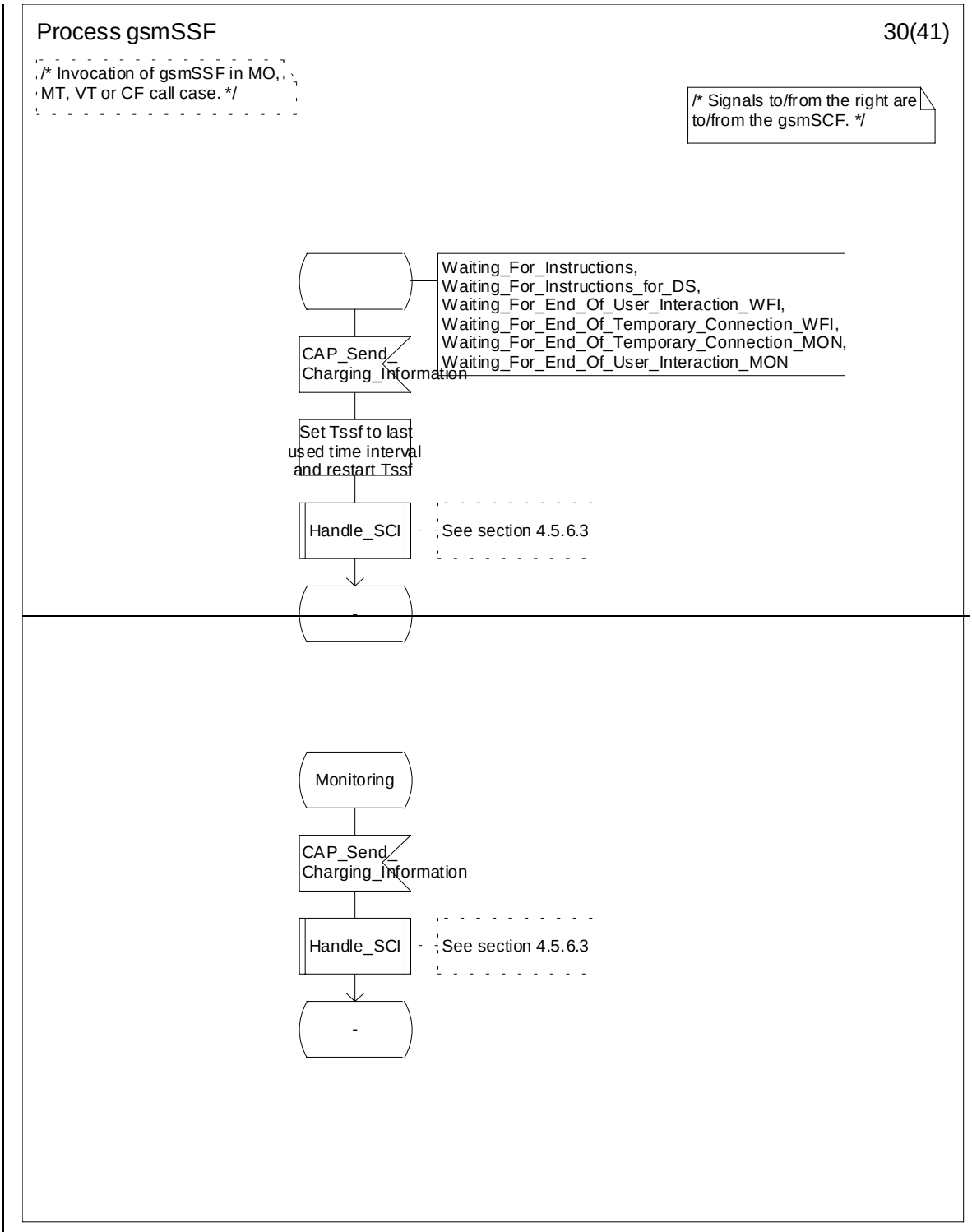


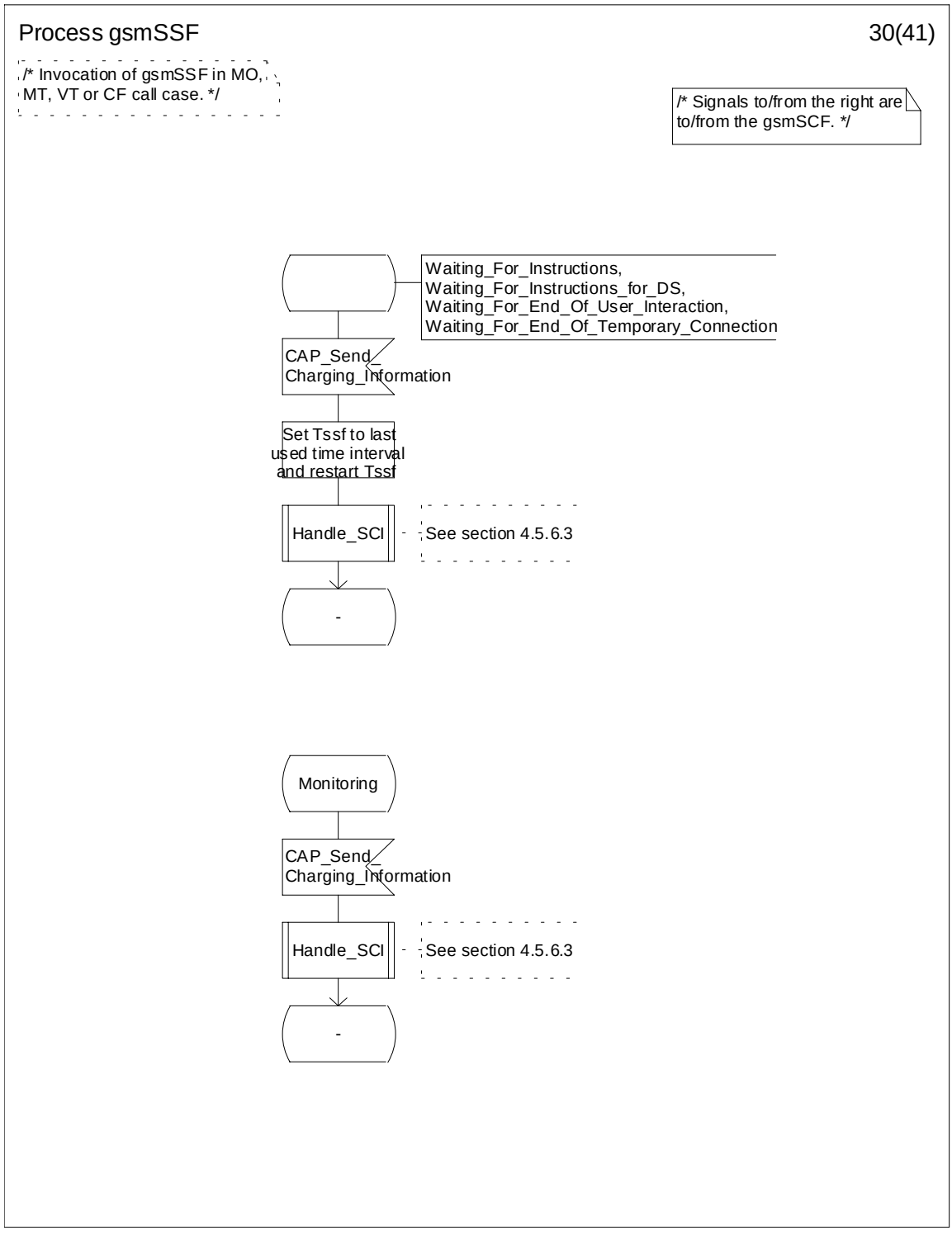
****** NEXT MODIFIED SECTION ******



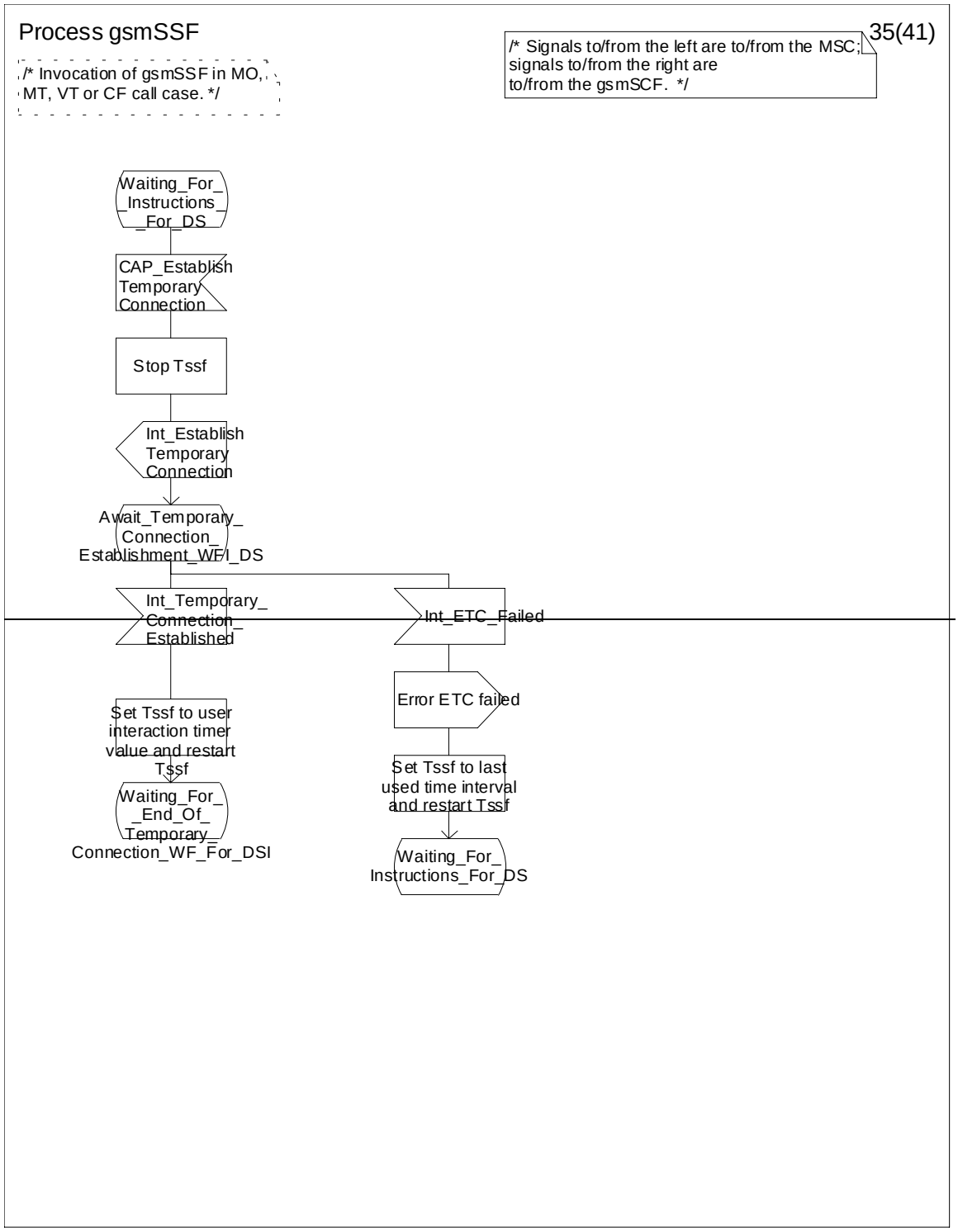

Process gsmSSF
28(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the right are to/from the gsmSCF. */
Waiting_For_Instructions, Waiting_For_End_Of_Temporary_Connection, Waiting_For_End_Of_User_Interaction
CAP_ Furnish_Charging_ Information
Set Tssf to last used time interval and restart Tssf
Non-completed CAMEL logical call record exists for this legID?
No
Yes
AppendFree FormatData in FCI?
Create CAMEL logical call record
"Append"
Not present, "Overwrite"
Append free format data to existing logical call record
Overwrite all CAMEL logical call record data with this FCI data
Write FCI data in CAMEL logical call record
-

