3GPP TSG CN Plenary Meeting #18 **NP-020526**
4th - 6th December 2002. New Orleans, USA.

Source: TSG CN WG2

Title: CRs on Rel-5 Work Item CAMEL4, CR Pack 1

Agenda item: 7.1

Document for: APPROVAL

Introduction:

This document contains 10 CRs on Rel-5 WI CAMEL4. These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #18 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.078	449	1	N2-020809	Rel-5	Correction of handling of MT-SMS in the SGSN	F	5.1.0
23.078	453		N2-020812	Rel-5	Correction of handling of MT-SMS in the VLR	F	5.1.0
23.078	454		N2-020814	Rel-5	Correction of IDPs in new section 4.5.1	F	5.1.0
23.078	456		N2-020832	Rel-5	Add result from GPRS mobility management procedure	F	5.1.0
29.078	277		N2-020842	Rel-5	Correction to SMS dialogue termination	F	5.1.0
23.078	457	1	N2-020902	Rel-5	Detach report in inter-SGSN routeing area update	F	5.1.0
29.078	283	1	N2-020910	Rel-5	ASN.1 syntax basic corrections	F	5.1.0
23.078	452	2	N2-020930	Rel-5	Clarification of architecture for CAMEL control of SMS	F	5.1.0
23.078	470	2	N2-020942	Rel-5	Resolving of open issues on "Support of partial implementation of CAMEL"	F	5.1.0
23.078	427	2	N2-020943	Rel-5	Use of Release Call & Release Call Segment in gsmSSF processes	F	5.1.0

3GPP TSG CN WG2 Meeting #25 ***N2-020809***
Miami, Florida, USA, 23rd – 27th September 2002 **(Revision of N2-020724)**

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **449** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of handling of MT-SMS in the SGSN
Source:	⌘	Vodafone
Work item code:	⌘	CAMEL4
Date:	⌘	23/07/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	In the current SDL description (in 29.002) of MT SMS in the SGSN there is no check of whether the SGSN supports CAMEL or whether the subscriber has MT-SMS-CSI before the dialogue with the gsmSCF is opened. The SDL description in 29.002 has been updated, including a call to a procedure (CAMEL_MT_SMS_SGSN) in 23.078. This CR defines the procedure CAMEL_MT_SMS_SGSN
Summary of change:	⌘	Add definition of procedure CAMEL_MT_SMS_SGSN
Consequences if not approved:	⌘	CAMEL control of MT SMS via the SGSN will not work properly

Clauses affected:	⌘	7.5.4.3 (new); Figure 7.13bisa (new)

Other specs affected:	Y	N			
⌘	X		Other core specifications	⌘	CR 29.002-474
		X	Test specifications		
		X	O&M Specifications		

Other comments:	⌘	

****** Unchanged material provided for information ******

7.5.4.2 Handling of mobile terminating SMS in the VLR

The functional behaviour of the VLR is specified in 3GPP TS 29.002 [32]. The procedures specific to CAMEL are specified in the following procedures:

- Procedure CAMEL_MT_SMS_VLR;
- Procedure CAMEL_MT_SMS_CHECK_VLR.

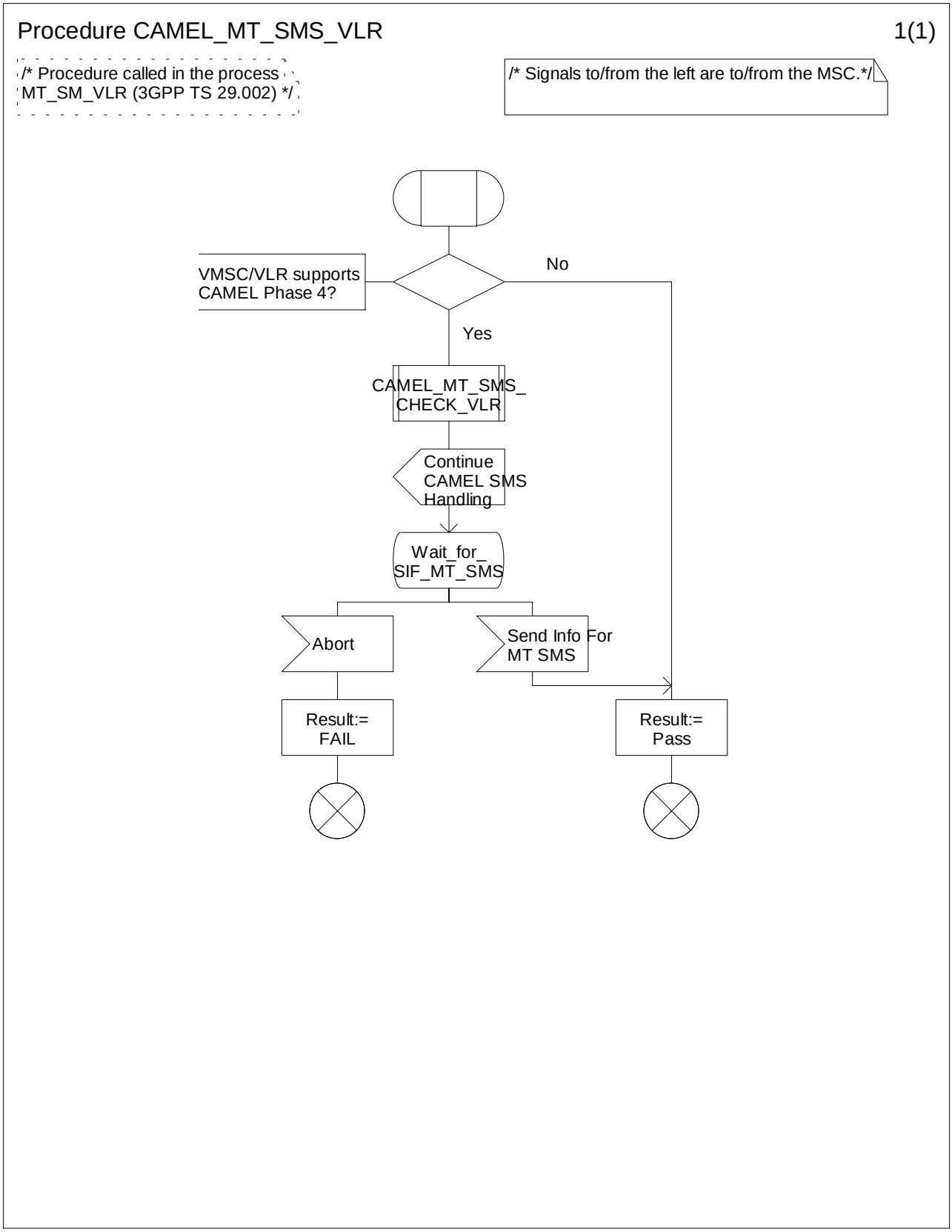

Figure 7.12a: Procedure CAMEL_MT_SMS_VLR (sheet 1)

Procedure CAMEL_MT_SMS_CHECK_VLR 1(1)

/* Procedure in the VLR to check the MT-SMS-CSI and set the MT-SMS-CSI parameter for SEND INFO MT SMS ack accordingly. */

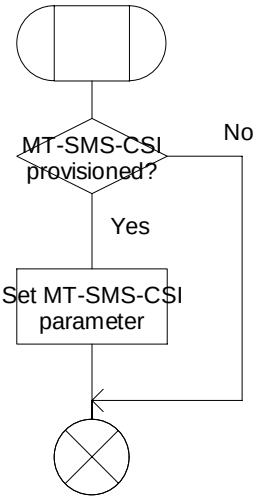

Figure 7.13a: Procedure CAMEL_MT_SMS_CHECK_VLR (sheet 1)

****** First modified section ******

7.5.4.3 CAMEL subscription check for mobile terminating SMS in the SGSN

The functional behaviour of the SGSN for delivery of MT short messages is specified in 3GPP TS 29.002 [32]. The procedure for checking CAMEL capability and subscription information is specified in the following procedure:

- Procedure CAMEL_MT_SMS_SGSN.

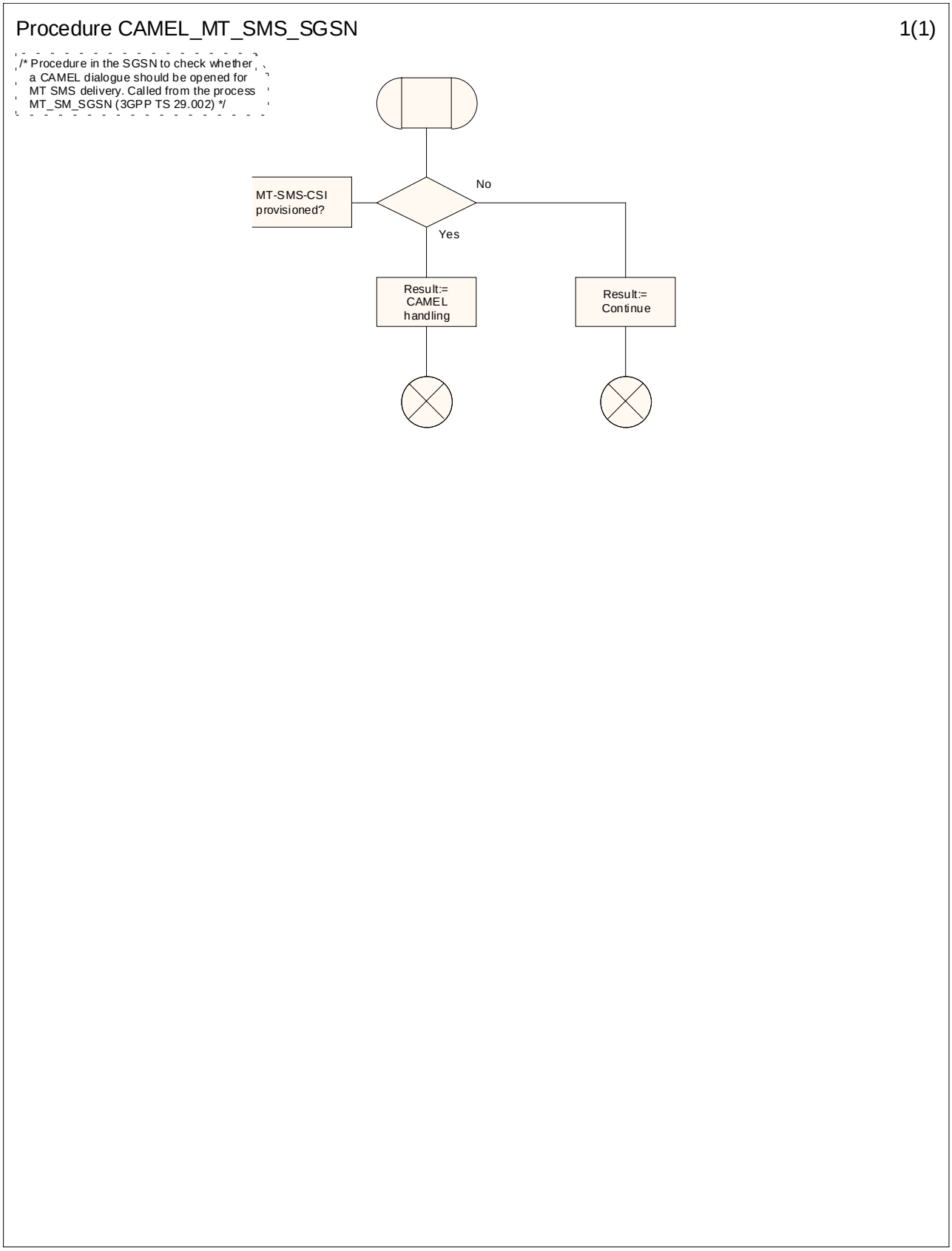

Figure 7.13bisa: Procedure CAMEL_MT_SMS_SGSN (sheet 1)

****** End of document ******

3GPP TSG CN WG2 Meeting #25 **N2-020812**
Miami, Florida, USA, 23rd – 27th September 2002

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CHANGE REQUEST

⌘ **23.078** **CR** **453** ⌘ **rev** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of handling of MT-SMS in the VLR
Source:	⌘	Vodafone
Work item code:	⌘	CAMEL4
Date:	⌘	19/08/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The current handling of MT-SMS in the VLR leads to the MSC opening a dialogue with the gsmSCF if the MSC/VLR supports CAMEL phase 4 but MT-SMS-CSI is not provisioned.
Summary of change:	⌘	Revise the VLR handling so that if MT-SMS-CSI is not provisioned then CAMEL handling will not occur
Consequences if not approved:	⌘	CAMEL control of MT SMS in the MSC/VLR will not work properly

Clauses affected:	⌘	7.5.4.2

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	If MT-SMS-CSI is provisioned, then by definition the MSC/VLR supports CAMEL phase 4. If MT-SMS-CSI is not provisioned, then, regardless of whether the MSC/VLR supports CAMEL phase 4, CAMEL control of MT SMS shall not be invoked.

****** First modified section ******

7.5.4.2 Handling of mobile terminating SMS in the VLR

The functional behaviour of the VLR is specified in 3GPP TS 29.002 [32]. The procedures specific to CAMEL are specified in the following procedures:

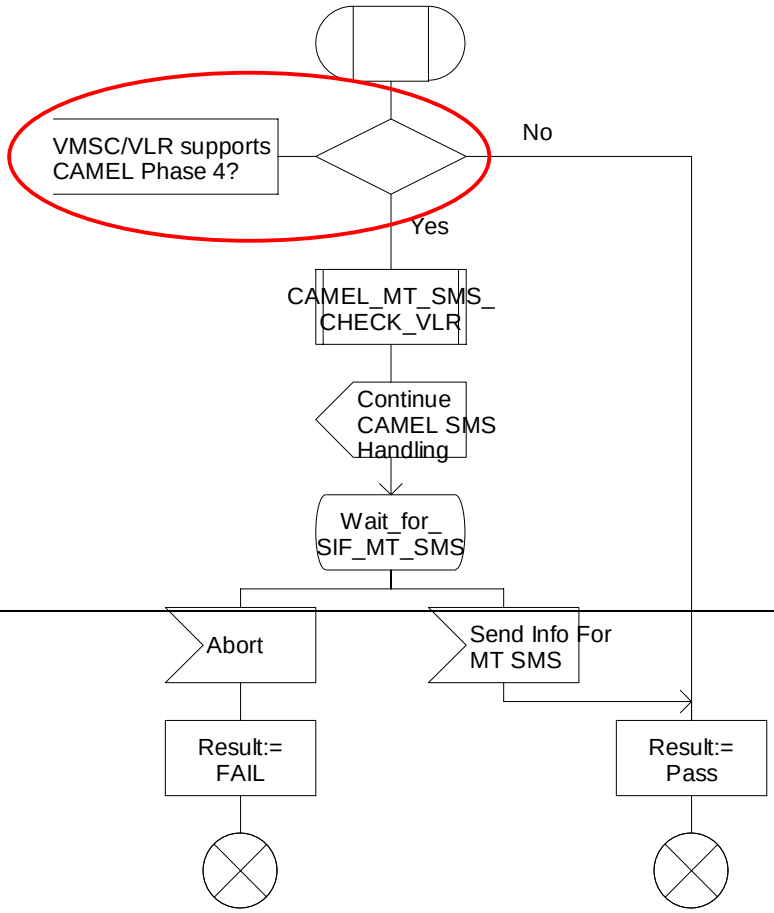
- Procedure CAMEL_MT_SMS_VLR;

~~- Procedure CAMEL_MT_SMS_CHECK_VLR.~~

Procedure CAMEL_MT_SMS_VLR 1(1)

/* Procedure called in the process MT_SM_VLR (3GPP TS 29.002) */

/* Signals to/from the left are to/from the MSC.*/



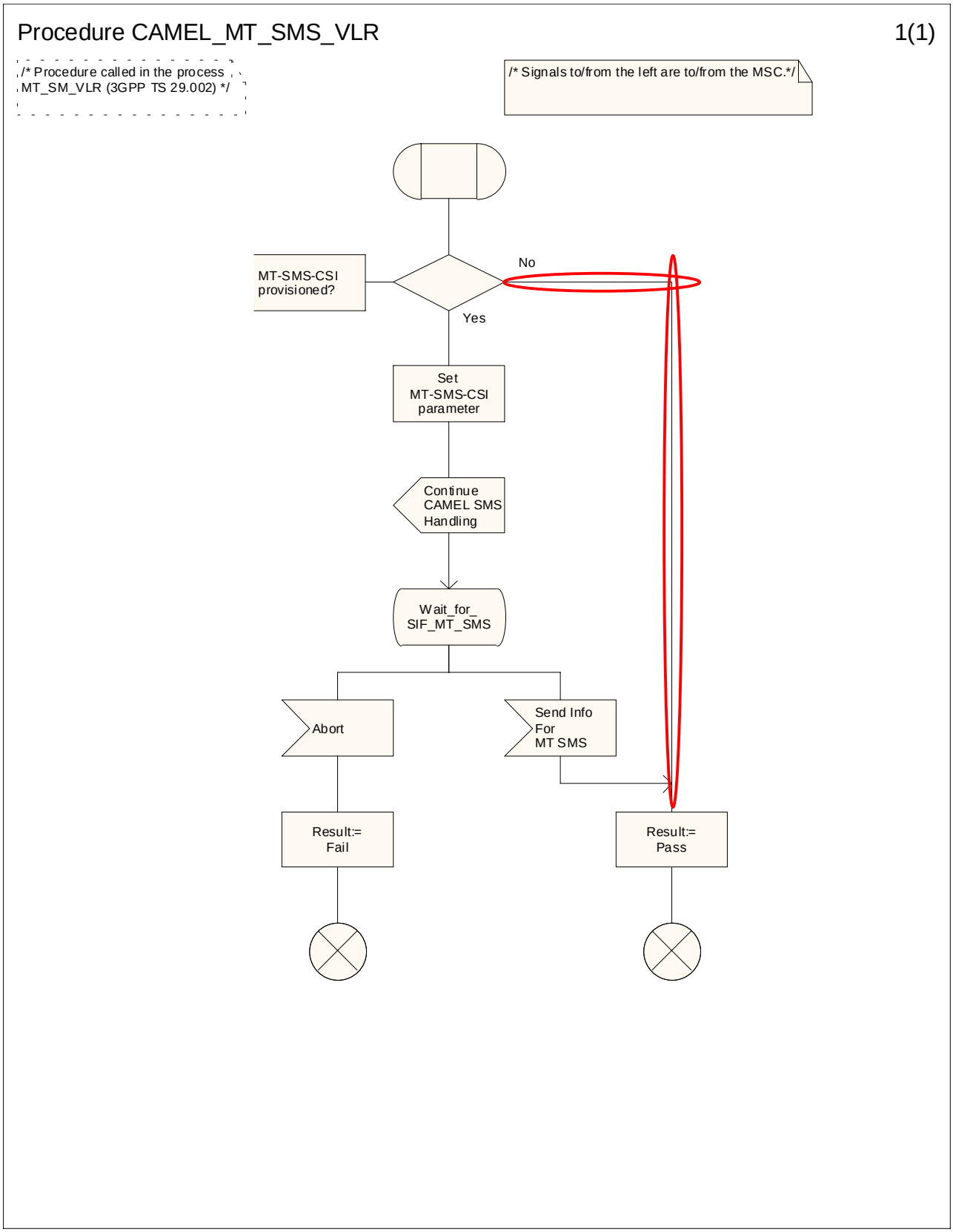
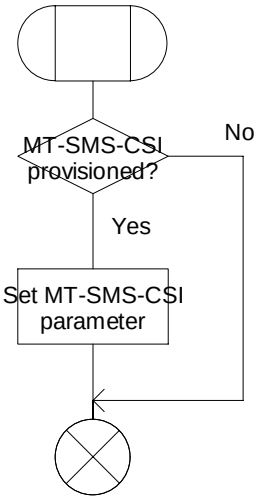


Figure 7.12a: Procedure CAMEL_MT_SMS_VLR (sheet 1)

Procedure CAMEL_MT_SMS_CHECK_VLR 1(1)

/* Procedure in the VLR to check the MT-SMS-CSI and set the MT-SMS-CSI parameter for SEND INFO MT SMS ack accordingly. */



~~Figure 7.13a: Procedure CAMEL_MT_SMS_CHECK_VLR (sheet 1)~~

****** End of document ******

3GPP TSG CN WG2 Meeting #26 **N2-020814**
Miami, U.S.A, 23rd – 27th September 2002

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CHANGE REQUEST

⌘ **23.078** **CR** **454** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of IDPs in new section 4.5.1
Source:	⌘	Vodafone
Work item code:	⌘	CAMEL4
Date:	⌘	10/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Incorrect TDPs identified in description of SDL architecture
Summary of change:	⌘	Remove TDPs not relating to the SDL processes in question
Consequences if not approved:	⌘	Misleading text which indicates incorrect TDPs can prompt a process to begin, when this is not so in the SDL modelling.

Clauses affected:	⌘	4.5.1

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

4.5.1 Overall SDL architecture

The following mapping from the SDL procedures to the Intelligent Network concepts apply:

SDL process	Description	SDL process specification
CSA_gsmSSF	Call Segment Association (CSA). The CSA SDL process distributes the CAP operations to the appropriate Call Segment(s).	3GPP TS 23.078
CS_gsmSSF	Call Segment (CS). Controls one or more BCSMs.	3GPP TS 23.078
OCH_MSC	O-BCSM in VMSC for Mobile Originating call controlling both Leg 1 and Leg 2. If CAP Disconnect Leg (leg 2) is received at the initial detection point (Collected_Info ~~or Terminating_Attempt_Authorised~~), then the call is not routed to the destination and the process calls the procedure CAMEL_OCH_LEG1_MSC to control Leg 1. If Answer is received, the process spawns the child process CAMEL_OCH_LEG2_MSC to control Leg 2 and calls the procedure CAMEL_OCH_LEG1_MSC to control Leg 1. The handling of the legs after answer is completely separate.	3GPP TS 23.018
MT_GMSC	T-BCSM in the GMSC controlling both Leg 1 and Leg 2. If CAP Disconnect Leg (leg 2) is received at the initial detection point (~~Collected_Info or~~ Terminating_Attempt_Authorised), then the call is not routed to the destination and the process spawns the child process CAMEL_MT_LEG1_MSC to control Leg 1. The process MT_GMSC terminates. If Answer is received, the process spawns the child process CAMEL_MT_LEG1_MSC to control Leg 1 and calls the procedure CAMEL_MT_LEG2_MSC to control Leg 2. The handling of the legs after answer is completely separate.	3GPP TS 23.018
MT_CF_MSC	O-BCSM in the redirecting MSC for Call Forwarding supplementary service, or Call Deflection supplementary service, or for CAMEL-based call forwarding. This process controls both Leg 1 and Leg 2. If CAP Disconnect Leg (leg 2) is received at the initial detection point (Collected_Info ~~or Terminating_Attempt_Authorised~~), then the call is not routed to the destination and the process calls the procedure CAMEL_MT_CF_LEG1_MSC to control Leg 1. If Answer is received, the process spawns the child process CAMEL_MT_CF_LEG2_MSC to control Leg 2 and calls the procedure CAMEL_MT_CF_LEG1_MSC to control Leg 1. The handling of the legs after answer is completely separate.	3GPP TS 23.018
ICH_MSC	T-BCSM in the VMSC controlling both Leg 1 and Leg 2. If CAP Disconnect Leg (leg 2) is received at the initial detection point (~~Collected_Info or~~ Terminating_Attempt_Authorised), then the call is not routed to the destination and the process spawns the child process CAMEL_ICH_LEG1_MSC to control Leg 1. The process ICH_MSC terminates. If Answer is received, the process spawns the child process CAMEL_ICH_LEG1_MSC to control Leg 1 and calls the procedure CAMEL_ICH_LEG2_MSC to control Leg 2. The handling of the legs after answer is completely separate.	3GPP TS 23.018
Assisting_MSC	The process in the MSC to handle an assist request.	3GPP TS 23.078
CAMEL_ICA_MSC	O-BCSM for gsmSCF initiated new call, or for new party set-up. This process controls the new leg.	3GPP TS 23.078

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3GPP TSG-CN WG2 Meeting #26
Miami, USA, 23rd - 27th September 2002.

Tdoc ⌘N2-020832

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **456** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Add result from GPRS mobility management procedure
Source:	⌘	Siemens AG
Work item code:	⌘	CAMEL4
Date:	⌘	18/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Current mobility mangement procedure for GPRS subscriber does not have the result returned to the parent procedure in 23.060. It is not useful if no indication as the result of CAMEL procedure is provided. This CR proposes the result as the same as other GPRS-related CAMEL procedures.
Summary of change:	⌘	Add result := Continue in the procedure CAMEL_PS_Notification
Consequences if not approved:	⌘	The parent procedures in 23.060 could not handle the GPRS mobility management procedures as other GPRS-related CAMEL procedures. Since GPRS mobility management does not affect the basic GPRS handling, CAMEL procedure should provide the result to continue the procedure no matter what happened in the CAMEL procedure.

Clauses affected:	⌘	9

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

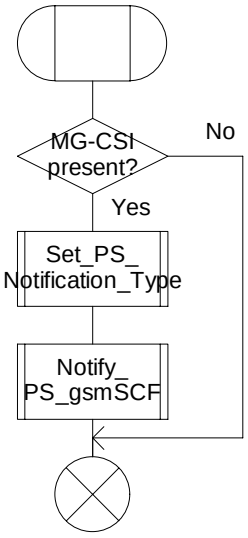
Other comments:	⌘	

9.3.2.1 Procedure CAMEL_PS_Notification

This procedure is called from processes in 3GPP TS 23.060 [15]. When this procedure is called, it checks the presence of MG-CSI. If there is no MG-CSI, then no notification is sent to the gsmSCF.

Procedure CAMEL_PS_Notification 1(1)

/* procedure in the SGSN for mobility management for GPRS subscriber */



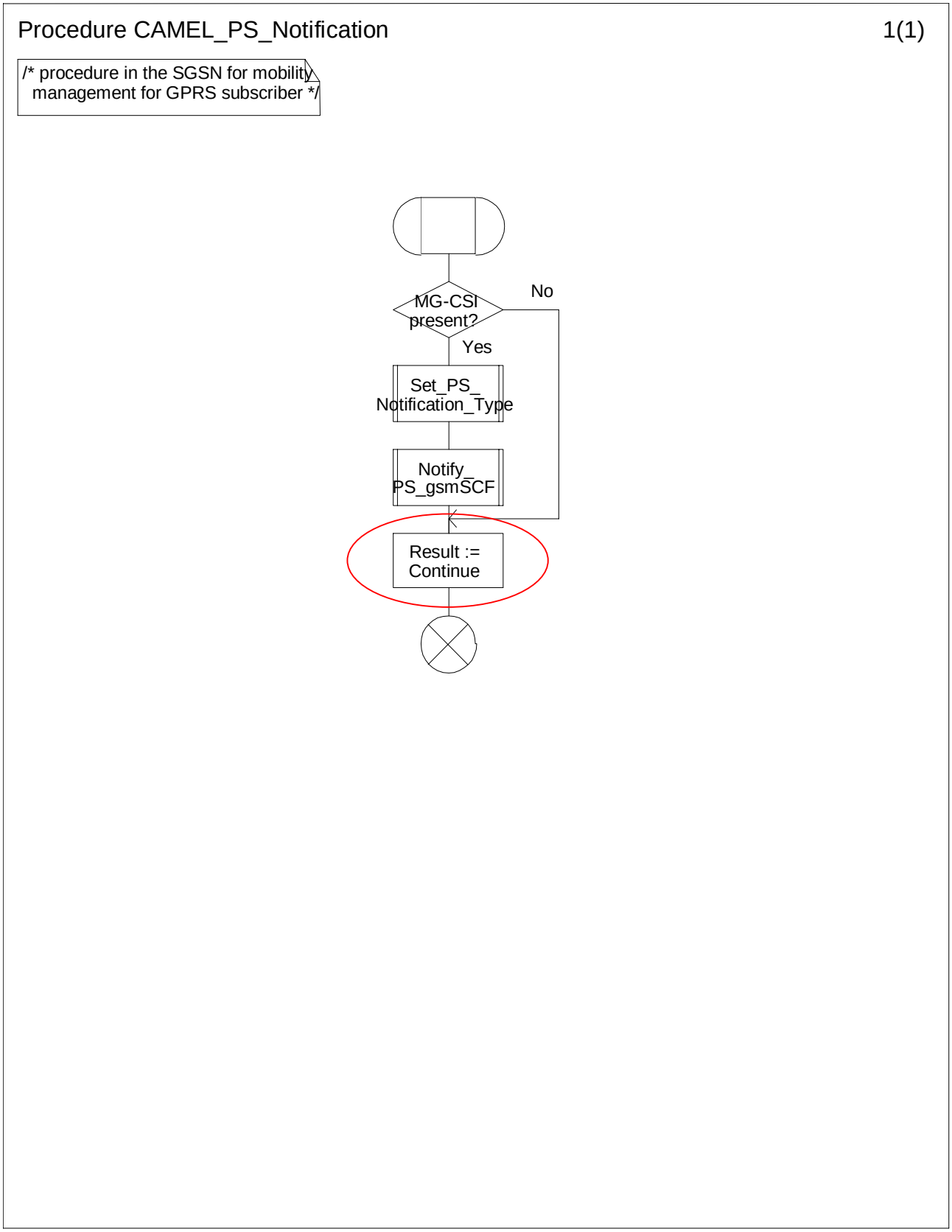


Figure 9.6a: Procedure CAMEL_PS_Notification (sheet 1)

3GPP TSG-CN WG2 Meeting #26 **Tdoc N2-020842**
Miami, USA, 23rd - 27th September 2002

CHANGE REQUEST

⌘ **29.078** **CR** **277** ⌘ **rev** ⌘ Current version: **5.1.0** ⌘

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction to SMS dialogue termination
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4
Date:	⌘	17/09/2002
Category:	⌘	F
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘

Pre-arranged end rules describe how the smsSSF may terminate a CAP dialogue in the case that the smsSSF FSM transits to the state "Idle".

As an example, the following is copied from section 14.1.2.1.3 from TS 29.078:

> *"The dialogue shall no longer be maintained when the prearranged end condition is met in the smsSSF. When the smsSSF makes a state transition to the state "Idle", the dialogue is locally ended by means of a TC-END request primitive with prearranged end."*

Not all situations whereby the smsSSF FSM transits to the state "Idle" qualify as pre-arranged. The definition of pre-arranged implies that both entities know, by virtue of preceding information exchange, that no more information will be transmitted in the dialogue and that both entities may close the dialogue locally.

When the smsSSF encounters a DP that is not armed, then nothing will be reported to the gsmSCF. The other DP in the smsSSF BCSM is implicitly disarmed. As a result, the smsSSF FSM transits to the state "Idle", but nothing was reported to the gsmSCF.

In that case, the smsSSF shall send an empty TC_End to the gsmSCF.

Summary of change: ⌘

Specify in section 14.1.2.1.3 that the smsSSF shall send an empty TC_End to the gsmSCF in the case that the smsSSF FSM transits to the state "Idle", but no event notification was sent to the gsmSCF.

Consequences if not approved: ⌘

Inconsistent behaviour in the case unarmed DP. Some smsSSFs may transit to the state "Idle" without sending any TC message; other smsSSFs may send

	TC_Abort.

Clauses affected:	⌘	14.1.2.1.3			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

****** First Modification ******

14.1.2 gsmSSF-gsmSCF interfaces

14.1.2.1 Normal procedures

14.1.2.1.1 gsmSSF-to-gsmSCF messages

The present subclause defines the normal procedures for TC messages from the gsmSSF to the gsmSCF.

gsmSSF FSM related messages

A dialogue shall be established when the gsmSSF FSM transits from the state "Idle" to the state "Waiting_for_Instructions". The InitialDP operation shall be transmitted in the same message.

The CAP Operation InitialDP shall be sent with a TC-BEGIN request primitive.

For all other operations sent from the gsmSSF FSM, the dialogue shall be maintained except for the following cases.

When the gsmSSF FSM executes a non-error case state transition to the state "Idle" and there is one or more pending operation and TC dialogue is established, TC dialogue can be terminated by TC-END primitive with component(s). When the gsmSSF sends the last EventReportBCSM, ApplyChargingReport or CallInformationReport the dialogue may be ended from the gsmSSF by a TC-END request primitive with basic end.

In the case that there is no pending operation and TC dialogue is established, TC dialogue can be terminated by TC-END primitive with zero component or prearranged end. When the gsmSSF FSM makes a non-error case state transition to the state "Idle" and there is no operation to be sent, the dialogue is ended by means of a TC-END request primitive (basic) with zero components, or the dialogue is locally ended by means of a TC-END request primitive with prearranged end.

In the case where a call release is initiated by any other entity than an gsmSCF, the gsmSSF can end a dialogue with a TC-END request primitive with zero component or prearranged end if a TC dialogue is established and the gsmSSF has no pending call information requests (or pending requests which should be treated in the same way, see subclause 14.1.1.1) nor any armed EDP.

When the gsmSSF has sent the last EventReportBCSM, ApplyChargingReport or CallInformationReport the dialogue may be ended from the gsmSCF by a TC-END request primitive with basic end.

Assisting gsmSSF FSM related messages

A dialogue shall be established when the assisting gsmSSF FSM transits from the state "Idle" to the state "Waiting_for_Instructions". The AssistRequestInstructions operation shall be transmitted with a TC-BEGIN request primitive.

For all other operations sent from the assisting gsmSSF FSM, the dialogue shall be maintained except for the following cases.

When the assisting gsmSSF FSM makes a non-error case state transition to the state "Idle" and there is one or more pending operation and TC dialogue is established, TC dialogue can be terminated by TC-END primitive with component(s).

In the case that there is no pending operation and TC dialogue is established, TC dialogue can be terminated by TC-END primitive with zero component or prearranged end. When the assisting gsmSSF FSM makes a non-error case state transition to the state "Idle" and there is no operation to be sent, the dialogue is ended by means of a TC-END request primitive (basic) with zero components, or the dialogue is locally ended by means of a TC-END request primitive with prearranged end.

gsmSSME FSM related messages

The following procedures shall be followed:

- The dialogue shall be maintained when the ActivityTest Return Result is sent.

14.1.2.1.2 gsmSCF-to-gsmSSF messages

The present subclause defines the normal procedures for TC messages from the gsmSCF to the gsmSSF.

SCSM-FSM related messages

A dialogue shall be established when the SCSM-FSM receives of InitialDP operation for TDP-R or AssistRequestInstructions operation.

For subsequent operations sent from the SCSM-FSM, the dialogue shall be maintained except for the following cases, i.e. all other operations are sent after a dialogue was established from the gsmSSF (the gsmSCF has previously received a TC-BEGIN indication primitive with an InitialDP operation or an AssistRequestInstructions operation).

The dialogue shall no longer be maintained when the prearranged end condition is met in the gsmSCF. When the gsmSCF does not expect any messages other than possibly REJECT or ERROR messages for the operations sent and when the last associated operation timer expires, the dialogue is locally ended by means of a TC-END request primitive with prearranged end.
Alternatively, the sending of operations, leading to the termination of the relationship, by means of a TC-END request primitive (basic end) is possible.

SCME-FSM related messages

The operations sent from the SCME-FSM shall be issued according to the following procedures:

- The dialogue shall be maintained when the ActivityTest operation is sent.

- For sending one or more CallGap operations, the SCME FSM shall use an existing SCSM FSM associated dialogue which was initiated by a gsmSSF FSM (i.e. established for the transmission of the InitialDP operation). The dialogue shall be maintained.

14.1.2.1.3 smsSSF -to-gsmSCF SMS related messages

A dialogue shall be established when the smsSSF has finalised trigger processing and transits to the state "Waiting_for_Instructions". The relevant CAP Operation, which can be the InitialDPSMS operation only, shall be transmitted in the same message.

For all other operations sent from the smsSSF, the dialogue shall be maintained.

The dialogue shall no longer be maintained when the prearranged end condition is met in the smsSSF. When the smsSSF makes a state transition to the state "Idle", the dialogue is locally ended by means of a TC-END request primitive with prearranged end.

When the smsSSF FSM transits to the state "Idle", but no event was reported to the gsmSCF, then the smsSSF shall send TC-END with zero components to the gsmSCF.

When the smsSSF has sent the last EventReportSMS operation the dialogue may be ended from the gsmSCF by a TC-END request primitive with basic end. If the smsSSF decides to apply basic end, then it shall send TC-END with zero components.

14.1.2.1.4 gsmSCF-to-smsSSF SMS related messages

All operations are sent after a dialogue was established from the smsSSF (the gsmSCF has previously received a TC-BEGIN indication primitive with an InitialSMSEvent operation).

The dialogue shall no longer be maintained when the prearranged end condition is met in the gsmSCF. When the gsmSCF does not expect any messages other than possibly REJECT or ERROR messages for the operations sent and when the last associated operation timer expires, the dialogue is locally ended by means of a TC-END request primitive with prearranged end.

Alternatively, the sending of operations, leading to the termination of the control relationship, by means of a TC-END request primitive (basic end) is possible.

14.1.2.1.5 Use of dialogue handling services

Dialogue handling services are used to trigger the sending of the APDUs associated with the operations involved in the CAP packages.

Component grouping is performed under the control of the application-process through an appropriate usage of the TC-BEGIN, TC-CONTINUE and TC-END service.

14.1.2.2 Abnormal procedures

The following procedures also apply to the gsmSCF-gsmSRF interfaces.

14.1.2.2.1 gsmSCF-to-gsmSSF/gsmSRF messages

Considering that gsmSSF and gsmSRF do not have the logic to recover from error cases detected on the gsmSCF-gsmSSF/gsmSRF interface, the following shall apply:

- Operation errors and rejection of TC components shall be transmitted to the gsmSSF and, respectively, the gsmSRF with a TC-END request primitive, basic end.

If, in violation of the above procedure, an ERROR or REJECT component is received with a TC-CONTINUE indication primitive, then the gsmSSF and, respectively, the gsmSRF shall abort the dialogue with a TC-U-ABORT request primitive.

14.1.2.2.2 gsmSSF/gsmSRF/ -to-gsmSCF messages

Operation errors and rejection of TC components shall be transmitted to the gsmSCF according to the following rules:

- The dialogue shall be maintained when the preceding message, which contained the erroneous component, indicated that the dialogue shall be maintained. I.e. the error or reject shall be transmitted with a TC-CONTINUE request primitive if the erroneous component was received with a TC-CONTINUE indication primitive.
  On receipt of an ERROR or REJECT component the gsmSCF decides on further processing. It may either continue, explicitly end or abort the dialogue.

- In all other situations the dialogue shall no longer be maintained. I.e. the error or reject shall be transmitted with a TC-END request primitive, basic end, if the erroneous component was received with a TC-BEGIN indication primitive.

- on expiration of application timer Tssf or Tsrf, dialogue shall be terminated by means of by TC-U-ABORT primitive with an Abort reason, regardless of TC dialogue is established or not.

If the error processing in the gsmSSF or gsmSRF leads to the case where the gsmSSF or gsmSRF is not able to process further gsmSCF operations while the dialogue is to be maintained, then the gsmSSF or gsmSRF aborts the dialogue with a TC-END request primitive with basic end or a TC-U-ABORT request primitive, depending on whether any pending ERROR or REJECT component is to be sent or not.

The gsmSSF can end a dialogue with a TC-U-ABORT request primitive in the case that call release is initiated by any other entity then the gsmSCF and the gsmSSF has no pending call information requests (or pending requests which should be treated in the same way, i.e., ApplyCharging nor any armed EDP to notify the gsmSCF of the call release (for alternative way, see subclause 14.1.2.1.1).

14.1.2.2.3 gsmSCF-to-smsSSF SMS related messages

Considering that the smsSSF does not have the logic to recover from error cases detected on the gsmSCF-smsSSF interface, the following shall apply:

- operation errors and rejection of TC components shall be transmitted to the smsSSF with a TC-END request primitive, basic end.

If, in violation of the above procedure, an ERROR or REJECT component is received with a TC-CONTINUE indication primitive, then the smsSSF shall abort the dialogue with a TC-U-ABORT request primitive.

14.1.2.2.4 smsSSF-to-gsmSCF SMS related messages

Operation errors and rejection of TC components shall be transmitted to the gsmSCF according to the following rules:

- the dialogue shall be maintained when the preceding message, which contained the erroneous component, indicated that the dialogue shall be maintained. I.e. the error or reject shall be transmitted with a TC-CONTINUE request primitive if the erroneous component was received with a TC-CONTINUE indication primitive;

- on receipt of an ERROR or REJECT component the gsmSCF decides on further processing. It may either continue, explicitly end or abort the dialogue;

If the error processing in the smsSSF leads to the case where the smsSSF is not able to process further gsmSCF operations while the dialogue is to be maintained, then the smsSSF aborts the dialogue with a TC-U-ABORT request primitive.

The smsSSF aborts a dialogue with a TC-U-ABORT request primitive if release is initiated by any other entity than the gsmSCF and the smsSSF has no armed EDPs to notify the gsmSCF.

14.1.2.2.5 Use of dialogue handling services

On receipt of a TC-U-REJECT.ind in the FE, this primitive should be ignored. It is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 14.1.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

A TC-U-REJECT.req should be sent followed by a TC-CONTINUE.req.

On receipt of a TC-R-REJECT.ind in the FE, this primitive should be ignored. It is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 14.1.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

On receipt of a TC-L-REJECT indication primitive (i.e. when a protocol error has been detected by the local TC entity) which cannot be related to an active operation, it is up to the application process to continue or to terminate the dialogue and implicitly trigger the transmission of the reject component or to abort the dialogue.

On receipt of a TC-NOTICE indication the TC-USER is informed that a message cannot be delivered by the Network Layer. It occurs if the Return Option has been set (see subclause 14.1.1.3.7). It is for the application process to decide whether to terminate the dialogue or retry.

The application-process is the sole user of the TC-P-ABORT service and TC-NOTICE service.

The receipt of a TC-U-ABORT-Ind or TC-P-ABORT-Ind on a dialogue terminates all request processing.

14.1.2.3 Dialogue handling

14.1.2.3.1 Dialogue establishment

14.1.2.3.2 Dialogue continuation

14.1.2.3.3 Dialogue termination

14.1.2.3.4 User abort

14.1.2.3.5 Provider abort

14.1.2.3.6 Mapping to TC dialogue primitives

The gsmSSF-gsmSCF IN services can be mapped onto TC services. The present subclause defines the mapping of the gsmSSF-gsmSCF IN services onto the services of the TC dialogue handling services defined in ETSI ETS 300 287-1 [22].

a) The TC-BEGIN service is used to invoke the operations of the gsmSCF-gsmSSF connection packages as defined in clause 6.

b) The TC-CONTINUE service is used to report the success of the operations invoked in a TC-BEGIN service and to invoke or respond to any other operations.

c) The TC-U-ABORT service is used to report the failure of operations of the connection packages as defined in clause 6.