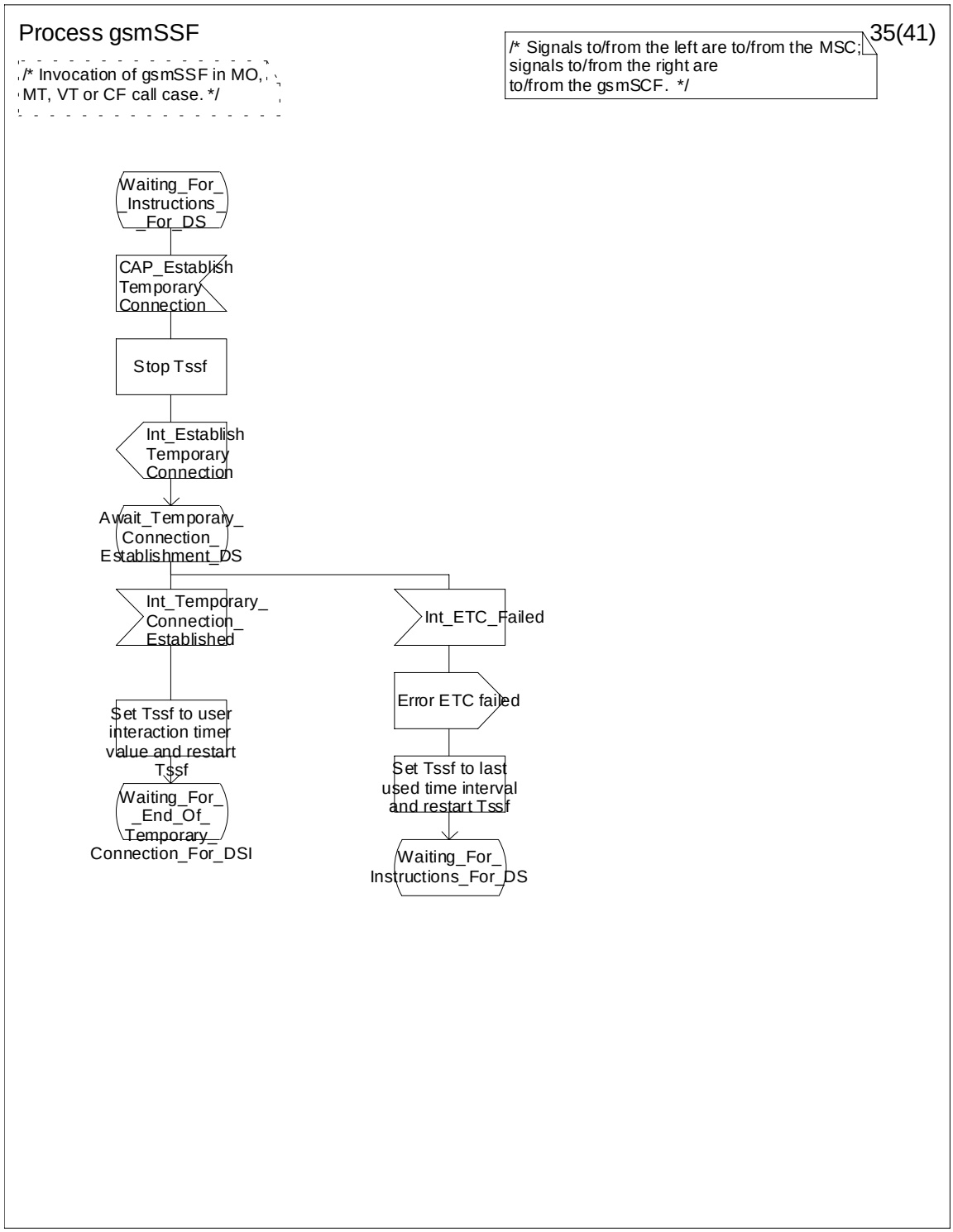
****** NEXT MODIFIED SECTION ******



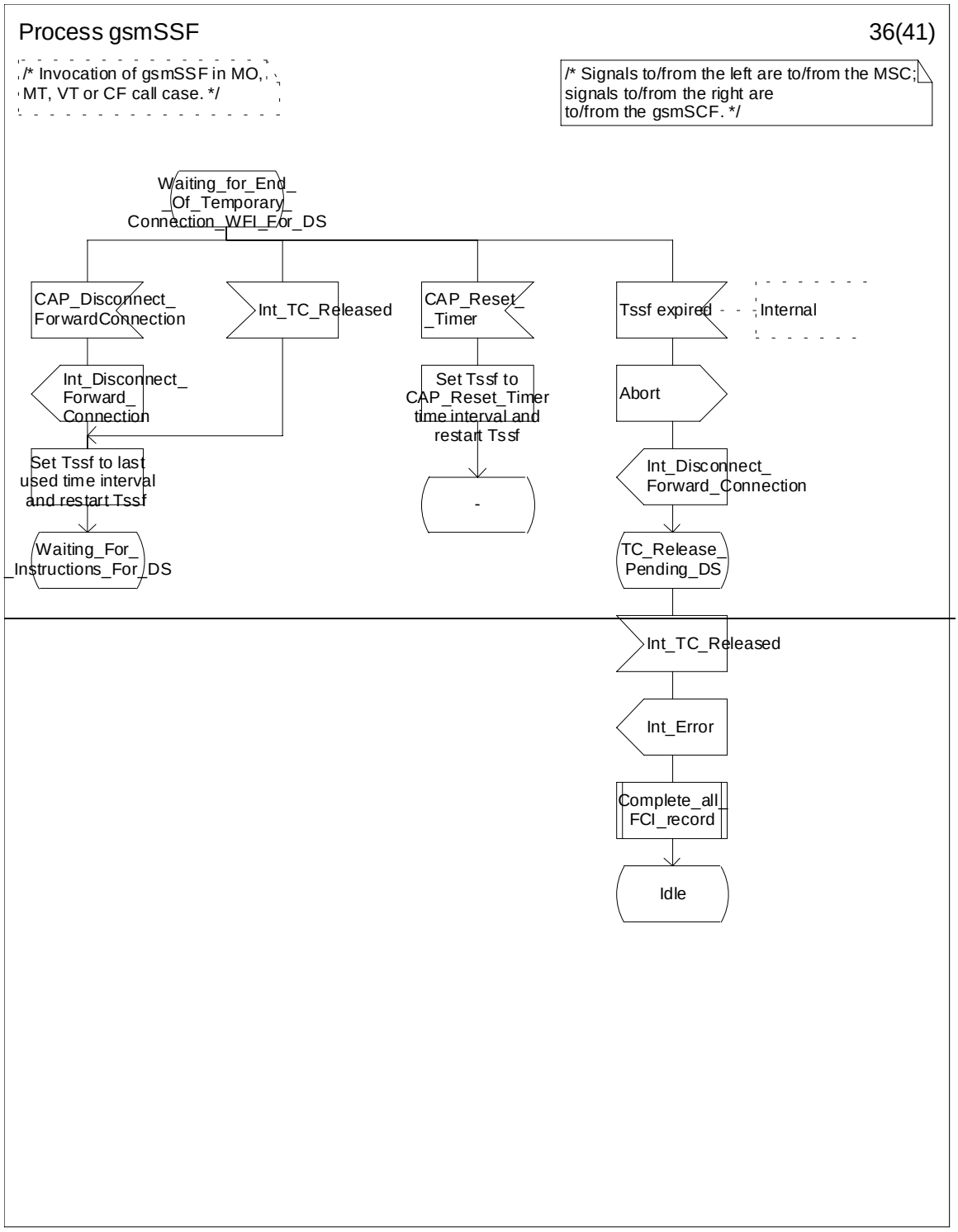

Process gsmSSF
30(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the right are to/from the gsmSCF. */
Waiting_For_Instructions,
Waiting_For_Instructions_for_DS,
Waiting_For_End_Of_User_Interaction,
Waiting_For_End_Of_Temporary_Connection
CAP_Send_Charging_Information
Set Tssf to last used time interval and restart Tssf
Handle_SCI
See section 4.5.6.3
-
Monitoring
CAP_Send_Charging_Information
Handle_SCI
See section 4.5.6.3
-

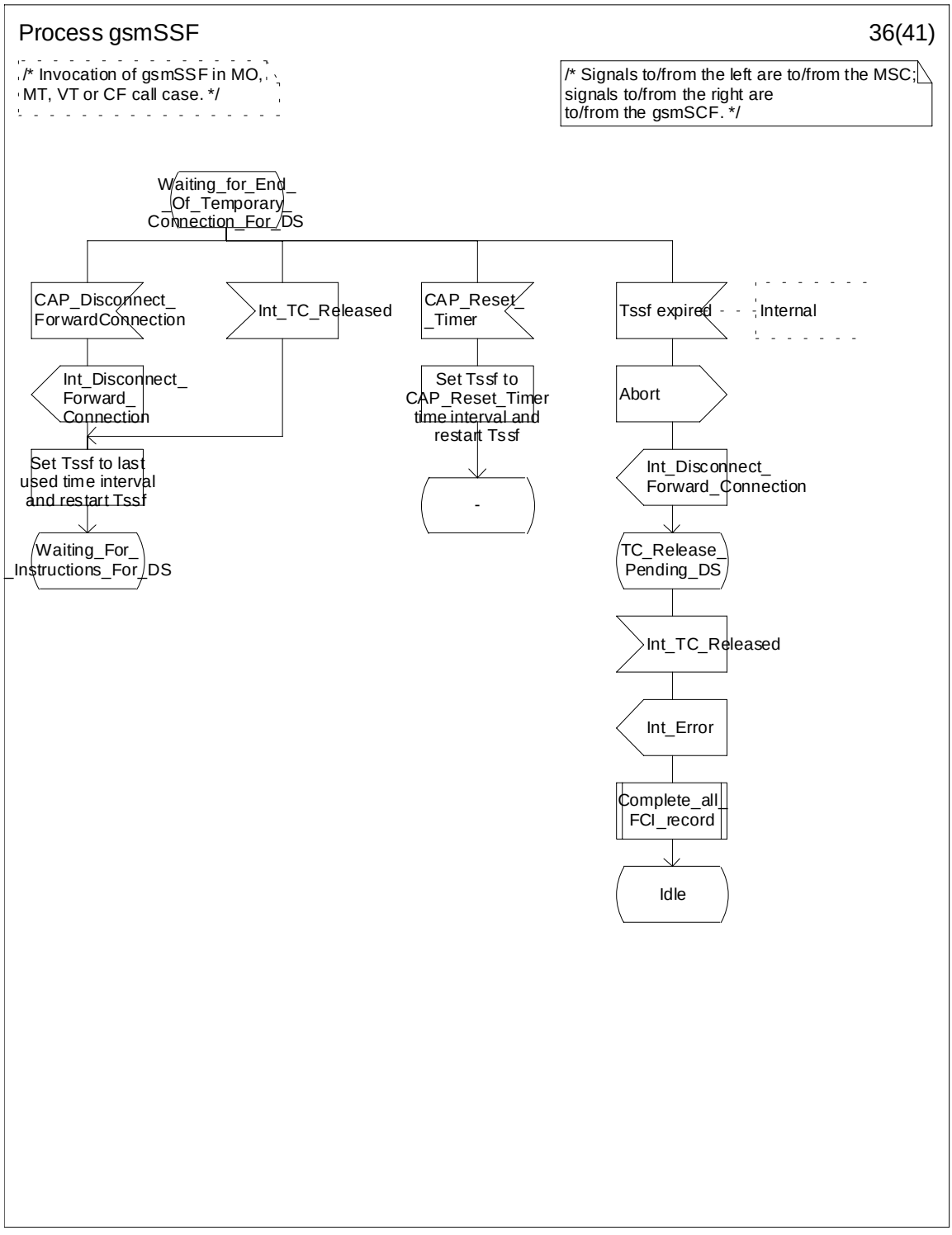
****** NEXT MODIFIED SECTION ******



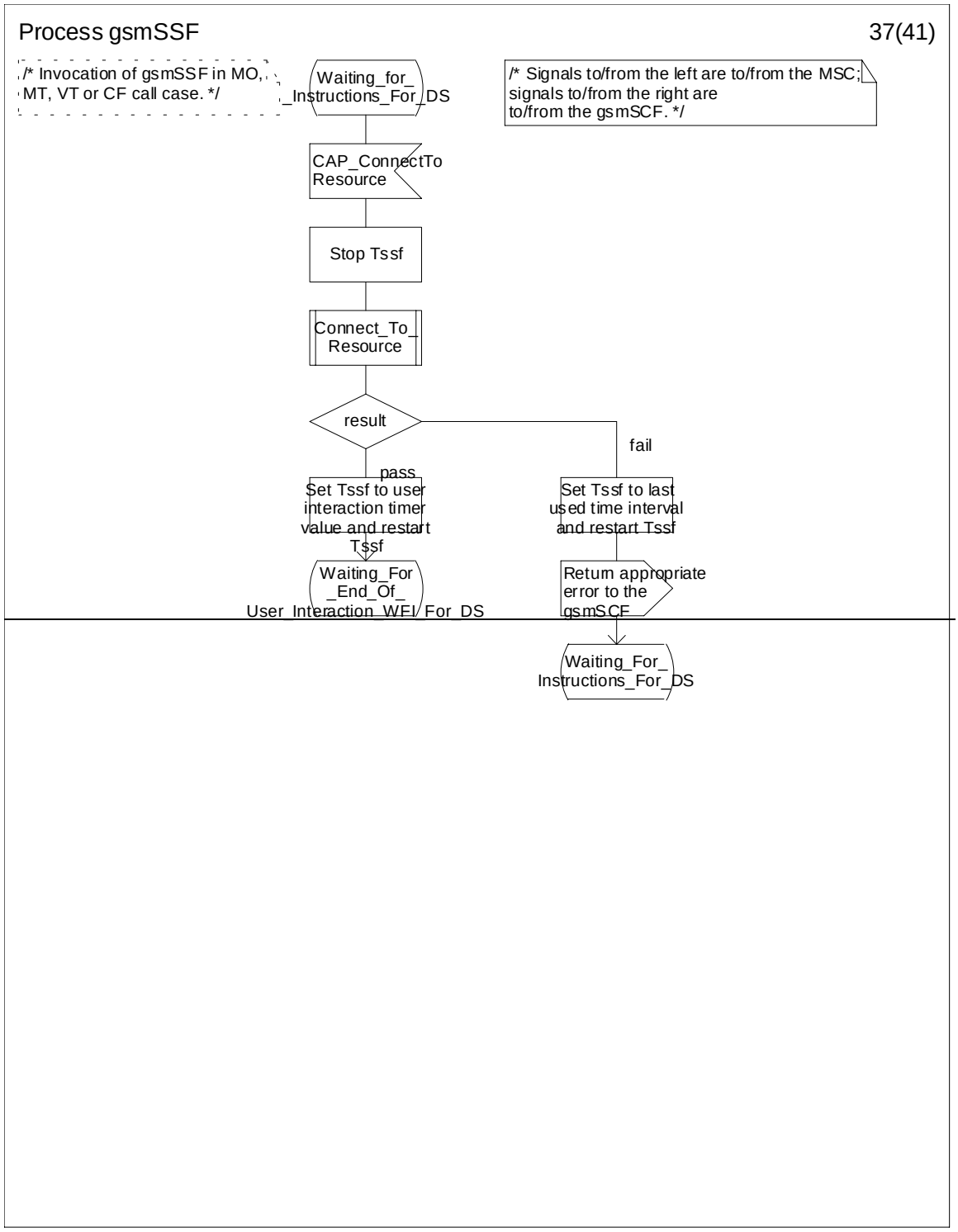

Process gsmSSF
35(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
Waiting_For_Instructions_For_DS
CAP_Establish Temporary Connection
Stop Tssf
Int_Establish Temporary Connection
Await_Temporary_Connection_Establishment_DS
Int_Temporary_Connection_Established
Int_ETC_Failed
Set Tssf to user interaction timer value and restart Tssf
Error ETC failed
Waiting_For_End_Of_Temporary_Connection_For_DSI
Set Tssf to last used time interval and restart Tssf
Waiting_For_Instructions_For_DS