The mapping of the parameters onto the TC-BEGIN primitive is defined in subclause 14.1.1.3.6 with the following qualifications:

- The AC Name parameter shall take the value of the application-context-name field of the cap3-sms-AC object if the initiating AE is a gsmSSF.

The mapping of the parameters onto the TC-CONTINUE primitive is defined in subclause 14.1.1.3.6.

The mapping of the parameters onto the TC-U-ABORT primitive is defined in subclause 14.1.1.3.6 with the following qualifications:

- The Application-Context-Name parameter shall be used as specified in ETSI ETS 300 287-1 [22]. When the responding AE refuses a dialogue because the application-context-name it receives is not supported, this parameter shall have the value of the application-context-name field of the cap3-sms-AC object if the responding AE is a gsmSCF.

The use of the parameters of the TC-END service is defined in subclause 14.1.1.3.6.

14.1.2.4 Component Handling

14.1.2.4.1 Procedures for CAP Operations

The CAP ASEs are users of the TC component handling services except for the TC-L-REJECT and TC-L-CANCEL services which are used by the application-process. Receipt of a TC-L-REJECT-Ind leads the application-process to abandon the dialogue (i.e. it issues a TC-U-ABORT-Request primitive).

The TC-U-CANCEL service is never used.

14.1.2.4.2 Mapping to TC component parameters

The gsmSSF-gsmSCF IN ASE services are mapped onto the TC component handling services. The mapping of operations and errors onto TC services is defined in subclause 14.1.1.4.2 with the following qualifications:

The timeout parameter of the TC-INVOKE-Req primitives is set according to clause 6.

****** End of Document ******

3GPP TSG-CN WG2 Meeting #26
Miami, USA, 23rd - 27th September 2002.

Tdoc ⌘N2-020902

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **457** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Detach report in inter-SGSN routeing area update
Source:	⌘	Siemens AG
Work item code:	⌘	CAMEL4
Date:	⌘	24/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	Mobility management for GPRS subscriber described in clause 9 reports by the new SGSN in the case of inter-SGSN routeing area update and not by the old SGSN (detach indication). If the inter-SGSN routeing area update occurs from the CAMEL4-supporting SGSN (old) to the CAMEL4-non-supporting SGSN (new), then the gsmSCF does not receive any notification, which keeps the gsmSCF still believing that the MS resides under the CAMEL4-supporting SGSN service area. This may lead the service logic mal-functioning.
Summary of change:	⌘	Sends indication by the old SGSN in the case of inter-SGSN routeing area update. To distinguish the "simple" detach from the detach due to the routeing area update to another SGSN service area, MM triggers are also enhanced.
Consequences if not approved:	⌘	Above problem could not be solved. The gsmSCF may try to provide the serviced based on the already-irrelavant location information if the MS moves to the new SGSN which does not support CAMEL phase 4.

Clauses affected:	⌘	9			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	29.002-CR 496
		X /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

*** First modified part ***

9.2.2 Mobility Management for GPRS CAMEL Subscription Information (MG-CSI)

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

9.2.2.1 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. These events are:

- Routeing area update of MS to a different SGSN service area (update from new SGSN);
- Routeing area update of MS to a different SGSN service area (disconnect by detach;
- Routeing area update of MS within the same SGSN service area;
- GPRS attach (e.g. MS switched on, successful routeing area update after network initiated transfer to "MS not reachable for paging");
- MS-initiated GPRS detach (e.g. MS switched off);
- Network-initiated GPRS detach.
- Network-initiated transfer to the "not reachable for paging" state (the network has not received a periodic routeing area update from the MS and assumes that the MS is unreachable).

9.2.2.2 gsmSCF address

This is the address of the gsmSCF where the Mobility Management event notification shall be sent to. The gsmSCF address is in E.164 format.

9.2.2.3 Service Key

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

9.2.2.4 CSI state

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

9.2.2.5 Notification flag

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

9.2.3 gsmSCF address list for CSI

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

*** Next modified part ***

9.3.2 Procedures for Mobility management for GPRS subscriber

The different procedures for Mobility Management are shown in figures 9.5a to 9.5e.

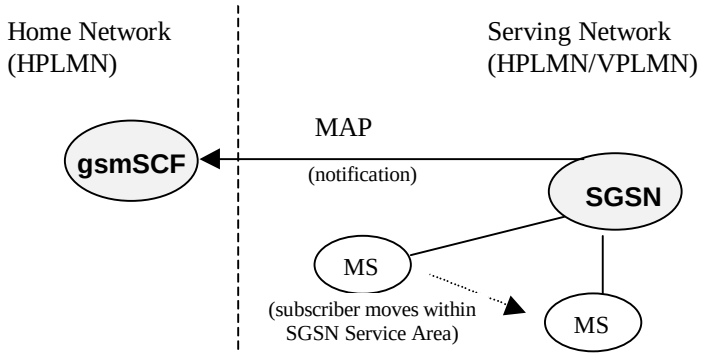


Figure 9.5a: Routeing Area Update within SGSN Service Area

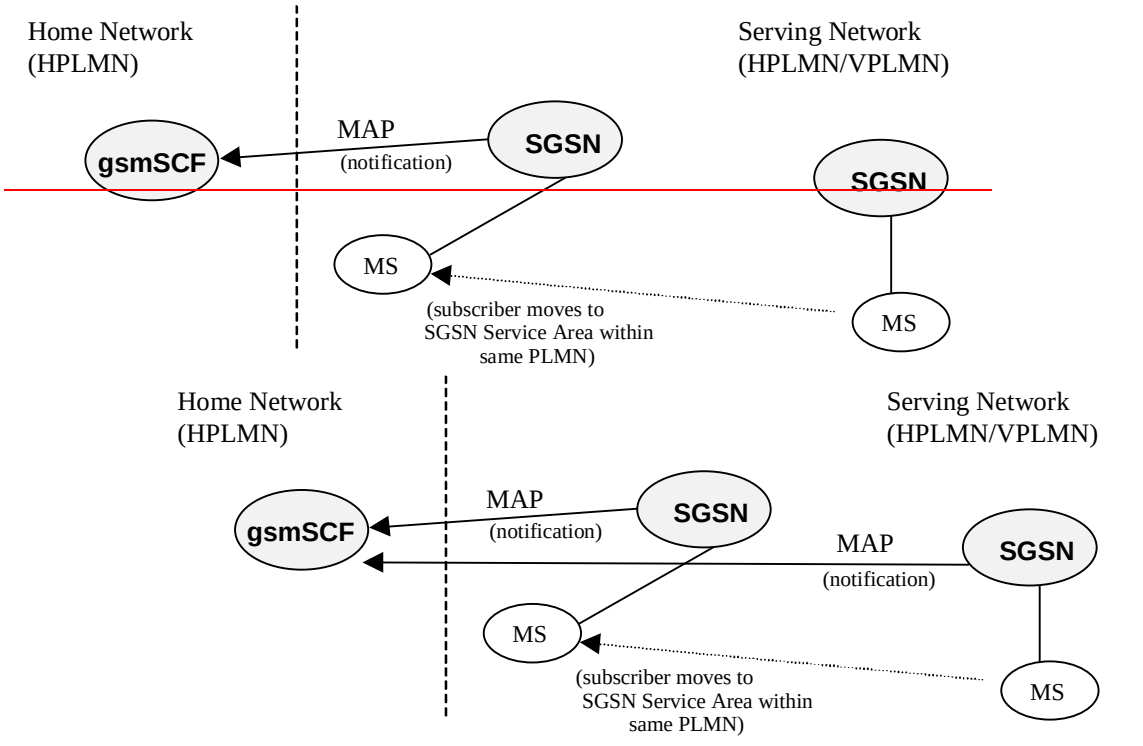


Figure 9.5b: Routeing Area Update from one SGSN Service Area to another SGSN Service Area

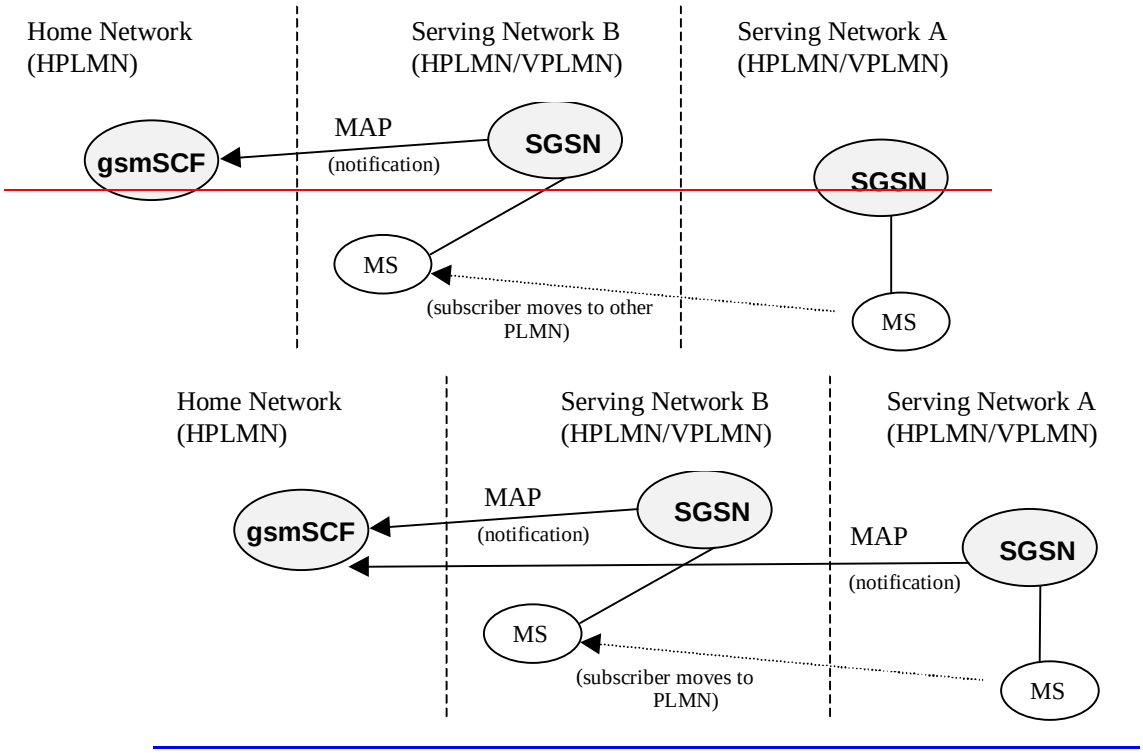


Figure 9.5c: Routeing Area Update from one PLMN to another PLMN

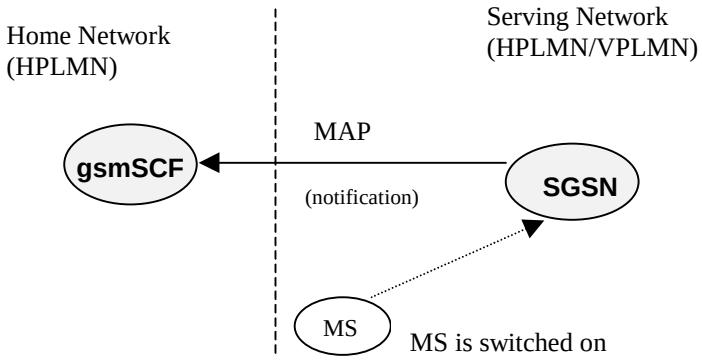


Figure 9.5d: Attach of MS

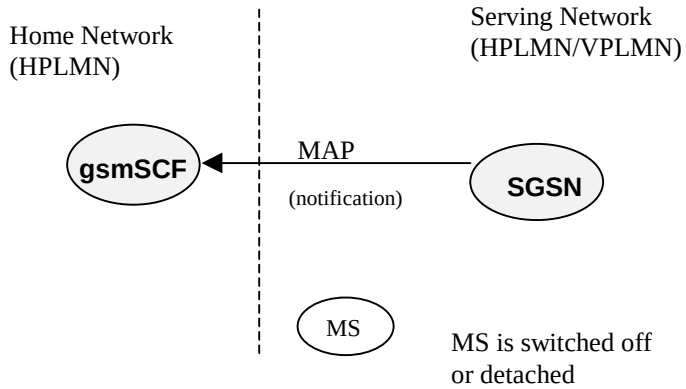


Figure 9.5e: GPRS detach

When a Mobility Management Event has taken place and the processing has been completed, then the SGSN may have to send a notification to the gsmSCF.

The sending of a Mobility Management notification to gsmSCF is independent of other CAMEL subscription data for a subscriber. E.g. a subscriber may have MG-CSI without GPRS-CSI.

The sending of a Mobility Management event notification is subscription based.

Refer to subclause 9.2.2 for a description of MG-CSI and the different Mobility Management events that may lead to a notification to the gsmSCF.

9.3.2.1 Procedure CAMEL_PS_Notification

This procedure is called from processes in 3GPP TS 23.060 [15]. When this procedure is called, it checks the presence of MG-CSI. If there is no MG-CSI, then no notification is sent to the gsmSCF.

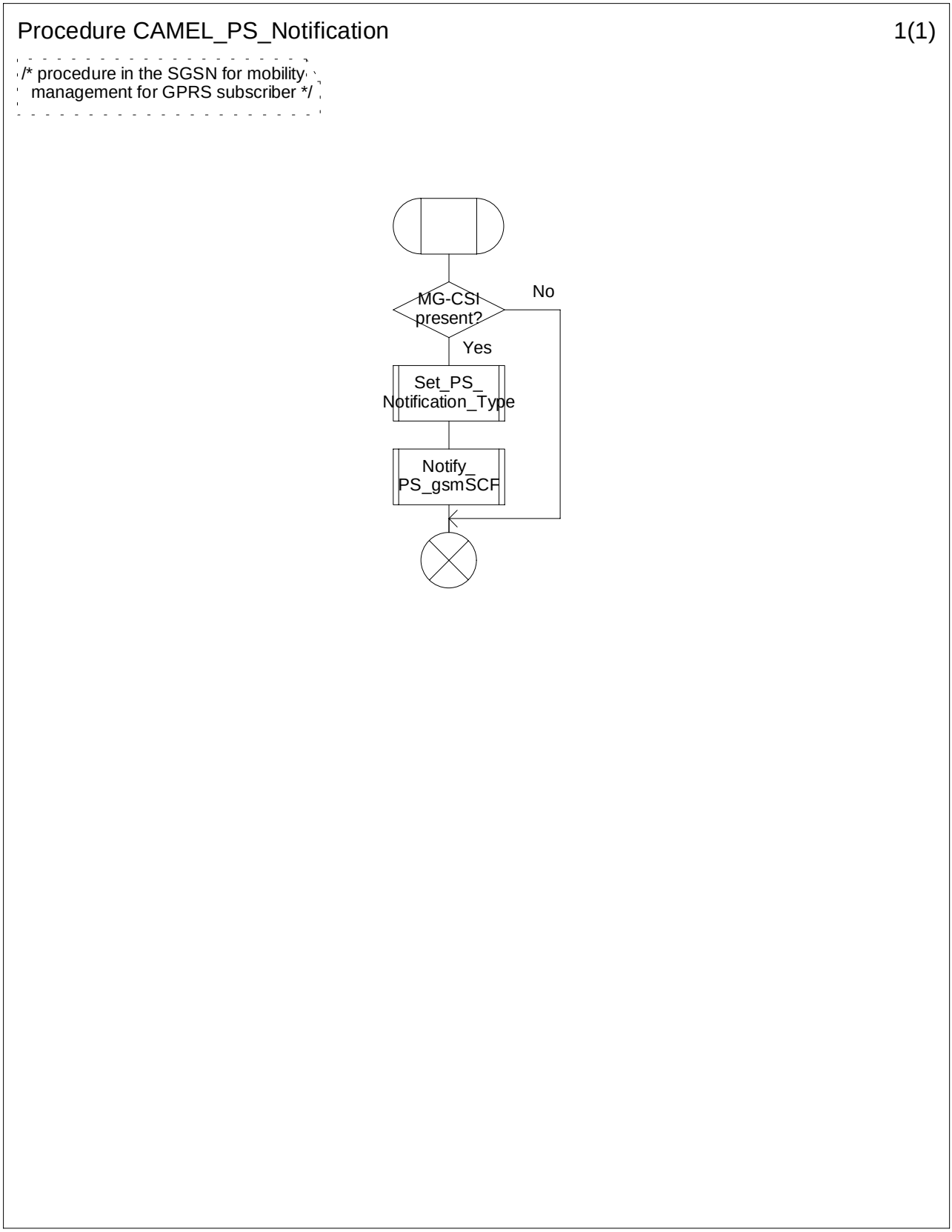
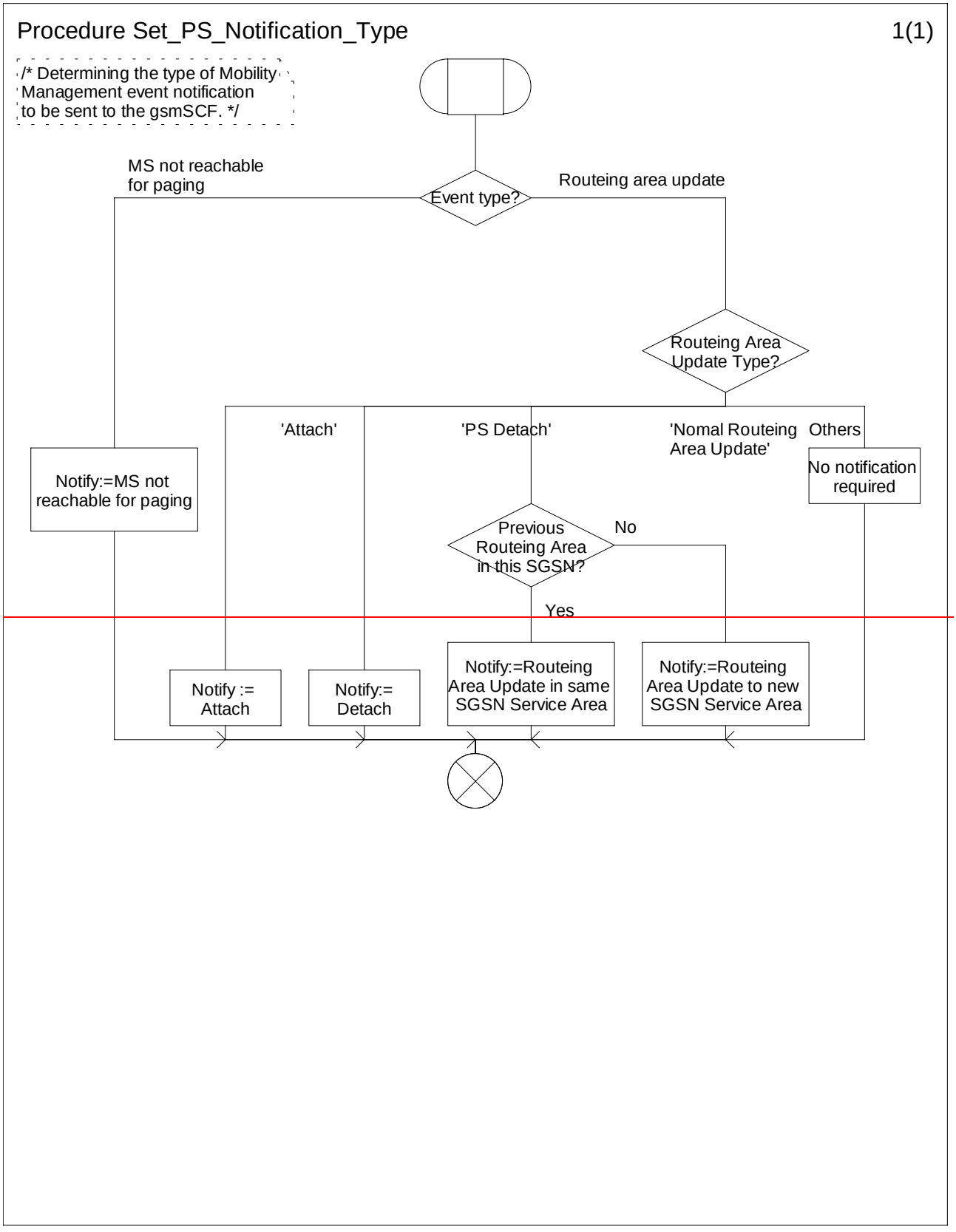


Figure 9.6a: Procedure CAMEL_PS_Notification (sheet 1)


Procedure Set_PS_Notification_Type
1(1)
/* Determining the type of Mobility Management event notification to be sent to the gsmSCF. */
Event type?
MS not reachable for paging
Routeing area update
Routeing Area Update Type?
'Attach'
'PS Detach'
'Nomal Routeing Area Update'
Others
No notification required
Notify:=MS not reachable for paging
Previous Routeing Area in this SGSN?
No
Yes
Notify := Attach
Notify:= Detach
Notify:=Routeing Area Update in same SGSN Service Area
Notify:=Routeing Area Update to new SGSN Service Area

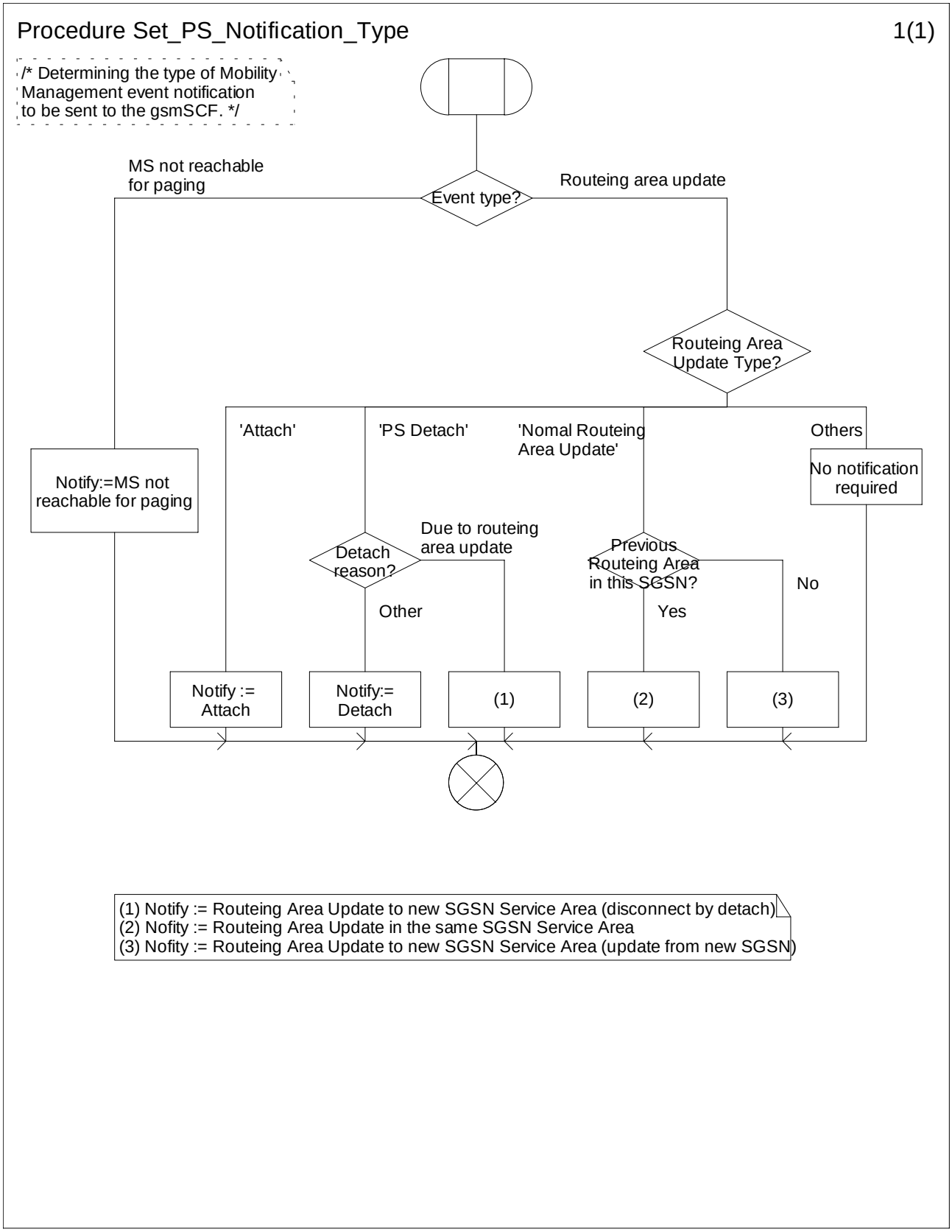


Figure 9.7a: Procedure Set_PS_Notification_Type (sheet 1)

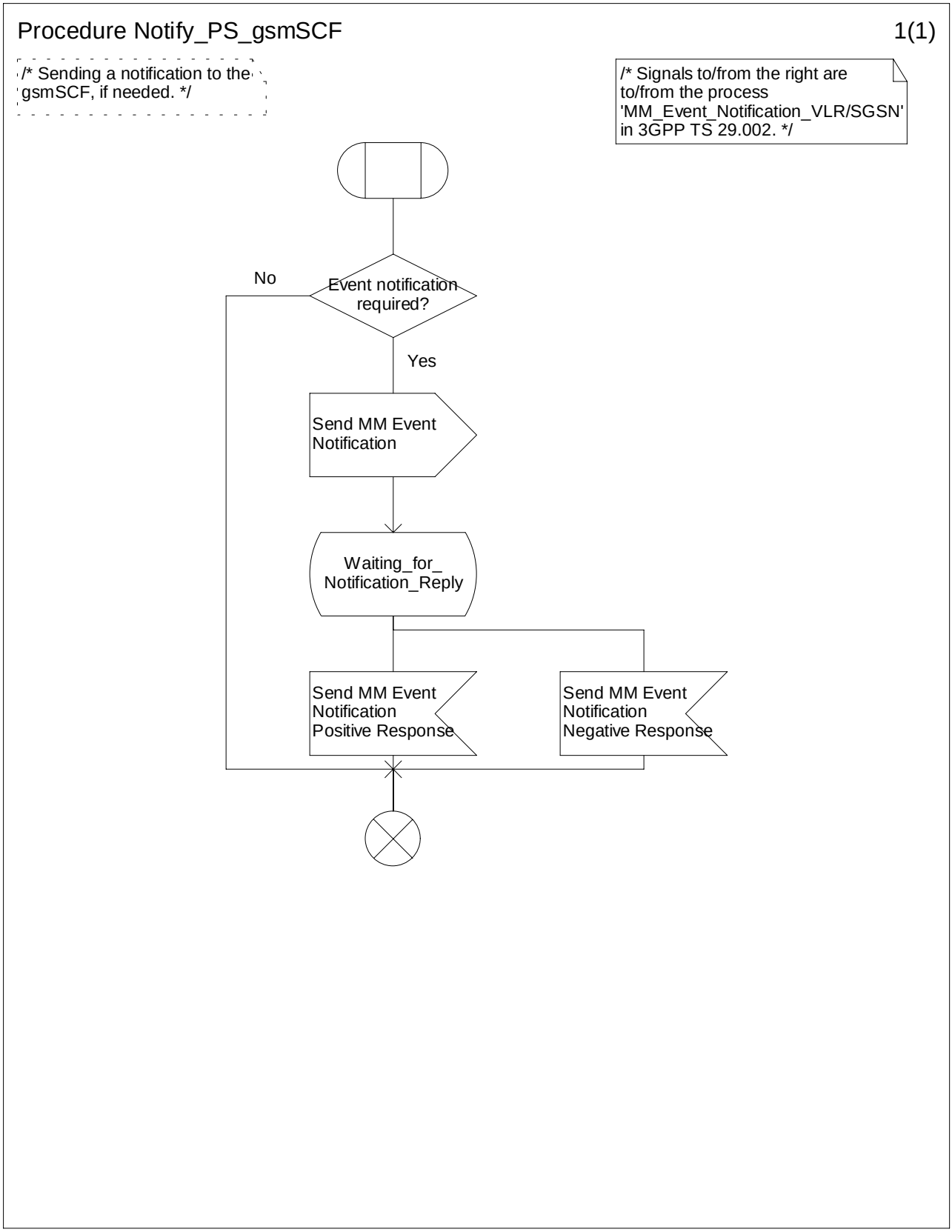


Figure 9.8a: Procedure Notify_PS_gsmSCF (sheet 1)

3GPP TSG CN WG2 Meeting #26 ***N2-020910***
Miami Beach, Florida, USA, 23rd – 27th September 2002 N2-020879rev

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CHANGE REQUEST

⌘ **29.078** **CR** **283** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	ASN.1 syntax basic corrections
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL4
Date:	⌘	24/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Small syntactic errors are in the current 29.078 ASN.1 modules.
Summary of change:	⌘	Correction of all syntactic errors.
Consequences if not approved:	⌘	Syntax errors and spelling errors in the ASN.1 which the implementers must fix manually.

Clauses affected:	⌘	ASN.1 modules of clauses 5 and 6.

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	Note: The text between the 29.078 clause headers 5, 6, 7 and 8 are the modified modules. The marked up changes are applicable to the 29.078 text.

— First modified modules —

5 Common CAP Types

```
-- 5    Common CAP Types
-- 5.1  Data types
CAP-datatypes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-datatypes(52) version4(3)}

DEFINITIONS IMPLICIT TAGS ::= BEGIN

...

AudibleIndicator ::= CHOICE {
    tone                                BOOLEAN,
    burstList                           [1] BurstList,
    }

...

END
```

— Next modified modules —

6 Circuit Switched Call Control

```
-- 6    Circuit Switched Call Control
-- 6.1  gsmSSF/CCF - gsmSCF Interface
-- 6.1.1    Operations and arguments
CAP-gsmSSF-gsmSCF-ops-args {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-gsmSSF-gsmSCF-ops-args(101) version4(3)}

DEFINITIONS IMPLICIT TAGS ::= BEGIN

-- This module contains the operations and operation arguments used for the
-- gsmSSF - gsmSCF interface, for the control of circuit switched calls.

-- The table in subclause 2.1 lists the specifications that contain the modules
-- that are used by CAP.

IMPORTS

...

    AChBillingChargingCharacteristics {},
    AdditionalCallingPartyNumber {},
    AlertingPattern,
    AeChChargingAddress {},
    AssistingSSPIPRoutingAddress {},
    BCSMEvent,
    BCSM-Failure,
    BearerCapability {},
    Burst,
    CalledPartyNumber {},
    CalledPartyBCDNumber {},
    CallingPartyNumber {},
    CallResult {},
    CallSegmentID {},
    CallSegmentToCancel {},
    CallSegmentFailure {},
    Carrier,
    Cause {},
    CGEncountered,
    ChargeNumber {},
    ControlType,
    CorrelationID {},
    DestinationRoutingAddress {},
    EventSpecificInformationBCSM {},
    EventTypeBCSM,
    Extensions {},
    FCIBillingChargingCharacteristics {},
    GapCriteria {},
    GapIndicators,
    GapTreatment,
    GenericNumbers {},
    InvokeID,
    IPRoutingAddress {},
```

```
    IPSSPCapabilities {},
    leg1,
    LegOrCallSegment {},
    LocationNumber {},
    MonitorMode,
    NAOliInfo,
    OCSIApplicable,
    OriginalCalledPartyID {},
    ReceivingSideID,
    RedirectingPartyID {},
    RequestedInformationList {},
    RequestedInformationTypeList,
    ScfID {},
    SCIBillingChargingCharacteristics {},
    SendingSideID,
    ServiceInteractionIndicatorsTwo,
    TimeAndTimezone {},
    TimerID,
    TimerValue
FROM CAP-datatypes datatypes

...

playTone {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT        PlayToneArg {bound}
    RETURN RESULT   FALSE
    ERRORS          {missingParameter |
                     parameterOutOfRange |
                     systemFailure |
                     unexpectedComponentSequence |
                     unexpectedDataValue |
                     unexpectedParameter |
                     unknownLegID |
                     unknownCSID}
    CODE            opcode-playTone}
-- Direction: gsmSCF -> gsmSSF, Timer: Tpt
-- This operation is used to play tones to either a leg or a call segment using
-- the MSC's tone generator.

PlayToneArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    ~~l~~legOrCallSegment                  [0] LegOrCallSegment {bound},
    bursts                          [1] Burst,
    extensions                      [2] Extensions {bound~~BOUND~~}
    OPTIONAL,
    ...
    }

...


END


...
```

— End of CR —

3GPP TSG CN WG2 Meeting #25 ***N2-020930***
Miami, Florida, USA, 23rd – 27th September 2002 **(Revision of N2-020811)**

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **452** ⌘ **rev** **2** ⌘ Current version: **5.1.0** ⌘

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Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Clarification of architecture for CAMEL control of SMS
Source:	⌘	Vodafone
Work item code:	⌘	CAMEL4 ***Date:*** ⌘ 26/09/2002
Category:	⌘	**F** ***Release:*** ⌘ Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*

Reason for change:	⌘	The architecture for CAMEL control of SMS does not recognise the case where the SMS-GMSC is integrated with the VMSC. This case is described in distinct SDL handling in TS 29.002. Further, the architecture for CAMEL control of SMS does not recognise the logical separation between the functional entities SMSC, SMS-GMSC and SMS-IWMSC. This distinction is significant when considering the possibility that the MSC is integrated with the SMS-GMSC.
Summary of change:	⌘	Add text to clarify that the functional entities SMS-GMSC and VMSC can be integrated and that the functional entities SMS-IWMSC and VMSC can be integrated. Enhance the architecture diagrams and supporting text to show the SMSC, SMS-GMSC and SMS-IWMSC as separate entities.
Consequences if not approved:	⌘	Confusion over whether there is an interface between the gsmSCF and the SMS-GMSC

Clauses affected:	⌘	7.1.1

Other specs affected: ⌘	Y	N		⌘
		X	Other core specifications	
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

****** First modified section ******

7 Short Message Services

7.1 Architecture

7.1.1 Functional Entities used for CAMEL

This subclause describes the functional architecture needed to support Mobile Originating Short Message Service (MO SMS) and Mobile Terminating Short Message Service (MT SMS) interworking for CAMEL. Figures 7.1a and 7.1b show the functional entities involved in MO SMS or MT SMS~~hort Message~~ requiring CAMEL support. Further details of the architecture needed to support Mobile Originating Short Message Service (MO SMS) and Mobile Terminating Short Message Service (MT SMS) are given in 3GPP TS 23.040 [14].

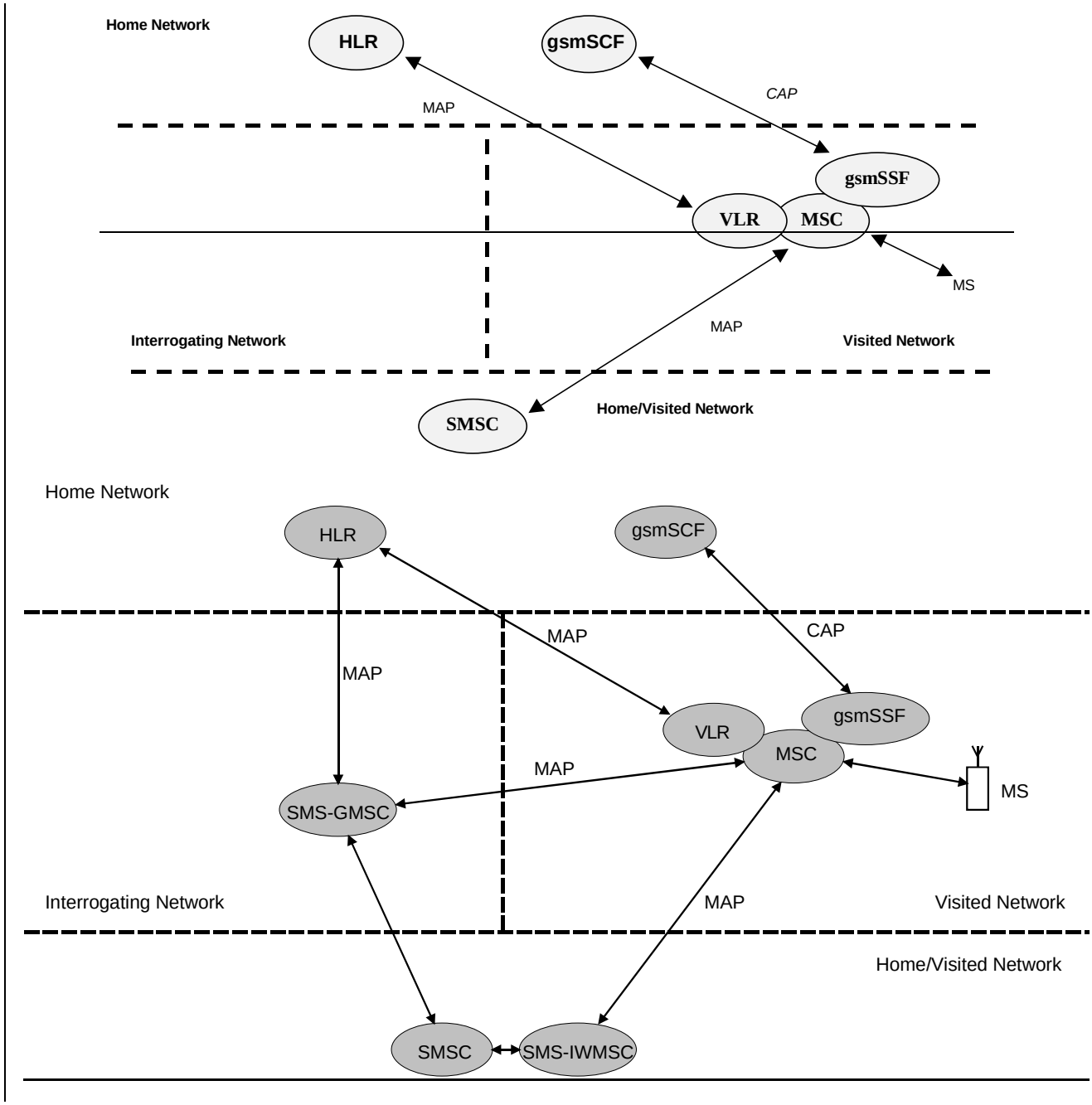


Figure 7.1a: Functional architecture for support of CAMEL control of MSC switched MO and MT SMS

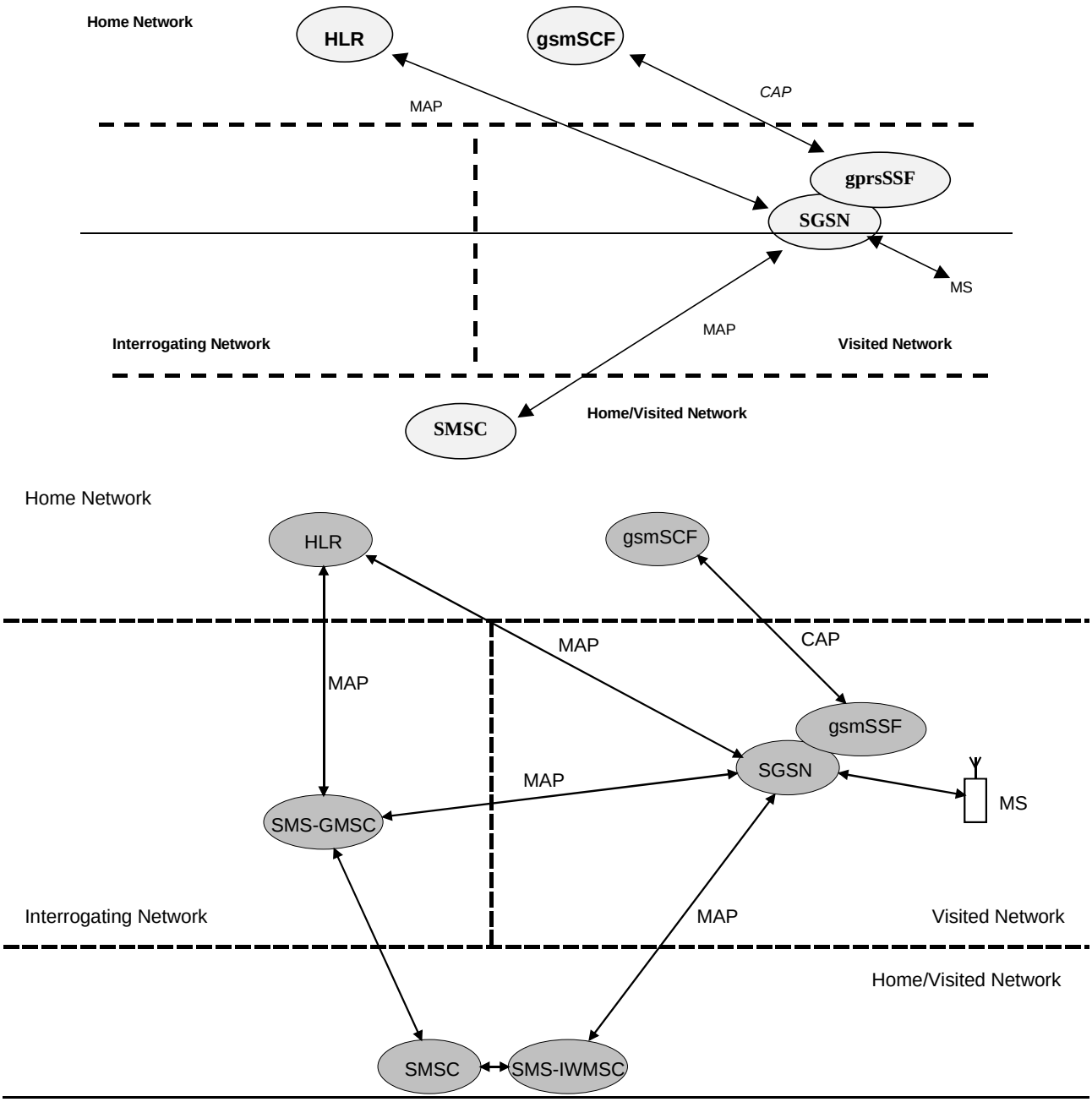


Figure 7.1b: Functional architecture for support of CAMEL control of SGSN switched MO and MT SMS

HLR: The HLR stores MO-SMS-CSI and/or MT-SMS-CSI. MO-SMS-CSI contains subscription information for subscribers that require CAMEL support of MO SMS. MT-SMS-CSI contains subscription information for subscribers that require CAMEL support of MT SMS. One or both of MO-SMS-CSI and MT-SMS-CSI are transferred to the VLR or to the SGSN on Location Update and Restore Data or when MO-SMS-CSI or MT-SMS-CSI has changed.