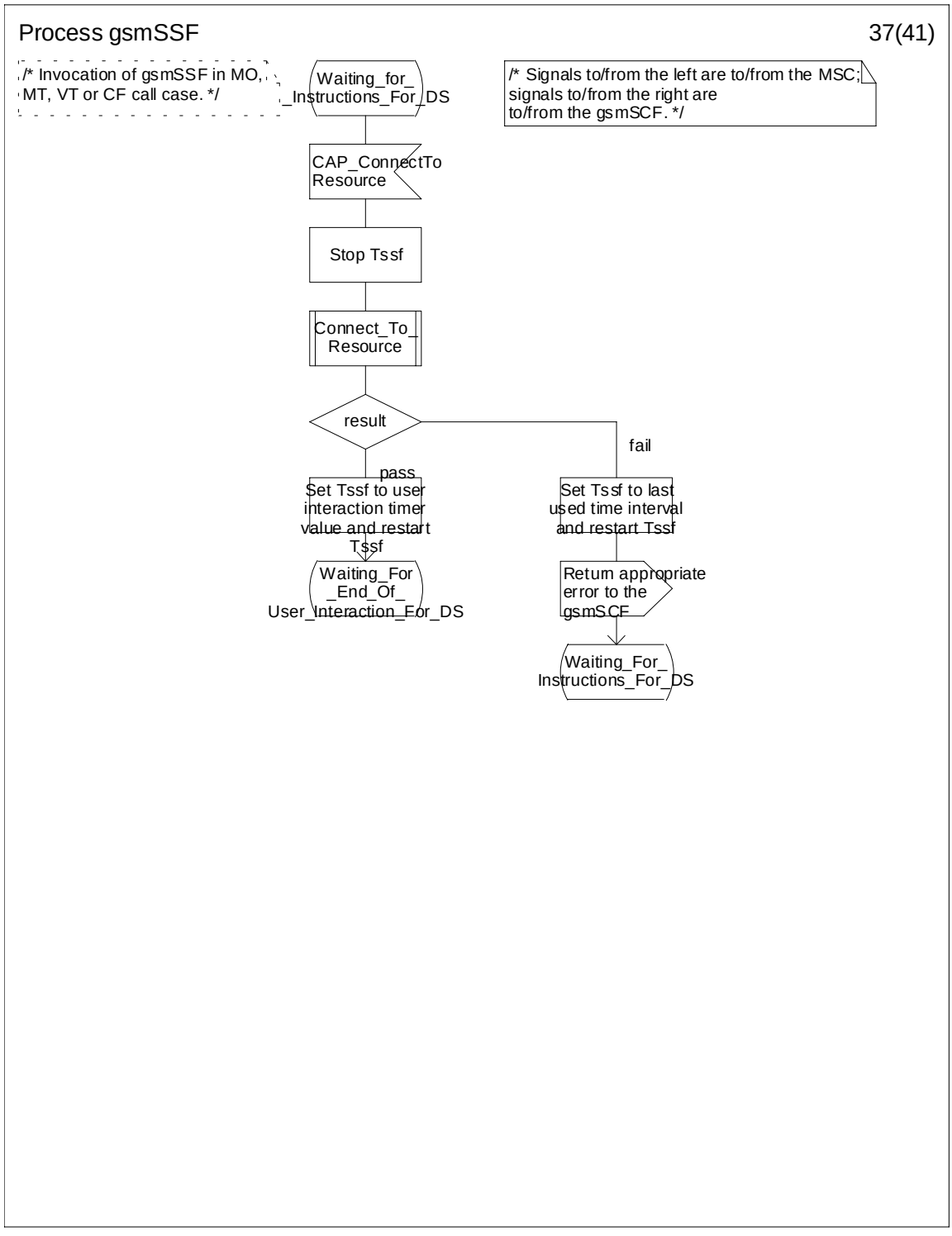
****** NEXT MODIFIED SECTION ******



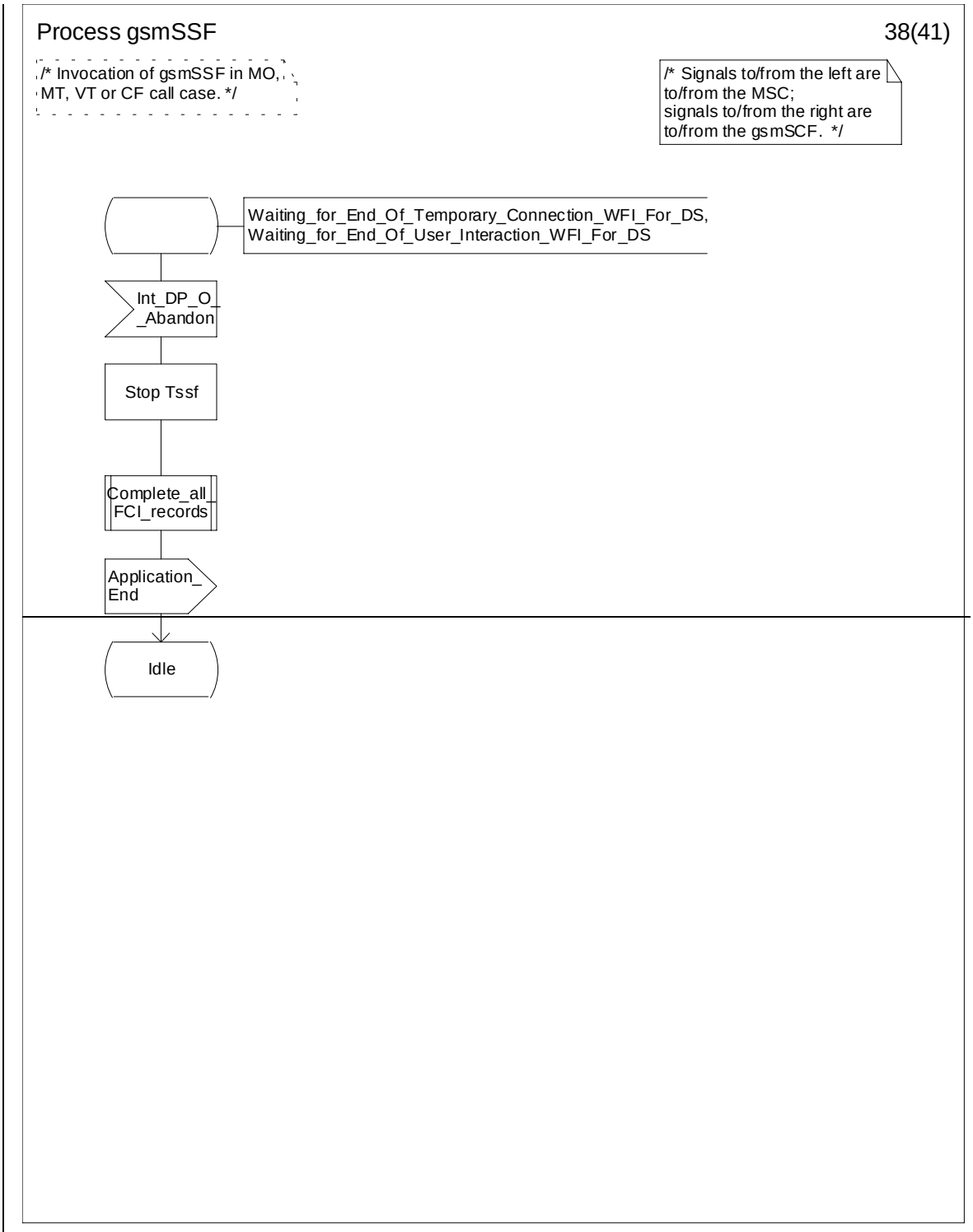

Process gsmSSF
36(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
Waiting_for_End_Of_Temporary_Connection_For_DS
CAP_Disconnect_ForwardConnection
Int_TC_Released
CAP_Reset_Timer
Tssf expired
Internal
Int_Disconnect_Forward_Connection
Set Tssf to CAP_Reset_Timer time interval and restart Tssf
Abort
Set Tssf to last used time interval and restart Tssf
-
Int_Disconnect_Forward_Connection
Waiting_For_Instructions_For_DS
TC_Release_Pending_DS
Int_TC_Released
Int_Error
Complete_all_FCI_record
Idle

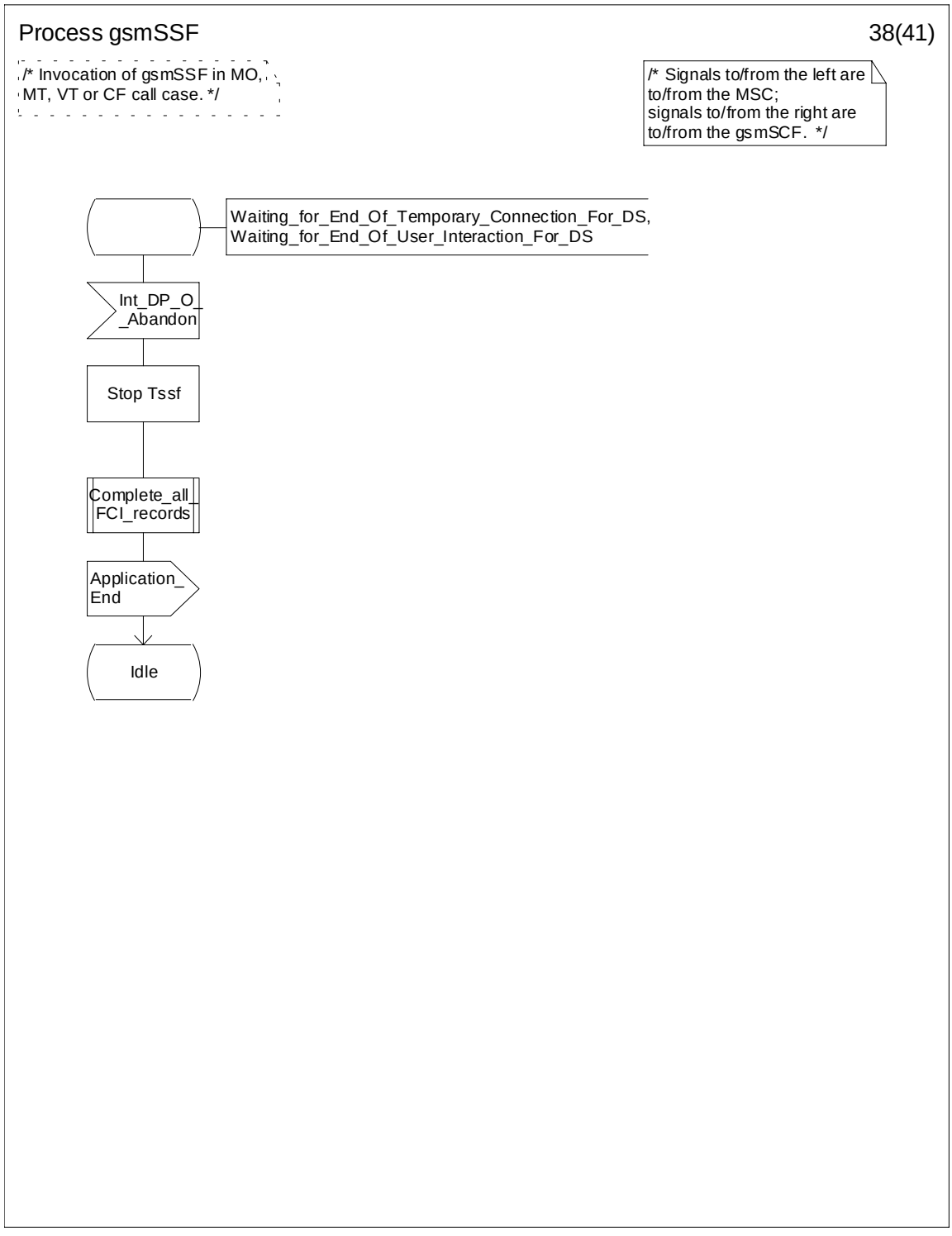
****** NEXT MODIFIED SECTION ******



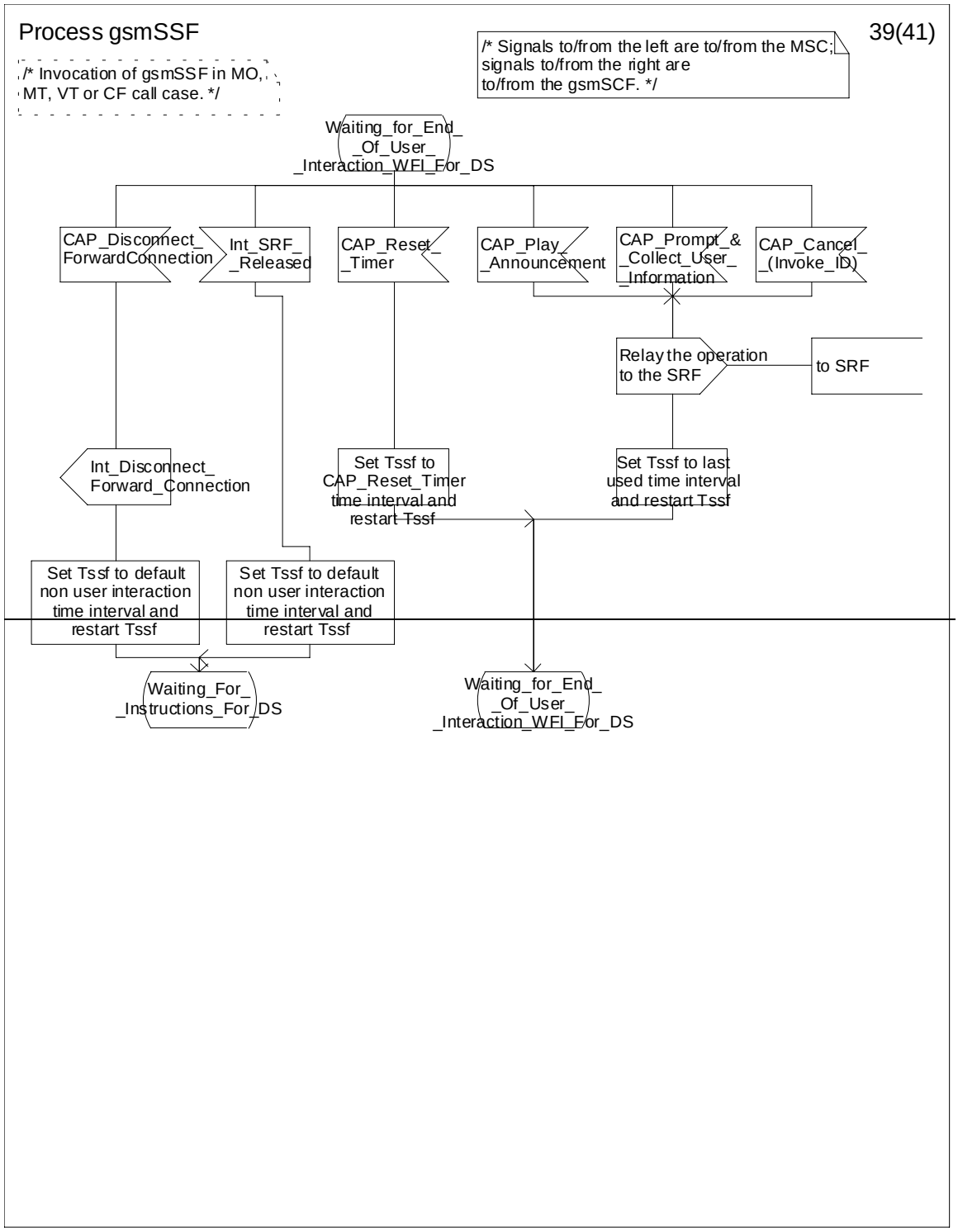

Process gsmSSF
37(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
Waiting_for_Instructions_For_DS
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
CAP_ConnectToResource
Stop Tssf
Connect_To_Resource
result
pass
fail
Set Tssf to user interaction timer value and restart Tssf
Waiting_For_End_Of_User_Interaction_For_DS
Set Tssf to last used time interval and restart Tssf
Return appropriate error to the gsmSCF
Waiting_For_Instructions_For_DS

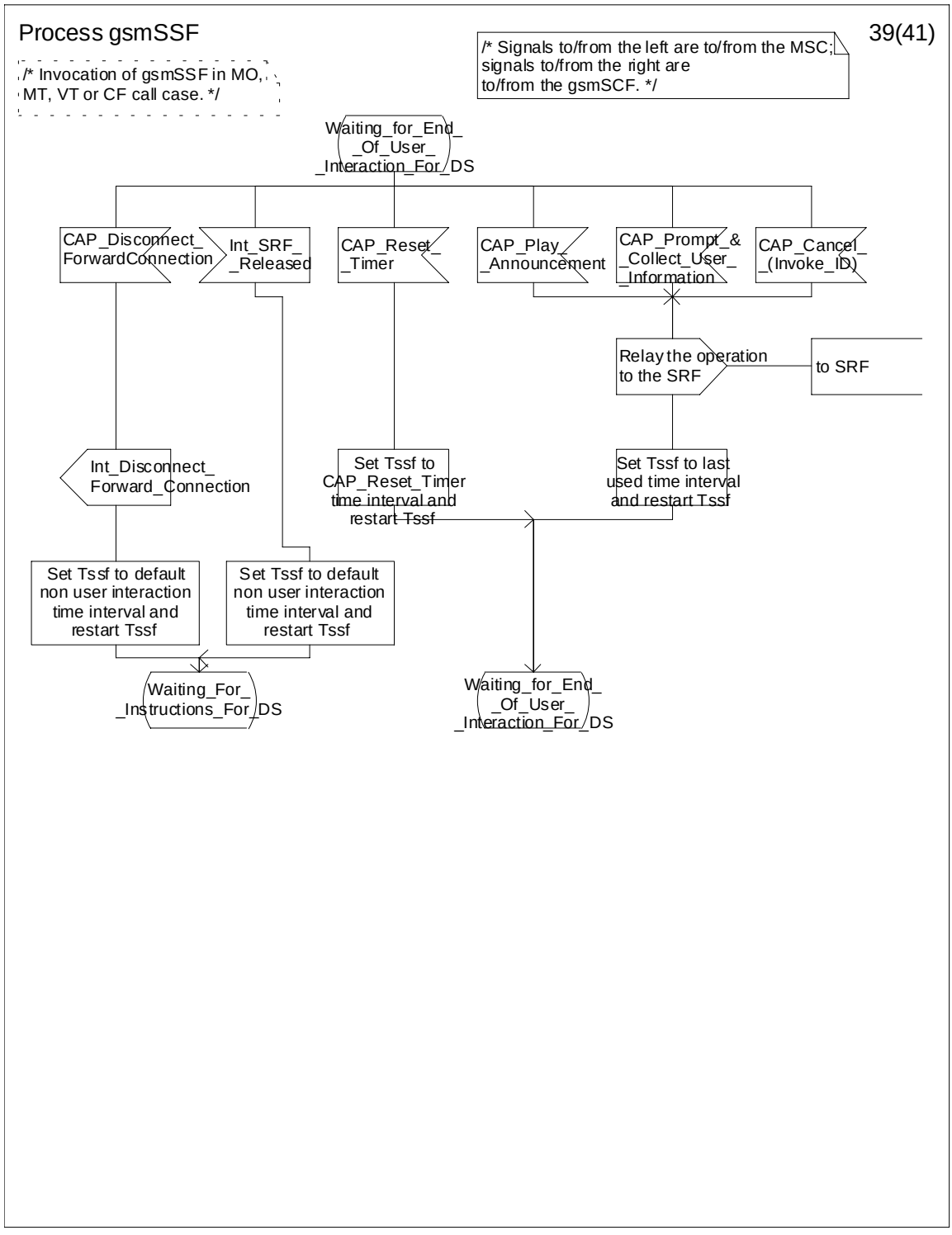
****** NEXT MODIFIED SECTION ******



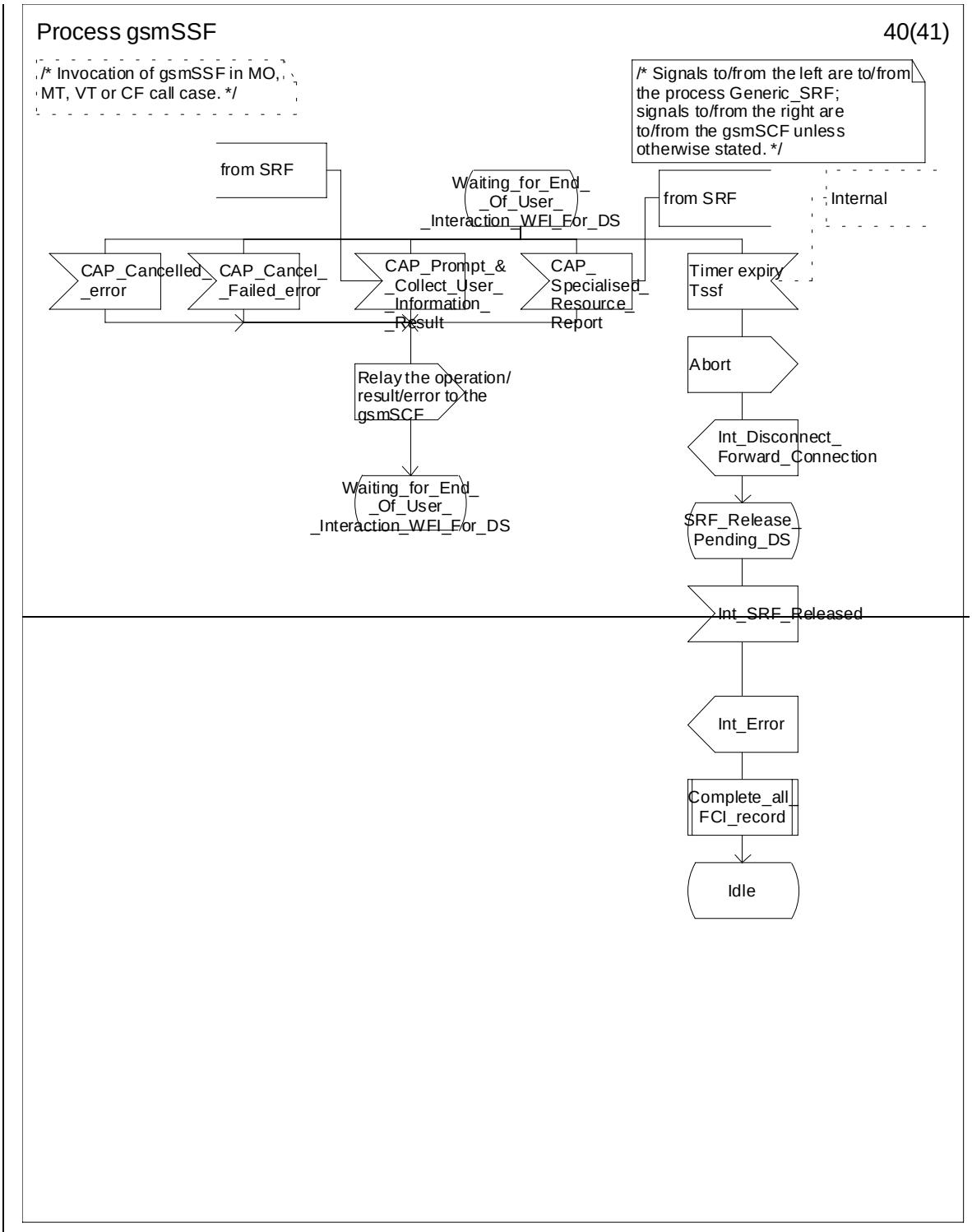

Process gsmSSF
38(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the gsmSCF. */
Waiting_for_End_Of_Temporary_Connection_For_DS, Waiting_for_End_Of_User_Interaction_For_DS
Int_DP_O_Abandon
Stop Tssf
Complete_all_FCI_records
Application_End
Idle