VLR: The VLR receives the MO-SMS-CSI and MT-SMS-CSI for the subscriber from the HLR. MO-SMS-CSI and MT-SMS-CSI are used by the MSC to determine ~~if~~ whether a Service Logic shall be invoked for an MO SMS submission or MT SMS delivery.

~~**SGSN:** The SGSN receives the MO-SMS-CSI and MT-SMS-CSI for the subscriber from the HLR. The SGSN uses the MO-SMS-CSI and MT-SMS-CSI to determine if a Service Logic shall be invoked for an MO SMS or MT SMS.~~

MSC: The MSC receives MO-SMS-CSI and MT-SMS-CSI from the VLR and uses this to determine whether ~~if~~ a Service Logic shall be invoked for an MO SMS submission or MT SMS delivery.

SGSN: The SGSN receives the MO-SMS-CSI and MT-SMS-CSI for the subscriber from the HLR. The SGSN uses the MO-SMS-CSI and MT-SMS-CSI to determine whether a Service Logic shall be invoked for an MO SMS submission or MT SMS delivery.

gprsSSF: see subclause 3.1.

gsmSSF: see subclause 3.1.

gsmSCF: see subclause 3.1.

SMSC: The Short Message Service Centre accepts messages submitted by an MS or other MO short message entity, stores them and delivers them to the destination MS or other MT short message entity.

SMS-GMSC: The Short Message Service Gateway MSC receives short messages from the SMSC, interrogates the HLR for routeing information to deliver each short message and forwards each short message to the serving node (MSC or SGSN) for delivery to the destination MS. The SMS-GMSC may be physically integrated with the SMSC or with the MSC for the destination subscriber.

SMS-IWMSC: The Short Message Service InterWorking MSC terminates the MAP signalling from the MSC or the SGSN for MO short message submission, and transfers the short message to the SMSC, The SMS-IWMSC may be physically integrated with the SMSC or with the MSC for the originating subscriber.

****** End of document ******

3GPP TSG CN WG2 Meeting #26 **N2-020942**
Miami Beach, Florida, USA, 23rd – 27th September 2002 N2-020906rev

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **470** ⌘ **rev** **2** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Resolving of open issues on "Support of partial implementation of CAMEL"
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL4
Date:	⌘	27/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change: ⌘ Currently there are open issues in 23.078 on the "Support of partial implementation of CAMEL". Those open points need to be closed.

- Shall we indicate the offered functionalities and CSIs in the MM-EventNotification?
Only the functionalities will be indicated.

- PSI-Enhancements for CS, indication towards the gsmSCF: Shall the support of PSI-Enhancements be part of the functionalities indicated towards the gsmSCF?
No, PSI-Enhancements for CS are not part of the functionalities.

- PSI-Enhancements for CS, indication towards the HLR: Shall the support of PSI-Enhancements be indicated from the VMSC to the HLR?
No, PSI-Enhancements for CS are not part of the functionalities.

- PSI-Enhancements for PS, indication towards the gsmSCF: Shall the support of PSI-Enhancements be indicated towards the gsmSCF? Shall this be part of the functionalities? Or shall the functionalities indicated to the gsmSCF in priniciple only include CS functionalities?
The functionalities will include only CS related items.

- Should the MSC include supported CSIs in the Mobility Management Event Notification IF to the gsmSCF?
There are no supported CSIs in the Mobility Management Event Notification IF

- Should the SGSN include supported CSIs and/or supported Functionalities in the Mobility Management Event Notification IF to the gsmSCF?
No indication of supported CSIs and/or supported Functionalities.

- Which IEs form part of the "Enhancements for Continue With Argument" needed to support the Initiate Call Attempt IF?

		No specific information elments are to be indicated. Further items covered in this CR: - T—CSI can not be part of the Offered CAMEL4 CSIs of the VLR (4.6.8.1 Insert Subscriber Data ack; 4.6.8.3 Update Location, 4.6.8.4 Restore Data and 10.3.2.2 Any Time Subscription Interrogation ack). - Separation of 4.6.8.1.2 into a circuit switched part and a packet switched part (6.6.4.1). - Correct reference of 9.4.2.1 Update GPRS Location to the GGPRS part instead of the SMS related part.
Summary of change:	⌘	Closure of the open items and update of the corresponding specification text.
Consequences if not approved:	⌘	Incomplete and inconsistent CAMEL stage 2 specification.

Clauses affected:	⌘	1.1, 1.1.2, 4.6.1.8.2, 4.6.8.1.2, 4.6.8.3.2, 4.6.8.4.2, 4.6.9.1.2, 6.6.4.1, 6.6.4.2.2, 9.4.1.1.2, 9.4.2.1, 10.3.2.2.2
Other specs affected:	⌘	Y / N [ ] / [X] Other core specifications ⌘ [ ] / [X] Test specifications [ ] / [X] O&M Specifications
Other comments:	⌘	

— First modified section —

1.1 Support of partial implementation of CAMEL phase 4

A functional entity (VMSC, GMSC or SGSN) may support the complete CAMEL phase 4 functionality or, as a network option, it may support thecomplete CAMEL phase 3 functionality and a partial implementation of CAMEL phase 4.

If a functional entity supports any part of CAMEL phase 4 then the HLR is informed of the CAMEL phase 4 CSIs supported. An ~~MSC or~~ SGSN may also indicate support of the ~~enhanced~~ Provide Subscriber Information IF. To indicate support of a specific CSI, a functional entity shall have the ability to trigger on any initial service event possible for that CSI.

~~Note to previous paragraph: indication of support of PSI enhancements in the MSC is for further study.~~

If a VMSC or GMSC supports any of the CAMEL phase 4 circuit switched CSIs (O-CSI, D-CSI, T-CSI or VT-CSI) then the gsmSCF is informed of the CAMEL phase 4 circuit switched functionalities offered. The gsmSCF shall not send information flows or parameters that conflict with the functionalities offered by the VMSC or GMSC.

~~Note to previous paragraph: packet switched issue is for further study.~~

If a CAMEL subscriber attempts to register in a VMSC or SGSN which supports at least one CAMEL phase 4 CSI or the enhancement of Provide Subscriber Information IF then the VMSC or SGSN indicates in the registration request to the HLR the phase of CAMEL which the VMSC or SGSN supports (at least phase 4). In addition, the VMSC or SGSN indicates which CAMEL phase 4 CSIs may be downloaded. An ~~VMSC or~~ SGSN may also indicate support of ~~enhancement of~~ the Provide Subscriber Information IF.

~~Note to previous paragraph: indication of support of PSI enhancements in the VMSC is for further study.~~

If a GMSC supports at least one CAMEL phase 4 CSI then the GMSC indicates in the Send Routeing Info to the HLR the phase of CAMEL which the GMSC supports (at least phase 4). In addition, the GMSC indicates which CAMEL phase 4 CSIs may be downloaded.

If a VMSC/gsmSSF or GMSC/gsmSSF initiates contact with the gsmSCF using the Initial DP IF, or acknowledges a gsmSCF initiated contact using the Intitate Call Attempt ack IF, then the VMSC/gsmSSF or GMSC/gsmSSF indicates in the IF the CAMEL phase 4 functionalities offered to the gsmSCF.

If a VLR ~~or SGSN~~ initiates contact with the gsmSCF using a Mobility Management Event Notification IF then the VLR ~~or SGSN~~ indicates in the IF the ~~CAMEL phase 4 CSIs and~~ functionalities offered to the gsmSCF.

~~Note to previous paragraph: SGSN and CSIs issue is for further study.~~

1.1.1 CAMEL Phase 4 CSIs

A network entity may indicate to the HLR an offer of support for the following CAMEL phase 4 CSIs:

- CAMEL phase 4 O-CSI;
- CAMEL phase 4 D-CSI;
- CAMEL phase 4 T-CSI;
- CAMEL phase 4 VT-CSI;
- CAMEL phase 4 MT- SMS-CSI;
- CAMEL phase 4 MG-CSI.

An ~~MSC or~~ SGSN may also indicate support of the CAMEL phase 4 Provide Subscriber Information IF.

A functional entity (VMSC, GMSC or SGSN) may offer the CSIs in any combination applicable for this entity. A functional entity shall indicate to the HLR all the CSIs it offers. The HLR may ignore the offer of the supported CSIs if they are not applicable for the sending entity, but it shall not reject the operation in this case.

1.1.2 CAMEL Phase 4 Functionalities

The CAMEL phase 4 functionalities which may be offered to the gsmSCF are the following:

~~- Enhancement of Provide Subscriber Information *(for further study);*~~

- Creating additional parties in a call, Creating a new call (Initiate Call Attempt~~, Enhancements for Continue With Argument *(Exact parameters enhancements for Continue With Argument need to be specified.)*~~);
- Placing an individual call party on hold (Split Leg);
- Connecting an individual call party to the group (Move Leg);
- Releasing an individual call party (Disconnect Leg);
- Indication of the release of a call party or call segment (Entity Released);
- Enhancements for subscriber interactions with the gsmSCF (Disconnect Forward Connection With Argument);
- Inclusion of flexible tone injection (Play Tone);
- DTMF Mid call procedure for MO and VT calls (DP O_Mid_Call, DP T_Mid_Call, Automatic Rearm);
- Provision of charging indicator at answer DP (Charge Indicator at DP O_Answer, DP T_Answer);
- Support of Alerting DP (DP O_Term_Seized, DP Call_Accepted);
- Provision of location information of called subscriber in the alerting phase (Location information at Alerting DP);
- Provision of location information during an ongoing call (DP O_Change_Of_Position, DP T_Change_Of_Position, Automatic Rearm);
- Interactions with Optimal Routing (BOR Interogation Requested, Route Not Permitted);
- Warning tone enhancements (Play Burstlist for Audible Indicator); and
- Enhancements of Call Forwarding indication (Forwarding Destination Number).

A functional entity (VMSC or GMSC~~ or SGSN~~) may offer the functionalities in any combination applicable for this entity and applicable to the offered CSIs.

~~Note to previous paragraph: SGSN issue is for further study.~~

A functional entity (VMSC or GMSC) shall indicate to the gsmSCF all the functional~~l~~ities it offers.

— Next modified section —

4.6.1 gsmSSF to gsmSCF information flows

...

4.6.1.8 Initial DP

4.6.1.8.1 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.

4.6.1.8.2 Information Elements

(Note: IEs in the NC columns in this IF may need further study.)

Information element name	MO	MF	MT	VT	NC	NP	Description
Additional Calling Party Number	C	C	C	C	-	C	This IE contains the calling party number provided by the access signalling system of the calling user or received from the gsmSCF due to the previous CAMEL processing.
Bearer Capability	M	C	C	C	-	C	This IE indicates the type of the bearer capability connection to the user.
Called Party Number	C	M	M	M	-	M	This IE contains the number used to identify the called party in the forward direction. For MO and MF calls this IE is used in the case of TDP Route_Select_Failure (this is the destination number used to route the call) and in the case of TDP Busy and TDP No Reply (this is the MSISDN when the destination number used for the call is an MSRN, or in the case of unsuccessful call establishment received from the HLR via the MAP interface, otherwise it is the number used to route the call). For VT calls when there is no forwarding pending this is the MSISDN received in the Provide Roaming Number; if the MSISDN is not available, the basic MSISDN is used. For the MT and VT call case when there is call forwarding or call deflection pending, this is the MSISDN, i.e. not the forwarded-to or deflected-to number. If the Initial DP IF is sent at TDP Route_Select_Failure or TDP Analysed_Information then the *NatureOfAddress indicator* may contain a national-specific value. For some national-specific *NatureOfAddress indicator* values the length of the digit part of the destination address may be zero.
Called Party BCD Number	C	-	-	-	-	-	This IE contains the number used to identify the called party in the forward direction. It is used for an MO call in all cases except in the case of TDP Route_Select_Failure. For the TDP Collected_Information, 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. For the TDP Analysed_Information, the number contained in this IE shall be the dialled number received over the network access or received from a gsmSCF in a Connect IF, Service selection information, such as * and # digits may be present (see subclause 4.2.1.2.2); carrier selection information dialled by the subscriber is not present.
Calling Party Number	M	C	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	-	C	This IE indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).
CallGap Encountered	C	C	C	C	-	C	This IE indicates the type of gapping which has been applied to the related call. This IE shall be present only if a call gapping context is applicable to the Initial DP IF.

Information element name	MO	MF	MT	VT	NC	NP	Description
Call Reference Number	M	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 gsmSCF to decide how to continue the call handling.
Event Type BCSM	M	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	-	C	This IE indicates the type of basic service i.e., teleservice or bearer service.
High Layer Compatibility	C	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	-	S	This IE identifies the mobile subscriber. For the NP case, the IMSI is mandatory if the new party is initiated in an MO, MF, MT, or VT call, otherwise it shall be absent.
IP SSP Capabilities	C	C	C	C	-	C	This IE indicates which SRF resources are supported within the gsmSSF and are available. If this IE is absent, it indicates that no gsmSRF is attached and available.
Location Information	M	-	C	M	-	-	This IE is described in a table below.
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 the incoming ISUP signalling.
MSC Address	M	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 MF calls, the MSC Address carries the international E.164 address of the forwarding MSC. For the NP case, the MSC address carries the international E.164 address of the serving VMSC (the NP case in the GMSC will not cause an Initial DP IF).

Information element name	MO	MF	MT	VT	NC	NP	Description
GMSC Address	-	M	-	M	-	S	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. For NP case, the GMSC Address is mandatory if the new party is initiated in an MF call or in a VT call, otherwise it shall be absent. The GMSC Address carries the international E.164 address of the GMSC.
Carrier	S	S	S	S	-	S	This IE is described in a table below. This IE may be present when the VPLMN and the HPLMN of the subscriber are both North American. For MO calls, this IE shall identify any carrier that was explicitly selected by the calling subscriber. If no carrier was explicitly selected, this 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 MF calls, the IE shall contain the carrier subscribed to by the forwarding subscriber.
Original Called Party ID	C	C	C	C	-	-	This IE carries the dialled digits if the call has met call forwarding on the route to the gsmSSF. This IE shall also be sent if it was received from the gsmSCF due to previous CAMEL processing.
Redirecting Party ID	C	C	C	C	-	-	This IE indicates the directory number the call was redirected from. This IE shall also be sent if it was received from the gsmSCF due to previous CAMEL processing.
Redirection Information	C	C	C	C	-	-	This IE contains forwarding related information, such as the redirection counter.
Service Key	M	M	M	M	-	M	This IE indicates to the gsmSCF the requested CAMEL Service. It is used to address the required application within the gsmSCF.
Subscriber State	-	-	C	C	-	-	This IE indicates the status of the MS. The states are: - CAMEL Busy: The MS is engaged on a transaction for a mobile originating or terminated circuit-switched call. - Network Determined Not Reachable: The network can determine from its internal data that the MS is not reachable. - Assumed Idle: The state of the MS is neither "CAMEL Busy" nor "Network Determined Not Reachable". - Not provided from VLR.
Time And Timezone	M	M	M	M	-	M	This IE contains the time that the gsmSSF was triggered, and the time zone in which gsmSSF resides.

Information element name	MO	MF	MT	VT	NC	NP	Description
Call Forwarding SS Pending	-	-	C	C	-	-	If the Initial DP IF is sent from the GMSC, then this IE shall be present in the following cases: - The GMSC has received an FTN in the 1st Send Routeing Info ack IF from the HLR. - The GMSC has received an FTN in the 2nd Send Routeing Info ack IF from the HLR and no relationship with the gsmSCF exists at that moment. - The GMSC has received the Resume Call Handling IF from the VMSC and no relationship with the gsmSCF exists at that moment. If the Initial DP IF is sent from the VMSC, then this IE shall be present in the following cases: - Conditional call forwarding is invoked and no relationship with the gsmSCF exists at that moment. - Call Deflection is invoked and no relationship with the gsmSCF exists at that moment.
Forwarding Destination Number	-	-	C	C	-	-	This IE contains the Forwarded-to-Number or the Deflected-to-Number. It shall be present if the Call Forwarding SS Pending IE is present, otherwise it shall be absent.
Service Interaction Indicators Two	C	C	C	C	-	C	The IE is described in a table below. This IE is present if it is received in the ISUP message or due to previous CAMEL processing.
CUG Index	C	-	-	-	-	C	See 3GPP TS 23.085 [21] for details of this IE.
CUG Interlock Code	C	C	C	C	-	C	This IE shall be set according to 3GPP TS 23.085 [21] unless modified by the gsmSCF via the Connect or Continue With Argument IFs.
Outgoing Access Indicator	C	C	C	C	-	C	This IE shall be set according to the 3GPP TS 23.085 [21] unless modified by the gsmSCF via the Connect or Continue With Argument IFs.
MS Classmark 2	C	-	-	-	-	-	This IE contains the MS classmark 2, which is sent by the MS when it requests access to setup the MO call or responds to paging in the CS domain.
IMEI (with software version)	C	-	-	-	-	-	This IE contains the IMEISV (as defined in 3GPP TS 23.003 [7]) of the ME in use by the served subscriber.
Supported CAMEL Phases	M	M	M	M	M	M	This IE indicates the CAMEL Phases supported by the GMSC or the VMSC.
Offered CAMEL4 Functionalities	M	M	M	M	M	M	This IE is described in a table below. This IE indicates the CAMEL phase 4 functionalities offered by the GMSC or the VMSC.

Offered CAMEL4 Functionalities contains the following information elements:

Information element name	Status	Description
~~PSI Enhancements~~	~~S~~	~~This IE indicates that the of Enhancement of Provide Subscriber Information is offered.~~ ~~*Note: for further study*~~
Initiate Call Attempt	S	This IE indicates that the gsmSCF may send to the gsmSSF the Initiate Call Attempt IF~~ and the CAMEL phase 4 parameters in the Continue With Argument IE.~~ ~~*CR Editor's note: In the parameter list for CWA, it should be clear which parameters can only be used if ICA is supported.*~~
Split Leg	S	This IE indicates that the gsmSCF may send to the gsmSSF the Split Leg IF.

Information element name	Status	Description
Move Leg	S	This IE indicates that the gsmSCF may send to the gsmSSF the Move Leg IF.
Disconnect Leg	S	This IE indicates that the gsmSCF may send to the gsmSSF the Disconnect Leg IF.
Entity Released	S	This IE indicates that the gsmSSF shall send to the gsmSCF the.
DFC With Argument	S	This IE indicates that the gsmSCF may send to the gsmSSF Disconnect Forward Connection With Argument IF.
Play Tone	S	This IE indicates that the gsmSCF may send to the gsmSSF the Play Tone IF.
DTMF Mid Call	S	This IE indicates that the gsmSCF may instruct the gsmSSF to arm the O_MidCall or T_MidCall DPs. The gsmSCF may instruct the gsmSSF to automatically re-arm the DPs.
Charging Indicator	S	This IE indicates that the Charge Indicator IE may be present in the Event Report BCSM IF reporting the O_Answer or T_Answer DP.
Alerting DP	S	This IE indicates that the gsmSCF may instruct the gsmSSF to arm the O_Term_Seized or Call_Accepted DPs.
Location At Alerting	S	This IE indicates that the Location Information IE shall be present (if available) in the Event Report BCSM IF reporting the Call_Accepted DP.
Change Of Position DP	S	This IE indicates that the gsmSCF may instruct the gsmSSF to arm the O_Change_Of_Position or T_Change_Of_Position DPs. The gsmSCF may instruct the gsmSSF to auromatically re-arm the DPs.
OR Interactions	S	This IE indicates that the gsmSCF may send to the gsmSSF the Basic OR Interrogation Requested IE in the Connect or Continue With Argument IFs. This IE indicates the Route Not Permitted IE may be present in the Event Report BCSM IF reporting the O_Abandon DP.
Warning Tone Enhancements	S	This IE indicates that the gsmSCF may send to the gsmSSF the Play Burstlist IE (within the Audible Indicator IE) in an Apply Charging IF.
CF Enhancements	S	This IE indicates that the Forwarding Destination Number IE may be present in the Event Report BCSM IF reporting the T_Busy or T_No_Answer DP.

Location Information is defined in 3GPP TS 23.018 [12]. The following differences apply:

Information element name	MO	MF	MT	VT	NC	NP	Description
Location Number	-	-	C	C	-	-	See 3GPP TS 23.018 [12].
Service area ID	C,E	-	C,E	C,E	-	-	See 3GPP TS 23.018 [12].
Cell ID	C,E	-	C,E	C,E	-	-	See 3GPP TS 23.018 [12].
Geographical information	C	-	C	C	-	-	See 3GPP TS 23.018 [12].
Geodetic information	C	-	C	C	-	-	See 3GPP TS 23.018 [12].
VLR number	M	-	C	M	-	-	See 3GPP TS 23.018 [12].
Age Of location information	M	-	C	C	-	-	See 3GPP TS 23.018 [12].
Current Location Retrieved	-	-	-	-	-	-	Not applicable
Location area ID	C,E	-	C,E	C,E	-	-	See 3GPP TS 23.003 [7].
Selected LSA Identity	S	-	S	S	-	-	This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. In the case of multiple matches the LSA ID with the highest priority shall be present. See 3GPP TS 23.073 [17]. This IE shall be present if available and SoLSA is supported, otherwise it shall be absent.

Carrier contains the following information elements:

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

Service Interaction Indicators Two contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Forward Service Interaction Indicator	C	C	C	C	-	C	This IE is described in a table below.
HOLD Treatment Indicator	C	-	-	C	-	C	This IE indicates whether the CAMEL subscriber can invoke HOLD for the call.
CW Treatment Indicator	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	This IE indicates whether the call leg can become part of an ECT call initiated by the CAMEL subscriber.

Forward Service Interaction Indicator contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Conference Treatment Indicator	C	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	-	C	This IE indicates whether the call can be forwarded using the Call Forwarding or Call Deflection supplementary services.

— Next modified section —

4.6.8 VLR to HLR information flows

4.6.8.1 Insert Subscriber Data ack

4.6.8.1.1 Description

This IF is used by the VLR to indicate to the HLR the result of the Insert Subscriber Data IF. It is specified in 3GPP TS 29.002 [32].

4.6.8.1.2 Information Elements

Insert Subscriber Data ack contains the following CAMEL specific information elements:

Information element name	Status	Description
Supported CAMEL Phases	S	This IE identifies which CAMEL phases are supported by the VMSC/VLR. It shall be present when a CSI has been included in the ISD.
Offered CAMEL4 CSIs	S	This IE indicates the CAMEL phase 4 CSIs offered in the VMSC/VLR. It shall be present if a CSI has been included in the ISD.

Offered CAMEL4 CSIs contains the following information elements:

Information element name	Status	Description
O—CSI	S	This IE indicates the offer of CAMEL phase 4 O-CSI. It shall be present if a CSI has been included in the ISD.
D—CSI	S	This IE indicates the offer of CAMEL phase 4 D-CSI. It shall be present if a CSI has been included in the ISD.
VT—CSI	S	This IE indicates the offer of CAMEL phase 4 VT-CSI. It shall be present if a CSI has been included in the ISD.
~~T—CSI~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 T-CSI. It shall be present if a CSI has been included in the ISD.~~
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI. It shall be present if a CSI has been included in the ISD.
~~MG—CSI~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 MG-CSI. It shall be present if a CSI has been included in the ISD.~~ ~~*Note: for further study*~~
~~PSI Enhancements~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 Enhancements of Provide~~

Information element name	Status	Description
		~~Subscriber Information.~~ ~~*Note: for further study*~~

CR Editor's note: "This IE table should contain only VLR to HLR related IEs. To indicate further IEs the IE table has to be duplicated to the intended interface and enhanced there by the required IEs. ". MG—CSI has been deleted due to this.

— Next modified section —

4.6.8.3 Update Location

4.6.8.3.1 Description

This IF is used by the VLR to provide information about supported CAMEL phases to the HLR. It shall be present when a CSI has been included in the Insert Subscriber Data IF.

4.6.8.3.2 Information Elements

Update Location contains the following CAMEL specific information element:

Information element name	Status	Description
Supported CAMEL Phases	S	This IE indicates which phases of CAMEL are supported. It shall be present if a CAMEL phase higher than phase 1 is supported. Otherwise may be absent.
Offered CAMEL4 CSIs	S	This IE indicates the CAMEL phase 4 CSIs offered in the VMSC/VLR. It shall be present if the "Supported CAMEL Phases" IE indicates support of CAMEL phase 4.

Offered CAMEL4 CSIs contains the following information elements:

Information element name	Status	Description
O—CSI	S	This IE indicates the offer of CAMEL phase 4 O-CSI. It shall be present if a CSI has been included in the Insert Subscriber Data.
D—CSI	S	This IE indicates the offer of CAMEL phase 4 D-CSI. It shall be present if a CSI has been included in the Insert Subscriber Data.
VT—CSI	S	This IE indicates the offer of CAMEL phase 4 VT-CSI. It shall be present if a CSI has been included in the Insert Subscriber Data.
~~T—CSI~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 T-CSI. It shall be present if a CSI has been included in the Insert Subscriber Data.~~
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI. It shall be present if a CSI has been included in the Insert Subscriber Data.
~~MG—CSI~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 MG-CSI. It shall be present if a CSI has been included in the Insert Subscriber Data.~~ ~~*Note: for further study*~~
~~PSI Enhancements~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 Enhancements of Provide Subscriber Information.~~ ~~*Note: for further study*~~

CR Editor's note: "This IE table should contain only VLR to HLR related IEs. MG—CSI has been deleted due to this.

— Next modified section —

4.6.8.4 Restore Data

4.6.8.4.1 Description

This IF is used by the VLR to provide the information about supported CAMEL phases to the HLR.

4.6.8.4.2 Information Elements

Restore Data contains the following CAMEL specific information element:

Information element name	Status	Description
Supported CAMEL Phases	S	This IE indicates which phases of CAMEL are supported. It shall be present if a CAMEL phase higher than phase 1 is supported. Otherwise may be absent.
Offered CAMEL4 CSIs	S	This IE indicates the CAMEL phase 4 CSIs offered in the VMSC/VLR. It shall be present if the "Supported CAMEL Phases" IE indicates support of CAMEL phase 4.

Offered CAMEL4 CSIs contains the following information elements:

Information element name	Status	Description
O—CSI	S	This IE indicates the offer of CAMEL phase 4 O-CSI
D—CSI	S	This IE indicates the offer of CAMEL phase 4 D-CSI
VT—CSI	S	This IE indicates the offer of CAMEL phase 4 VT-CSI
~~T—CSI~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 T-CSI~~
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI
~~PSI Enhancements~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 Enhancements of Provide Subscriber Information.~~ ~~*Note: for further study*~~

— Next modified section —

4.6.9 HLR to GMSC information flows

4.6.9.1 Send Routeing Info ack

4.6.9.1.1 Description

This IF is specified in 3GPP TS 23.018 [12]; it is used by the HLR to transfer the requested routeing information to the GMSC.

4.6.9.1.2 Information Elements

Send Routeing Info ack contains the following CAMEL specific information elements:

Information element name	Status	Description
Location Information	C	This IE indicates the location of the served subscriber.
O—CSI	S	O-CSI is defined in subclause 4.3.1. This IE identifies the subscriber as having originating CAMEL services. It shall be present if O-CSI is active, and CFU or CFNRc has been invoked, or if both O-CSI and T-CSI are active.
D—CSI	S	D-CSI is defined in subclause 4.3.2. This IE identifies the subscriber as having originating CAMEL dialled services. It shall be present if D-CSI is active, and CFU or CFNRc has been invoked, or if both D-CSI and T-CSI are active.
Subscriber State	C	This IE indicates the status of the MS. The possible values of the IE are: - CAMEL Busy: The VLR has indicated that the MS is engaged in a transaction for a mobile originating or terminated circuit-switched call. - Network Determined Not Reachable: The VLR has indicated that the network can determine from its internal data that the MS is not reachable. - Assumed Idle: The VLR has indicated that the state of the MS is neither "CAMEL Busy" nor "Network Determined Not Reachable". - Not Provided From VLR: The VLR did not provide any information on subscriber state even though it was requested.
T—CSI	S	This IE is described in a table below. This IE identifies the subscriber as having terminating CAMEL services. It shall be present if T-CSI is active and no Suppress T-CSI indicator is present in the Send Routeing Info IF.

Information element name	Status	Description
Basic Service Code	C	This IE indicates the type of basic service i.e., teleservice or bearer service.
CUG Subscription Flag	S	This IE indicates if the called party has a CUG subscription. It shall be present only if the T-CSI is active and included in the Send Routing Information ack IF.
Supported CAMEL Phases In VMSC	S	This IE indicates the supported CAMEL phases of the VLR. It shall be present if known by the HLR, otherwise it shall be absent.
Offered CAMEL4 CSIs In VMSC	S	This IE indicates the CAMEL phase 4 CSIs offered in the VMSC. It shall be present if known by the HLR, otherwise it shall be absent.
VMSC Address	M	This IE indicates the E.164 address of the VMSC in whose area the B subscriber is currently registered.

Location Information is defined in 3GPP TS 23.018 [12]. The following differences apply:

Information element name	Status	Description
Service area ID	C,E	See 3GPP TS 23.018 [12].
Cell ID	C,E	See 3GPP TS 23.018 [12].
Current Location Retrieved	-	Not applicable
Location area ID	C,E	See 3GPP TS 23.003 [7].
Selected LSA Identity	S	This IE indicates the LSA identity associated with the current position of the MS. Shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. If there are multiple matches the LSA ID with the highest priority shall be sent. See 3GPP TS 23.073 [17].

T-CSI contains the following information elements:

Information element name	Status	Description
gsmSCF Address	M	This IE is described in subclause 4.3.5.
Service Key	M	This IE is described in subclause 4.3.5.
Default Call Handling	M	This IE is described in subclause 4.3.5.
TDP List	M	This IE is described in subclause 4.3.5.
CAMEL Capability Handling	C	This IE is described in subclause 4.3.5. If this IE is absent then this indicates that CAMEL phase 1 support is requested.

Offered CAMEL4 CSIs In VMSC contains the following information elements:

Information element name	Status	Description
O—CSI	S	This IE indicates the offer of CAMEL phase 4 O-CSI. It shall be present if known by the HLR, otherwise it shall be absent.
D—CSI	S	This IE indicates the offer of CAMEL phase 4 D-CSI. It shall be present if known by the HLR, otherwise it shall be absent.
VT—CSI	S	This IE indicates the offer of CAMEL phase 4 VT-CSI. It shall be present if known by the HLR, otherwise it shall be absent.
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI. It shall be present if known by the HLR, otherwise it shall be absent.
~~PSI Enhancements~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 Enhancement of Provide Subscriber Information. It shall be present if known by the HLR, otherwise it shall be absent.~~ ~~*Note: for further study.*~~

— Next modified section —

6.6.4 SGSN to HLR Information Flows

6.6.4.1 Insert Subscriber Data ack

~~See subclause 4.6.8.1.~~

6.6.4.1.1 Description

This IF is used by the SGSN to indicate to the HLR the result of the Insert Subscriber Data IF. It is specified in 3GPP TS 29.002 [32].

6.6.4.1.2 Information Elements

Insert Subscriber Data ack contains the following CAMEL specific information elements:

Information element name	Status	Description
Supported CAMEL Phases	S	This IE identifies which CAMEL phases are supported by the VMSC/VLR. It shall be present when a CSI has been included in the ISD.
Offered CAMEL4 CSIs	S	This IE indicates the CAMEL phase 4 CSIs offered in the VMSC/VLR. It shall be present if a CSI has been included in the ISD.

Offered CAMEL4 CSIs contains the following information elements:

Information element name	Status	Description
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI. It shall be present if a CSI has been included in the ISD.
MG—CSI	S	This IE indicates the offer of CAMEL phase 4 MG-CSI. It shall be present if a CSI has been included in the ISD.
PSI Enhancements	S	This IE indicates the offer of CAMEL phase 4 Enhancements of Provide Subscriber Information.

— Next modified section —

6.6.4.2 Update GPRS Location

6.6.4.2.1 Description

This IF is used by the SGSN to indicate to the HLR the CAMEL phases supported by the SGSN. It is specified in 3GPP TS 29.002 [32].

6.6.4.2.2 Information Elements

Update GPRS location contains the following CAMEL specific information element:

Information element name	Status	Description
Supported CAMEL Phases	S	This IE identifies which CAMEL phases are supported by the SGSN. The SGSN may indicate support of CAMEL phase 3 or higher. It shall be present when the SGSN supports CAMEL.
Offered CAMEL4 CSIs	S	This IE indicates the CAMEL phase 4 CSIs offered in the SGSN. It shall be present if the "Supported CAMEL Phases" IE indicates support of CAMEL phase 4.

Offered CAMEL4 CSIs contains the following information elements:

Information element name	Status	Description
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI
MG—CSI	S	This IE indicates the offer of CAMEL phase 4 MG-CSI.
PSI Enhancements	S	This IE indicates the offer of CAMEL phase 4 Enhancements of Provide Subscriber Information.

— Next modified section —

9.4.1 VLR or SGSN 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 or SGSN to notify the gsmSCF of a Mobility Management event.

9.4.1.1.2 Information Elements

Information element name	VLR	SGSN	Description
Event Met	M	M	This IE indicates the type of Mobility Management event that lead to the notification. Refer to subclause 9.2.1.1 for the CS subscriber and subclause 9.2.2.1 for the GPRS subscriber.
Service Key	M	M	This IE indicates the Service Logic that the gsmSCF shall apply.
IMSI	M	M	This IE identifies the mobile subscriber to whom the Mobility Event applies.
Basic MSISDN	M	M	This IE identifies the mobile subscriber to whom the Mobility Event applies.
Location Information for CS subscriber	C	-	This IE is described in a table below. This IE indicates the current location of the MS.
Location Information for GPRS subscriber	-	C	This IE indicates the current location of the MS which is equivalent to the location info SGSN IE in subclause 7.6.1.2.
Supported CAMEL Phases	M	M	This IE indicates the CAMEL Phases that are supported by the sending entity (VMSC/VLR or SGSN) in which the MS is registered after the mobility management event.
~~Offered CAMEL4 CSIs~~	~~M~~	~~M~~	~~This IE indicates the CAMEL phase 4 CSIs offered by the sending entity (VMSC/VLR or SGSN). Note: for further study.~~
Offered CAMEL4 Functionalities	M	-	This IE is described in subclause 4.6.1.8. It indicates the CAMEL phase 4 functionalities offered by the VMSC/VLR.

Location Information for CS subscriber is defined in 3GPP TS 23.018 [12]. The following differences apply:

Information element name	Status	Description
Service area ID	C,E	See 3GPP TS 23.018 [12].
Cell ID	C,E	See 3GPP TS 23.018 [12].
Current Location Retrieved	-	Not applicable
Location area ID	C,E	See 3GPP TS 23.003 [7].
Selected LSA Identity	S	This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. In the case of multiple matches the LSA ID with the highest priority it shall be present. See 3GPP TS 23.073 [17].

~~*Note: the following table is for further study.*~~

~~Offered CAMEL4 CSIs contains the following information elements:~~

~~Information element name~~	~~VLR~~	~~SGSN~~	~~Description~~
~~O—CSI~~	~~S~~	~~-~~	~~This IE indicates the offer of CAMEL phase 4 O-CSI~~
~~D—CSI~~	~~S~~	~~-~~	~~This IE indicates the offer of CAMEL phase 4 D-CSI~~
~~VT—CSI~~	~~S~~	~~-~~	~~This IE indicates the offer of CAMEL phase 4 VT-CSI~~
~~T—CSI~~	~~S~~	~~-~~	~~This IE indicates the offer of CAMEL phase 4 T-CSI~~
~~MT—SMS—CSI~~	~~S~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI~~
~~MG—CSI~~	~~-~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 MG-CSI~~
~~PSI Enhancements~~	~~S~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 Enhancement of Provide Subscriber Information~~

— Next modified section —

9.4.2 SGSN to HLR information flows

9.4.2.1 Update GPRS Location

See subclause ~~7.6.4.3~~6.6.4.2.

— Next modified section —

10.3.2 HLR to gsmSCF information flows

...

10.3.2.2 Any Time Subscription Interrogation ack

10.3.2.2.1 Description

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

10.3.2.2.2 Information Elements

Information element name	Status	Description
Call Forwarding SS Data	C	This IE is described in a table below.
Call Barring SS Data	C	This IE is described in a table below.
Operator Determined Barring Data	C	This IE is described in a table below.
CAMEL Subscription Information	C	This IE is described in a table below.
Supported CAMEL Phases In VLR	C	This IE indicates the CAMEL phase supported in the VLR.
Offered CAMEL4 CSIs In VLR	S	This IE indicates the CAMEL phase 4 CSIs offered in the VMSC/VLR. It shall be present if the "Supported CAMEL Phases In VLR" IE indicates CAMEL phase 4.
Supported CAMEL Phases In SGSN	C	This IE indicates the CAMEL phase supported in the SGSN.
Offered CAMEL4 CSIs In SGSN	S	This IE indicates the CAMEL phase 4 CSIs offered in the SGSN. It shall be present if the "Supported CAMEL Phases In SGSN" IE indicates support of CAMEL phase 4.

Call Forwarding SS Data contains the following information elements:

Information element name	Status	Description
Forwarding Feature List	C	This IE is described in a table below
Notification-to-CSE Flag	C	This IE indicates whether the gsmSCF is notified of a change of Call Forwarding SS data.

Forwarding Feature List contains 1 to 32 items of the following information elements:

Information element name	Status	Description
Basic Service	C	See 3GPP TS 29.002 [32].
SS Status	C	See 3GPP TS 23.011 [9].
Forwarded-to Number	C	See 3GPP TS 23.082 [19].
Forwarded-to Subaddress	C	See 3GPP TS 29.002 [32].
Subscription Options	C	See 3GPP TS 23.082 [19].
No Reply Condition Time	C	See 3GPP TS 23.082 [19].

Call Barring SS Data contains the following information elements:

Information element name	Status	Description
Call Barring Feature List	C	This IE is described in a table below.
Password	C	See 3GPP TS 23.011 [9].
Wrong Password Attempts Counter	C	See 3GPP TS 23.011 [9].
Notification-to-CSE Flag	C	This IE indicates whether the gsmSCF is notified of a change of Call Barring SS data.

Call Barring Feature List contains 1 to 32 items of the following information elements:

Information element name	Status	Description
Basic Service	C	See 3GPP TS 29.002 [32].
SS Status	C	See 3GPP TS 23.011 [9].

Operator Determined Barring Bata contains the following information elements:

Information element name	Status	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 IE 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 ODB data.

CAMEL Subscription Information contains the following information elements:

Information element name	Status	Description
O—CSI	C	See subclause 4.3.1.
D—CSI	C	See subclause 4.3.2.
T—CSI	C	See subclause 4.3.5.
VT—CSI	C	See subclause 4.3.6.
TIF—CSI	C	See subclause 4.3.4.
GPRS-CSI	C	See subclause 6.3.1.
MO—SMS-CSI	C	See subclause 7.3.1.
MT—SMS-CSI	C	See subclause 7.3.2.
SS—CSI	C	See subclause 8.2.1.
M—CSI	C	See subclause 9.2.1.
MG—CSI	C	See subclause 9.2.2.

Offered CAMEL4 CSIs in VLR contains the following information elements:

Information element name	Status	Description
O—CSI	S	This IE indicates the offer of CAMEL phase 4 O-CSI
D—CSI	S	This IE indicates the offer of CAMEL phase 4 D-CSI
VT—CSI	S	This IE indicates the offer of CAMEL phase 4 VT-CSI
~~T—CSI~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 T-CSI~~
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI
~~PSI Enhancements~~	~~S~~	~~This IE indicates the offer of CAMEL phase 4 Enhancement of Provide Subscriber Information.~~ ~~*Note: for further study*~~

Offered CAMEL4 CSIs in SGSN contains the following information elements:

Information element name	Status	Description
MT—SMS—CSI	S	This IE indicates the offer of CAMEL phase 4 MT-SMS-CSI
MG—CSI	S	This IE indicates the offer of CAMEL phase 4 MG-CSI
PSI Enhancements	S	This IE indicates the offer of CAMEL phase 4 Enhancement of Provide Subscriber Information

— END —

3GPP TSG CN WG2 Meeting #26 **N2-020943**
Miami, U.S.A, 23rd – 27th September 2002

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **427** ⌘ **rev** **2** ⌘ Current version: **5.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Use of Release Call & Release Call Segment in gsmSSF processes
Source:	⌘	Vodafone
Work item code:	⌘	CAMEL4
Date:	⌘	11/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	Int_Release_Call_Segment can be replaced by Int_Release_Call in all situations, with some modification to SDL modelling in CS_gsmSSF. CS_gsmSSF will go to idle in all cases if no legs remain in the call segment, this can be clarified for Call Party Handling Situations (CS_gsmSSF sheet 38) This makes the use of Int_Release_Call_Segment unecessary. The handling can be rationalised using one signal for these overlapping operations.
Summary of change:	⌘	Int_Release_Call_Segment is no longer used. (CS_gsmSSF and CSA_gsmSSF) When necessary Int_Release Call is used to release all legs in a call segment. When CSA_gsmSSF receives Abort, it checks if: (sheet 21 CSA_gsmSSF) 1) CSID1 exists 2) CSID1 contains more than one leg 3) Default handling is continue If all of these conditions are met then Int_Release_Call is sent to all Call Segments except CSID1. If at least one of these conditions is not met then Int_Release Call is sent to all Call Segments.
Consequences if not approved:	⌘	An unnecessary signal exists in the SDLs, and confusion exists between use of Int_Release_Call_Segment and Int_Release_Call.

Clauses affected:	⌘	4.5.7.4, 4.5.7.6 (changes to processes CS_gsmSSF & CSA_gsmSSF)

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	

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

4.5.7.4 Process CS_gsmSSF and procedures

Process CS_gsmSSF 1(56)

/* Invocation of CS_gsmSSF */

```
/* Timers used in the CS_gsmSSF process:

Tssf: Application timer in the ssf.

The following timers ar applicable for call legs as well as for the connected SRF (srf ID).
That is 'pty' may be a leg ID or an srf ID.
Tcp(pty): Timer for call period.
  This timer measures the duration of a call period.
Tsw(pty): Timer for tariff switch.
  At the expiration of this timer, a new tariff shall be started.
Tw(pty): Warning timer.
  At the expiration of this timer, a warning tone shall be played to the calling party.
DELTA(pty): time, measured in the CS_gsmSSF, elapsed between the time an
  ApplyChargingReport operation is send to the gsmSCF and an
  ApplyCharging operation is received from the gsmSCF for that pty.
Tccd(pty): Control of call duration timer.
  This timer supervises if after sending of ACR a new AC is received for that pty.
  Tccd has a value range of 1 to 20 seconds.

Ranges for the default values for Tssf.
  - non user interaction Tssf timer value: 1 second to 20 seconds
  - user interaction Tssf timer value:        1 minute to 30 minutes
*/
```

Figure 4.95a: Process CS_gsmSSF (sheet 1)

Process CS_gsmSSF 2(56)

/* Invocation of CS_gsmSSF */

/* Decision box definition (1)

'armed TDPs for this CSI?'
It is questioned whether or not the ongoing call can encounter further TDPs which are indicated in the current CSI.