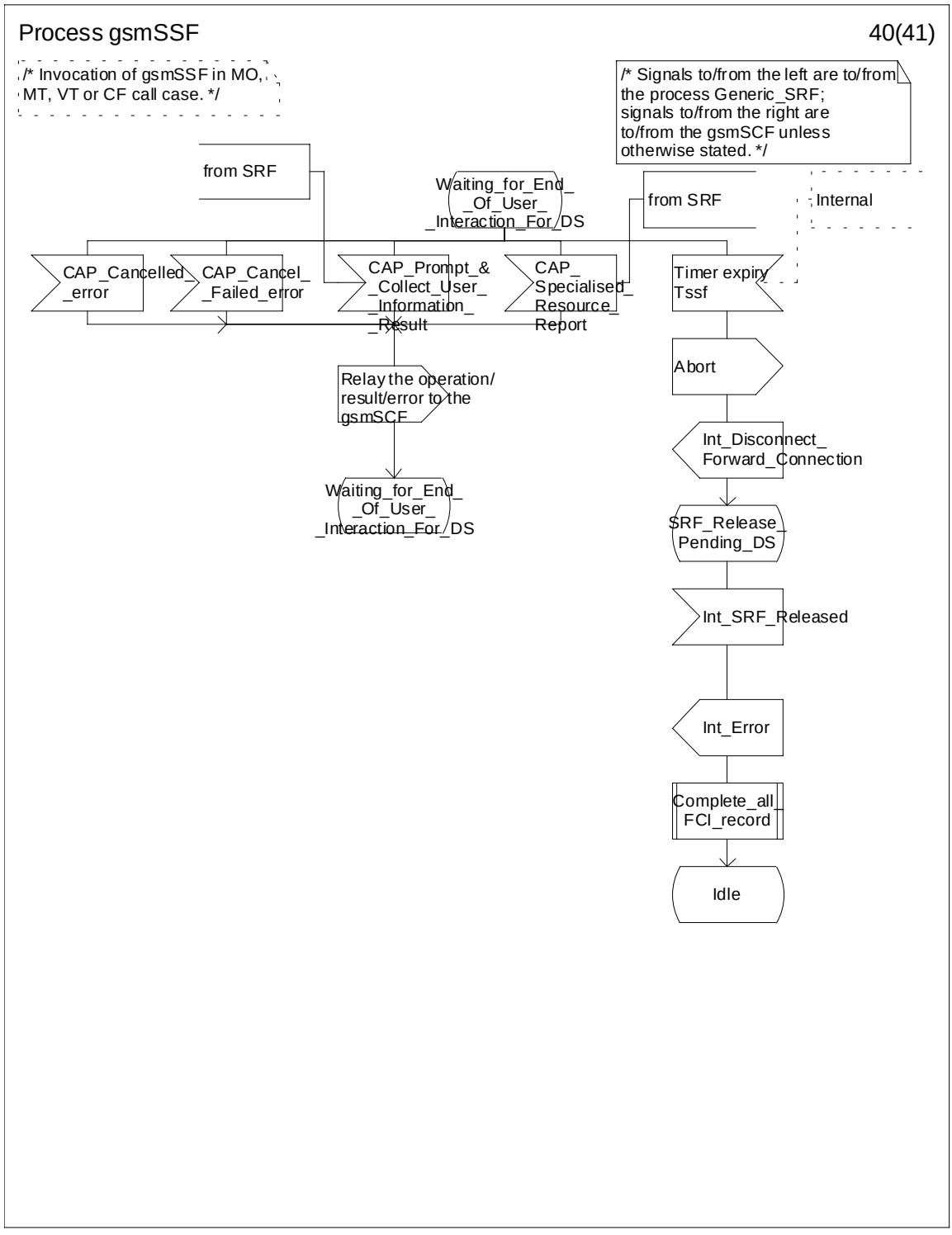
****** NEXT MODIFIED SECTION ******




Process gsmSSF
39(41)
/* 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_End_Of_User_Interaction_For_DS
CAP_Disconnect_ForwardConnection
Int_SRF_Released
CAP_Reset_Timer
CAP_Play_Announcement
CAP_Prompt_&_Collect_User_Information
CAP_Cancel_(Invoke_ID)
Relay the operation to the SRF
to SRF
Int_Disconnect_Forward_Connection
Set Tssf to CAP_Reset_Timer time interval and restart Tssf
Set Tssf to last used time interval and restart Tssf
Set Tssf to default non user interaction time interval and restart Tssf
Set Tssf to default non user interaction time interval and restart Tssf
Waiting_For_Instructions_For_DS
Waiting_for_End_Of_User_Interaction_For_DS

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




Process gsmSSF
40(41)
/* Invocation of gsmSSF in MO, MT, VT or CF call case. */
/* Signals to/from the left are to/from the process Generic_SRF; signals to/from the right are to/from the gsmSCF unless otherwise stated. */
from SRF
Waiting_for_End_ _Of_User_ _Interaction_For_DS
from SRF
Internal
CAP_Cancelled_ _error
CAP_Cancel_ _Failed_error
CAP_Prompt_& _Collect_User_ _Information_ _Result
CAP_ Specialised_ Resource_ Report
Timer expiry Tssf
Relay the operation/ result/error to the gsmSCF
Abort
Int_Disconnect_ Forward_Connection
Waiting_for_End_ _Of_User_ _Interaction_For_DS
SRF_Release_ Pending_DS
Int_SRF_Released
Int_Error
Complete_all_ FCI_record
Idle

3GPP TSG CN2 WG2 meeting
Rotenburg, Germany, 22-26 Mai 2000

Document N2-000237
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	156r1	Current Version:	3.4.0

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

For submission to: CN#08 *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: N2 **Date:** 17/05/00

Subject: Several corrections of the chapter 9 for Mobility Management

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: Several corrections of the chapter 9, Mobility Management

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:

help.doc

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

9 Mobility Management

9.1 Architecture

9.1.1 Functional Entities used for CAMEL

This subclause describes the functional architecture required to support Mobility Management in CAMEL. Figure 9.1 shows the functional entities involved in CAMEL support of Mobility Management. The architecture is applicable to the third phase of CAMEL.

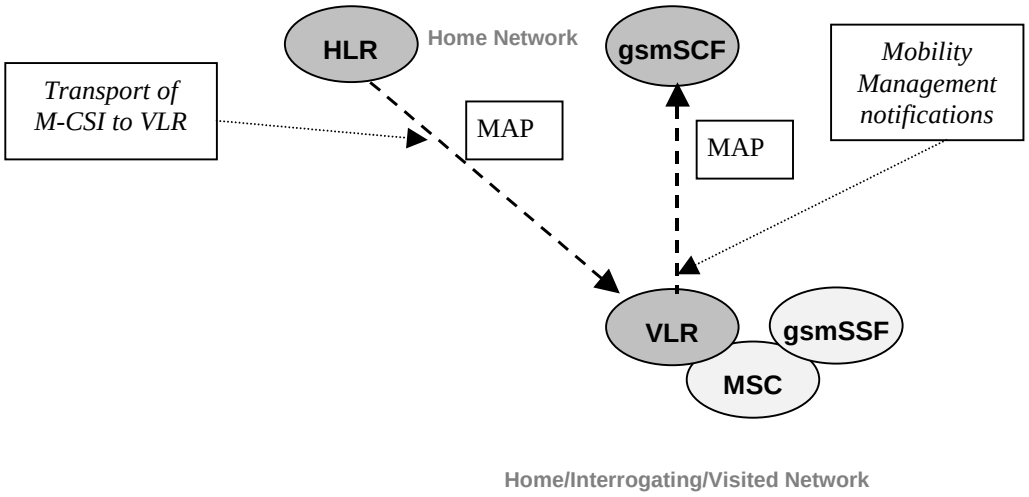


Figure 9.1: Functional architecture for support of CAMEL

gsmSCF: see subclause 4.1.
HLR: The HLR contains Mobility management CAMEL Subscription Information (M-CSI) for those subscribers that require CAMEL control ~~(…use another word…)~~ of Mobility Management events. M-CSI is sent to the VLR during the Location Update and Restore Data procedures or when M-CSI is modified in the HLR. The M-CSI is deleted in the VLR with the Delete Subscriber Data procedure.
MS: Mobile Station (GSM terminal).
MSC: See subclause 4.1.
VLR: After having completed a Mobility Management event from a subscriber, the VLR may have to send a notification to the gsmSCF. The contents of M-CSI indicates which Mobility Management events shall be reported to the gsmSCF.

9.1.2 Interfaces defined for CAMEL

This subclause describes the different interfaces applicable to CAMEL control of Mobility Management events. It specifies on a high level the functions specific to CAMEL.

9.1.2.2 VLR - gsmSCF interface

This interface is used by the VLR to send ~~supplementary service~~ Mobility Management event notifications to the gsmSCF. When processing a mobility management event, the VLR may have to send a notification to the gsmSCF, depending on the presence of M-CSI for the subscriber and the contents of M-CSI.

9.2 Description of CAMEL Subscriber Data

9.2.1 Mobility Management CAMEL Subscription Information (M-CSI)

9.2.1.1 Content of the M-CSI

This subclause specifies the contents of the Mobility Management CAMEL Subscription Information (M-CSI).

9.2.1.1.1 Mobility Management Triggers

This data indicates which Mobility Management events shall result in a notification to the gsmSCF. One or more events may be marked per subscriber. ~~One or more events may be marked per subscriber. One or more events may be marked per subscriber. The following events may be marked for a subscriber:~~These events are :

- Location update in the same VLR service area.
- Location update to ~~an~~another VLR service area.
- IMSI attach.
- MS initiated IMSI detach (explicit detach).
- Network initiated IMSI detach (implicit detach).

9.2.1.1.2 gsmSCF address

~~Address to be used to access the gsmSCF for a particular subscriber. The address shall be an E.164 number to be used for routing.~~ This is the address of the gsmSCF where the Mobility Management event notification shall be sent to. The gsmSCF address is in E164 format.

9.2.1.1.3 Service Key

The Service Key is included in the notification message to the gsmSCF. It indicates to the gsmSCF which Service Logic shall be applied.

9.2.1.1.4 CSI state

The CSI state indicates whether the M-CSI is active or not.

9.2.1.1.5 Notification flag

The notification flag indicates whether the change of the M-CSI shall trigger Notification on Change of Subscriber Data or not.

9.2.1.1.6 gsmSCF address list for CSI

The gsmSCF address list indicates a list of gsmSCF addresses to which Notification on Change of Subscriber Data is to be sent. This list is common to all CSI.

9.3 Procedures for Mobility management

The different procedures for Mobility Management are shown in Figures 9.2 to 9.6. ~~Figures 9.2 to 9.6 show the functional entities involved in Mobility Management event notifications.~~

Figure 9.2: Location Update within a single VLR Service Area. The VLR Service area may be in the HPLMN or in the VPLMN.

Figure 9.3: Location Update from one VLR Service Area to another VLR Service Area. Both VLR Service Areas are in the HPLMN or in the same VPLMN.

Figure 9.4: Location Update from one PLMN to another PLMN:
- update from HPLMN to VPLMN;
- update from VPLMN to HPLMN;
- update from one VPLMN to another VPLMN.

Figure 9.5 IMSI Detach (in HPLMN or in VPLMN):
- explicit detach (the MS has been switched off by the subscriber);
- implicit detach (the network has not received a periodic paging update from the MS and assumes that the MS is switched off or unreachable).

Figure 9.6 IMSI Attach (in HPLMN or in VPLMN):
- attach (the MS has been switched on by the subscriber – subscription data is still available in the VLR, no location update is needed).