'Call to be released?'
It is questioned whether or not the ongoing call will be released imediately after CS_gsmSSF has responded; that is the ongoing call will not send any signals furtheron to the CS_gsmSSF.
NOTE: In this case the CS_gsmSSF shall also go to idle.
*/

/* Decision box definitions (2)
Thefollowing decisions are used by procedures in CCF.

'gsmSSF invoked?'
Is the CS_gsmSSF process in any state other than Idle?
*/

/*
Note to the task box "Perform implicit disarming of DPs";

If DP O_Change_Of_Position and/or DP T_Change_Of_Position are disarmed by this task,
the CS_gsmSSF sends
Int_Invoke_O_Change_Of_Position_MSC to the CAMEL_O_CHANGE_OF_POSITION_MSC and/or
Int_Invoke_T_Change_Of_Position_MSC to the CAMEL_T_CHANGE_OF_POSITION_MSC
with the parameter "Transparent, respectively.
*/

Figure 4.95b: Process CS_gsmSSF (sheet 2)

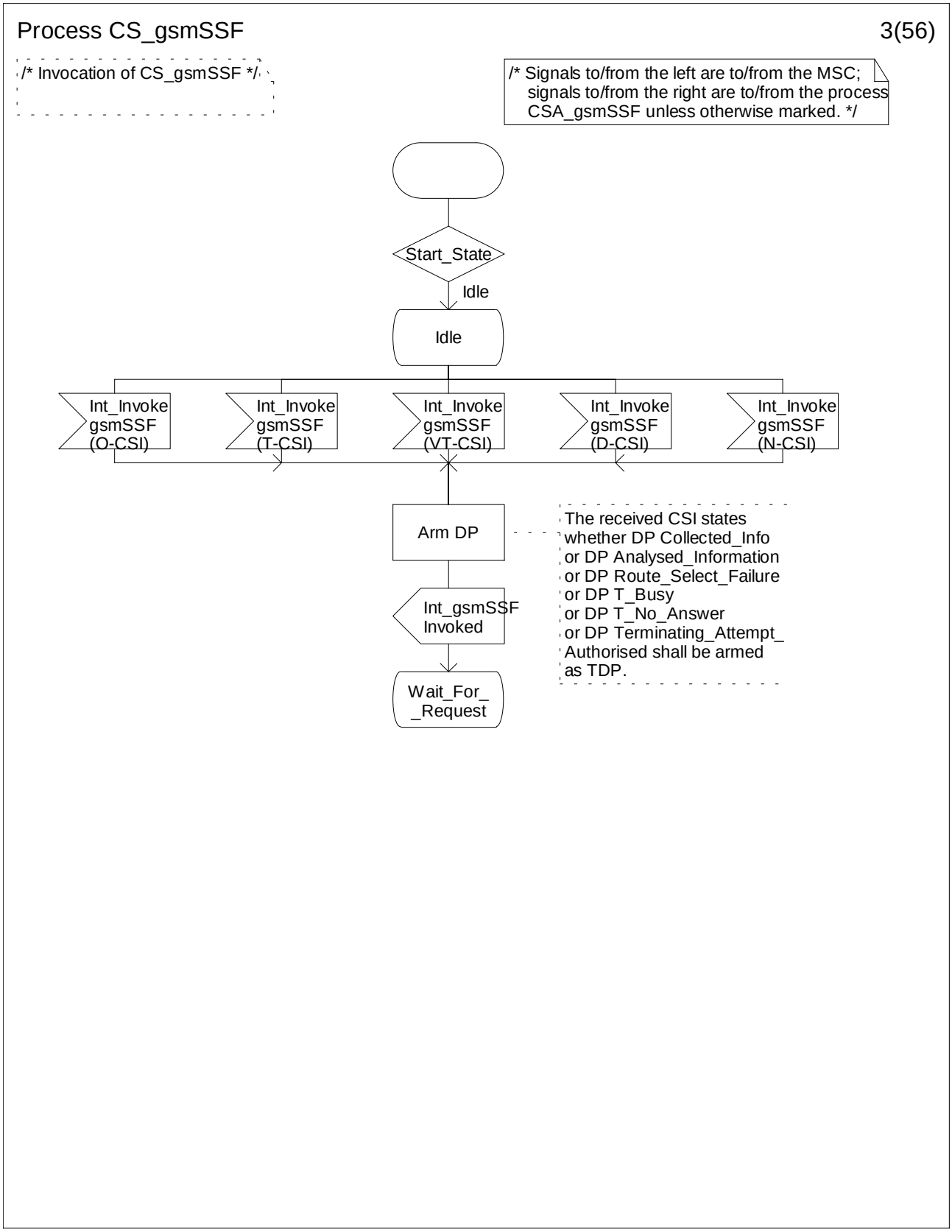


Figure 4.95c: Process CS_gsmSSF (sheet 3)

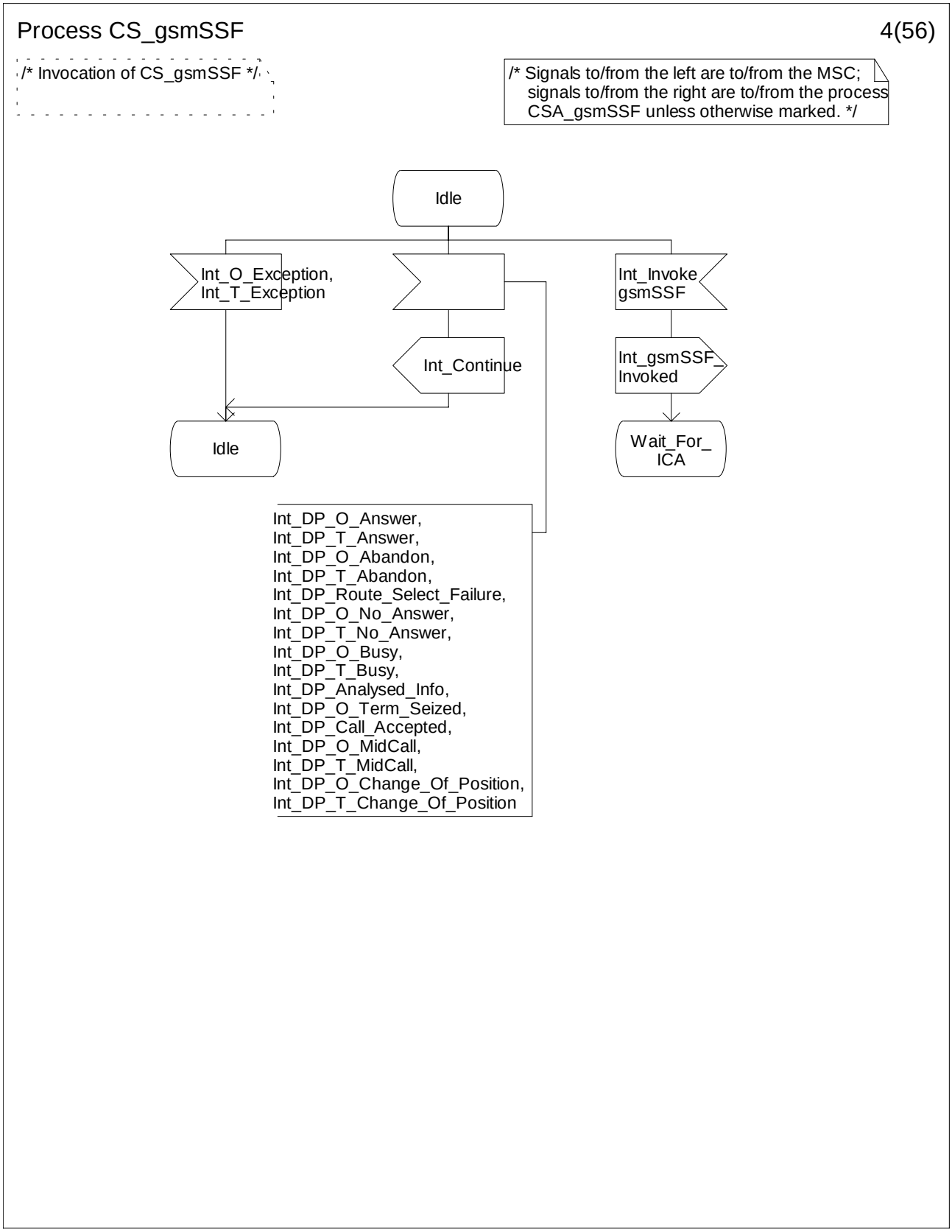


Figure 4.95d: Process CS_gsmSSF (sheet 4)

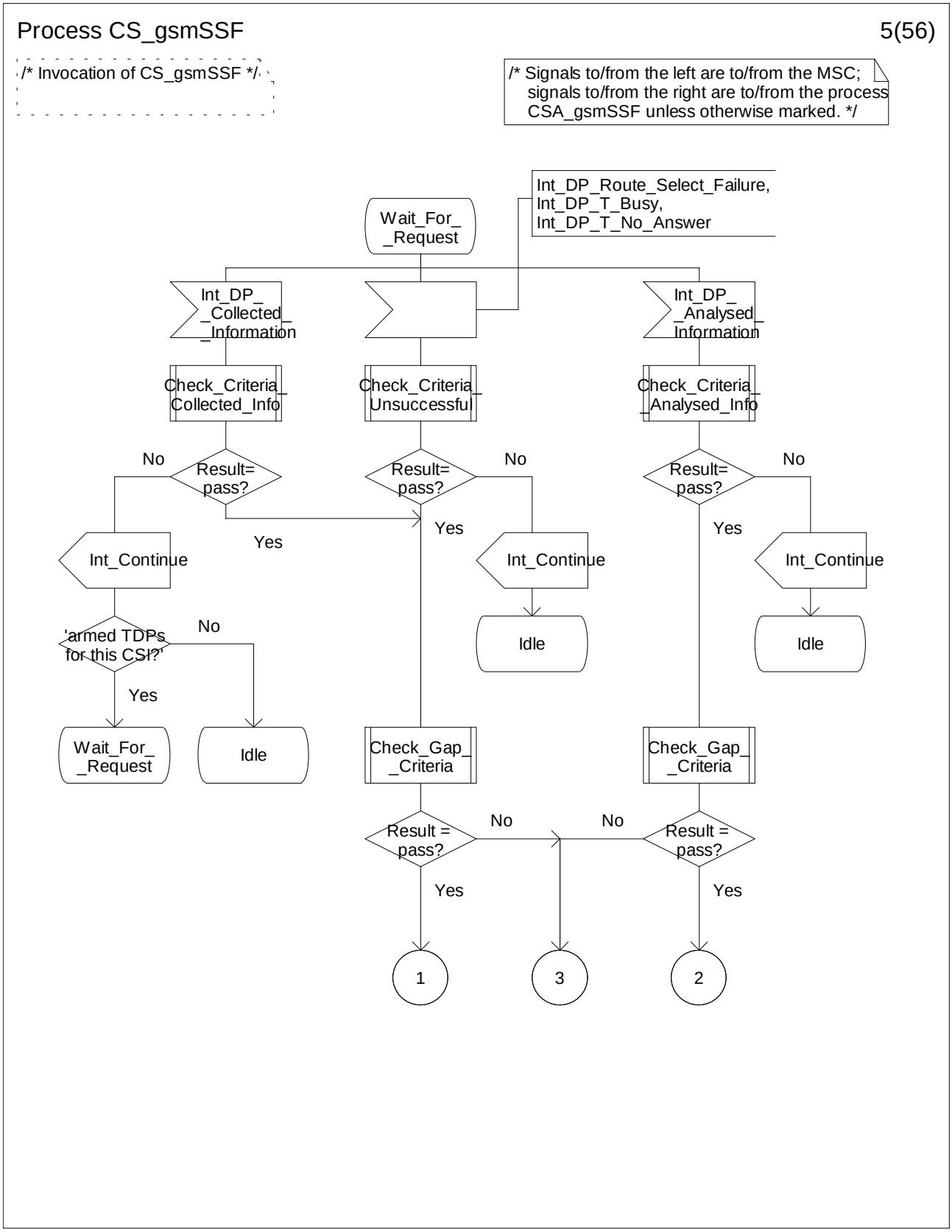


Figure 4.95e: Process CS_gsmSSF (sheet 5)

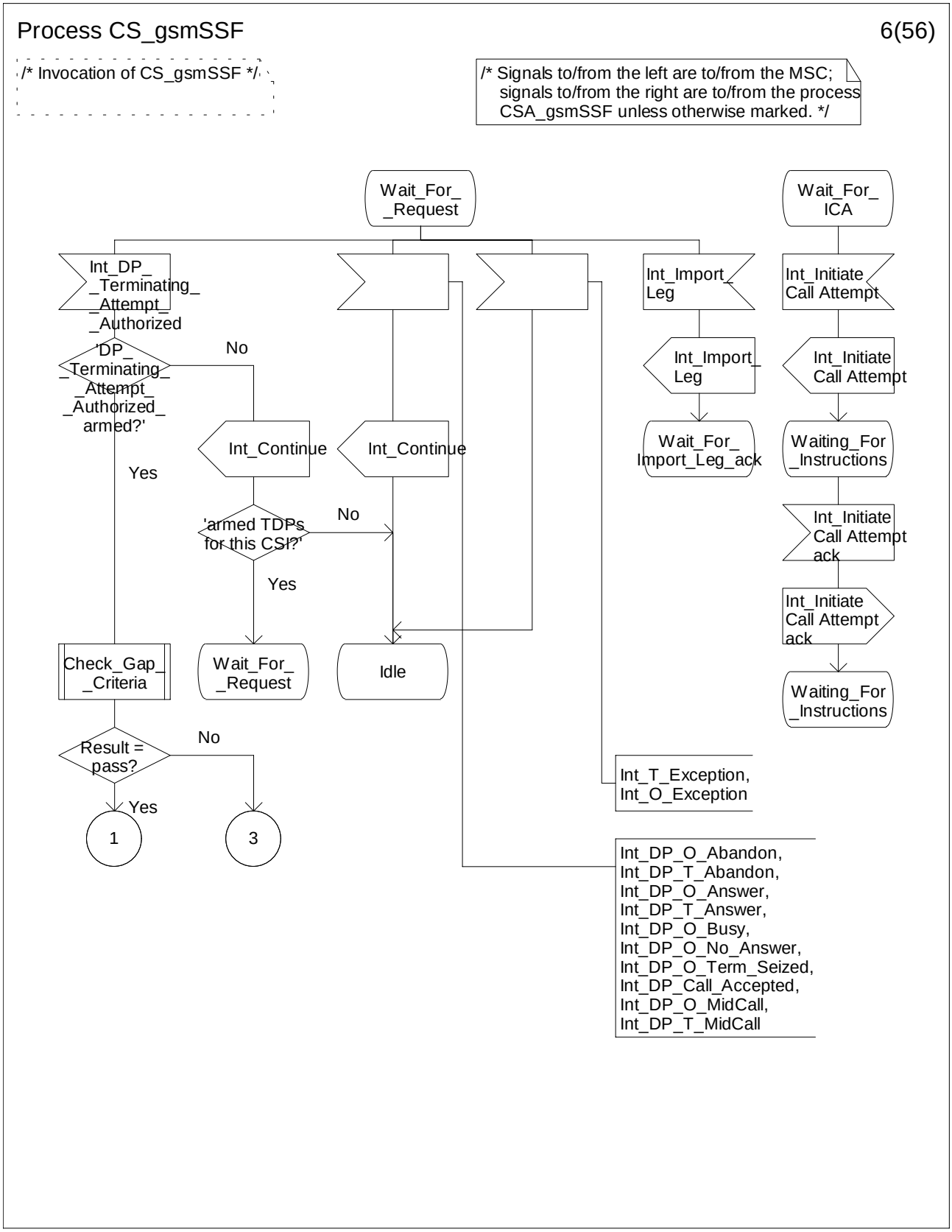


Figure 4.95f: Process CS_gsmSSF (sheet 6)

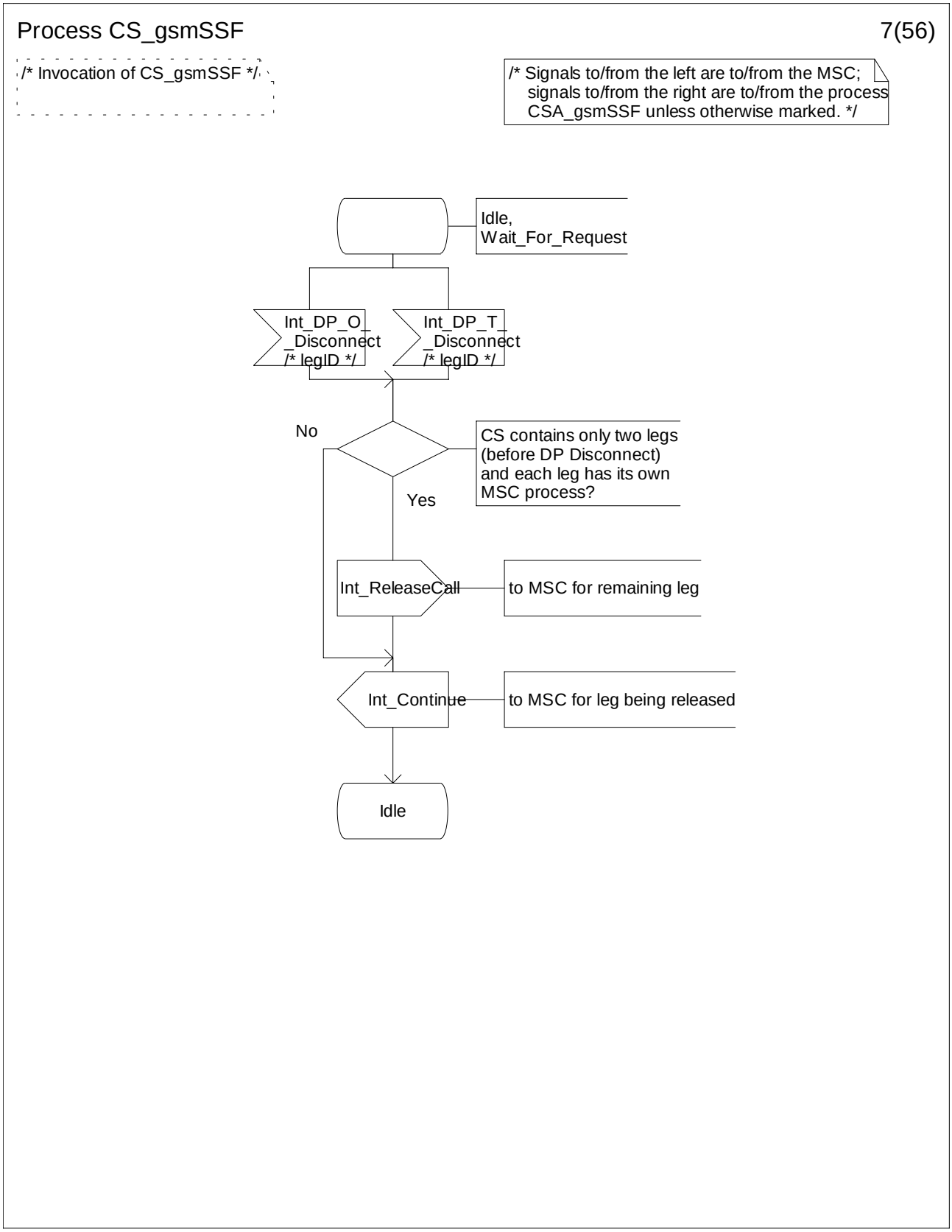


Figure 4.95g: Process CS_gsmSSF (sheet 7)

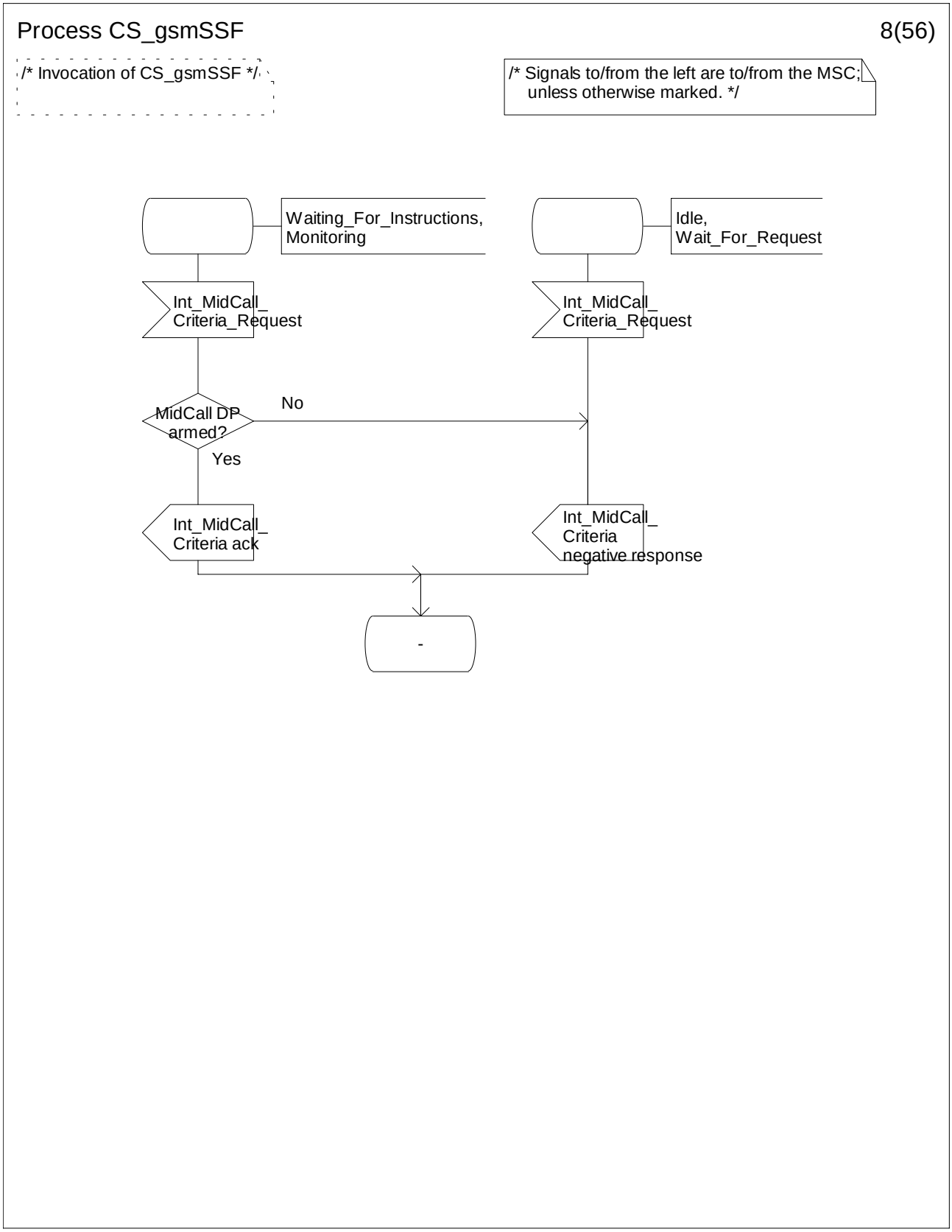


Figure 4.95h: Process CS_gsmSSF (sheet 8)

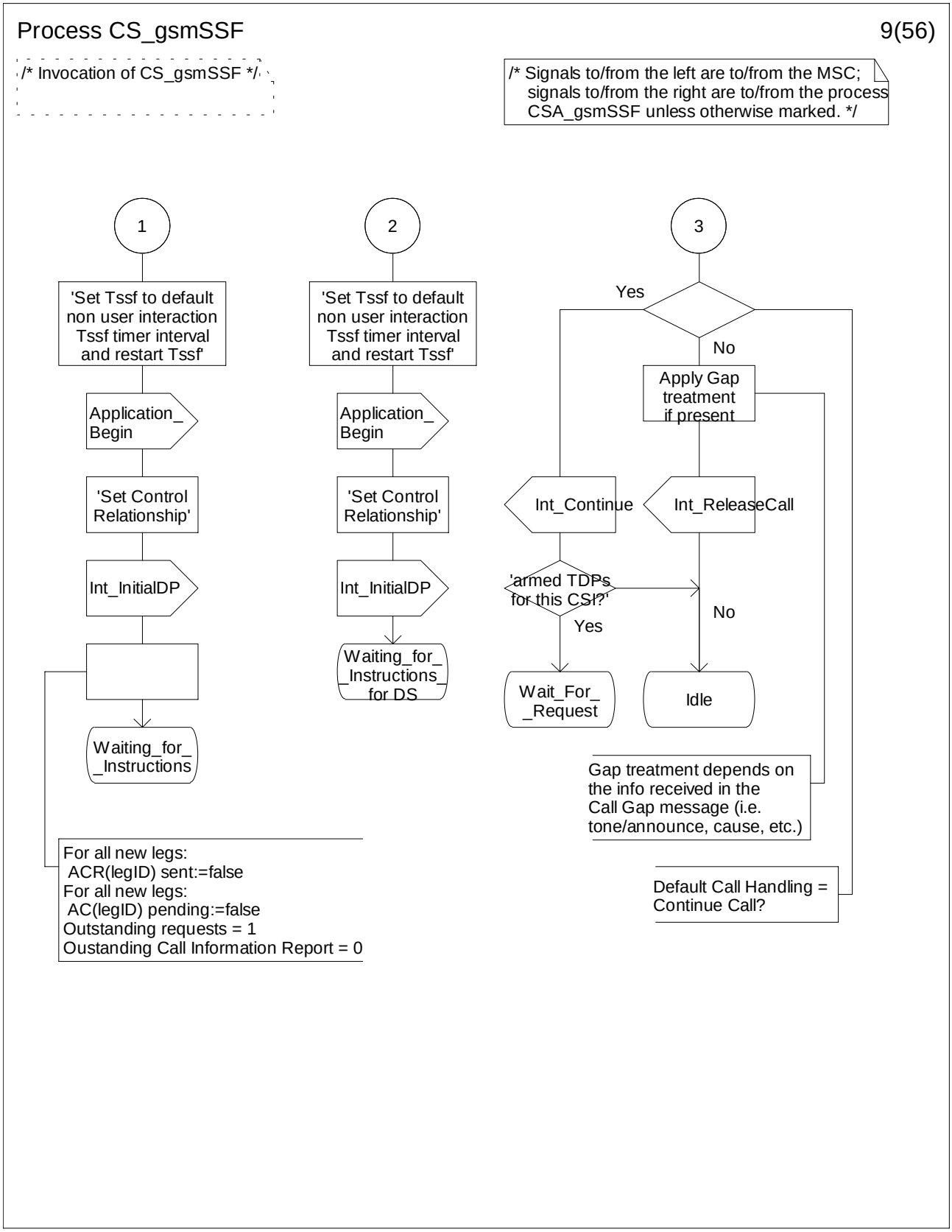


Figure 4.95i: Process CS_gsmSSF (sheet 9)

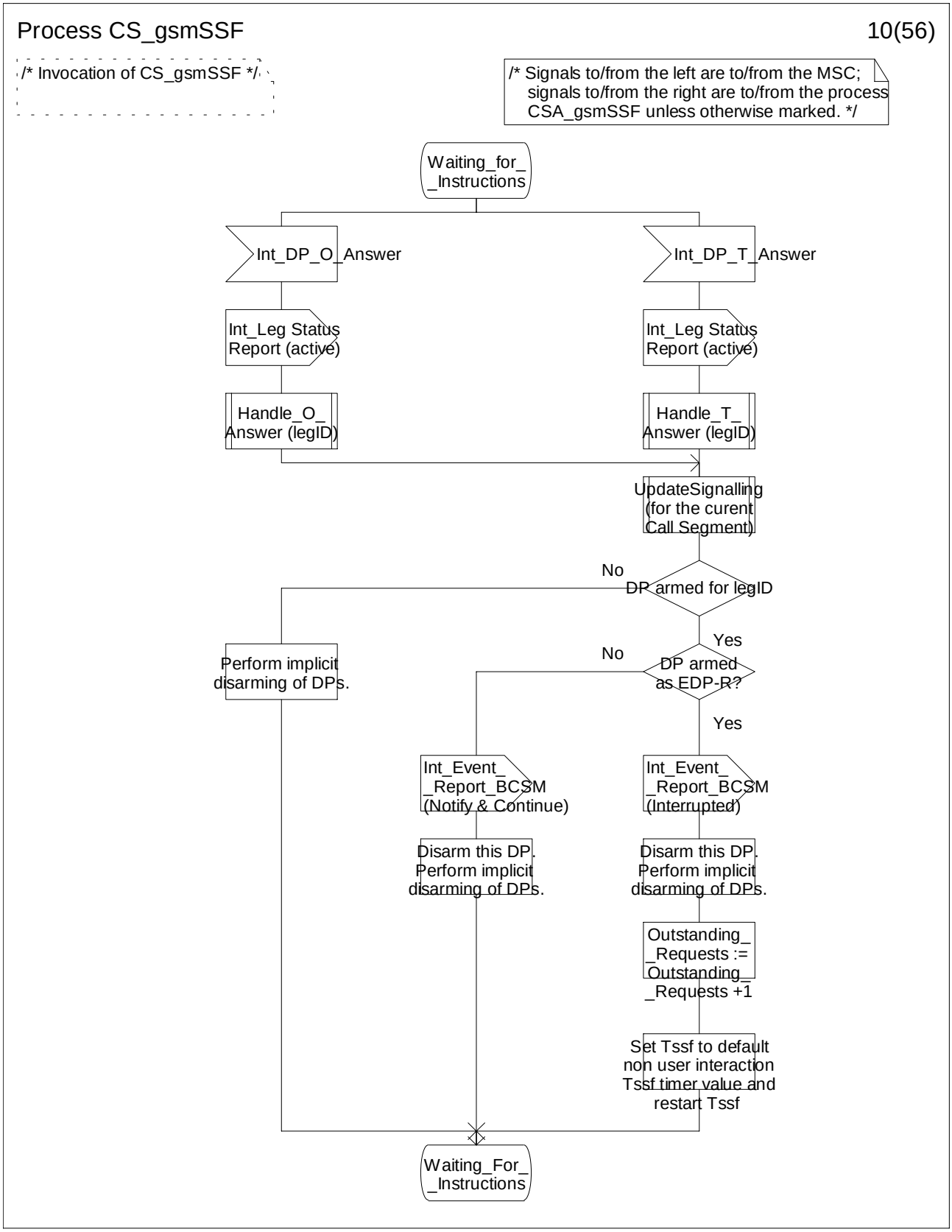


Figure 4.95j: Process CS_gsmSSF (sheet 10)

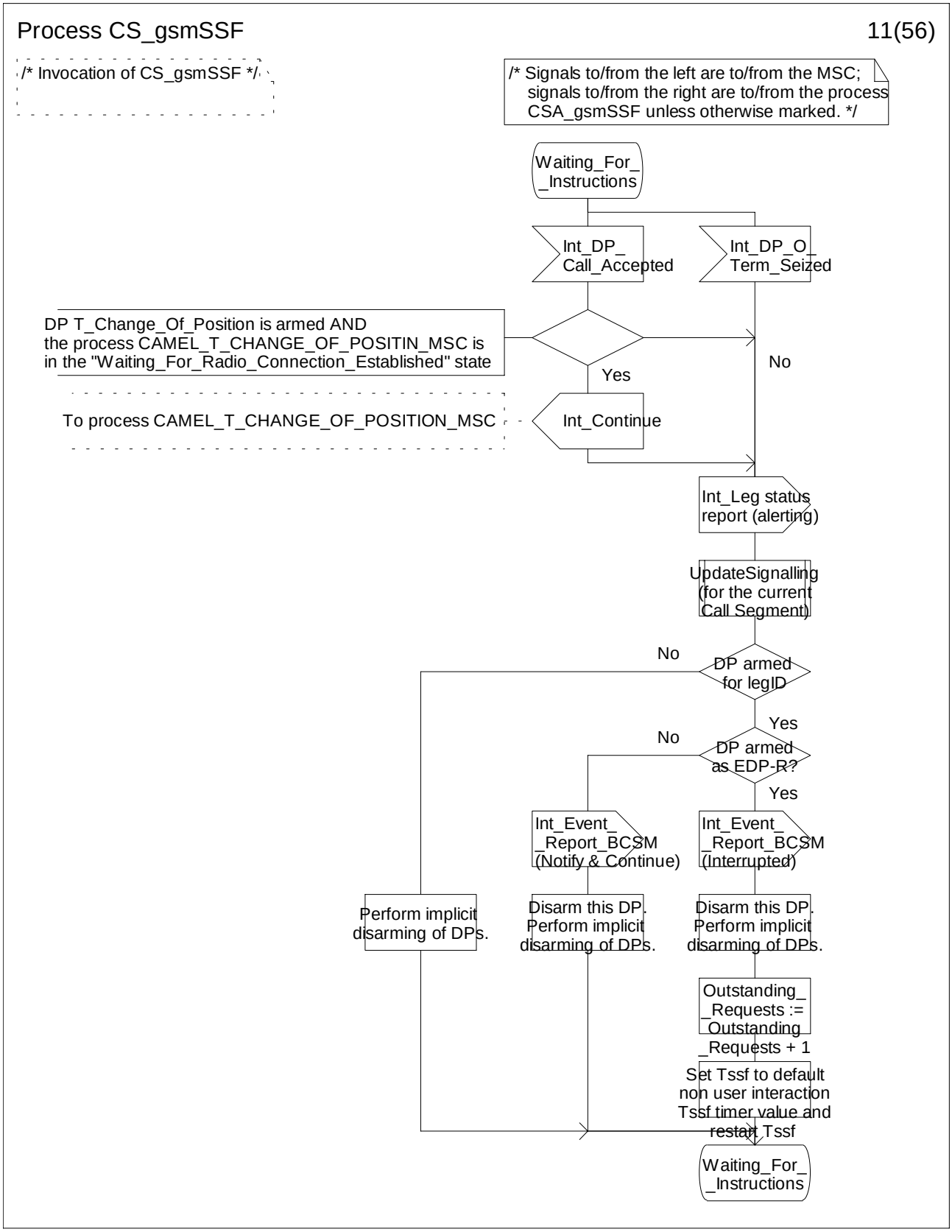


Figure 4.95k: Process CS_gsmSSF (sheet 11)

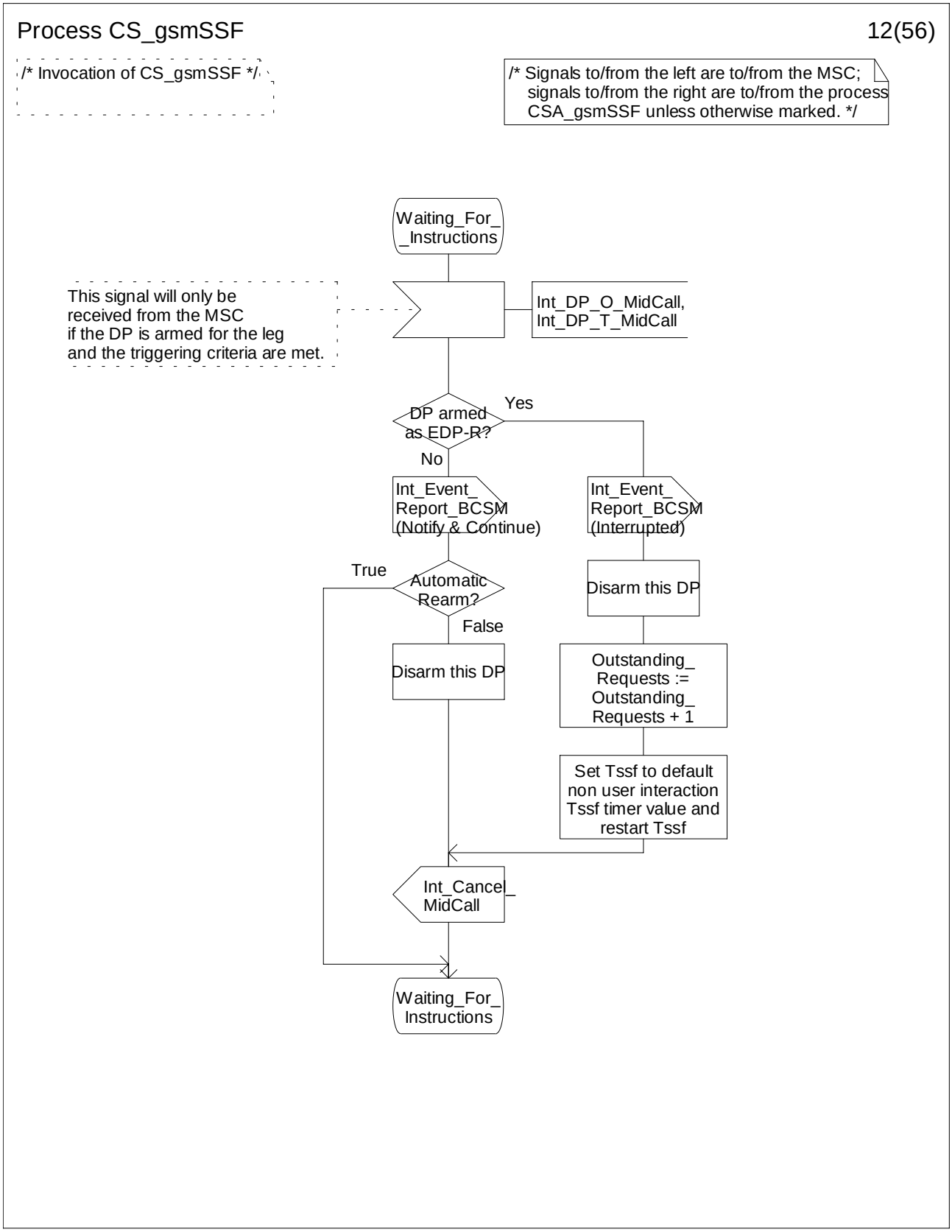


Figure 4.95l: Process CS_gsmSSF (sheet 12)

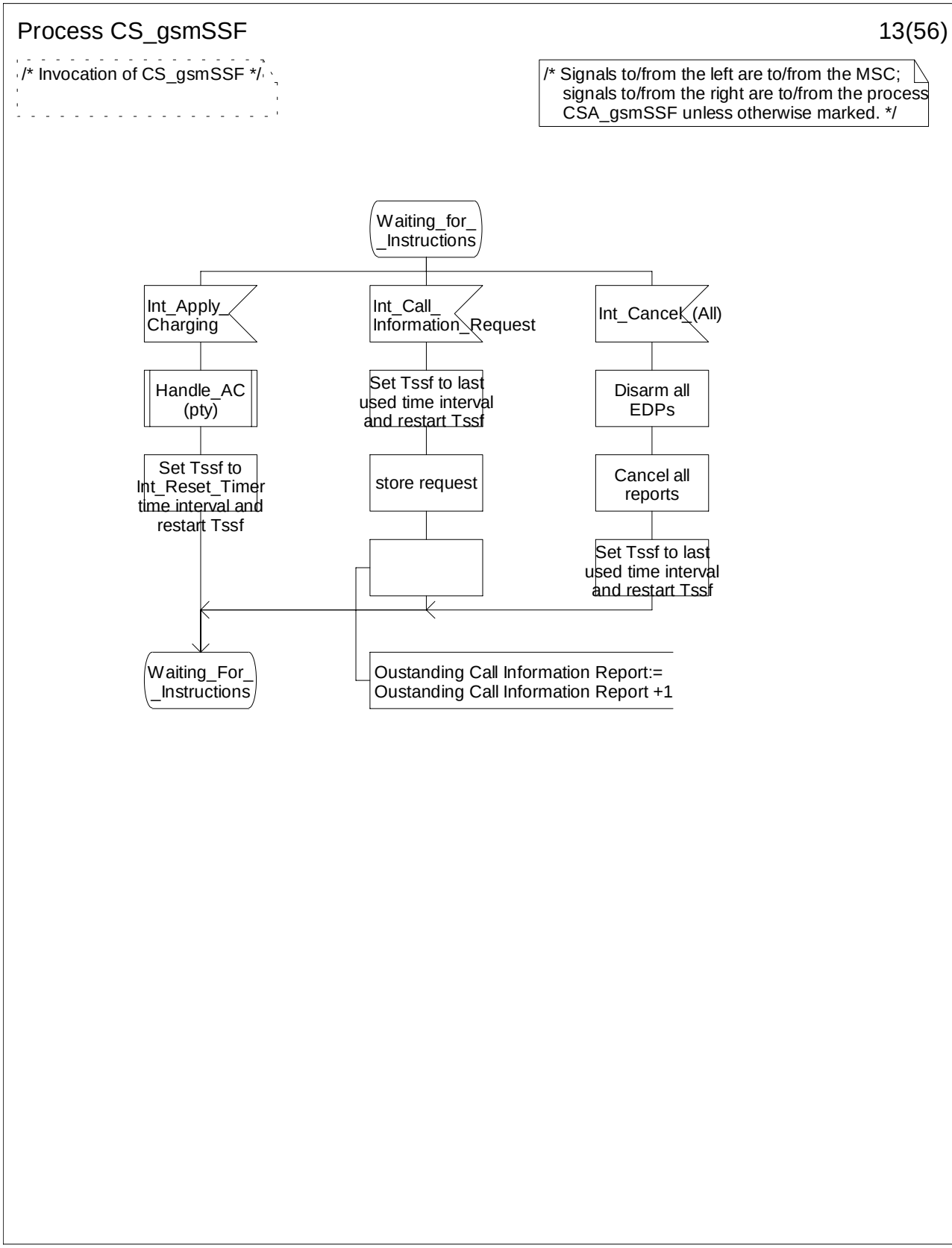


Figure 4.95m: Process CS_gsmSSF (sheet 13)

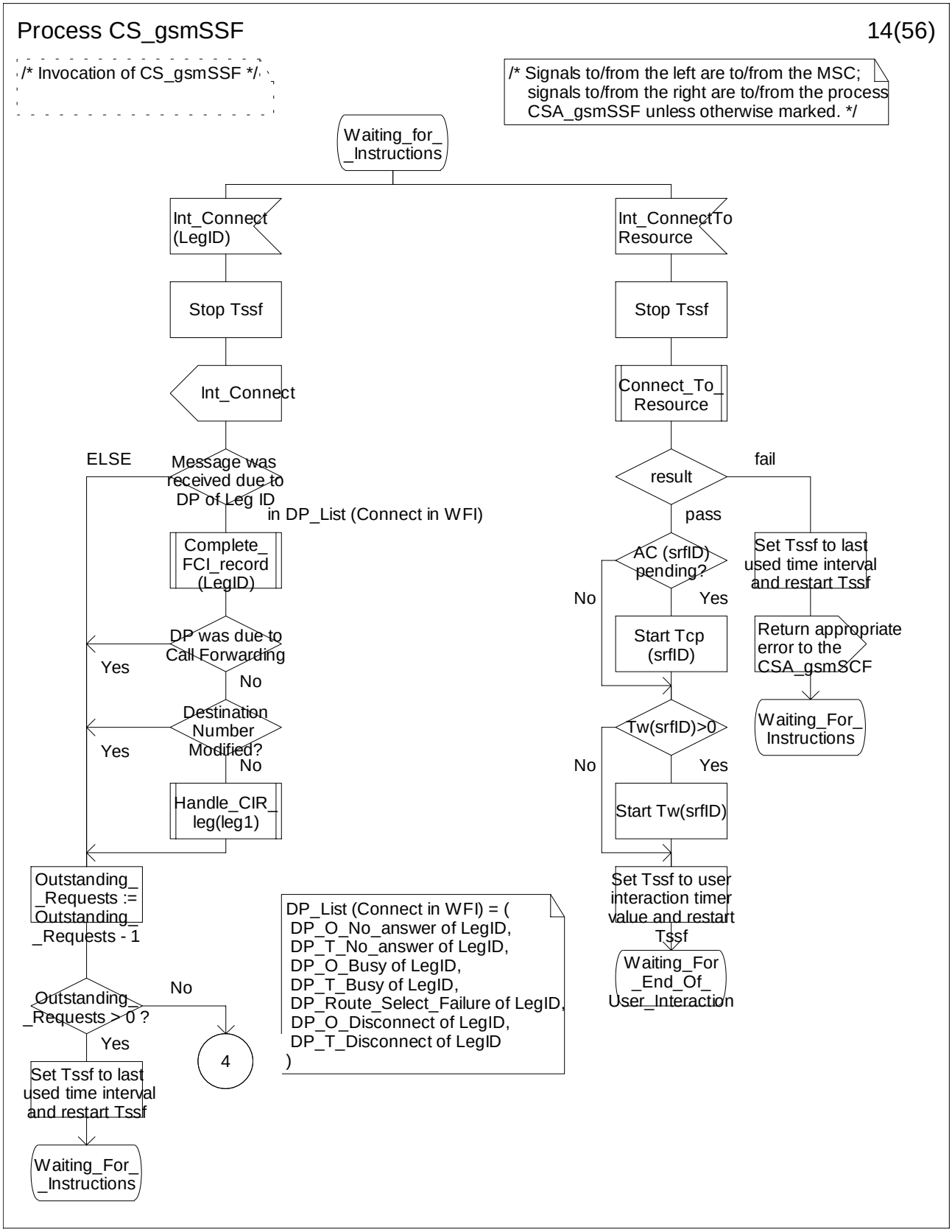


Figure 4.95n: Process CS_gsmSSF (sheet 14)

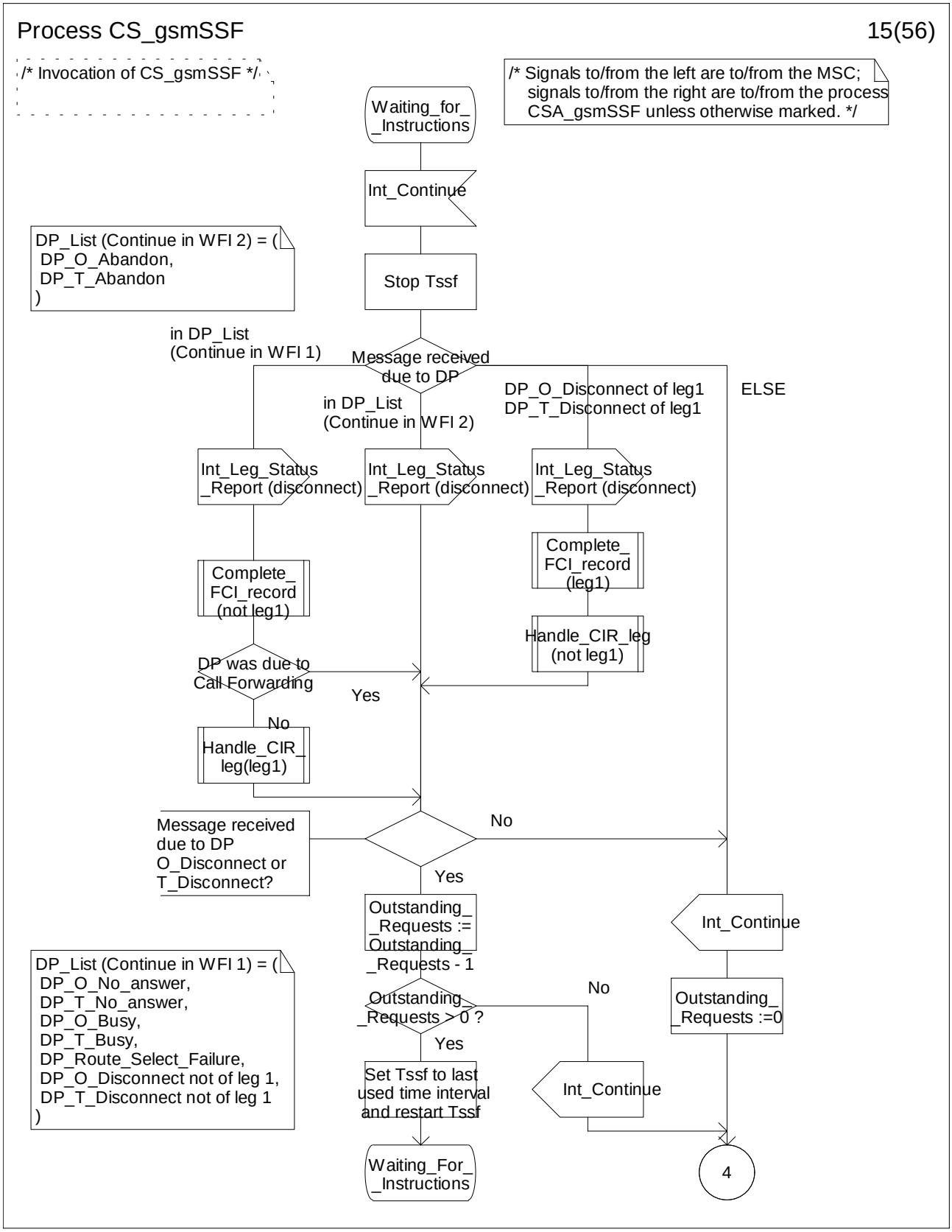


Figure 4.95o: Process CS_gsmSSF (sheet 15)

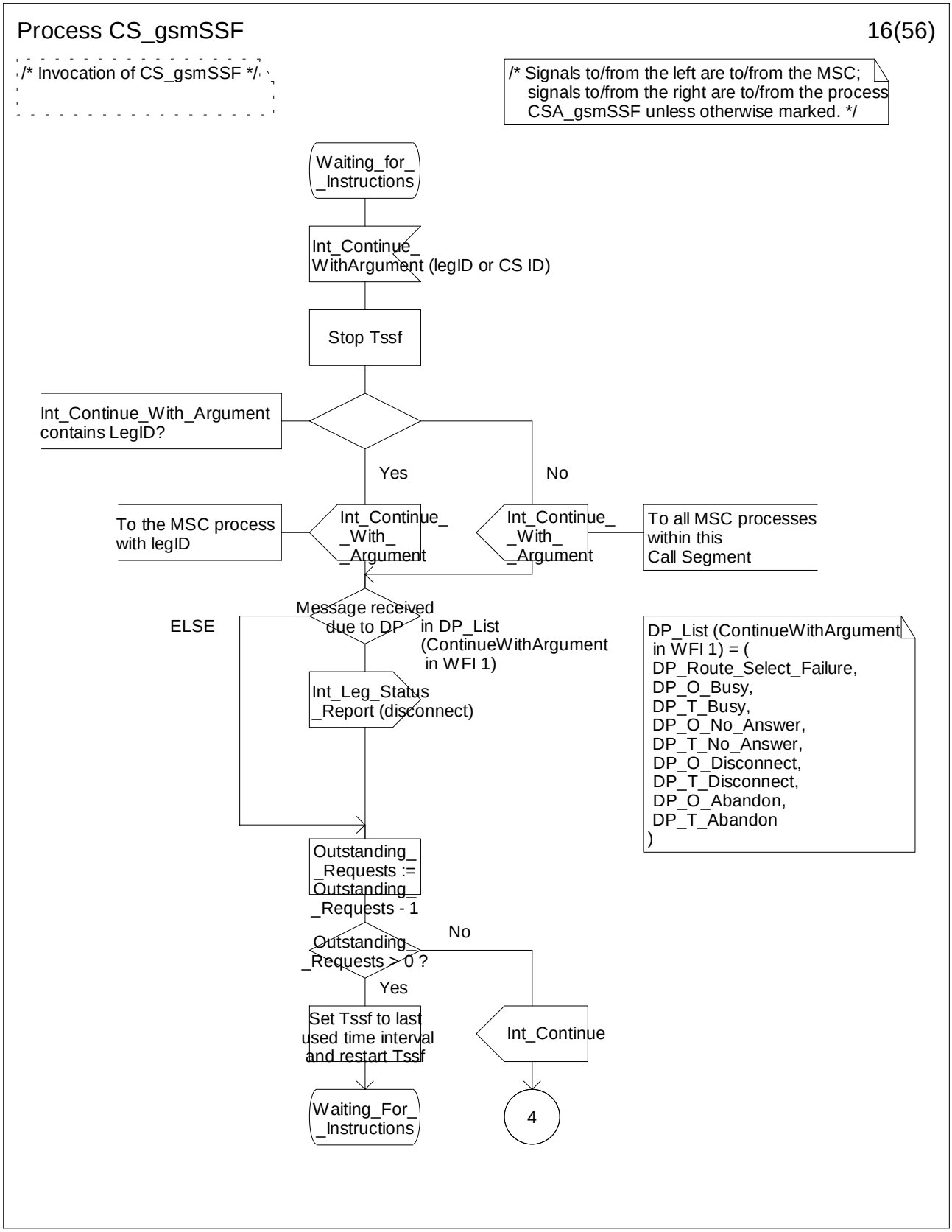


Figure 4.95p: Process CS_gsmSSF (sheet 16)

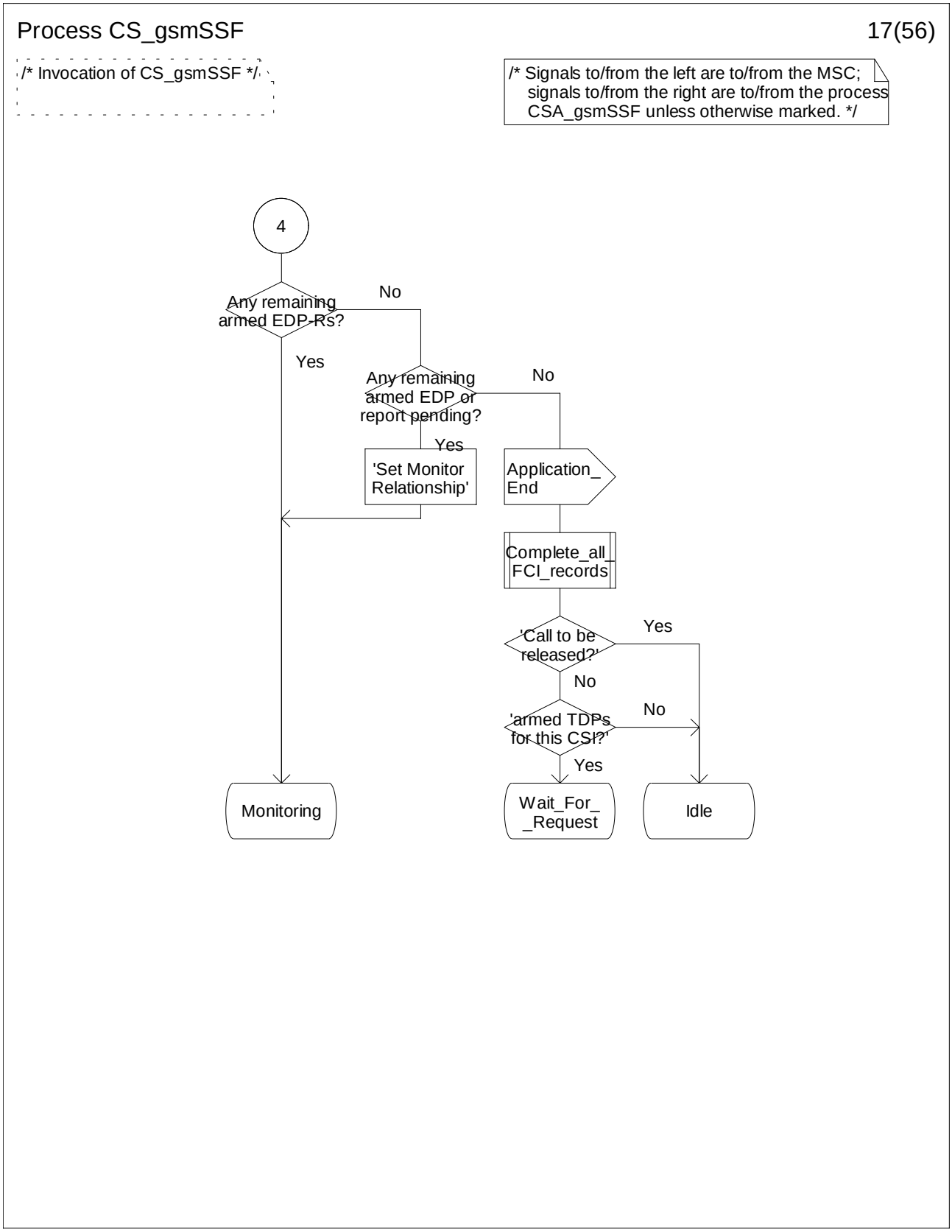


Figure 4.95q: Process CS_gsmSSF (sheet 17)

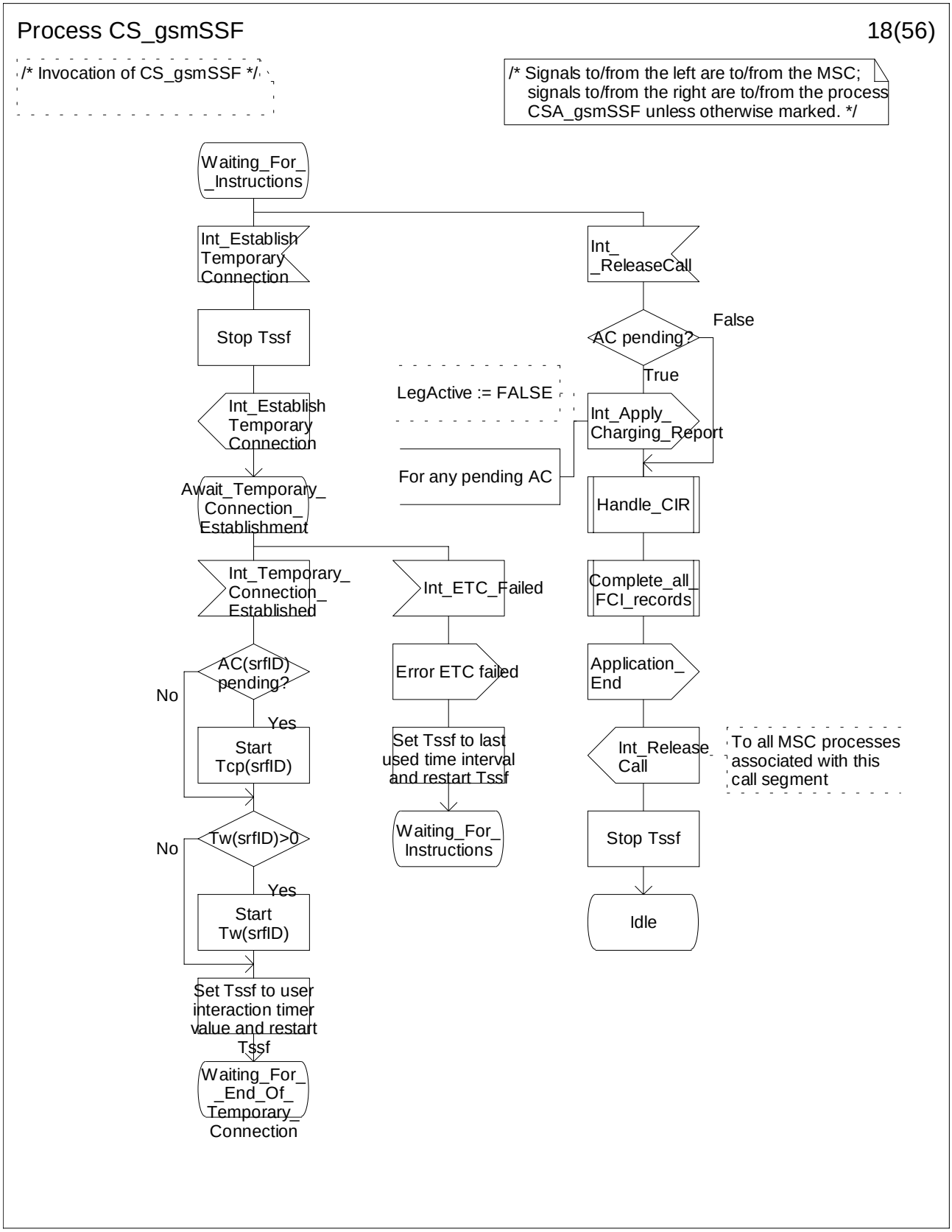


Figure 4.95r: Process CS_gsmSSF (sheet 18)

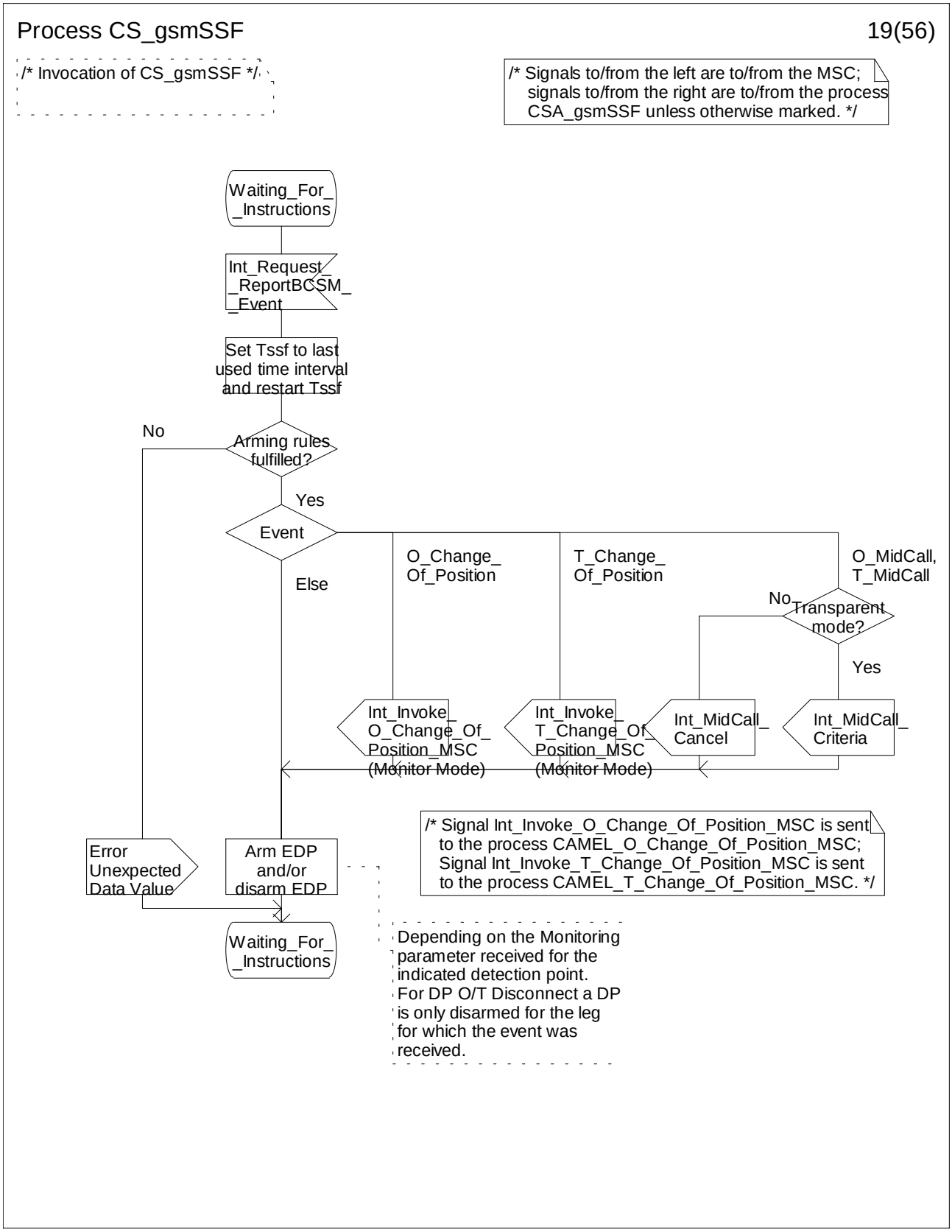


Figure 4.95s: Process CS_gsmSSF (sheet 19)

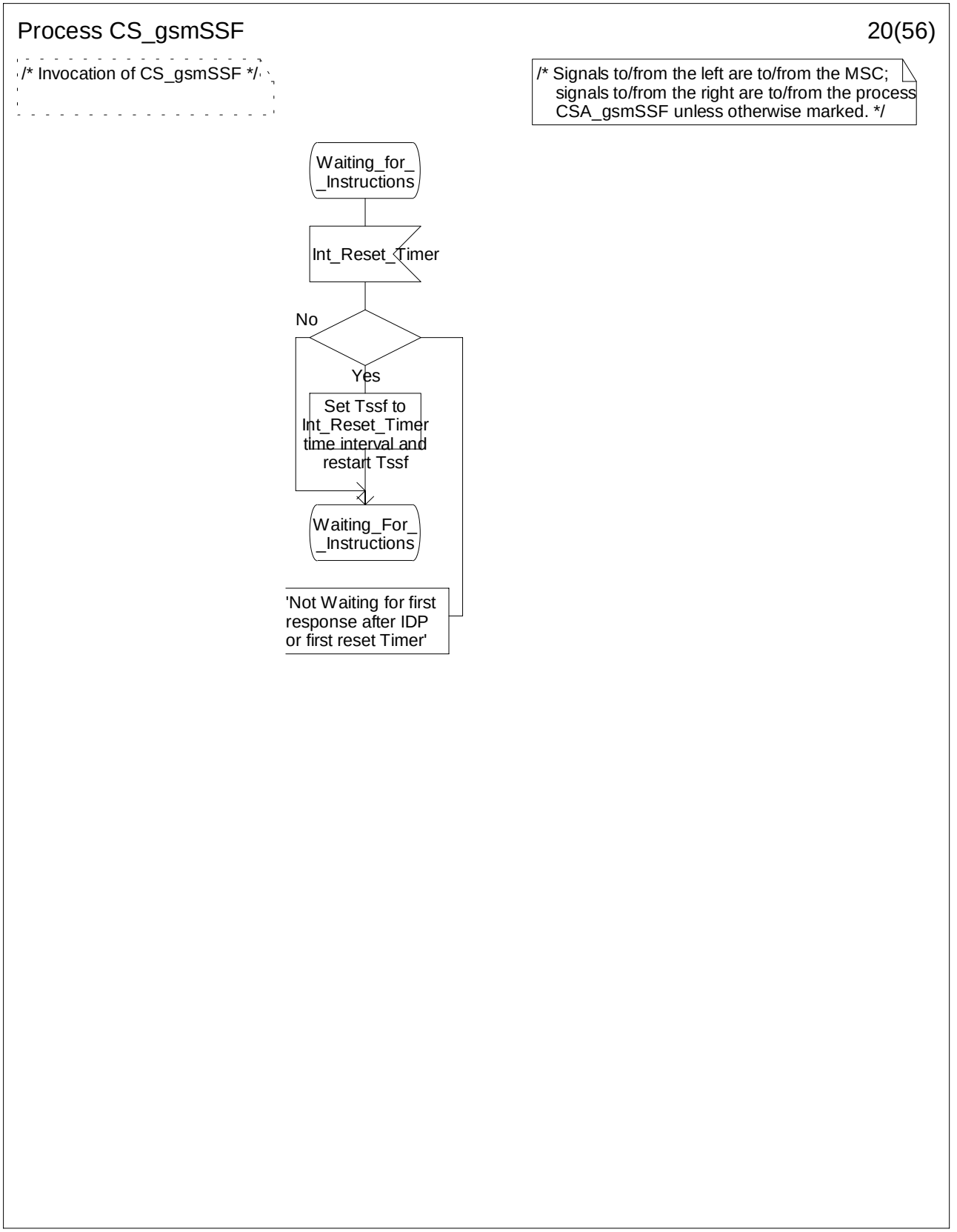


Figure 4.95t: Process CS_gsmSSF (sheet 20)

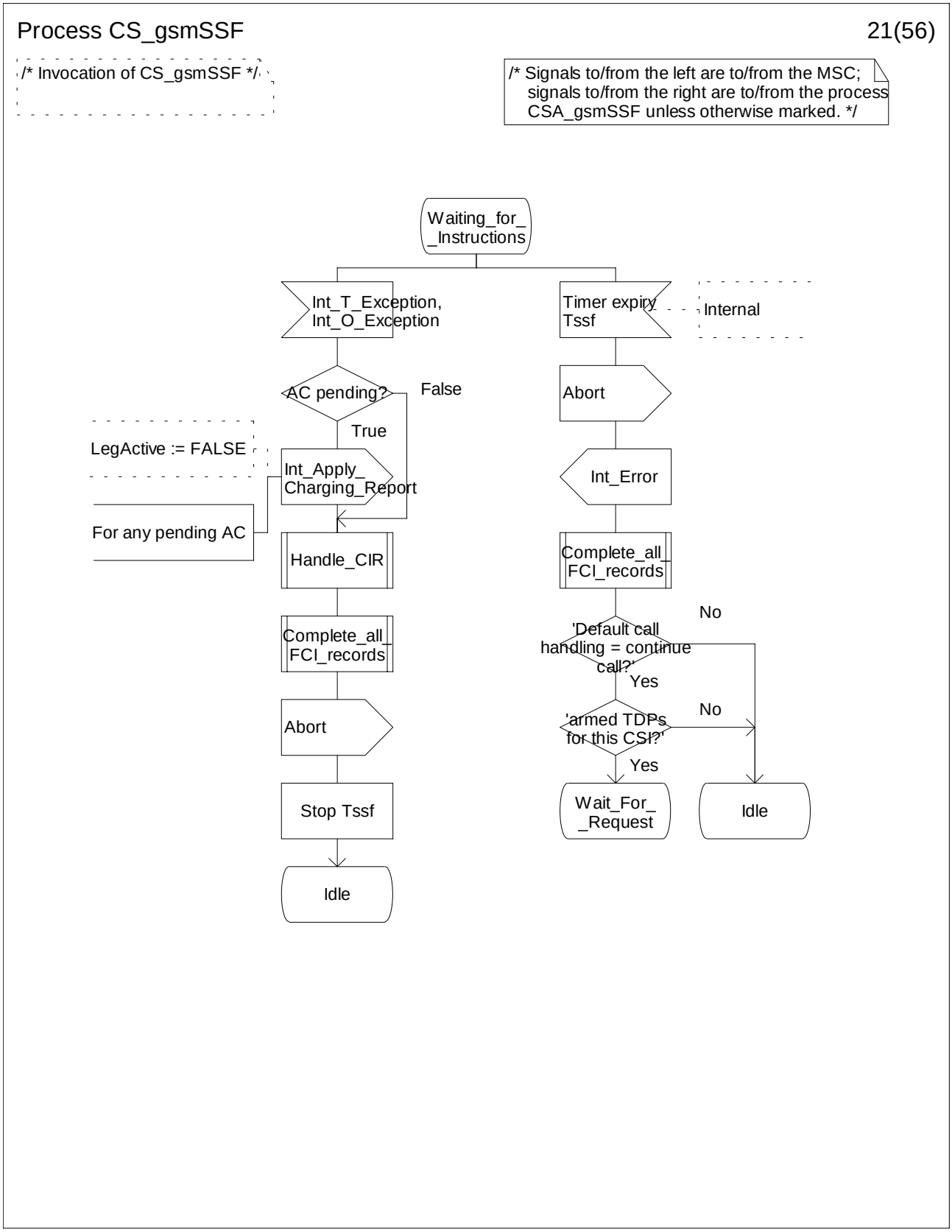


Figure 4.95u: Process CS_gsmSSF (sheet 21)

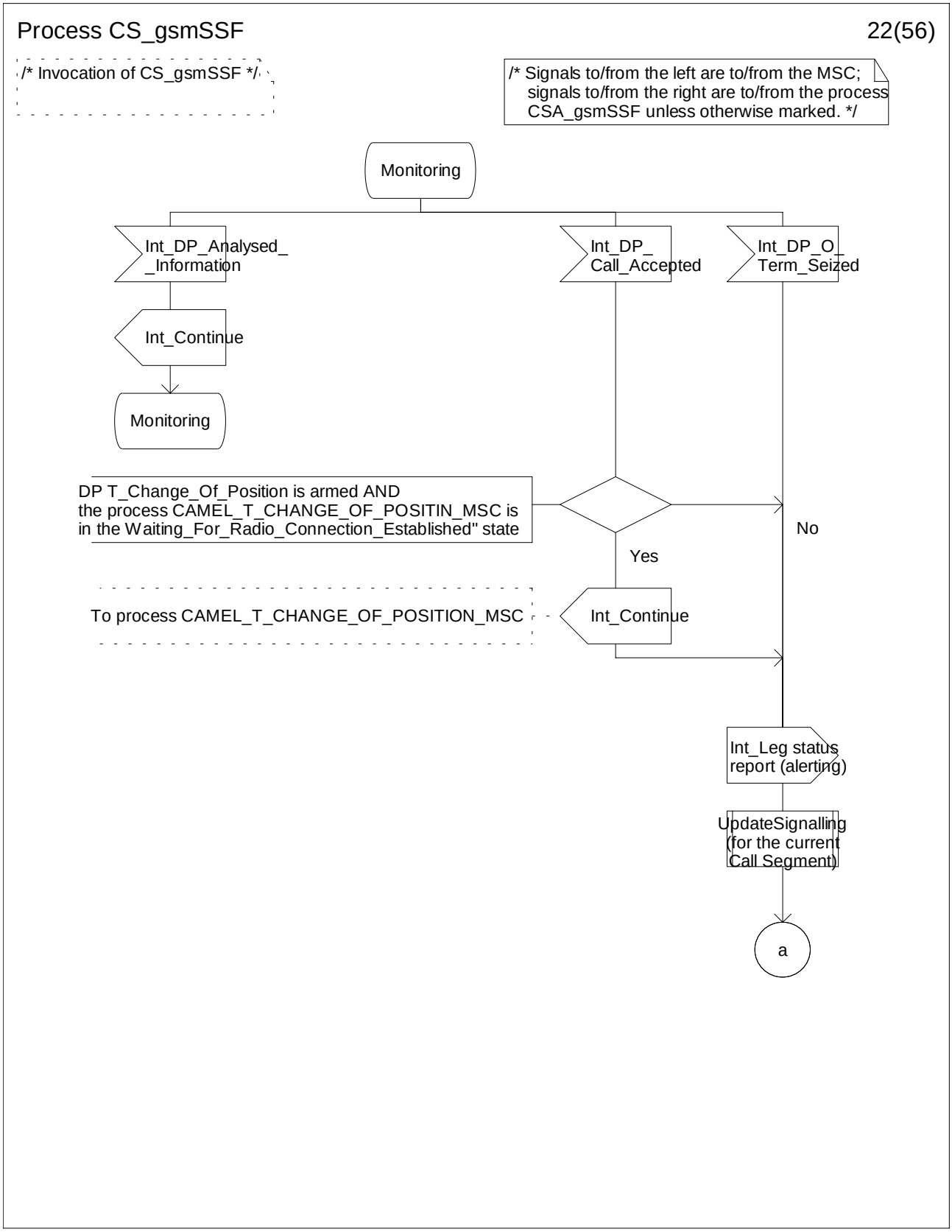


Figure 4.95v: Process CS_gsmSSF (sheet 22)

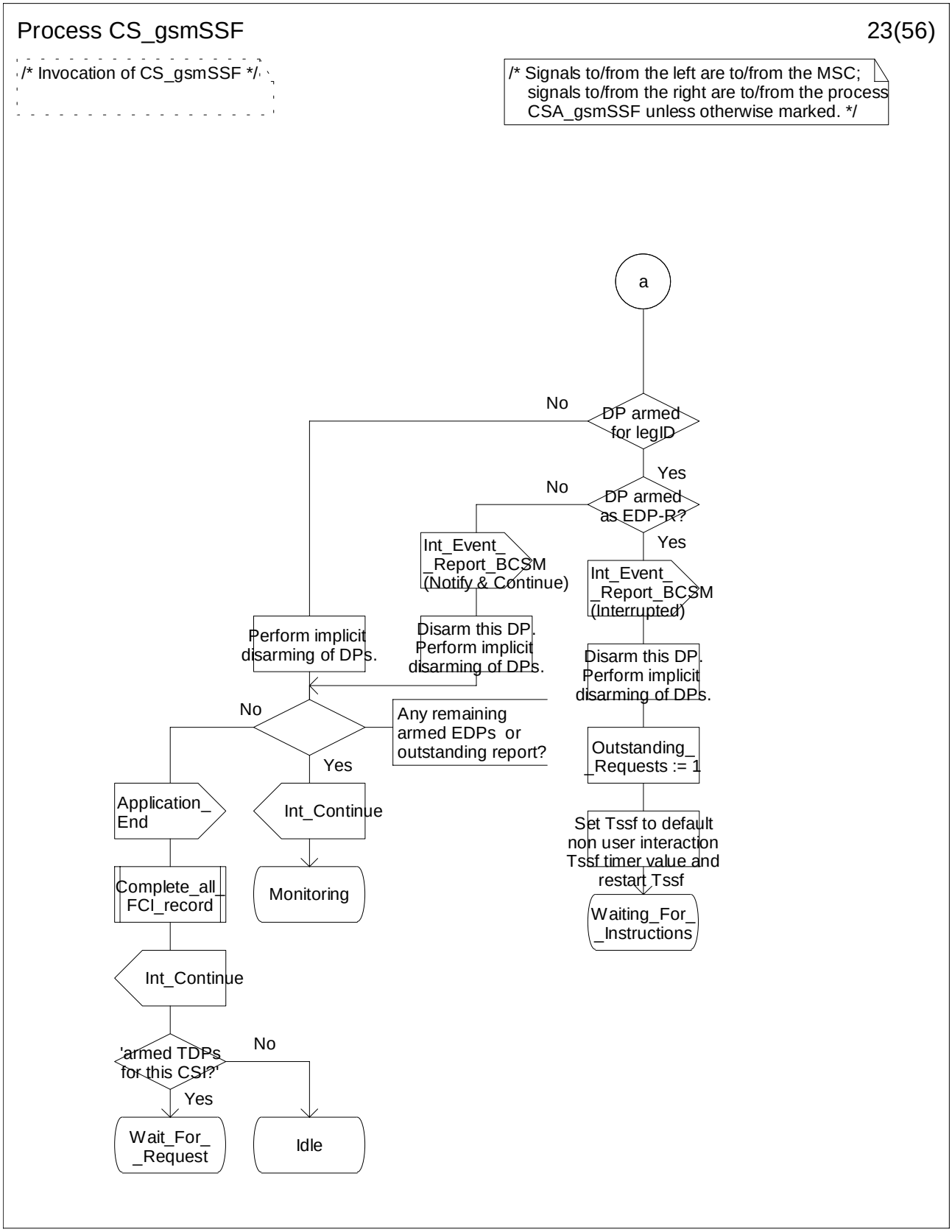


Figure 4.95w: Process CS_gsmSSF (sheet 23)

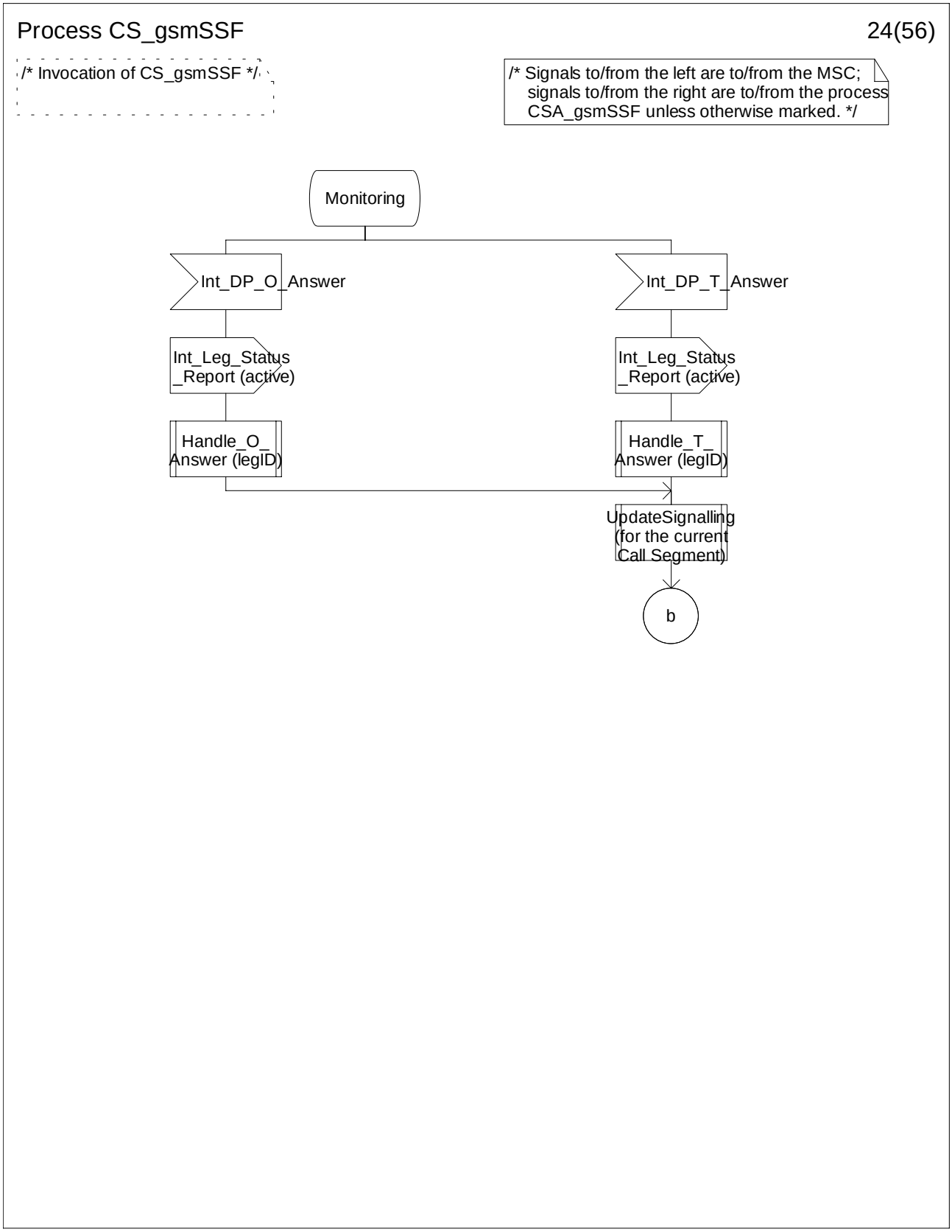


Figure 4.95x: Process CS_gsmSSF (sheet 24)

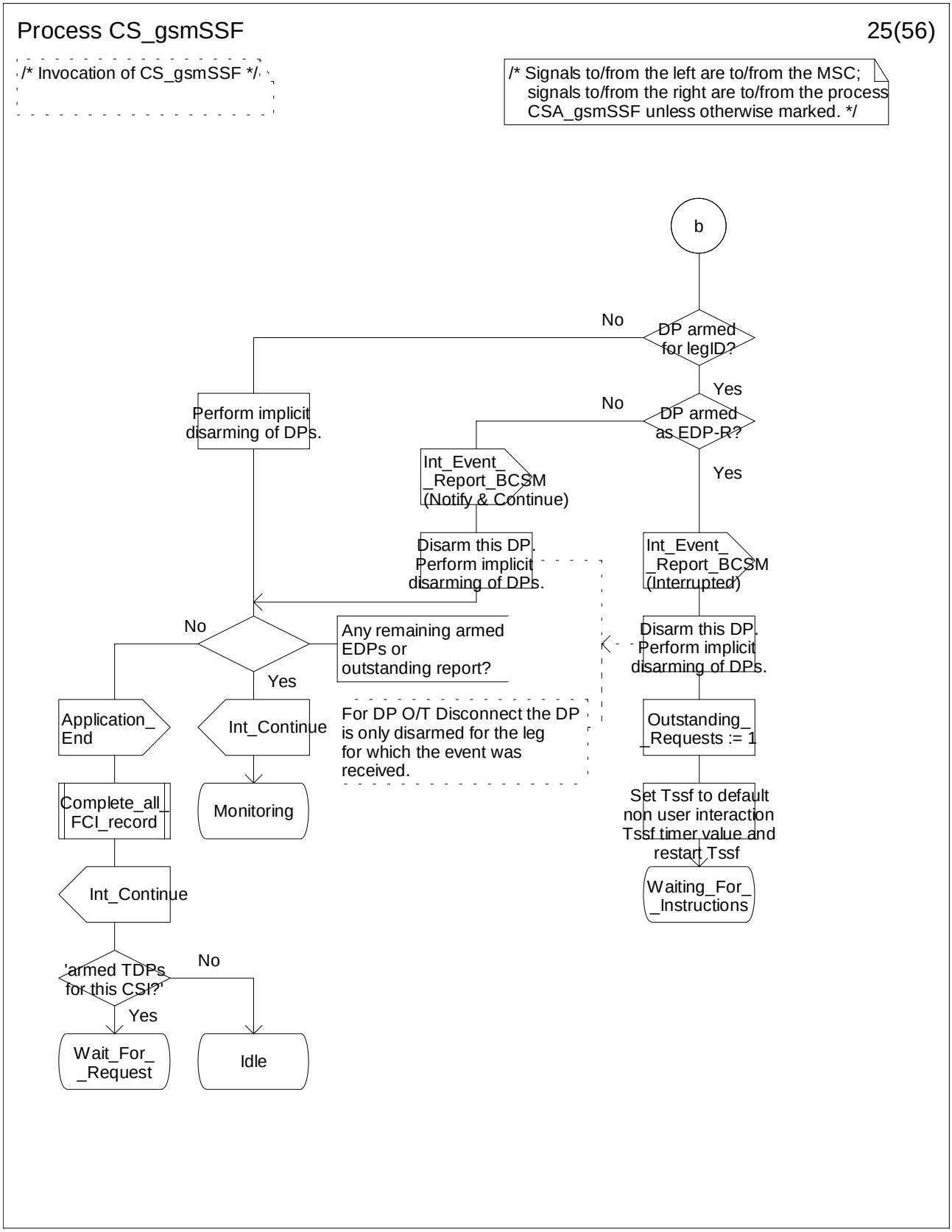


Figure 4.95y: Process CS_gsmSSF (sheet 25)