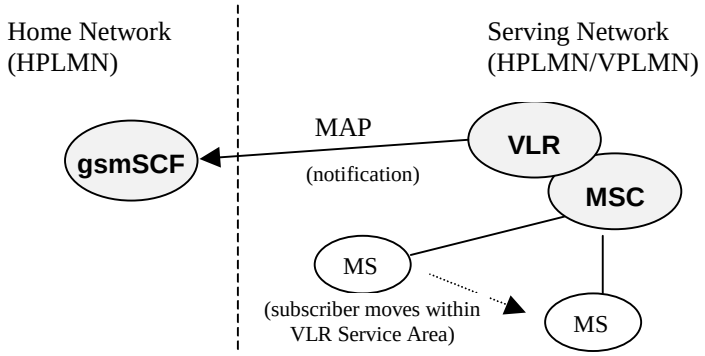


Figure 9.2: Location Update within a single VLR Service Area

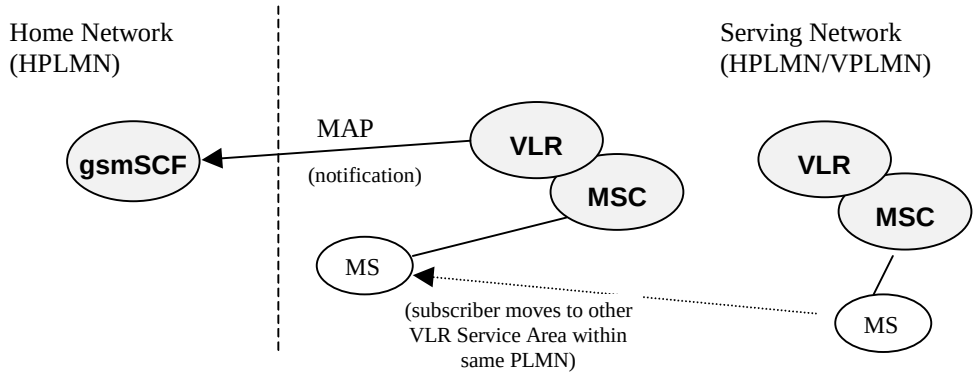


Figure 9.3: Location Update from one VLR Service Area to another VLR Service Area

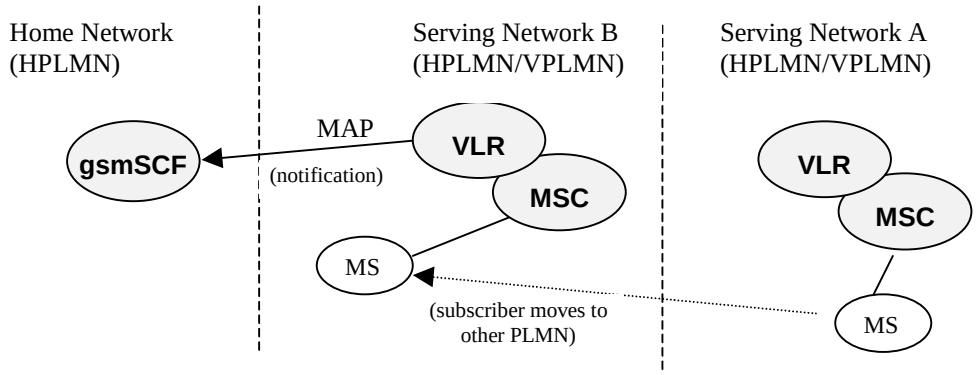


Figure 9.4: Location Update from one VLR Service Area to Another VLR Service Area

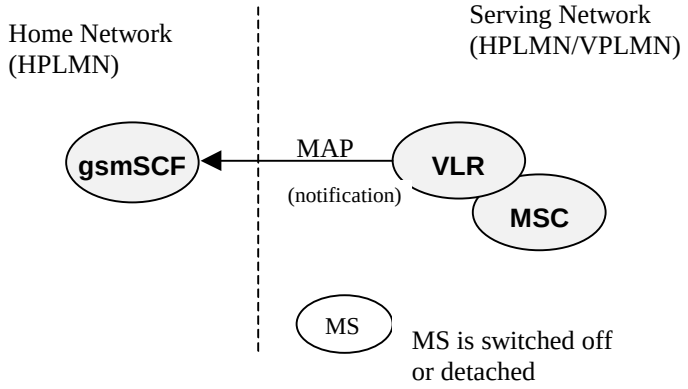


Figure 9.5: IMSI Detach (implicit/explicit)

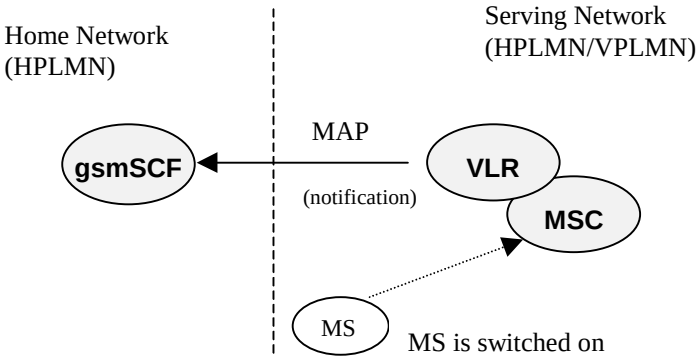


Figure 9.6: IMSI Attach

When a Mobility Management Event has taken place and the processing ~~thereof~~ has been completed, then the VLR may have to send a notification to the gsmSCF. The processing of the Mobility Management event in VLR is not suspended by the sending of the notification nor is it in any way affected by the notification.

The sending of a Mobility Management notification to gsmSCF is independent of other CAMEL subscription data for a subscriber. Eg. a subscriber may have M-CSI without having O-CSI or VT-CSI. The sending of a Mobility Management event notification is subscription based.

Refer to subclause 9.2.1~~.1~~ for a description of M-CSI and the different Mobility Management events that may lead to a notification to the gsmSCF.

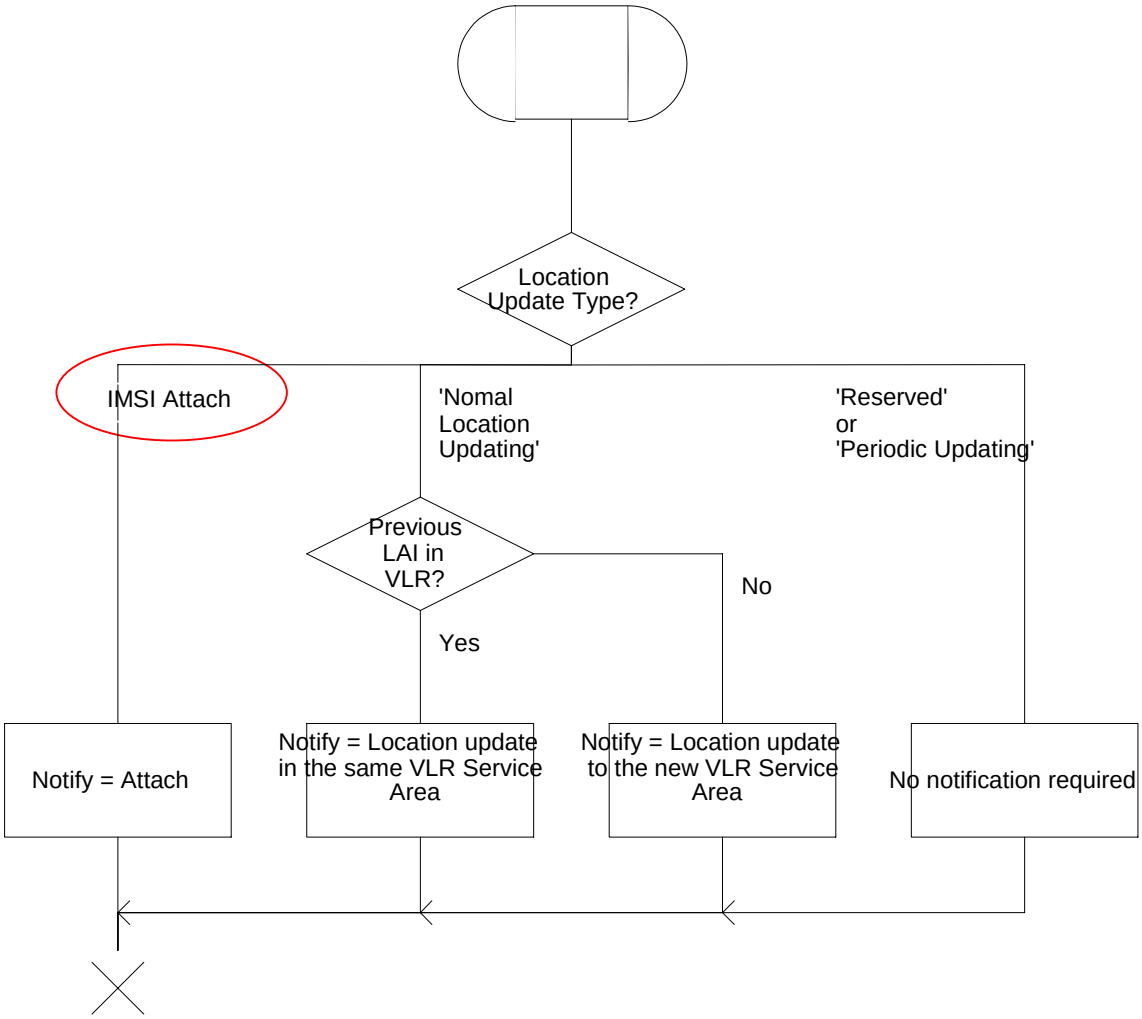
9.3.1 Procedure descriptionss

9.3.1.1 Procedure Set_Notification_Type

This procedure is called from process Update_Location_VLR in 3G TS 23.012 [32]. It checks the information element 'Location Update Type', which the VLR receives from the MSC via MAP_UPDATE_LOCATION_AREA service. This element identifies the type of Location Update requested by the Mobile Station.
The possible values of this parameter are specified in 3G TS 24.008 [33].
The type of Location Update that was requested by the Mobile Station, determines which Mobility Management notification message shall be sent to the gsmSCF.
The values 'Periodic Updating' and 'Reserved' shall not lead to a Mobility Management notification to the gsmSCF.

Procedure Set_Notification_Type 1(1)

Determining the type of Mobility Management event notification to be sent to the gsmSCF