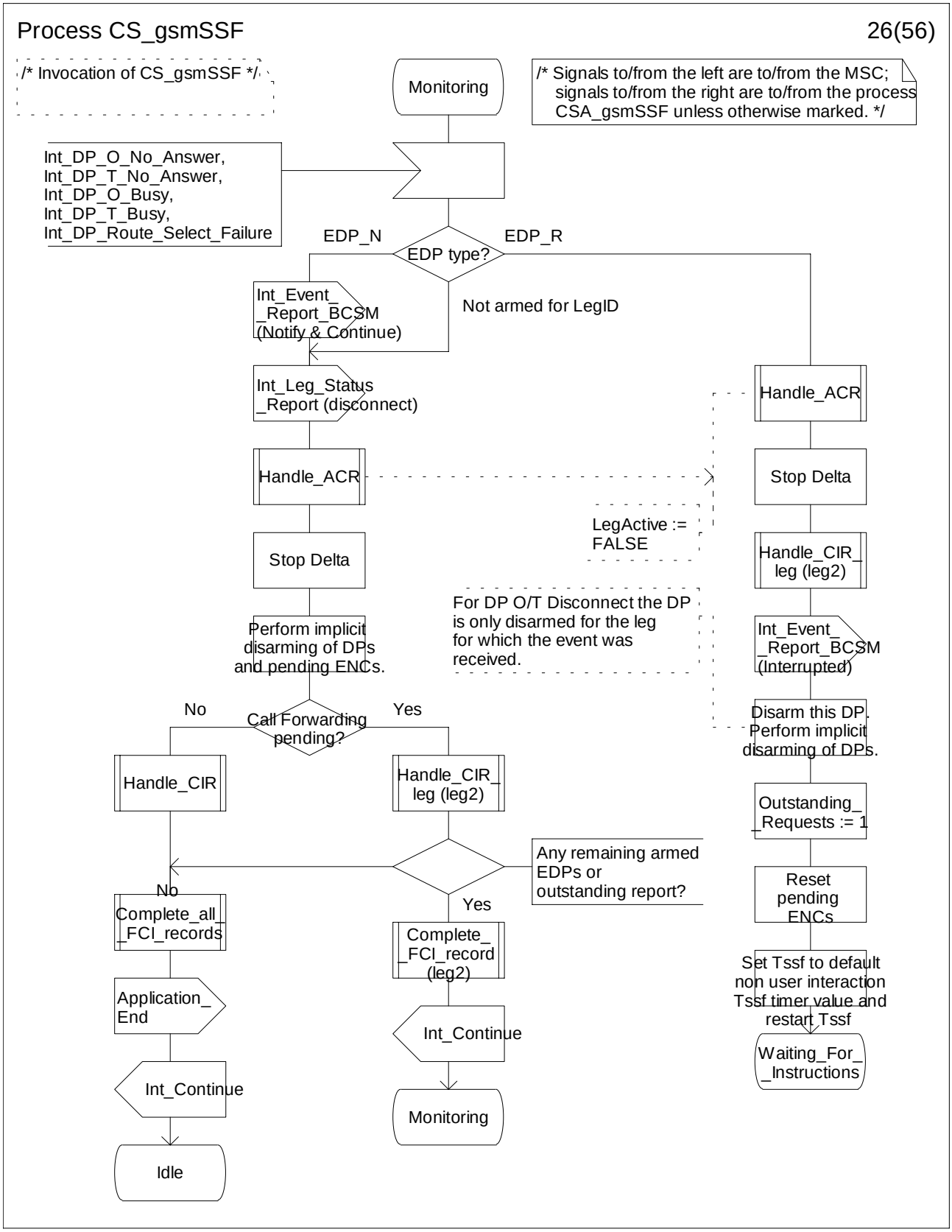


Figure 4.95z: Process CS_gsmSSF (sheet 26)

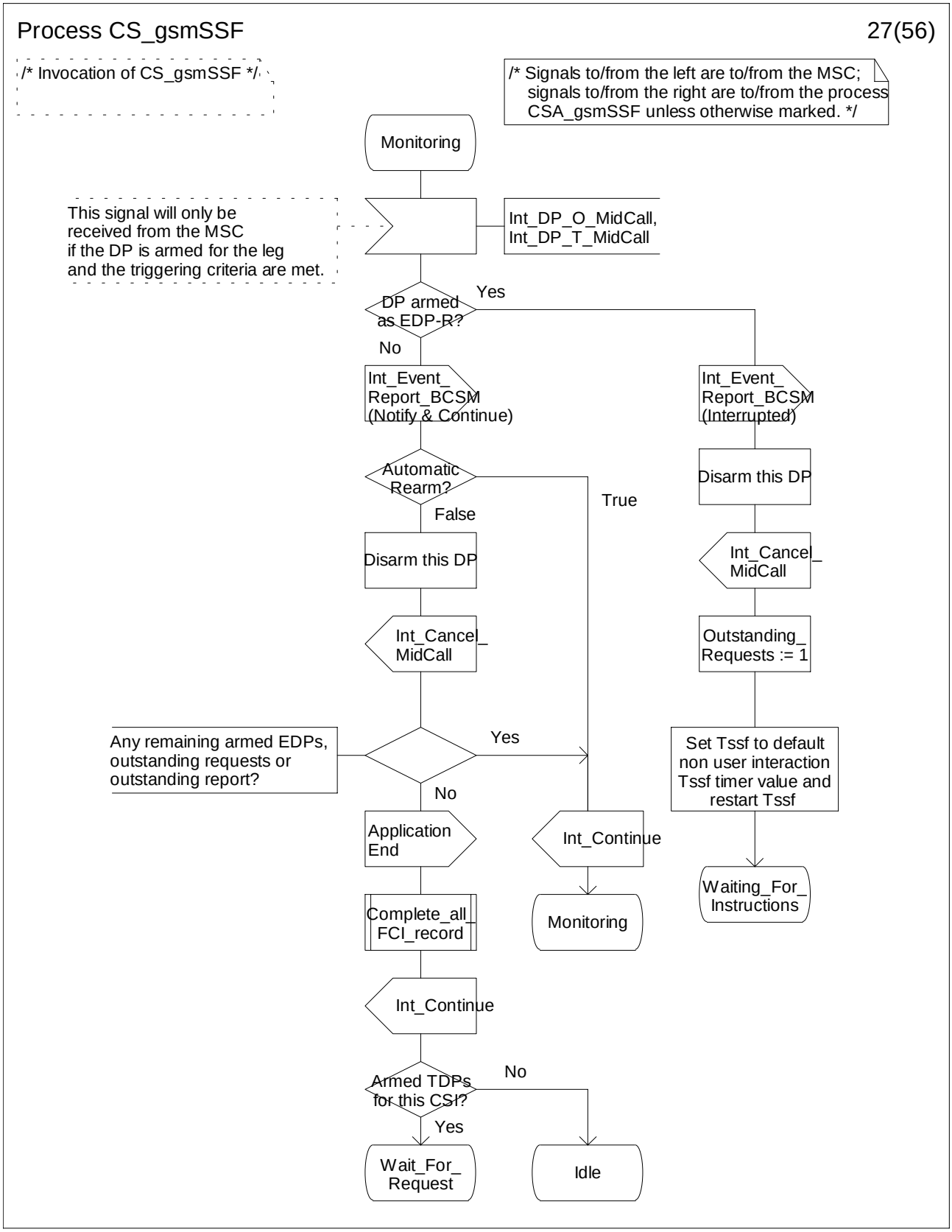


Figure 4.95aa: Process CS_gsmSSF (sheet 27)

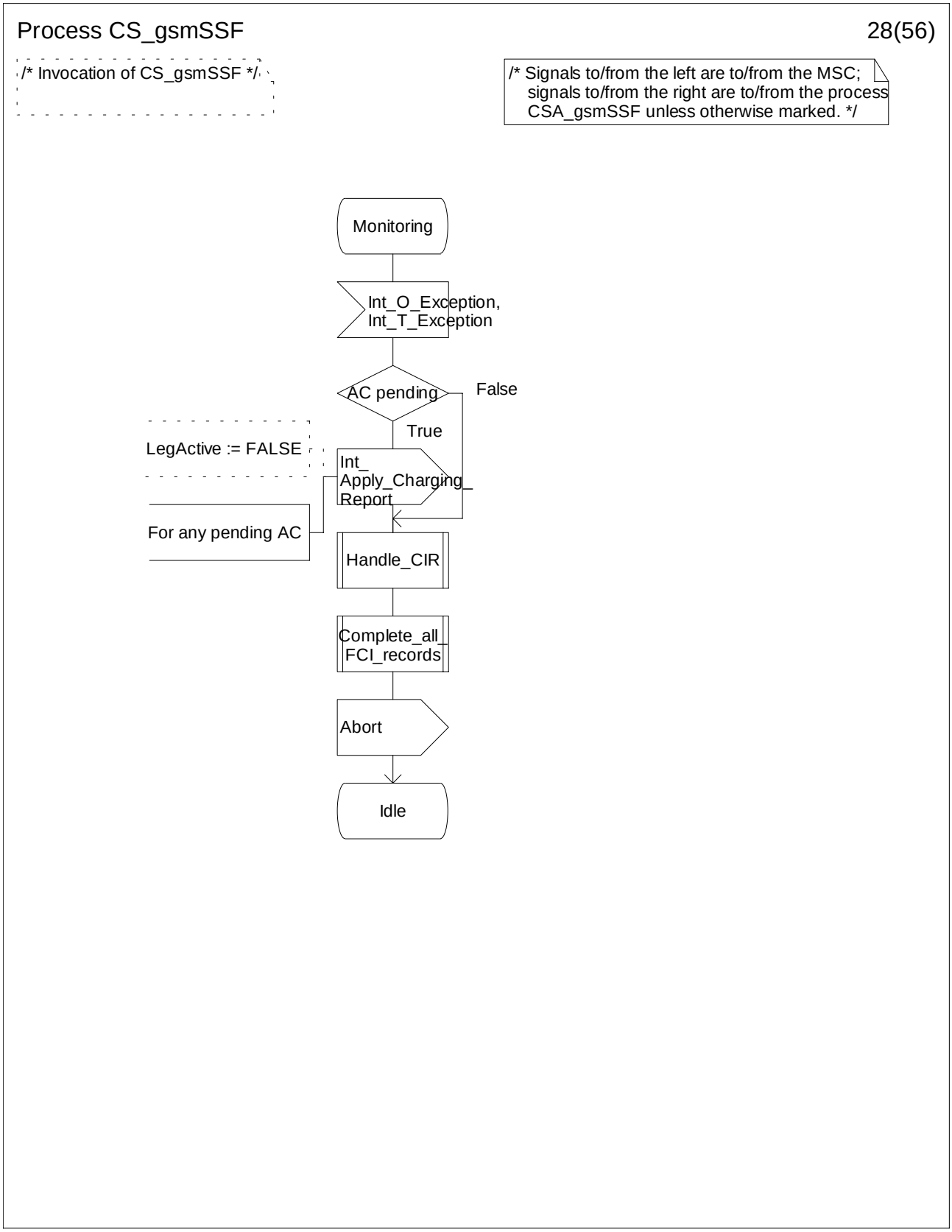


Figure 4.95bb: Process CS_gsmSSF (sheet 28)

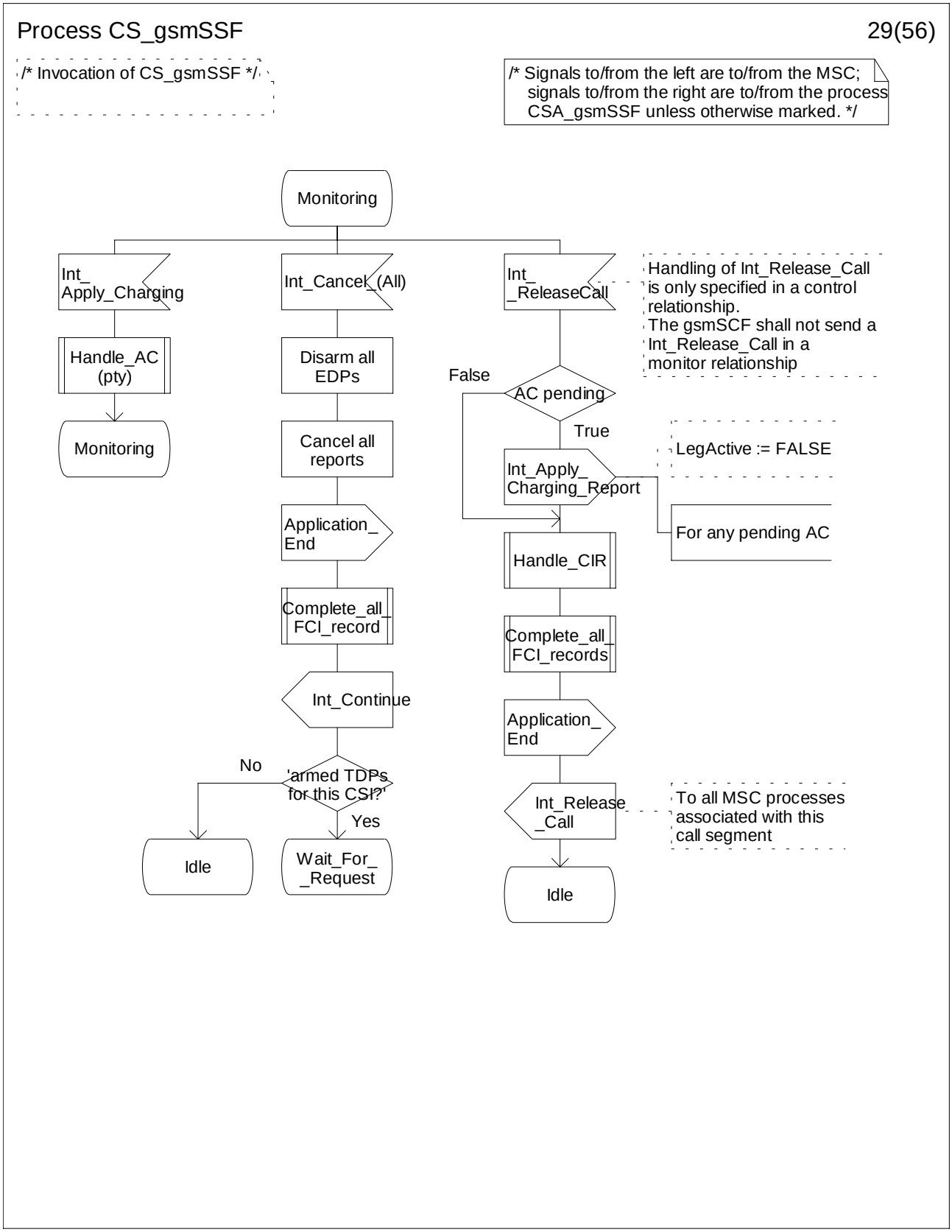


Figure 4.95cc: Process CS_gsmSSF (sheet 29)

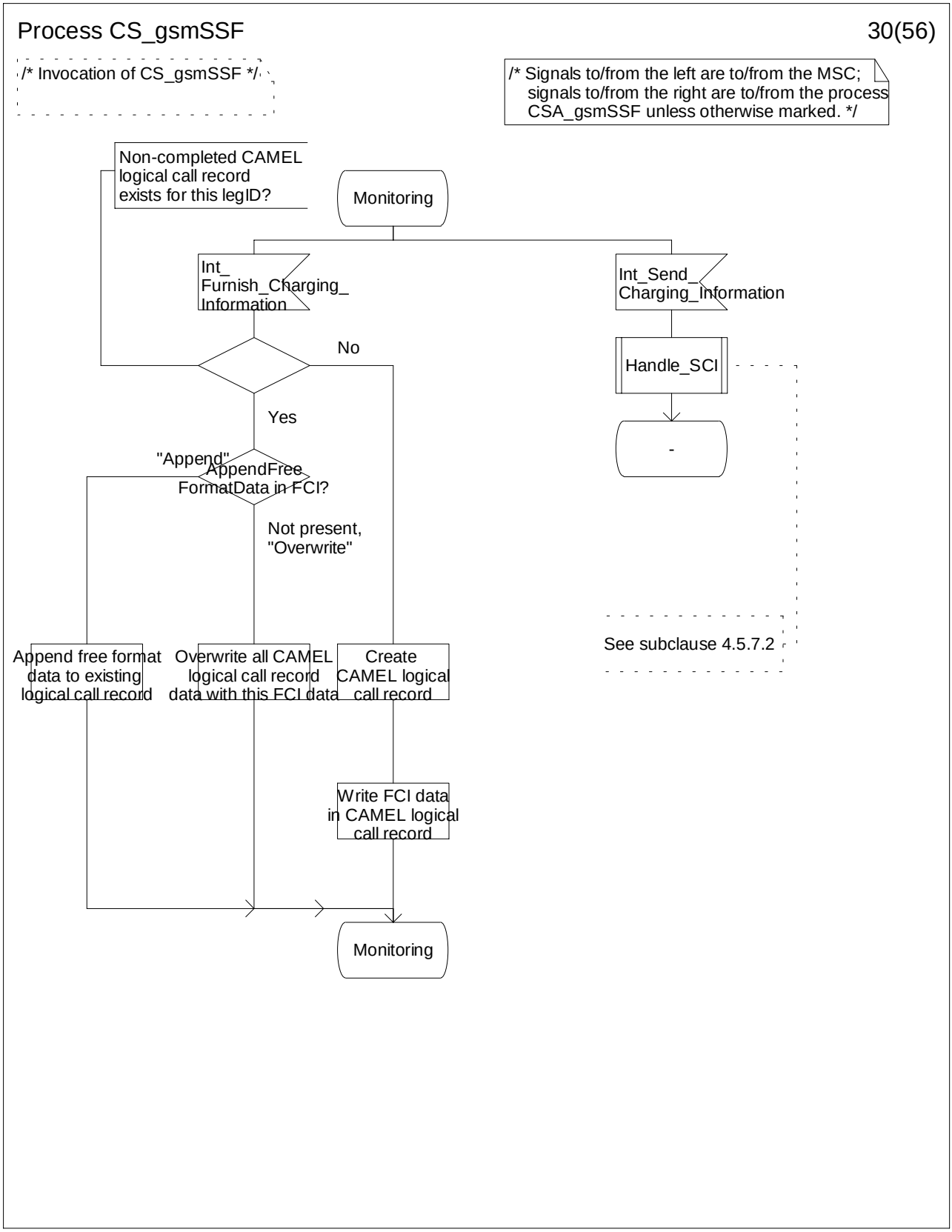


Figure 4.95dd: Process CS_gsmSSF (sheet 30)

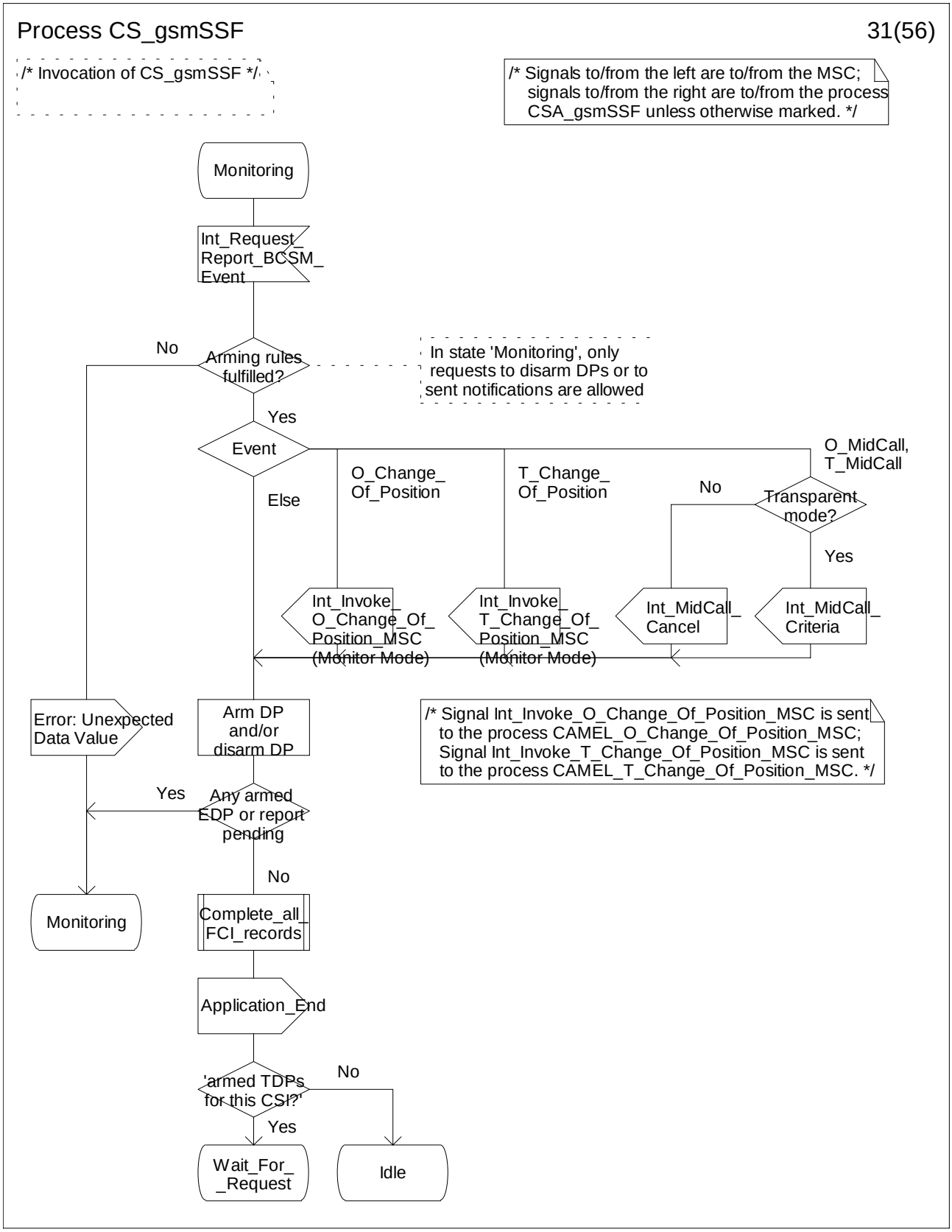


Figure 4.95ee: Process CS_gsmSSF (sheet 31)

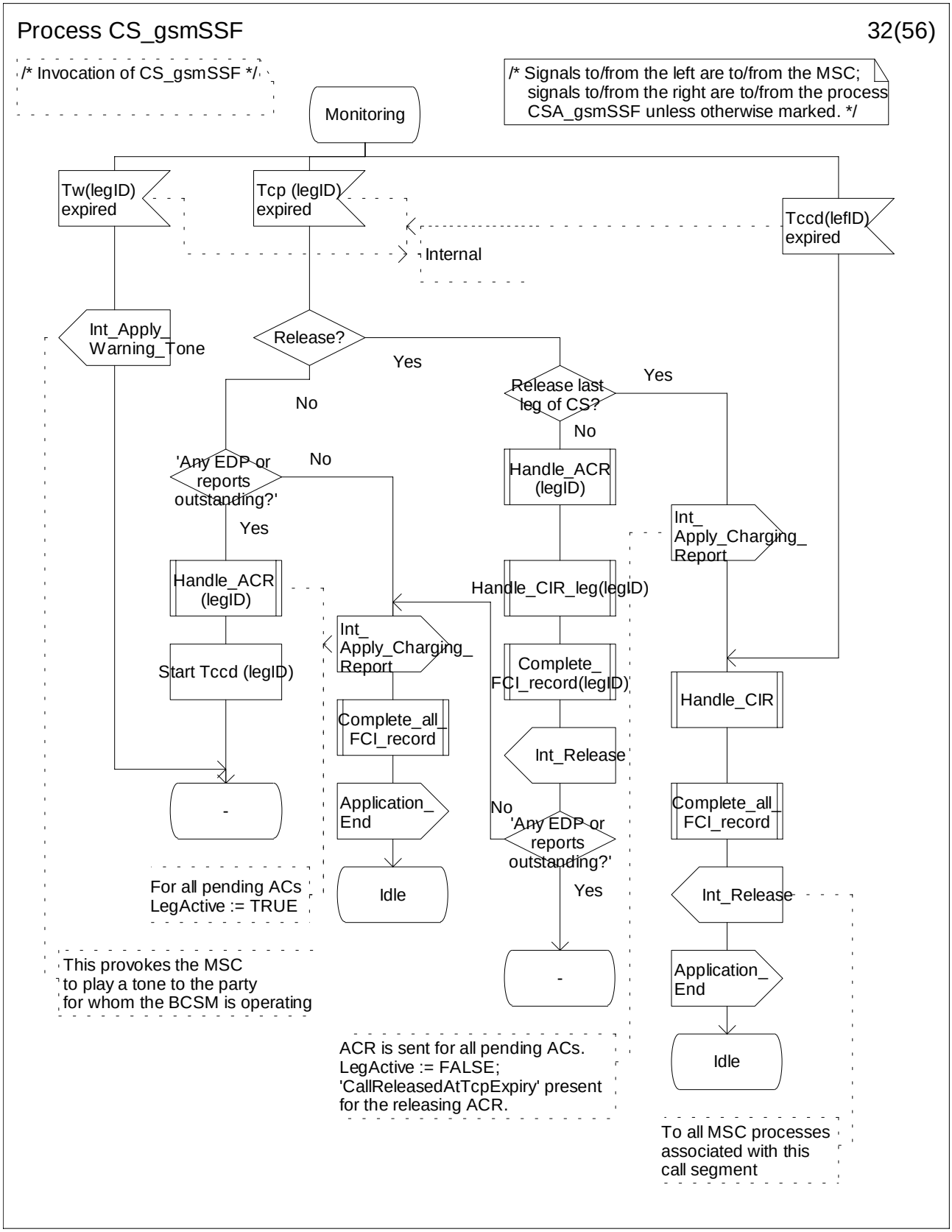


Figure 4.95ff: Process CS_gsmSSF (sheet 32)

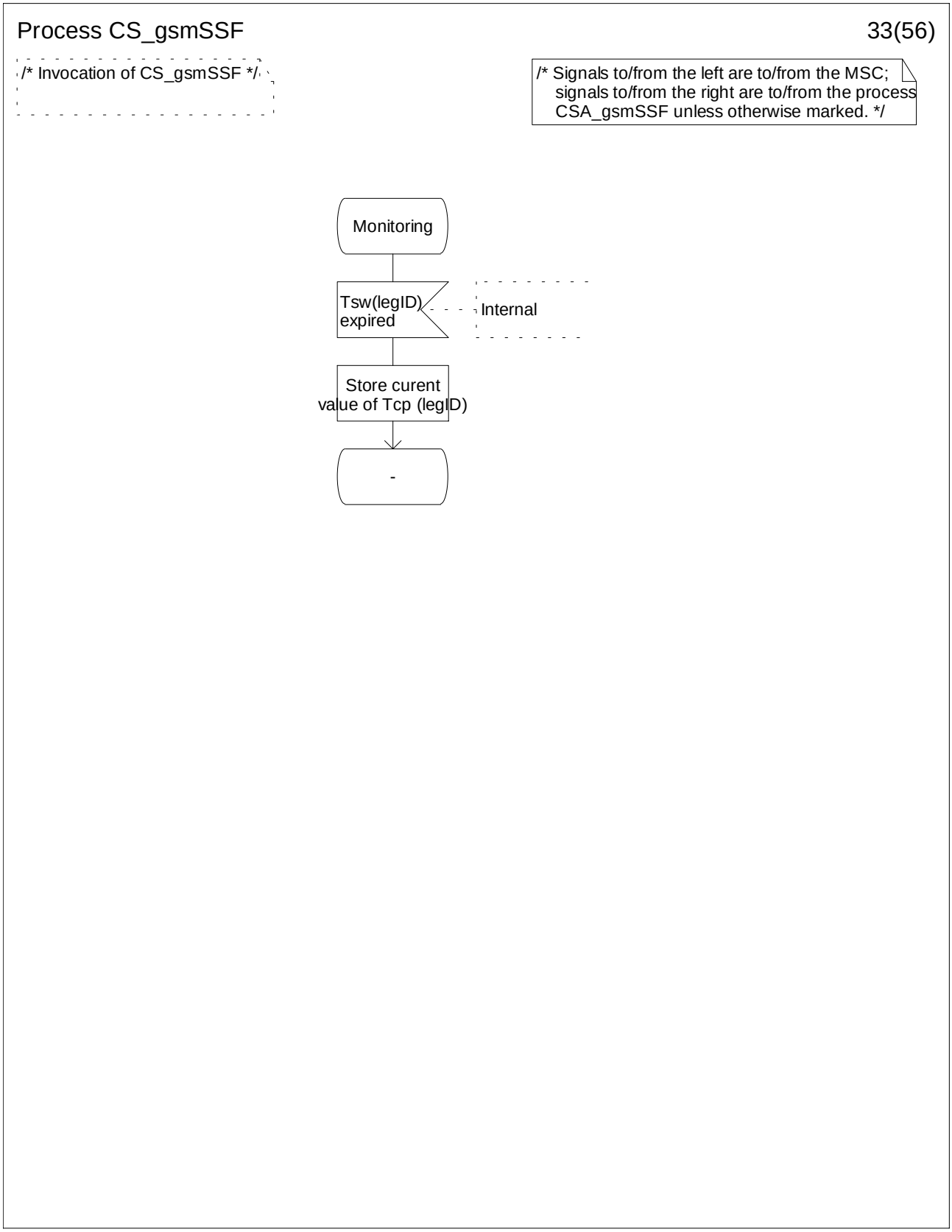


Figure 4.95gg: Process CS_gsmSSF (sheet 33)

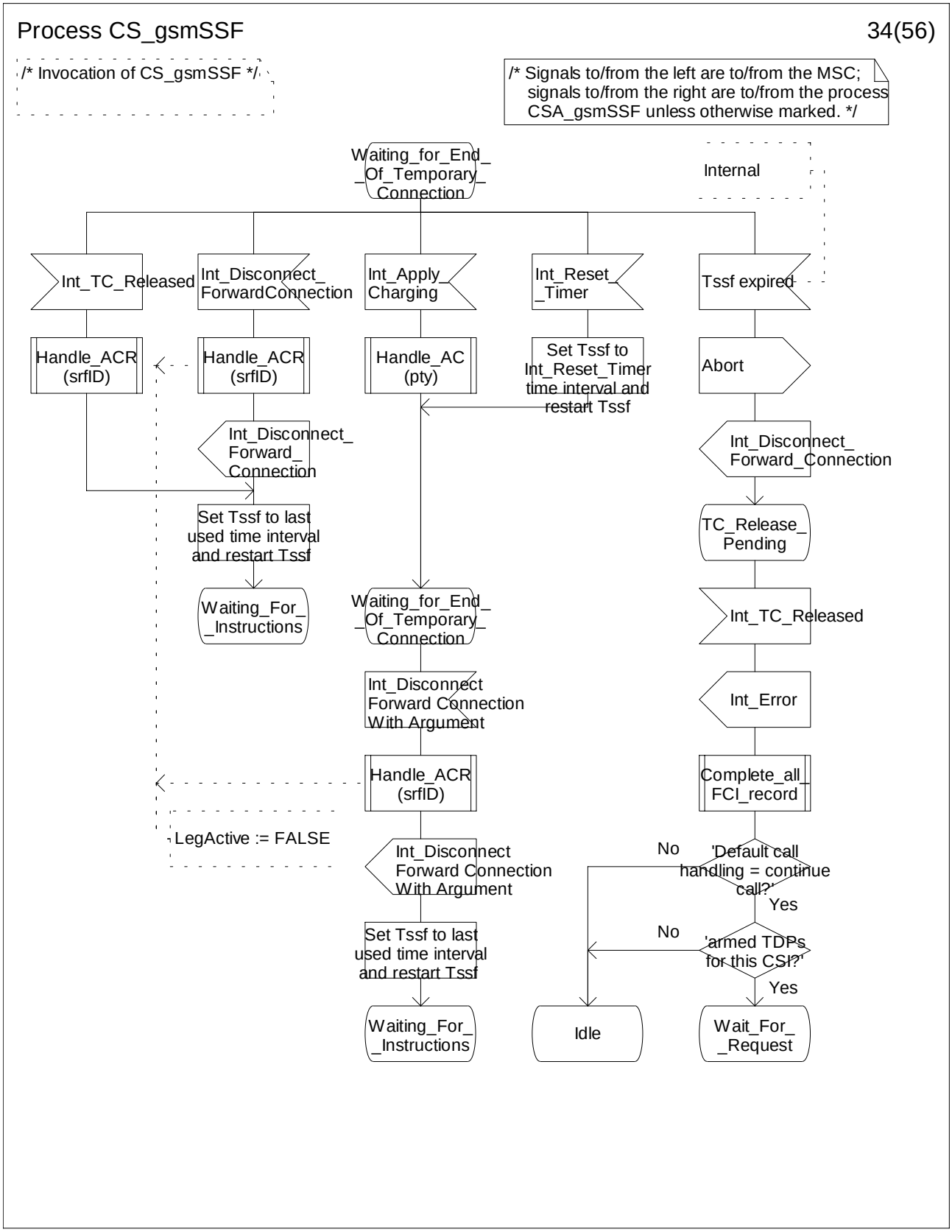


Figure 4.95hh: Process CS_gsmSSF (sheet 34)

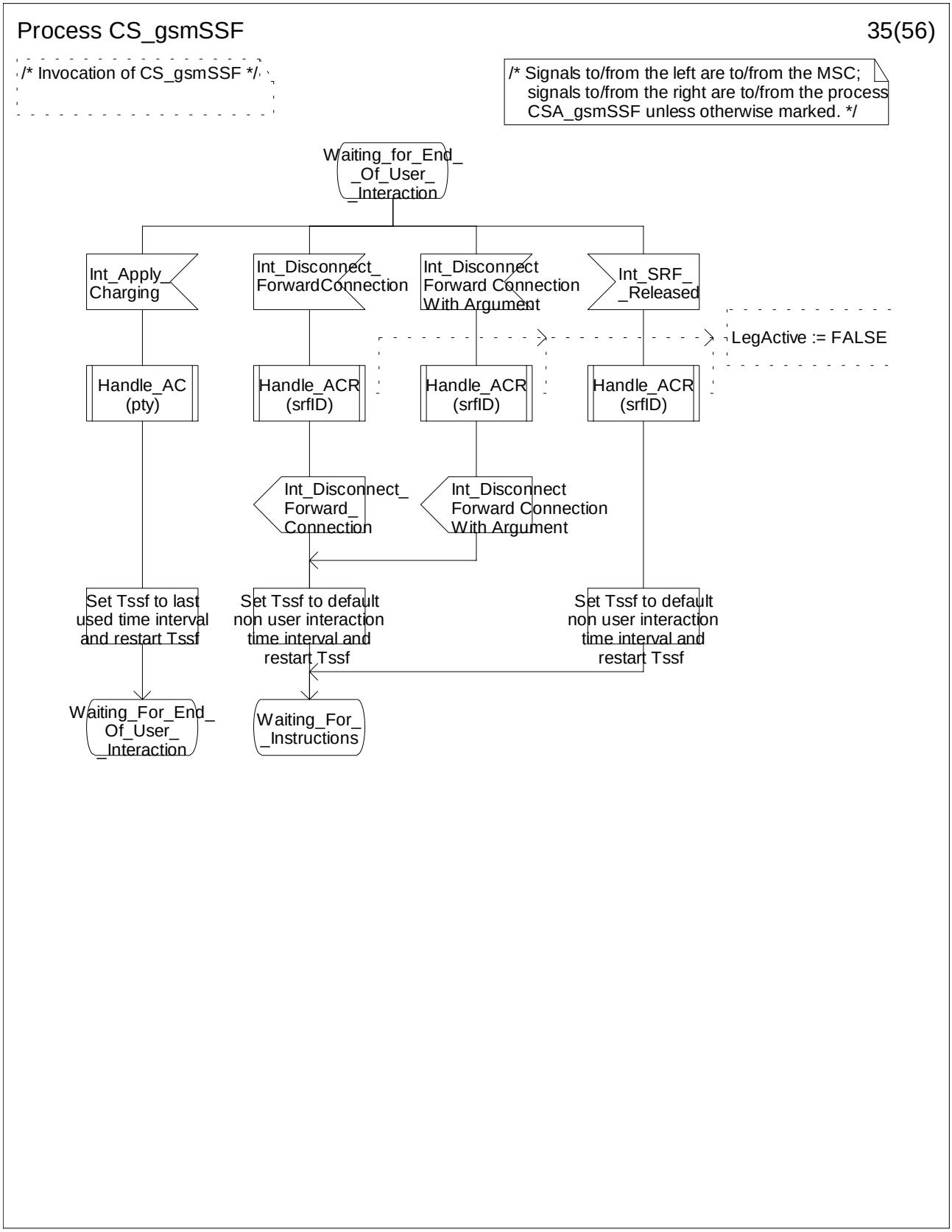


Figure 4.95ii: Process CS_gsmSSF (sheet 35)

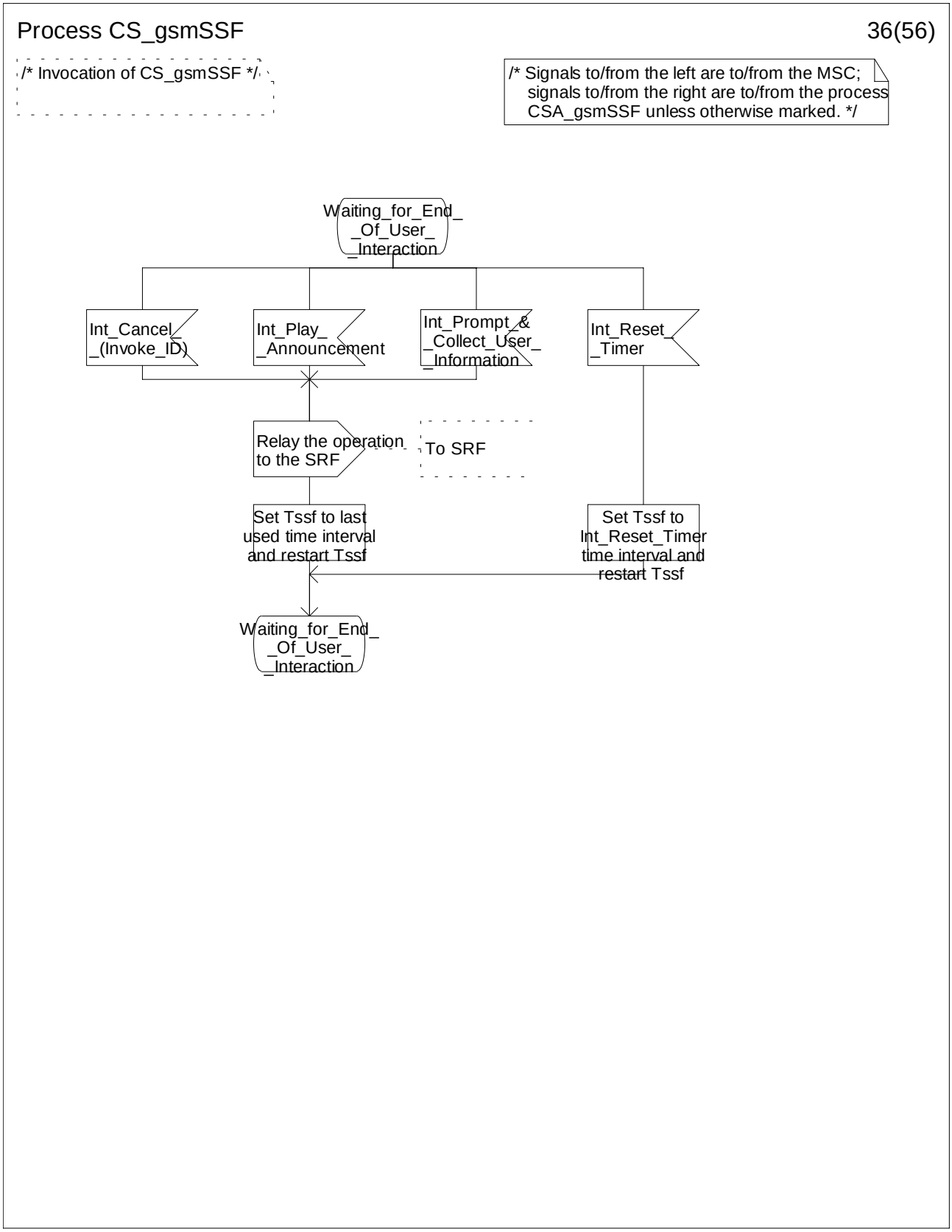


Figure 4.95jj: Process CS_gsmSSF (sheet 36)

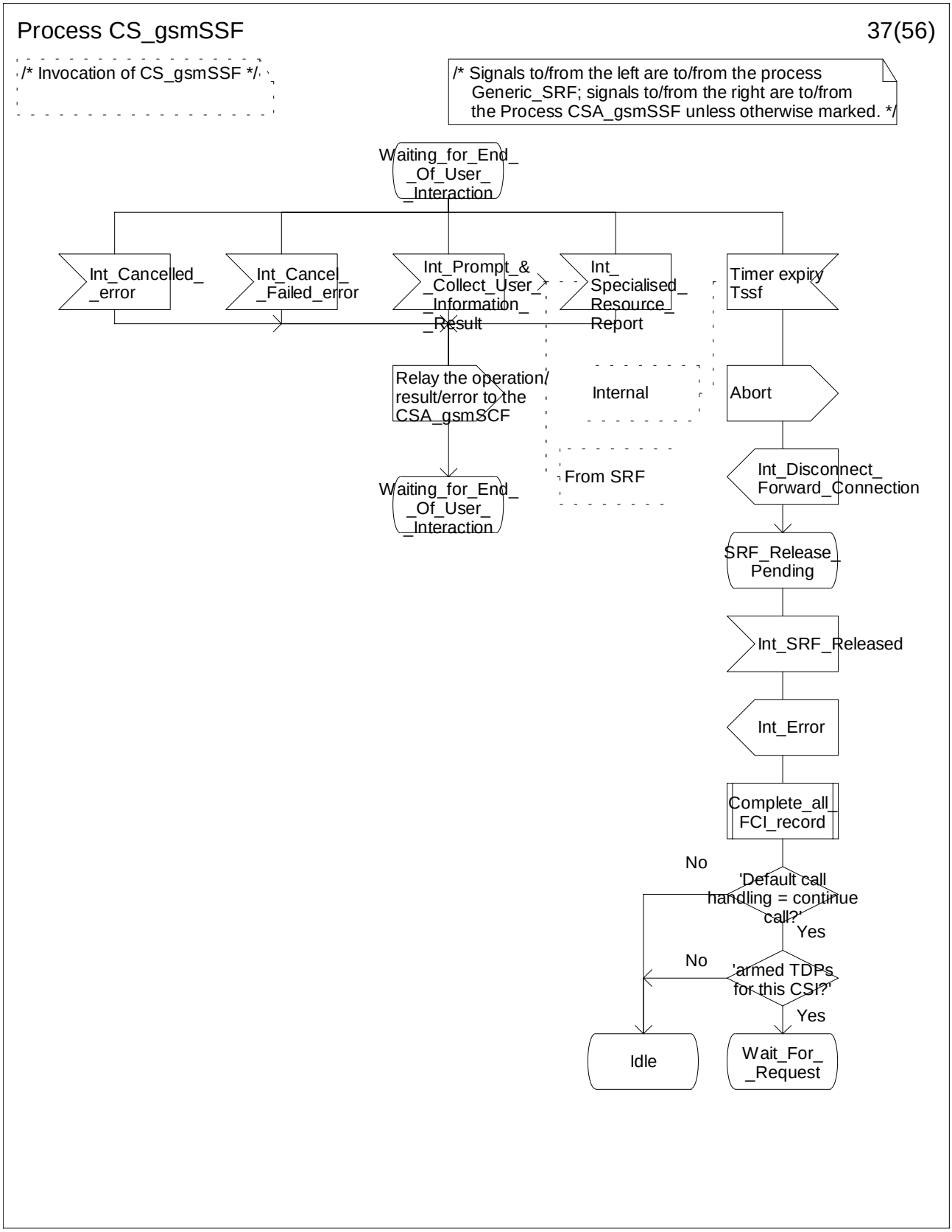
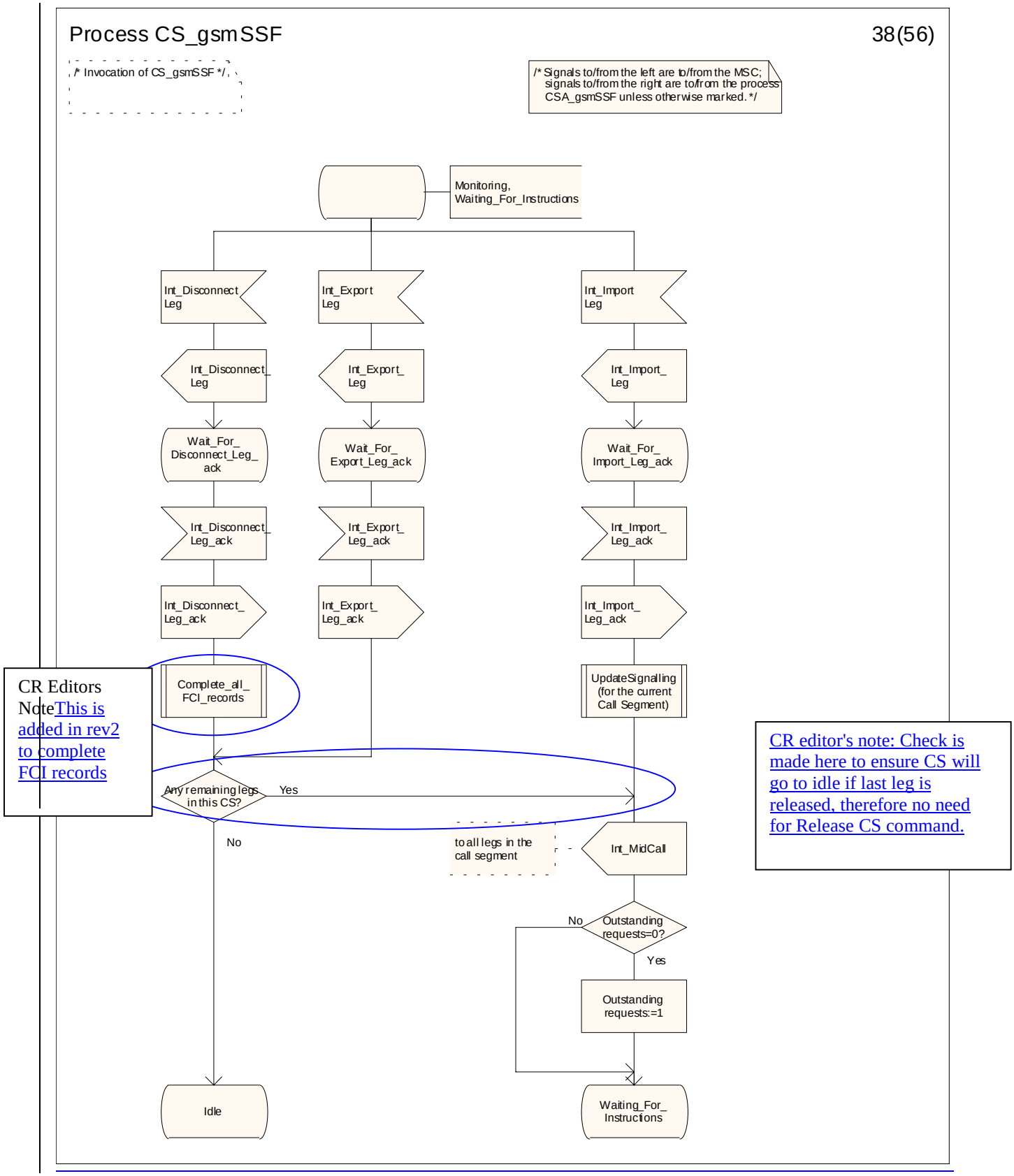


Figure 4.95kk: Process CS_gsmSSF (sheet 37)


Process CS_gsmSSF
38(56)
/* Invocation of CS_gsmSSF */
/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA_gsmSSF unless otherwise marked. */
Monitoring, Waiting_For_Instructions
Int_Disconnect Leg
Int_Export Leg
Int_Import Leg
Int_Disconnect_ Leg
Int_Export_ Leg
Int_Import_ Leg
Wait_For_ Disconnect_Leg_ ack
Wait_For_ Export_Leg_ack
Wait_For_ Import_Leg_ack
Int_Disconnect_ Leg_ack
Int_Export_ Leg_ack
Int_Import_ Leg_ack
Int_Disconnect_ Leg_ack
Int_Export_ Leg_ack
Int_Import_ Leg_ack
Complete_all_ FCI_records
UpdateSignalling (for the current Call Segment)
CR Editors NoteThis is added in rev2 to complete FCI records
Any remaining legs in this CS?
Yes
No
to all legs in the call segment
Int_MidCall
No
Outstanding requests=0?
Yes
Outstanding requests:=1
Idle
Waiting_For_ Instructions
CR editor's note: Check is made here to ensure CS will go to idle if last leg is released, therefore no need for Release CS command.

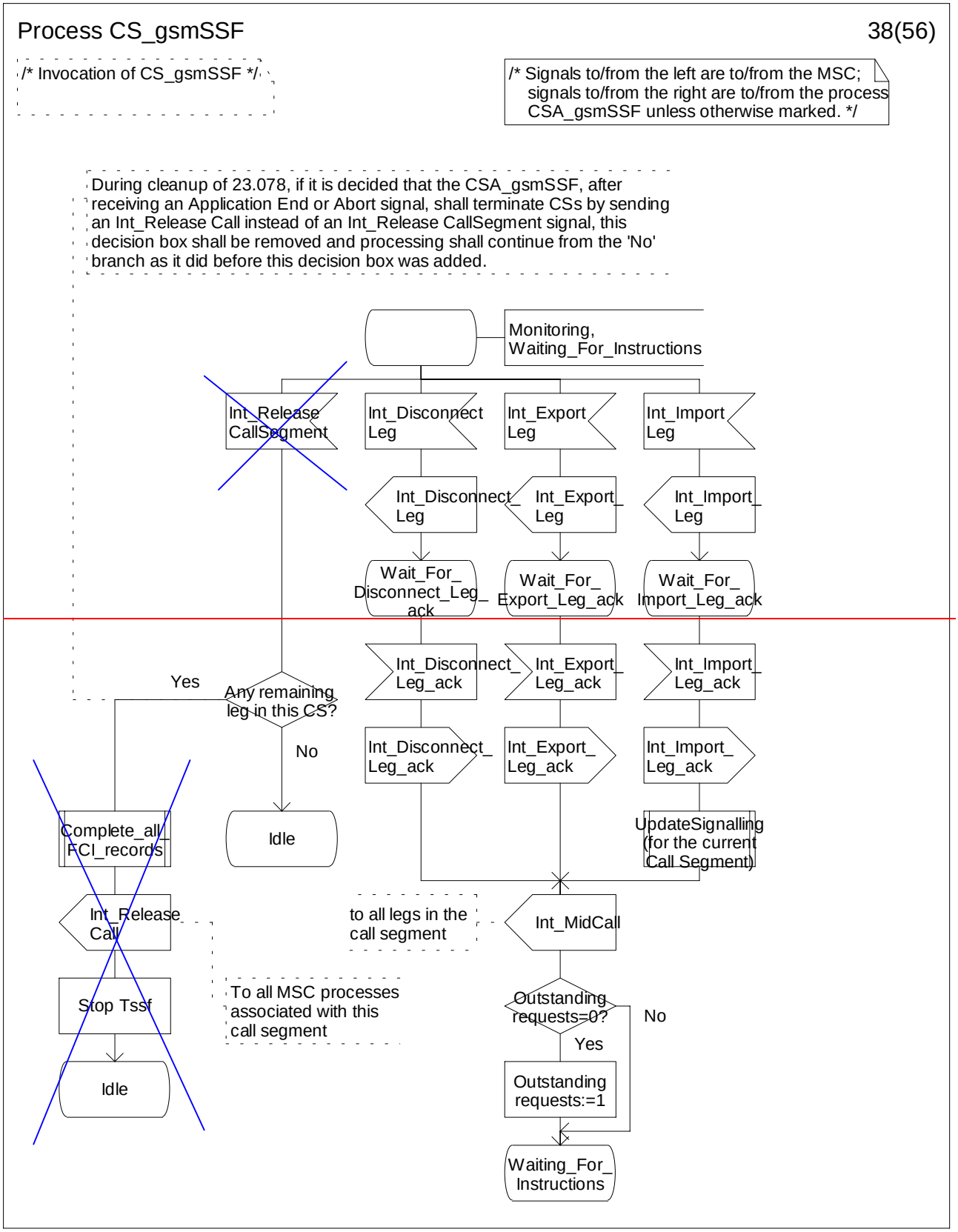


Figure 4.95ll: Process CS_gsmSSF (sheet 38)

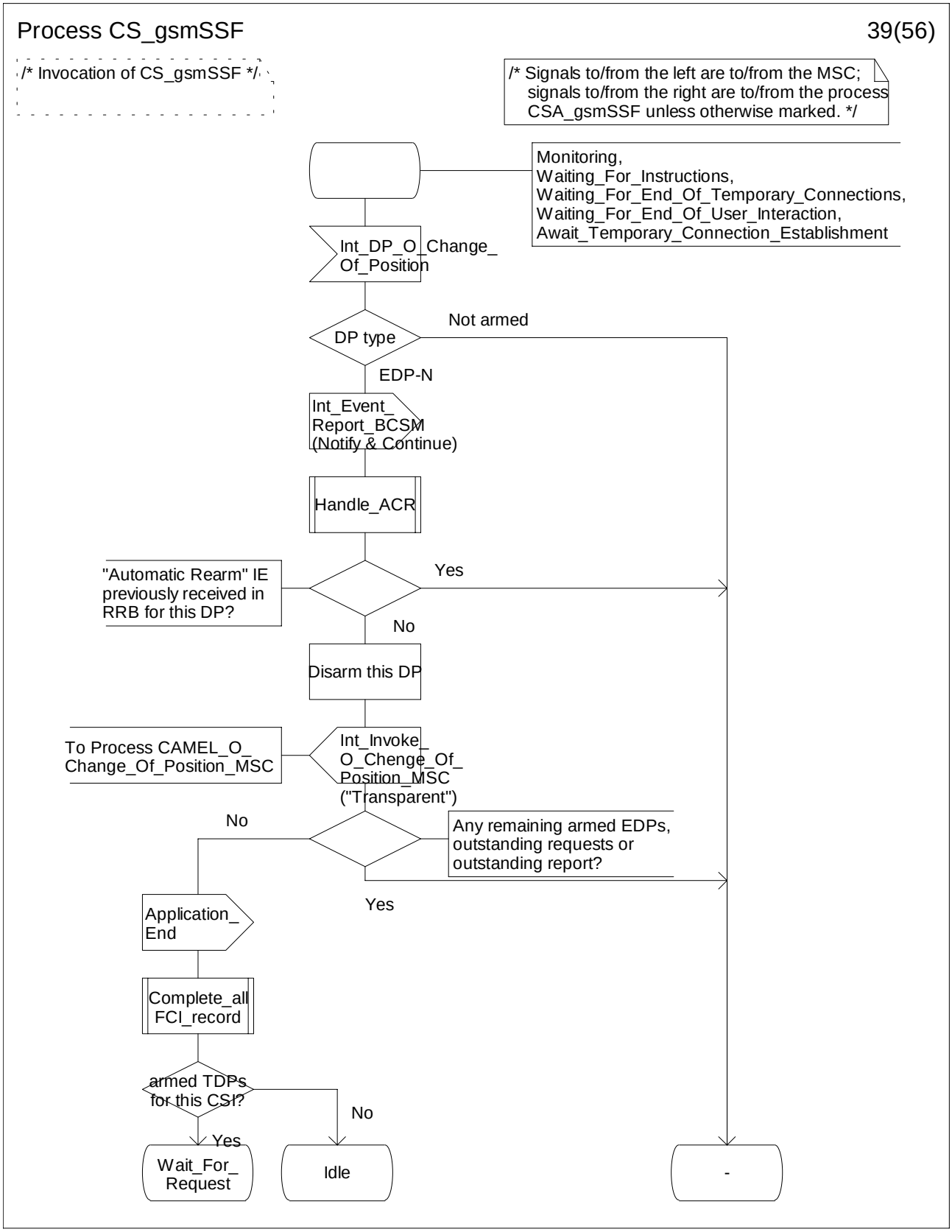


Figure 4.95mm: Process CS_gsmSSF (sheet 39)

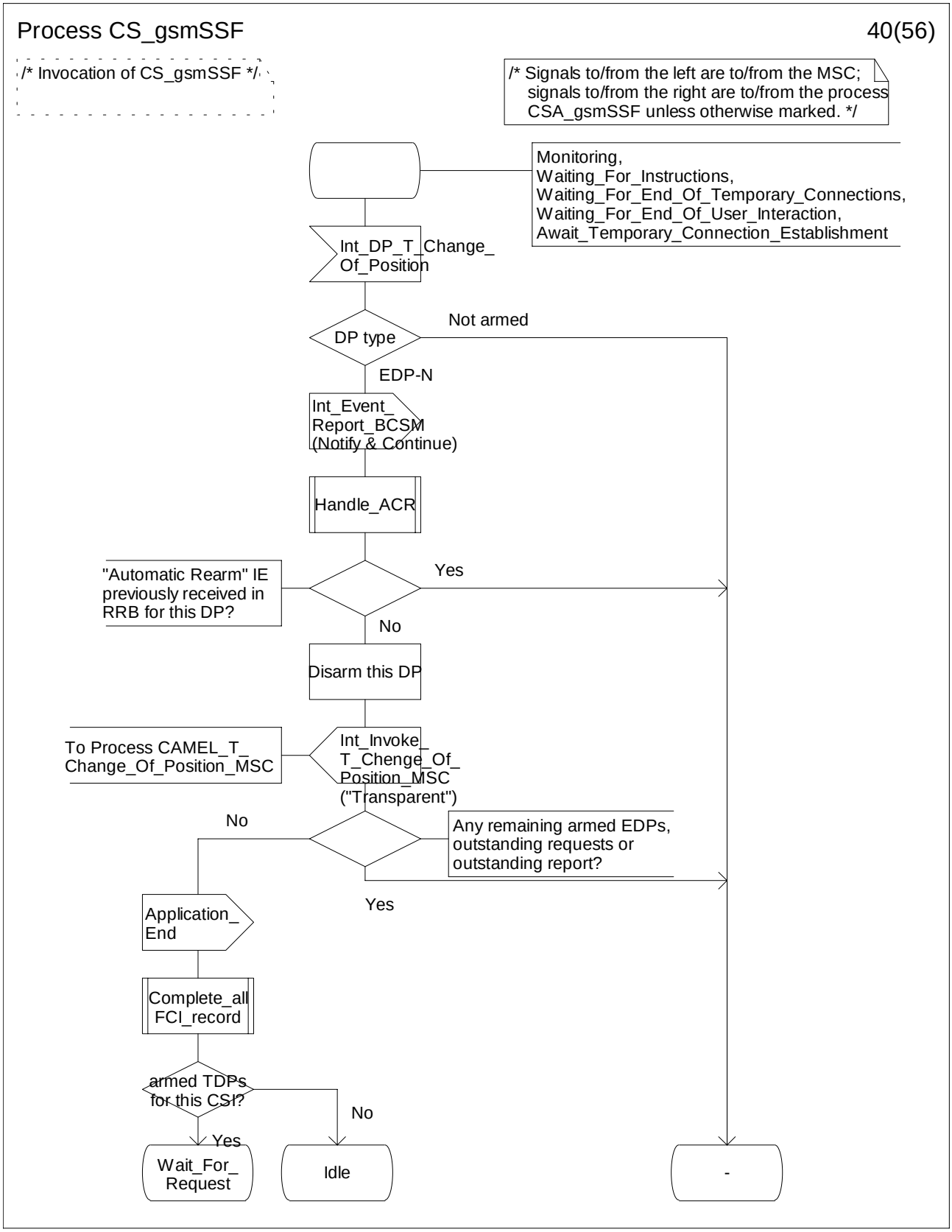


Figure 4.95nn: Process CS_gsmSSF (sheet 40)

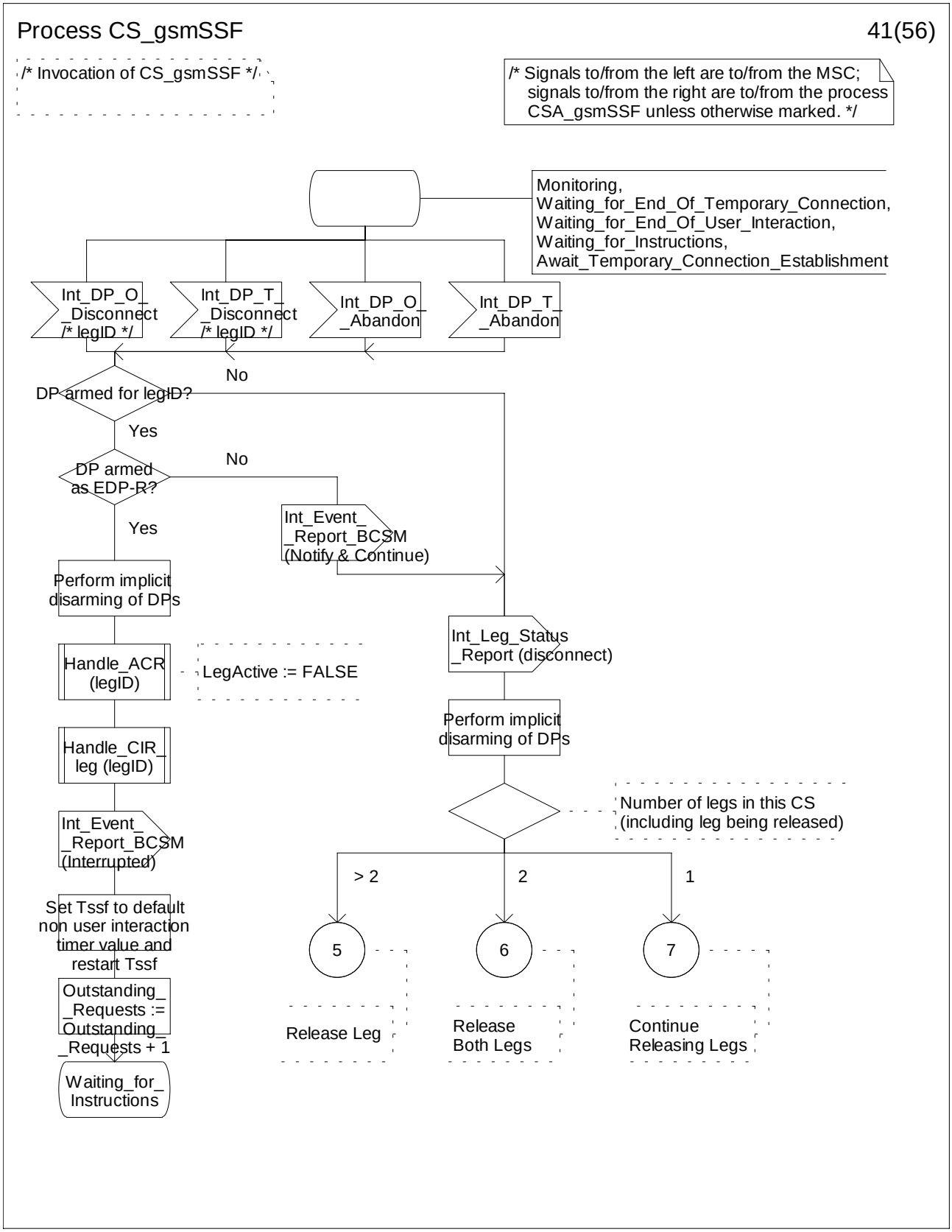


Figure 4.95oo: Process CS_gsmSSF (sheet 41)

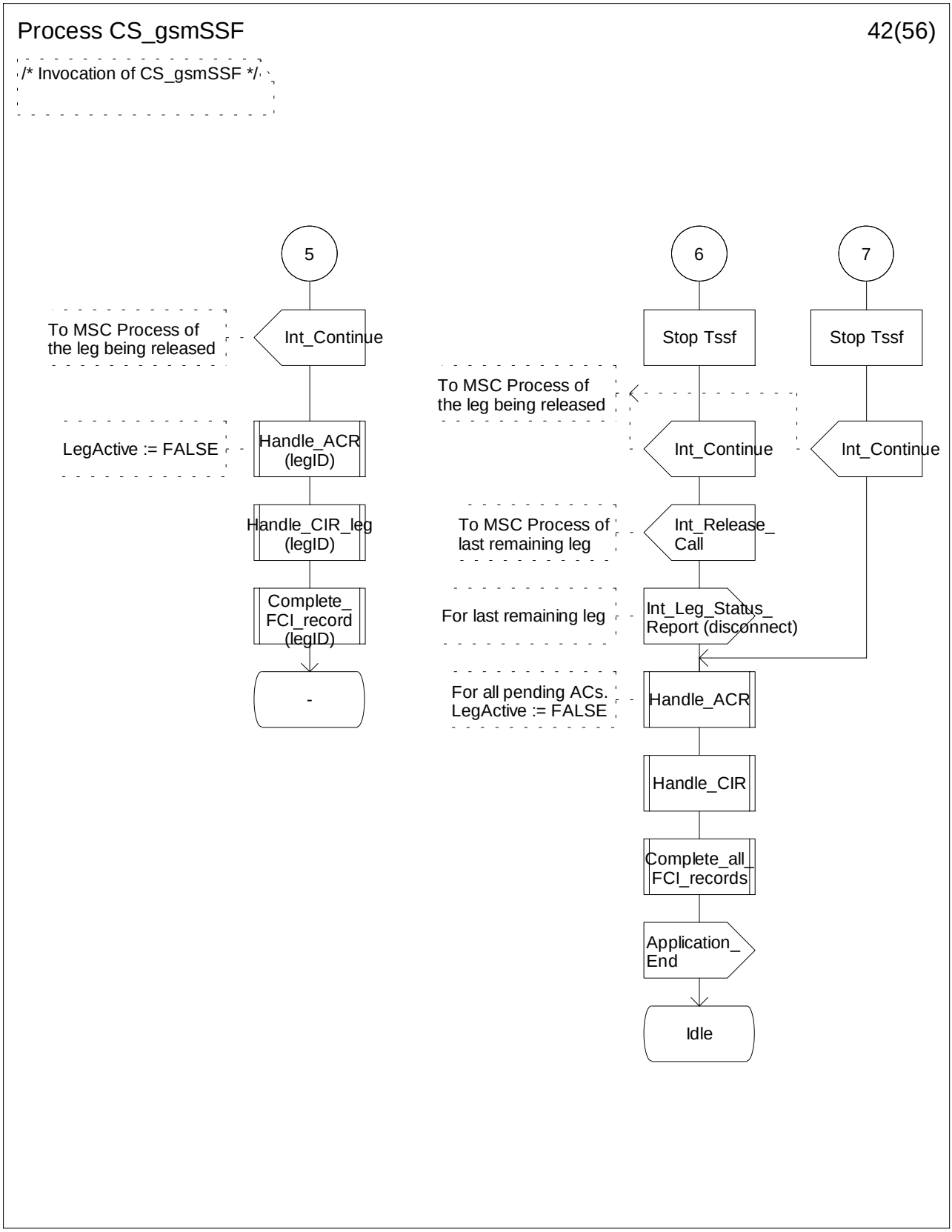


Figure 4.95pp: Process CS_gsmSSF (sheet 42)

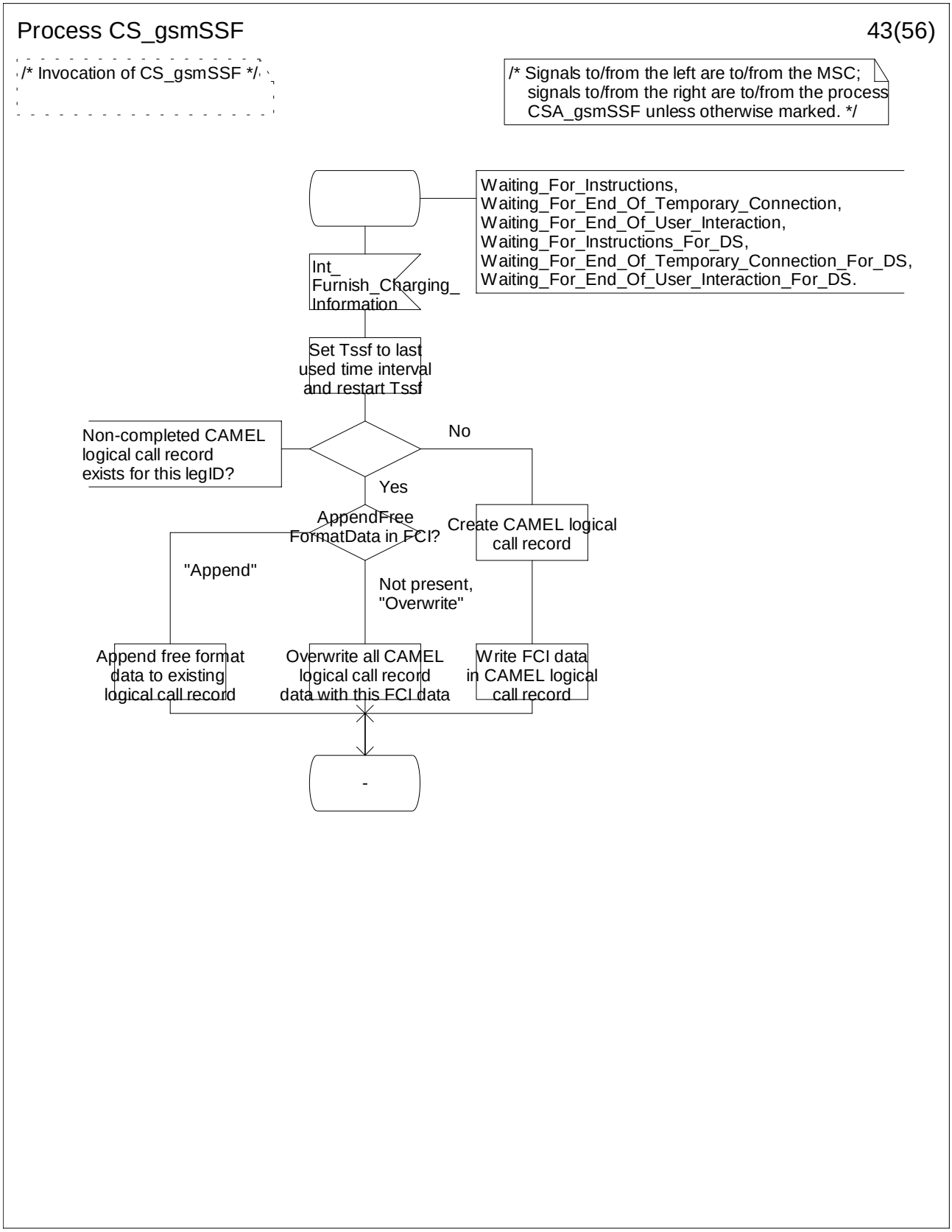


Figure 4.95qq: Process CS_gsmSSF (sheet 43)

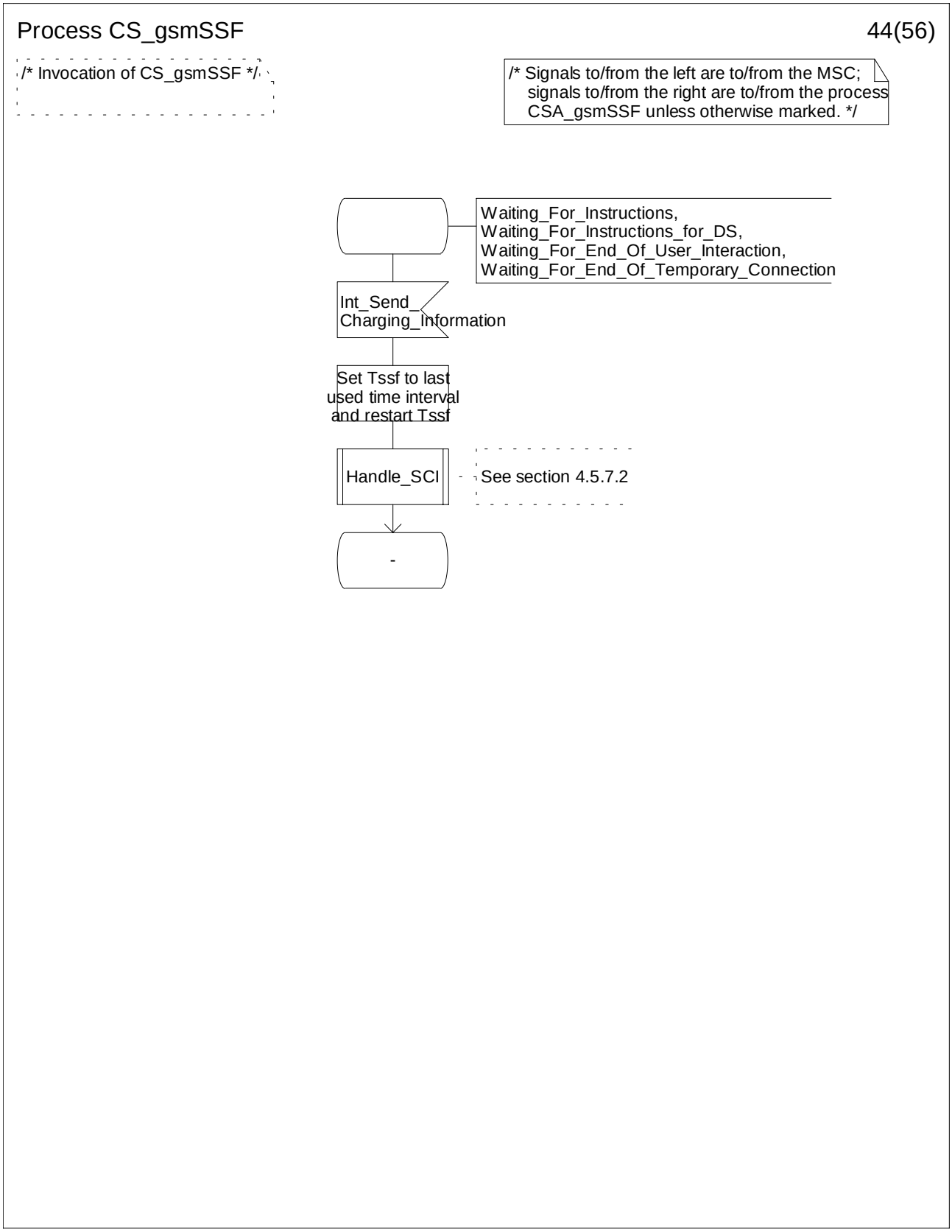


Figure 4.95rr: Process CS_gsmSSF (sheet 44)

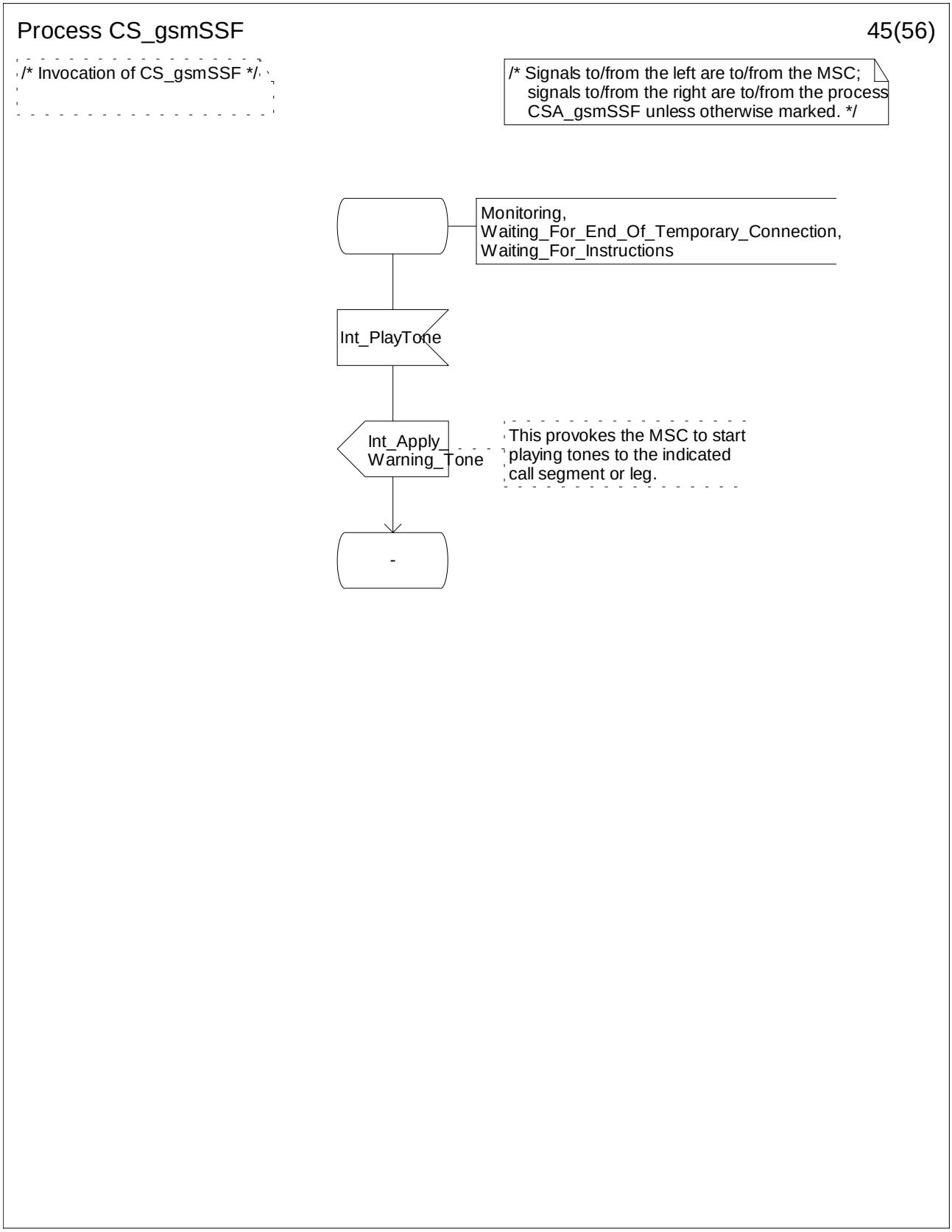


Figure 4.95ss: Process CS_gsmSSF (sheet 45)

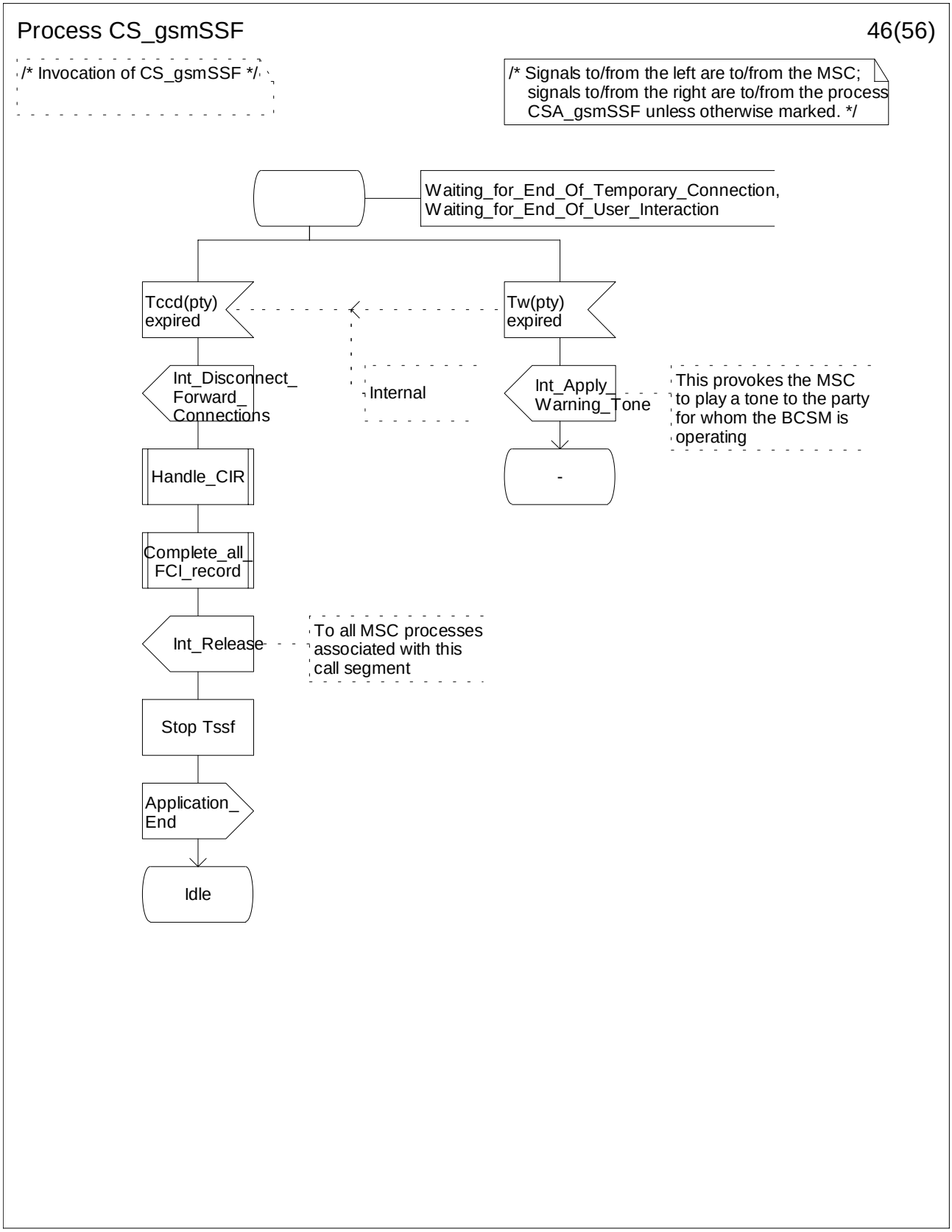


Figure 4.95tt: Process CS_gsmSSF (sheet 46)