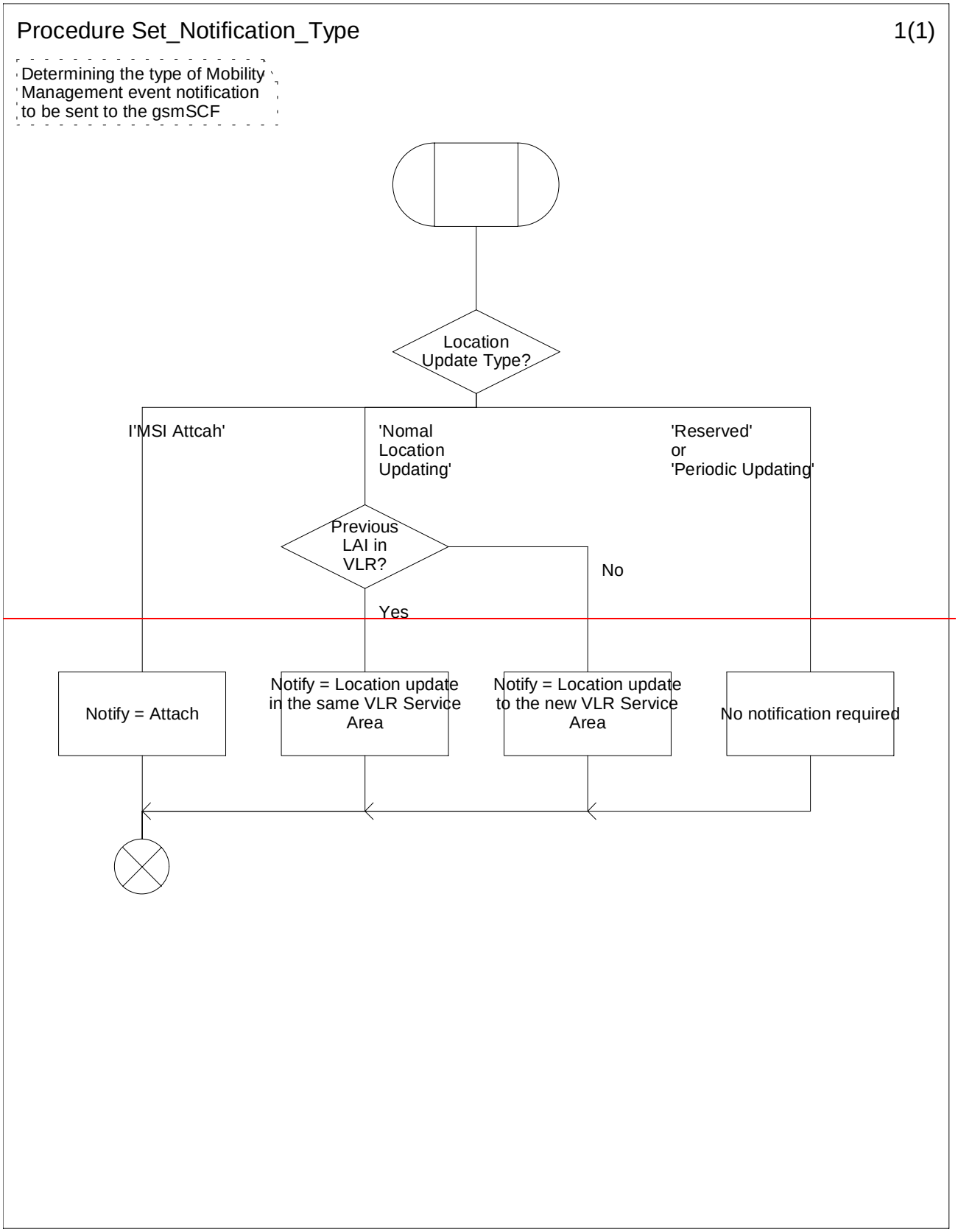


Figure 9.7: Procedure Set_Notification_Type

9.3.1.2 Procedure Notify_gsmSCF

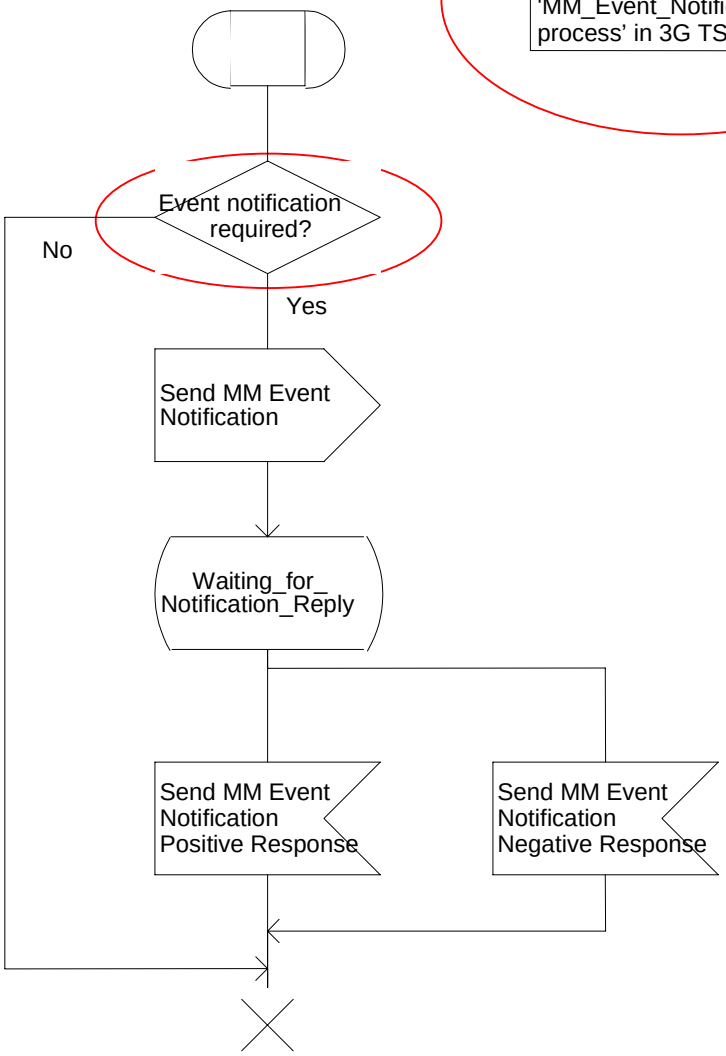
This procedure is called from the process 'Update_Location_Area_VLR' and process 'Detach_IMSI_VLR' in 3G TS 23.012 [32].
It is also called from the process 'Update_Location_VLR' in 3G TS 29.002 [4].
The calling process passes on the variable 'Notify' to the procedure 'Notify_gsmSCF'. This variable indicates which Mobility Management notification may have to be sent to the gsmSCF.
If this variable has a value NULL, then no notification shall be sent to the gsmSCF.
If a notification may have to be sent to the gsmSCF, then the procedure checks the presence of M-CSI.

- If M-CSI is present and the Mobility Management event indicated in the variable 'Notify' is marked in M-CSI, then a notification shall be sent to the gsmSCF.
- If M-CSI is not present or the Mobility Management event indicated in the variable 'Notify' is not marked in M-CSI, then no notification shall be sent to the gsmSCF.

Procedure Notify_gsmSCF 1(1)

Sending a notification to the gsmSCF, if needed.

Signals to/from the right are to/from the process 'MM_Event_Notification VLR process' in 3G TS 29.002



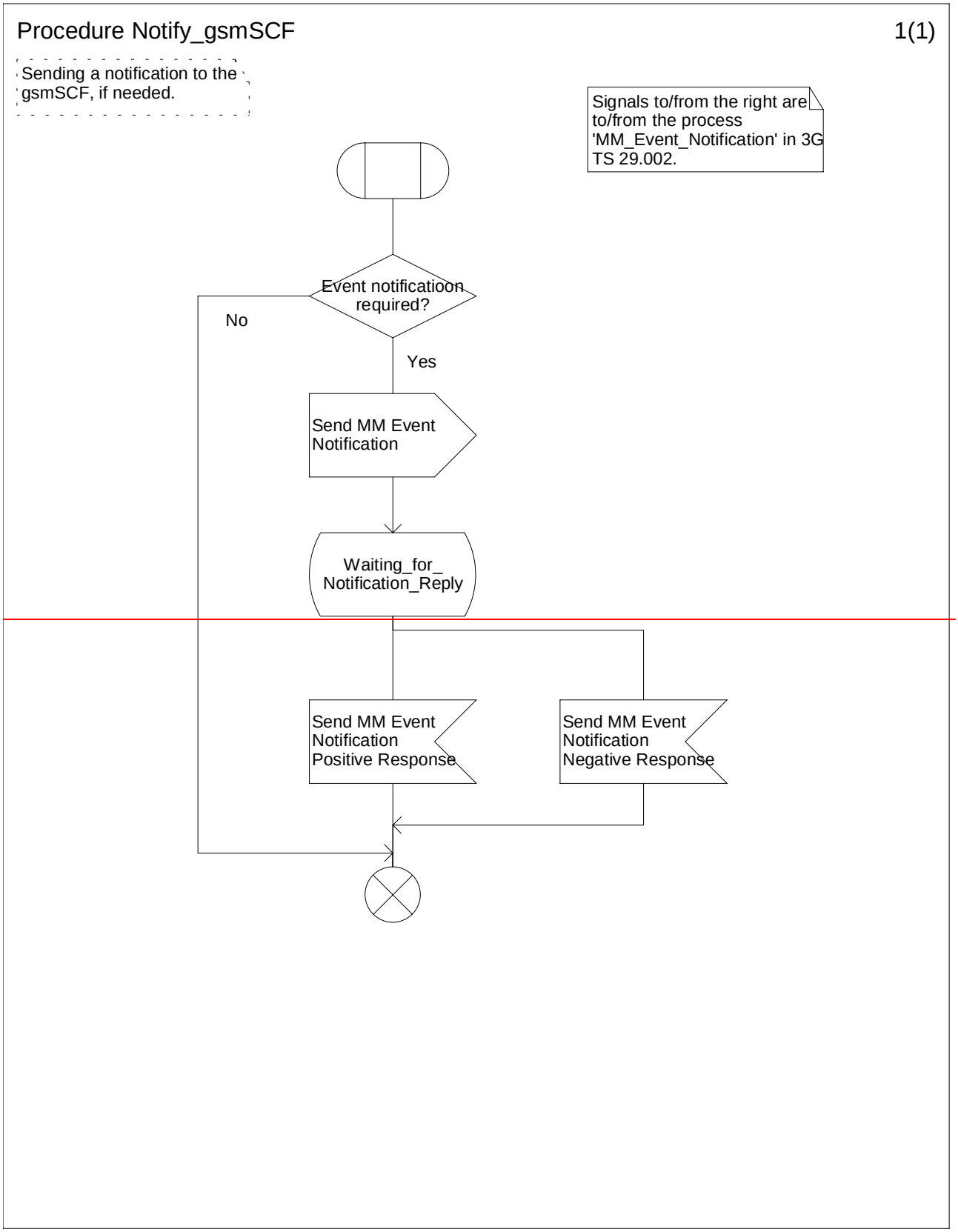


Figure 9.8: Procedure Notify_gsmSCF

9.4 Description of information flows

This clause contains the detailed description of the information flows used by CAMEL for Mobility Management control.
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 VLR shall functionally support all IE's which can be sent to it.

9.4.1 VLR to gsmSCF information flows

9.4.1.1 Mobility Management event Notification

9.4.1.1.1 Description

This IF is generated by the VLR when it shall notify the gsmSCF of a Mobility Management event.

9.4.1.1.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Event Met	M	This IE indicates the type of Mobility Management that lead to the notification. The value of this IE shall be one of the following. - Location update in the same VLR service area - Location update to ~~an~~another VLR service area - IMSI attach - MS initiated IMSI detach (explicit detach) - Network initiated IMSI detach (implicit detach)
Service Key	M	This IE indicates the Service Logic that the gsmSCF shall apply.
IMSI	M	This IE identifies the mobile subscriber to whom the Mobility Event applies.
Basic MSISDN	M	This IE identifies the mobile subscriber to whom the Mobility Event applies.
Location Information	C	This IE indicates the current location of the MS. This IE is explained in subclause 4.6.1.7.
Supported CAMEL Phases	M	This IE indicates the CAMEL Phases that are supported by the MSC/VLR in which the MS is registered after the mobility management event.

M Mandatory (The IE shall always be sent).

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

9.4.2 HLR to VLR information flows

9.4.2.1 Delete Subscriber Data

9.4.2.1.1 Description

This IF is used by an HLR to remove certain subscriber data from a VLR if the subscription of one or more supplementary services or basic services is withdrawn. Note that this IF is not used in the case of erasure or de-activation of supplementary services. This IF is specified in 3G TS 29.002 [4].

9.4.2.1.2 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 VLR.

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

9.4.2.2 Insert Subscriber Data

9.4.2.2.1 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].

9.4.2.2.2 Information Elements

Insert Subscriber Data contains the following CAMEL specific IE for Mobility Management:

Information element name	Required	Description
M-CSI	C	This IE identifies the subscriber as having mobility management notification services. It contains the events that shall be reported, the gsmSCF Address and the Service Key.

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

M-CSI contains the following information:

Information element name	Required	Description
GsmSCF Address	M	This IE is described in subclause 9.2.1.
Service Key	M	This IE is described in subclause 9.2.1.
Mobility Management Triggers	M	This IE indicates which Mobility Management events shall be reported to the gsmSCF. It shall contain one or more of the following elements: - Location update in the same VLR service area - Location update to ~~an~~another VLR service area - IMSI attach - MS initiated IMSI detach (explicit detach) - Network initiated IMSI detach (implicit detach)

M Mandatory (The IE shall always be sent).

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or for SMG, use the format P-99-xxx

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23.078	CR	157	Current Version:	3.4.0

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

For submission to: CN#8					
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: N2 **Date:** 16 May 2000

Subject: Editorial correction of the GPRS_activate_PDP_context 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: In the procedure GPRS_activate_PDP_context we go to the state DP_PDP_Context_Establisment with a NEXTSTATE, but the there is no such state.

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 ******

6.5.7 Handling of PDP Context establishment and deactivation

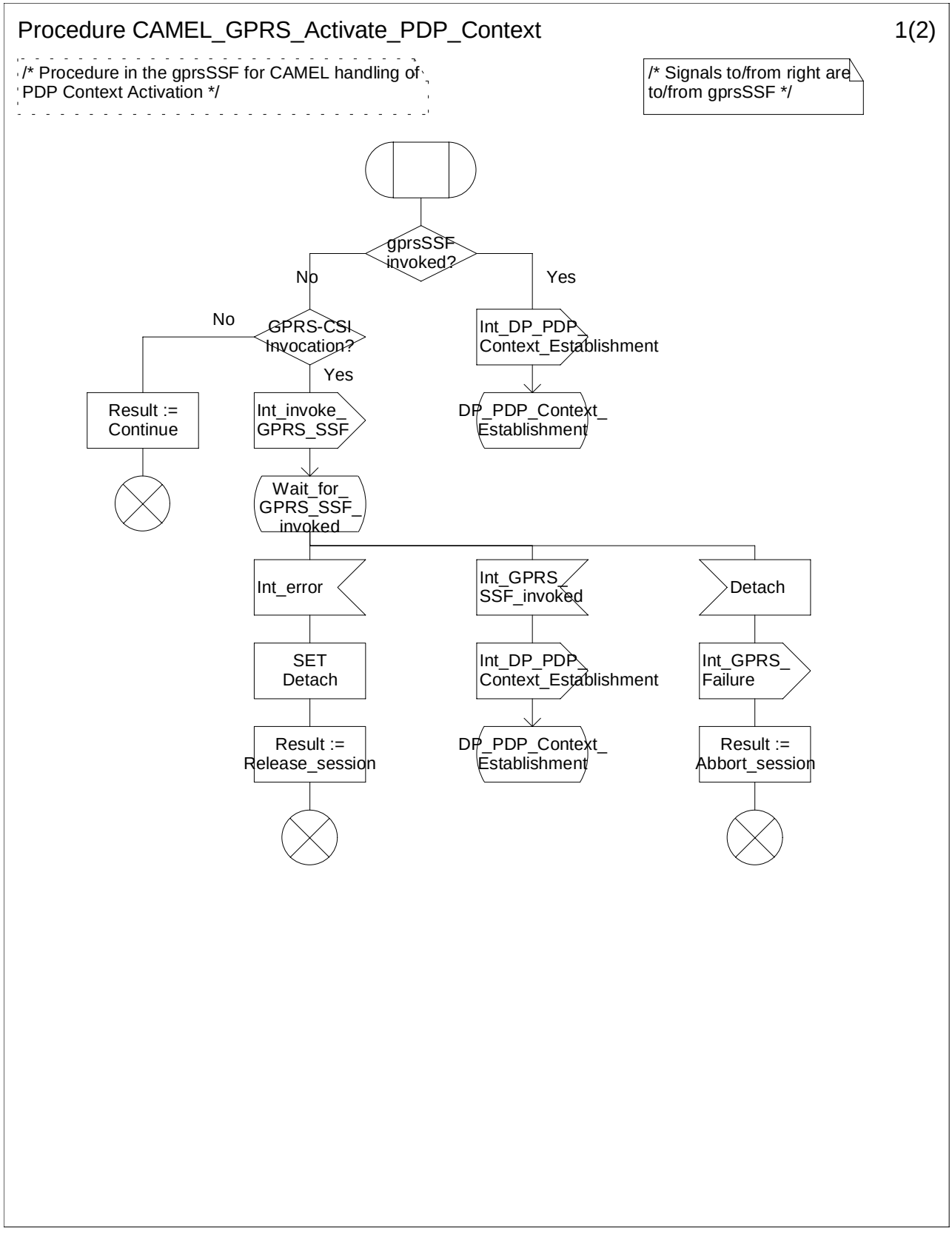


Figure Error! Reference source not found.**.1 a: Procedure CAMEL_GPRS_Activate_PDP_Context (sheet 1)**

<This figure is not changed>

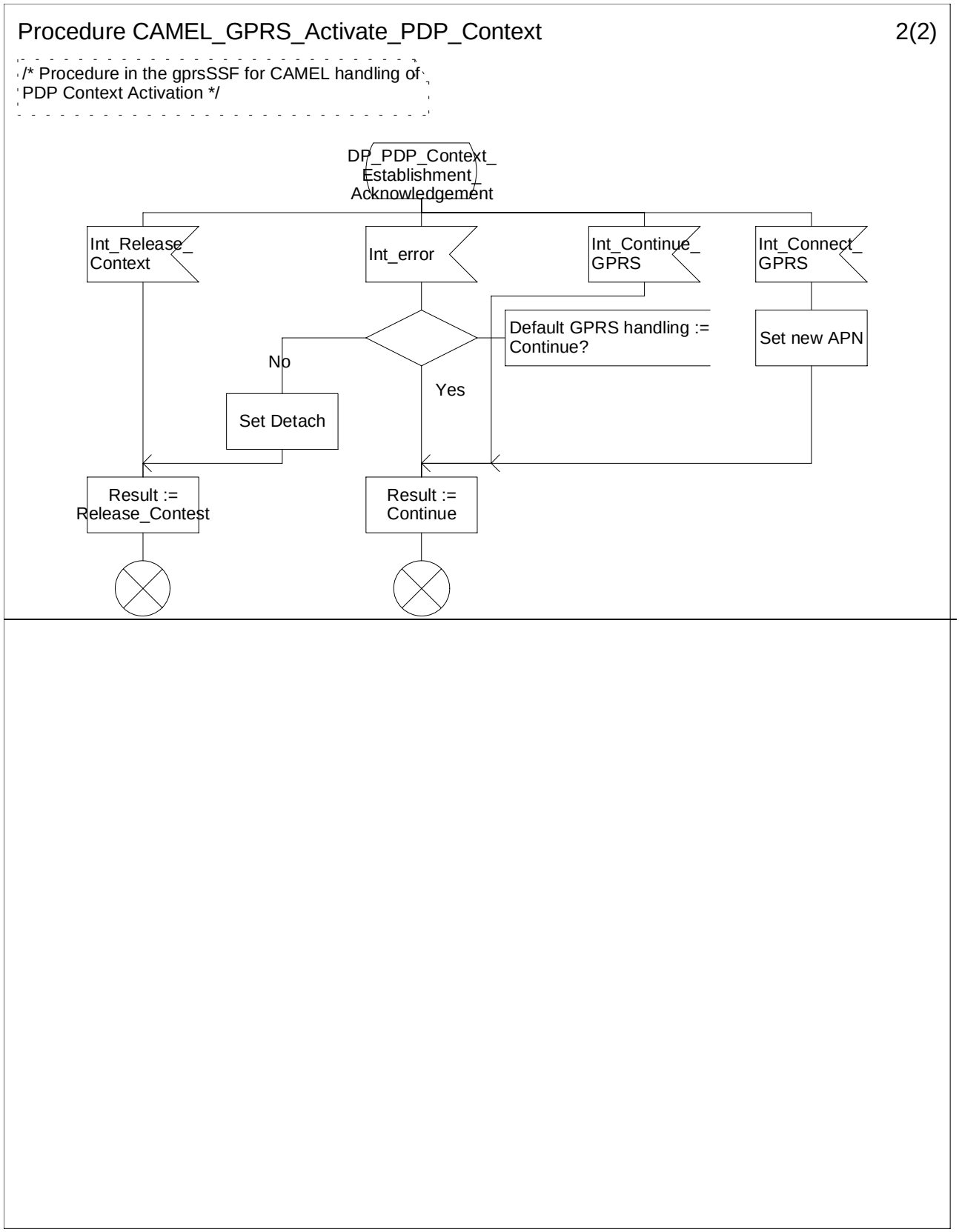
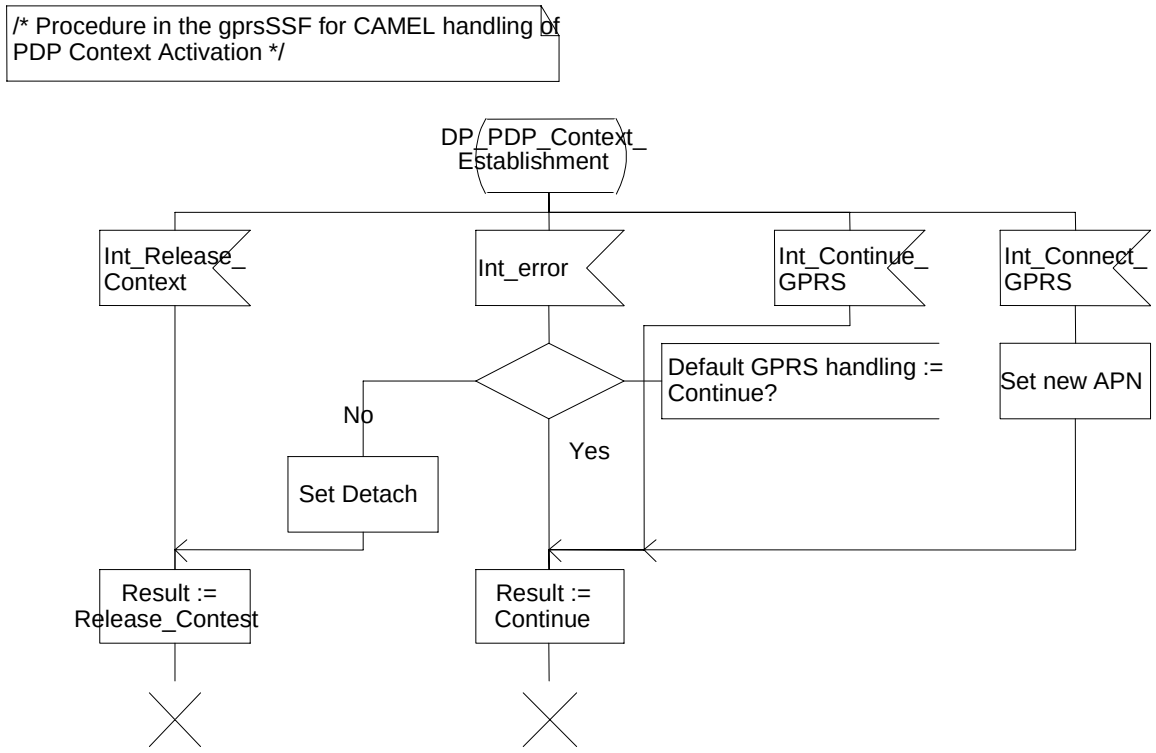


Figure Error! Reference source not found..1 **b: Procedure CAMEL_GPRS_Activate_PDP_Context (sheet 2)**

Procedure CAMEL_GPRS_Activate_PDP_Context 2(2)



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

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

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23.078	CR	158r1	Current Version:	3.4.0

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

For submission to: CN#8 *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: N2 **Date:** 25 May 2000

Subject: Removal of ActivityTestSMS operation

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 CAP dialogue for MO SMS takes only few seconds. Therefore the AT-SMS is not necessary, and adds complexity unnecessary.

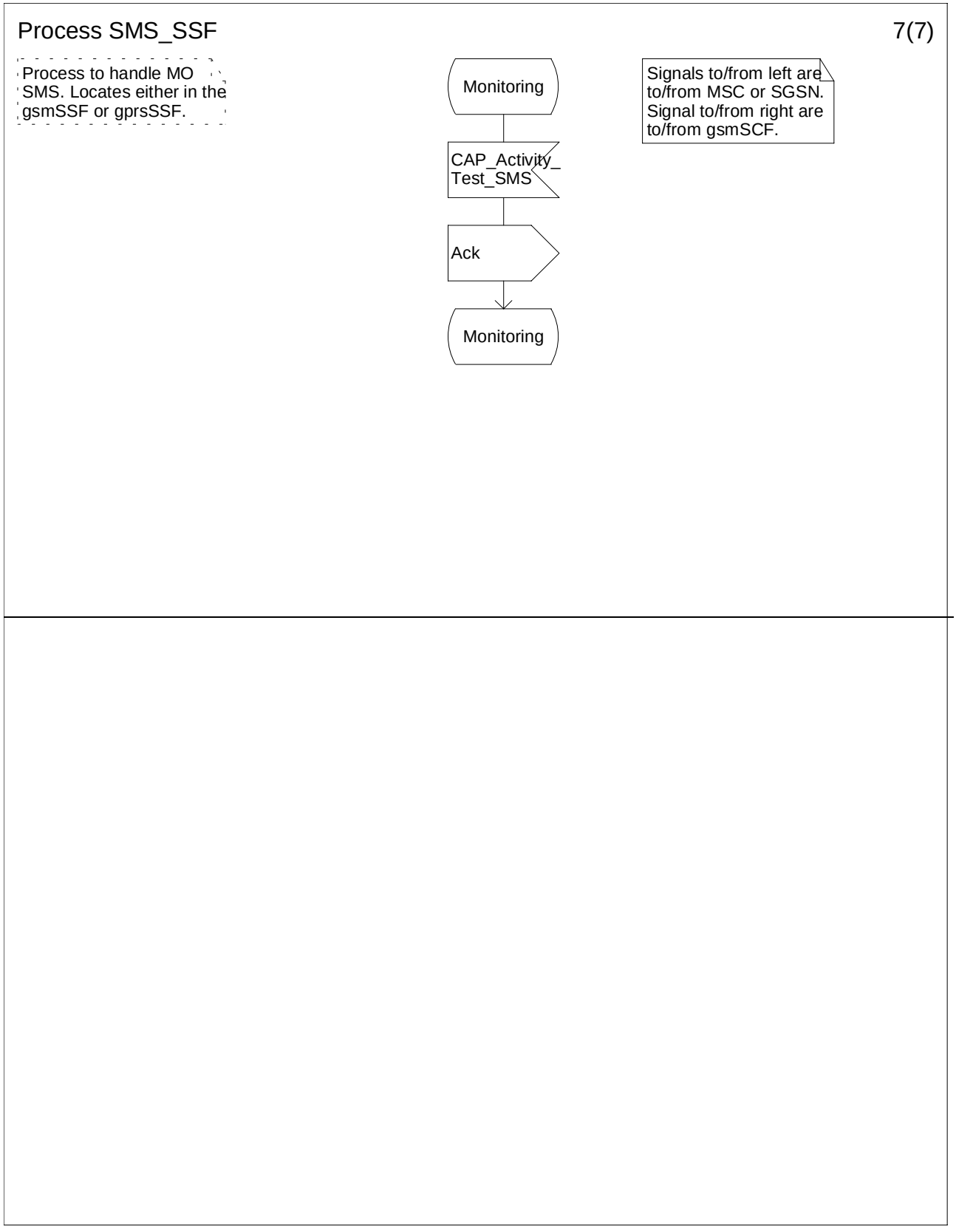
Clauses affected:

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	29.078-CR083 tdoc N2-000143
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 7.10 g: Process SMS_SSF (sheet 7)~~

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

7.6 Description of information flows

7.6.1 gsmSSF/gprsSSF to gsmSCF information flows

~~7.6.1.1 Activity Test SMS ack~~

~~7.6.1.1.1 Description~~

~~This IF is the response to the Activity Test sent by the gsmSCF.~~

~~7.6.1.1.2 Information Elements~~

~~This IF contains no information elements.~~

……

7.6.2 gsmSCF to gsmSSF/gprsSSF information flows

~~7.6.2.1 Activity Test SMS~~

~~7.6.2.1.1 Description~~

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

~~7.6.2.1.2 Information Elements~~

~~This IF contains no information elements.~~

3GPP/SMG Meeting #
Rotenburg, Germany, 22-26 May 2000

Document N2-000205
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

23.078	CR	159r1	Current Version:	3.4.0

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

For submission to:	CN#8	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: N2 **Date:** 23 May 2000

Subject: PDPid in the EntityReleasedGPRS operation

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: EntityReleasedGPRS operation shall not have PDPid when the attach/detach FSM is released without an armed EventDetectionPoint. EntityReleasedGPRS is needed in this case since the TC dialogue termination does not indicate clearly that the relationship must be terminated. PDPid is not needed either when a single PDP context has the CAP relationship towards SCP.

Clauses affected:

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	29.078-CR084 tdoc N2-000145 et al
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 ******

6.6.1.3 Entity Released GPRS

6.6.1.3.1 Description

This IF is used by the gprsSSF to inform the gsmSCF at any phase that a GPRS session or PDP context has been terminated 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~~C	This IE identifies the PDP context which has been terminated by the SGSN. If not present the relationship corresponds to the Attach/Detach state model or to one single PDP context within a PDP context relationship.

M Mandatory (The IE shall always be sent).

C Conditional