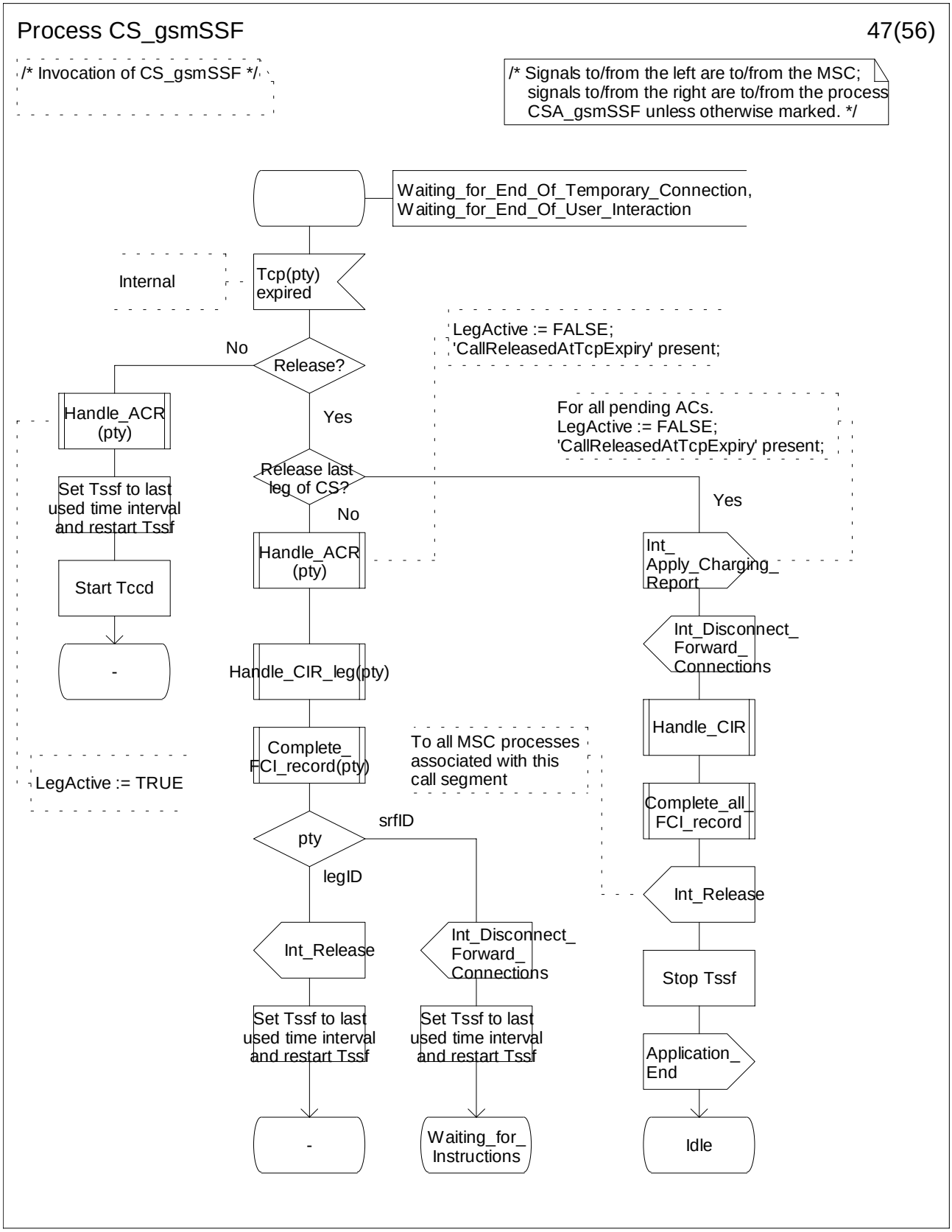


Figure 4.95uu: Process CS_gsmSSF (sheet 47)

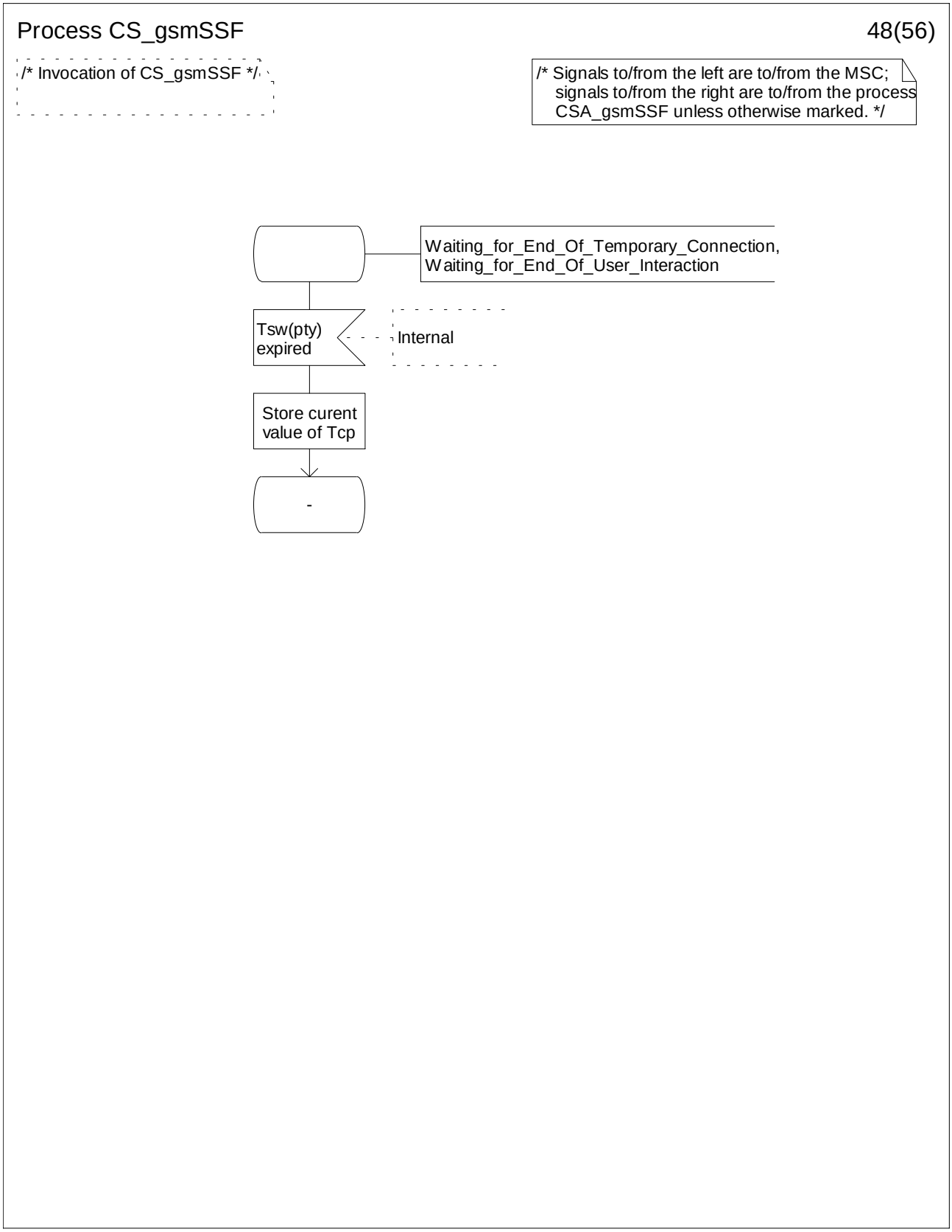


Figure 4.95vv: Process CS_gsmSSF (sheet 48)

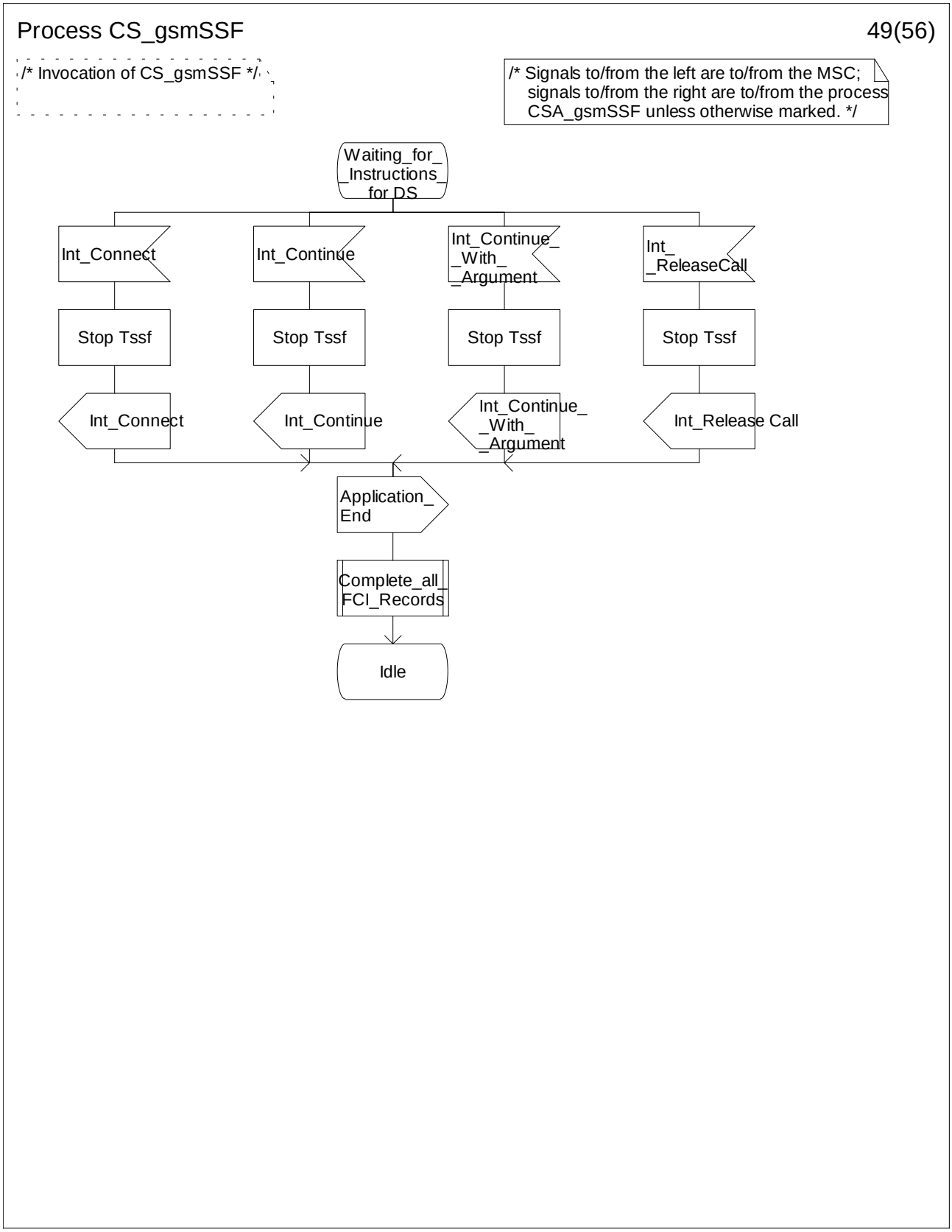


Figure 4.95ww: Process CS_gsmSSF (sheet 49)

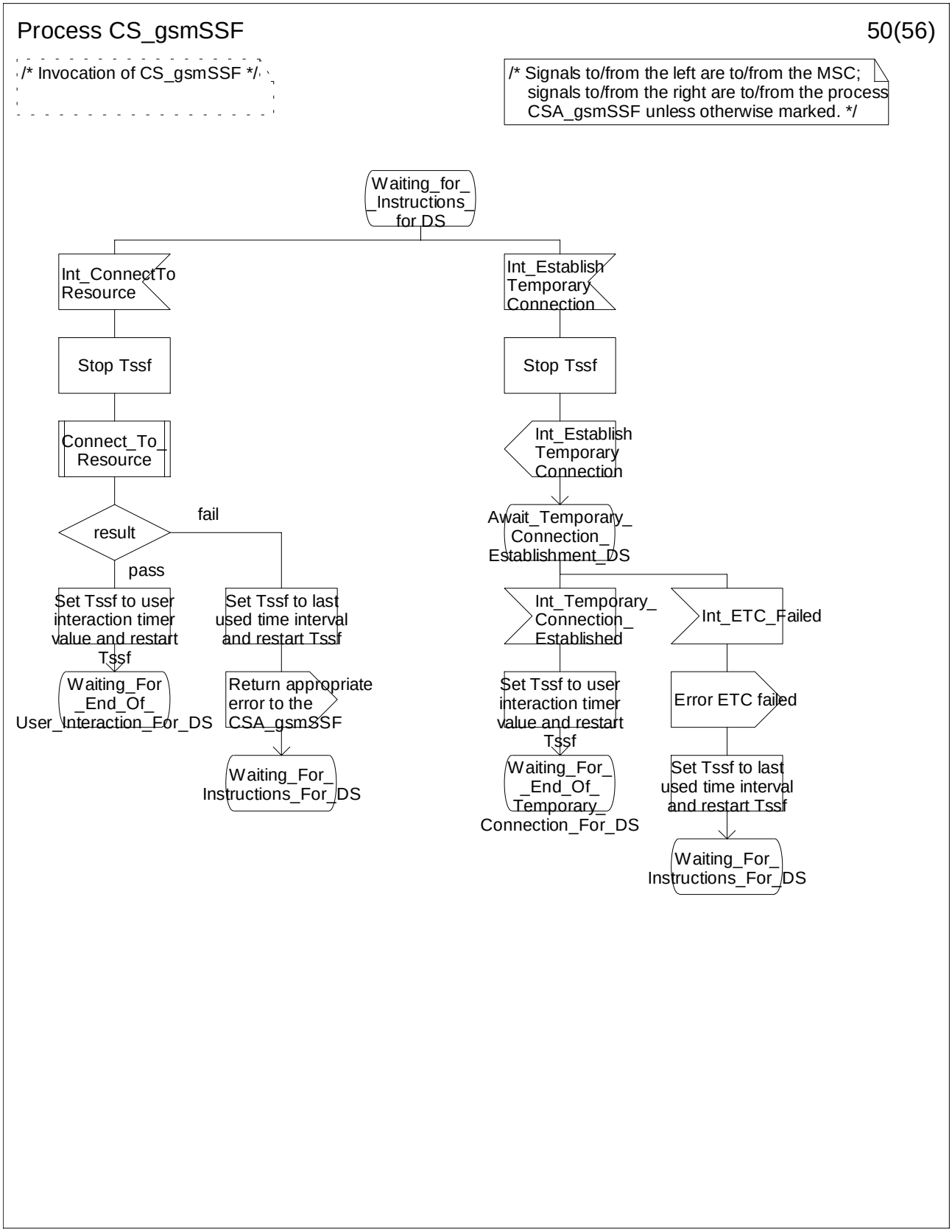


Figure 4.95xx: Process CS_gsmSSF (sheet 50)

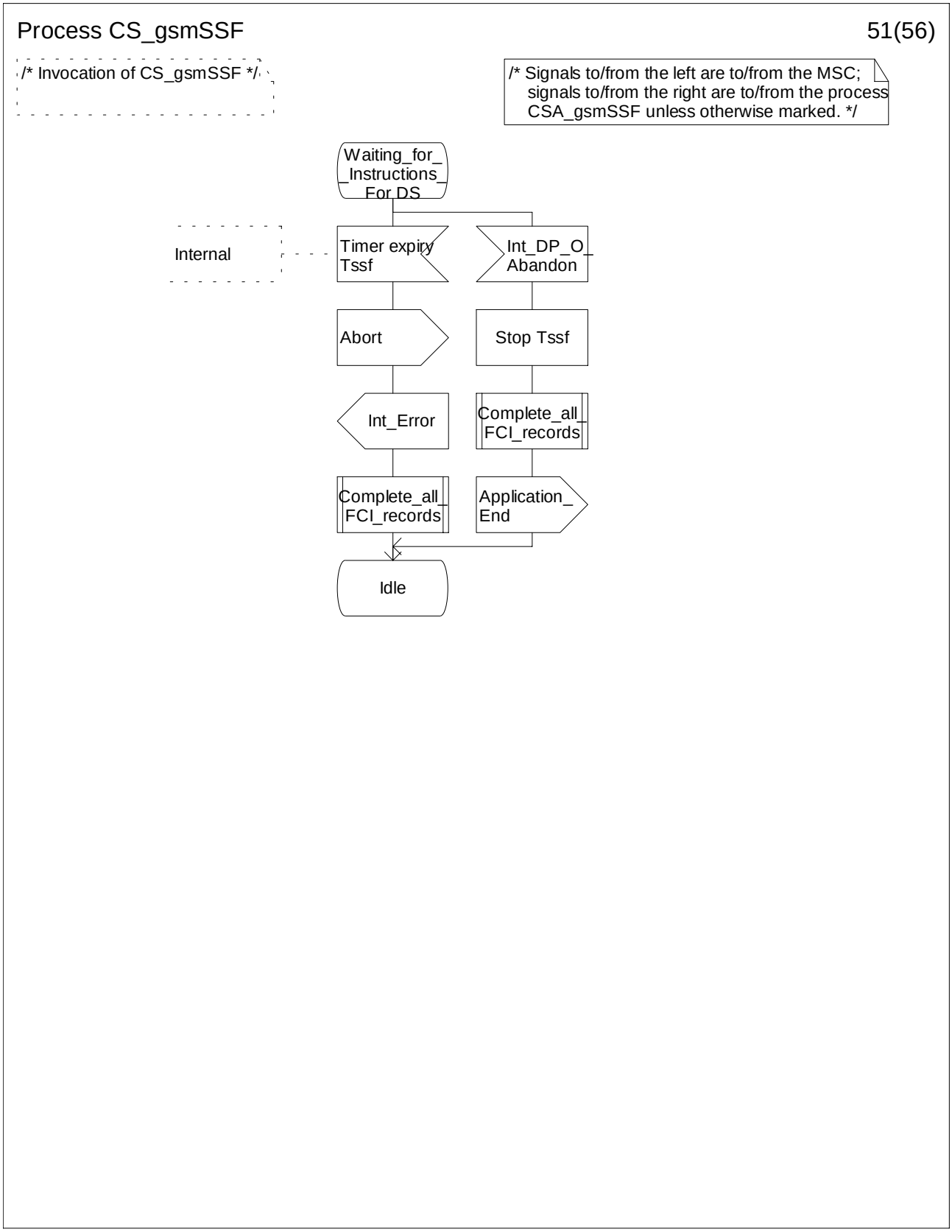


Figure 4.95yy: Process CS_gsmSSF (sheet 51)

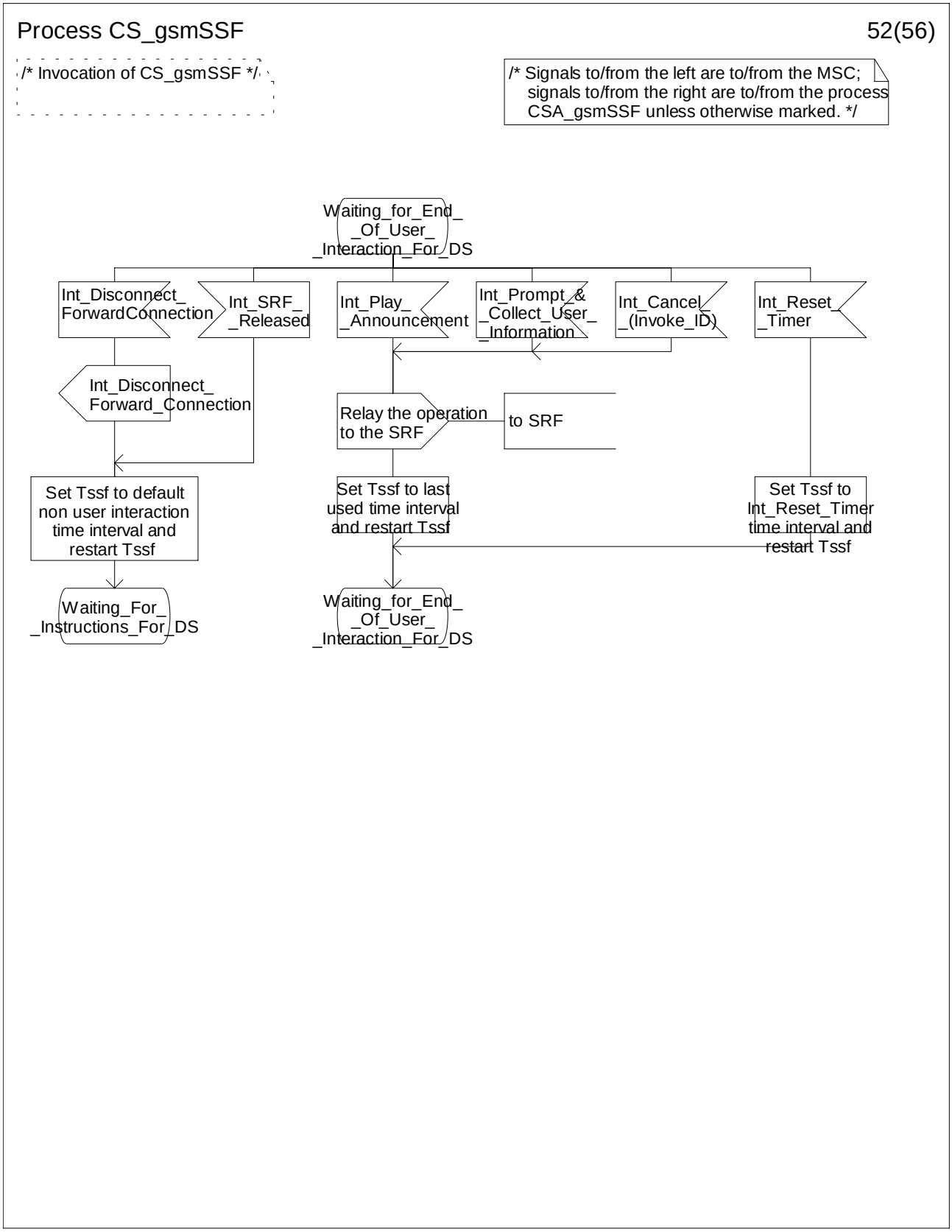


Figure 4.95zz: Process CS_gsmSSF (sheet 52)

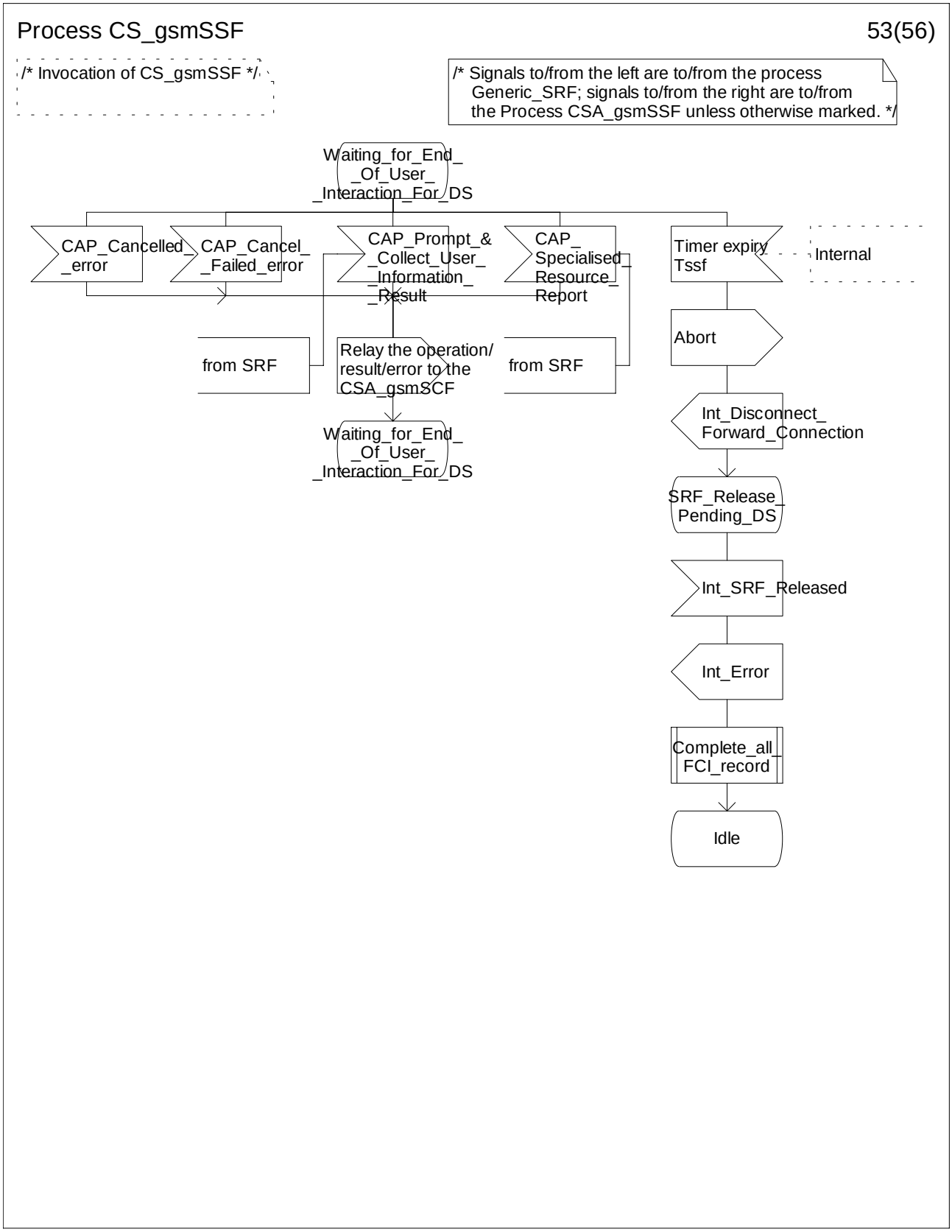


Figure 4.95aaa: Process CS_gsmSSF (sheet 53)

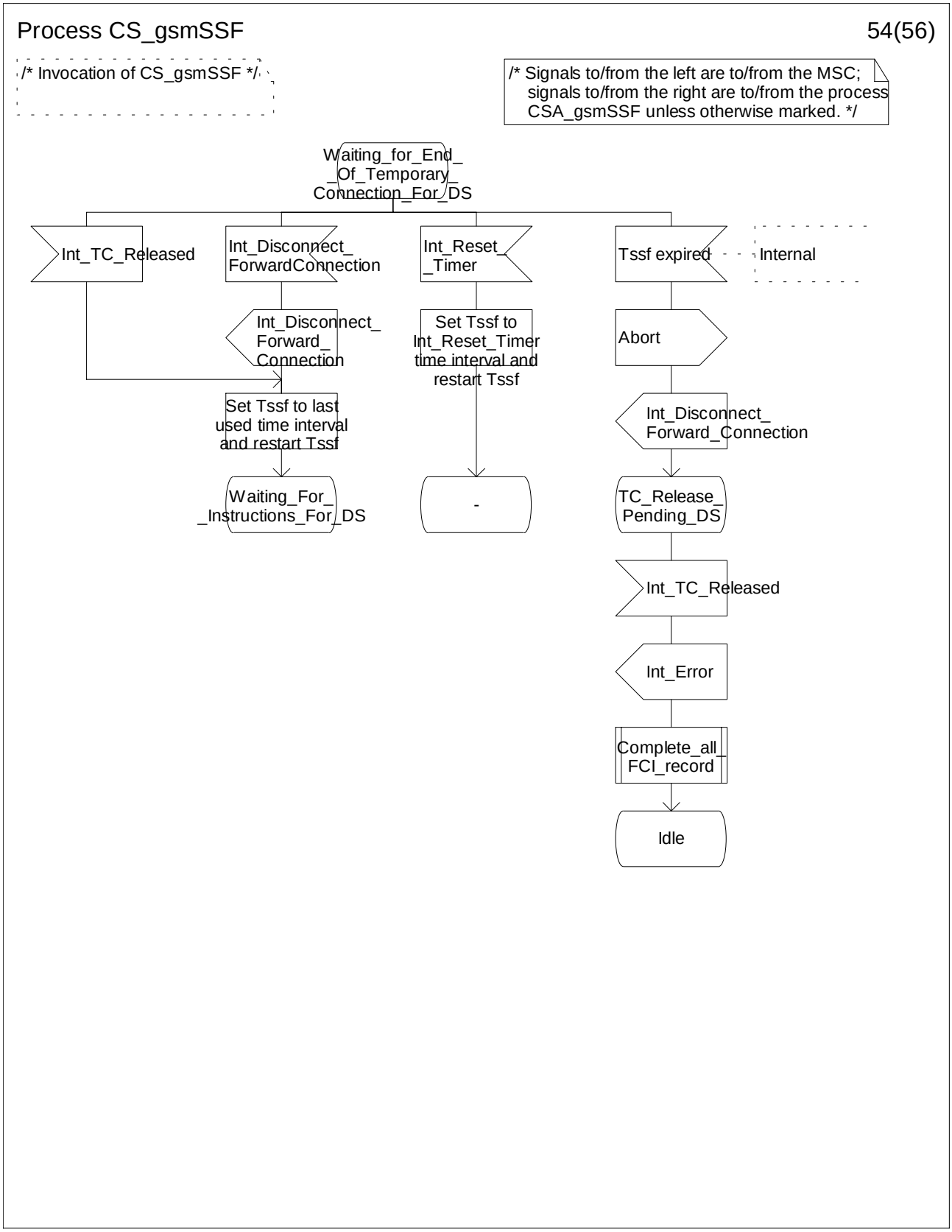


Figure 4.95bbb: Process CS_gsmSSF (sheet 54)

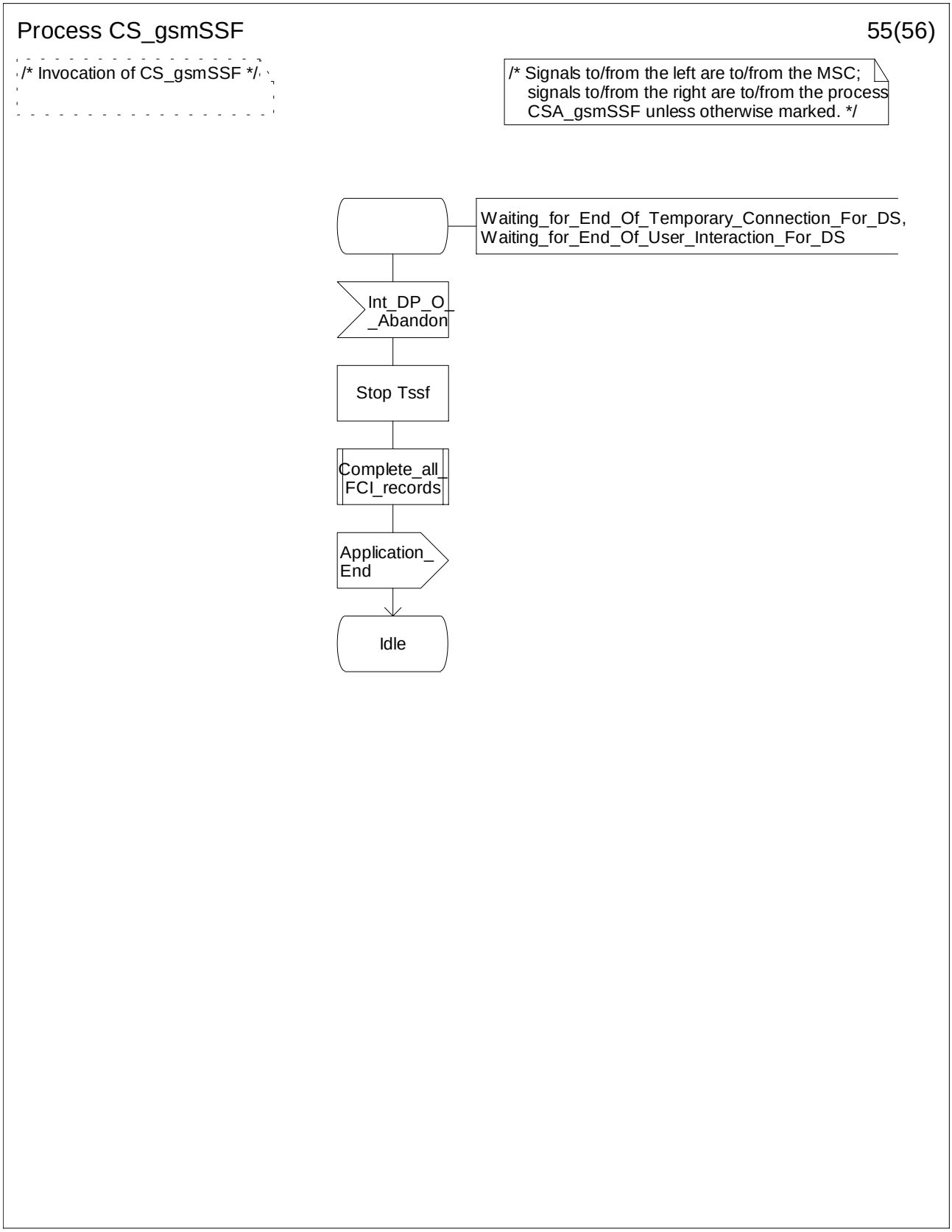


Figure 4.95ccc: Process CS_gsmSSF (sheet 55)

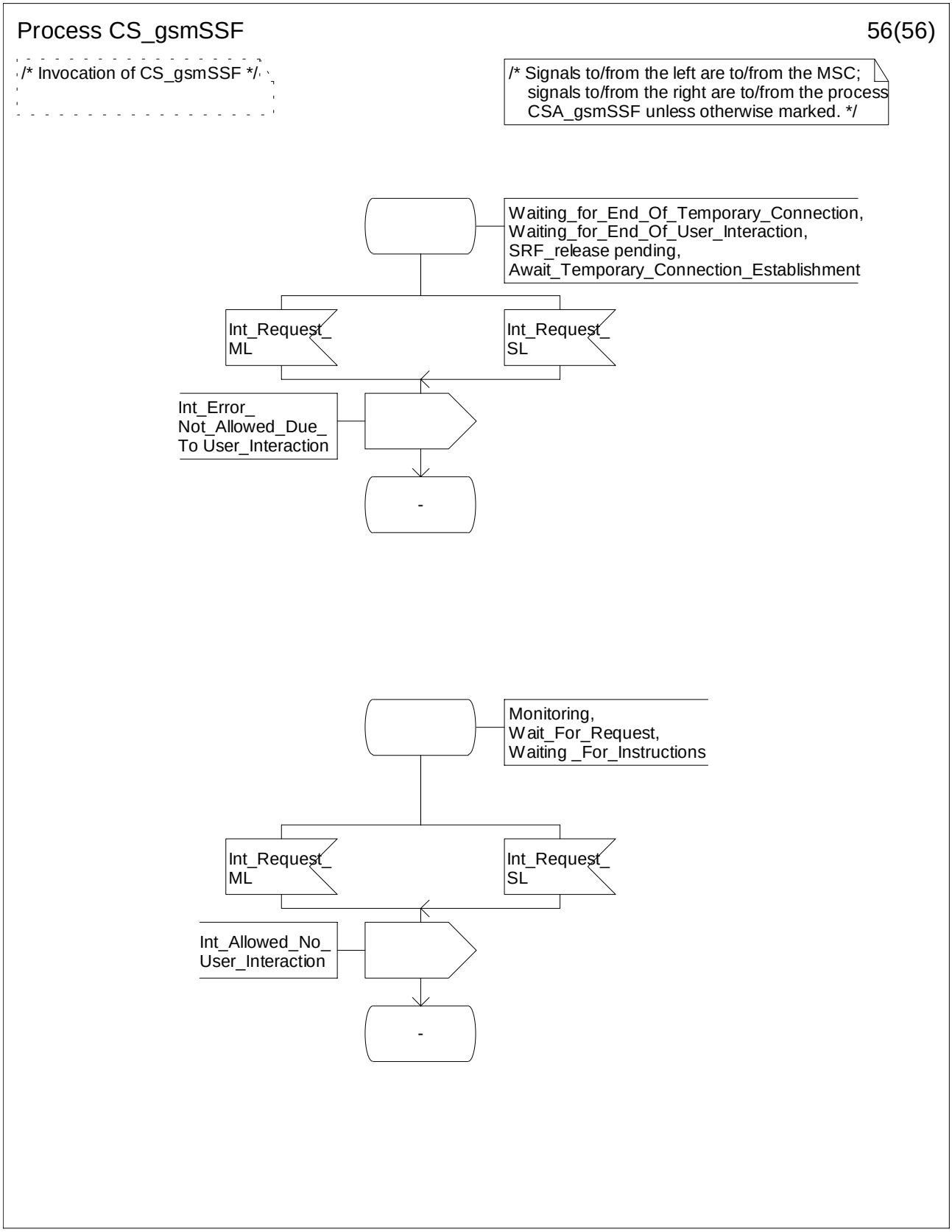


Figure 4.95ddd: Process CS_gsmSSF (sheet 56)

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

4.5.7.6 Process CSA_gsmSSF and procedures

The call gap information flow can only be received for an opened transaction between the CSA_gsmSSF and the gsmSCF.

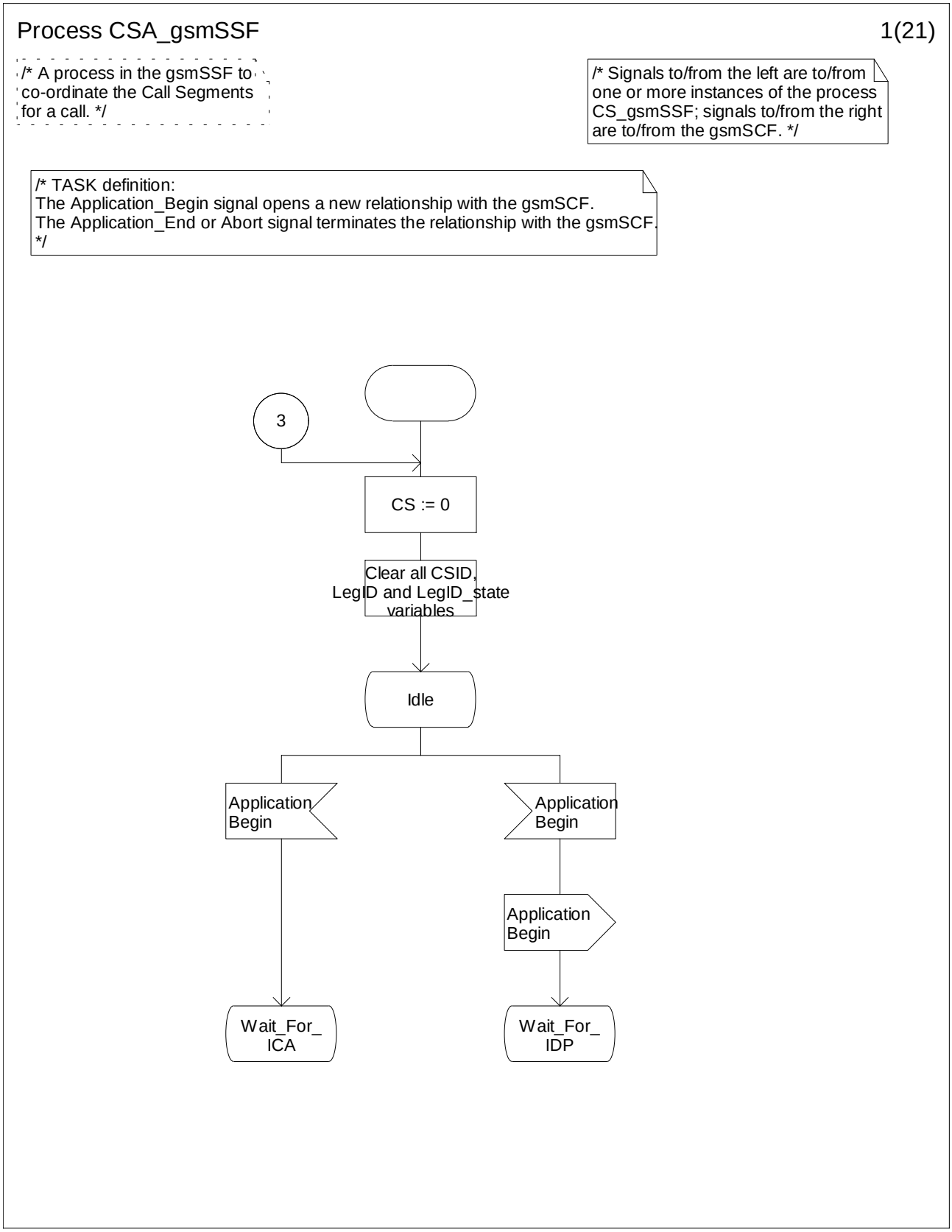


Figure 4.112a: Process CSA_gsmSSF (sheet 1)

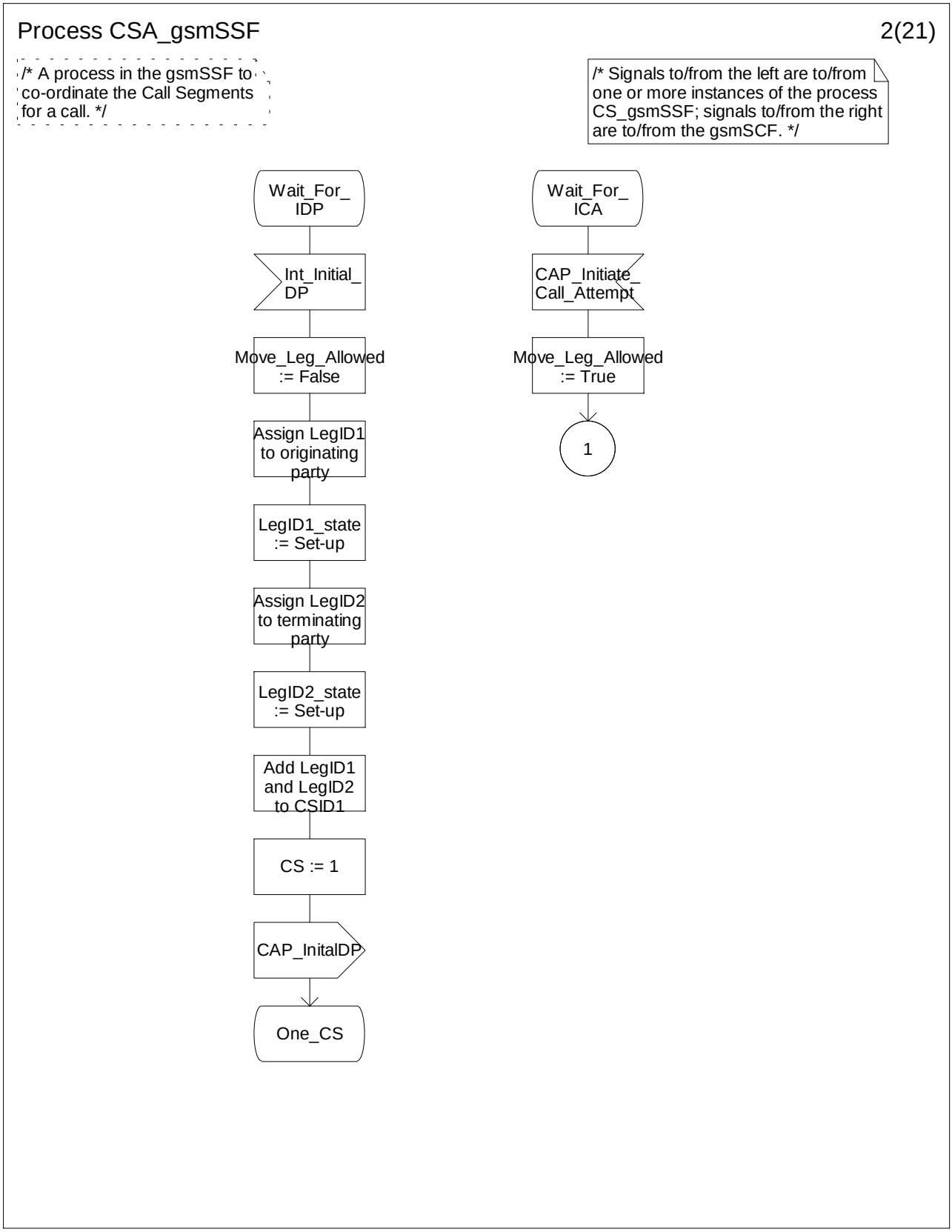


Figure 4.112b: Process CSA_gsmSSF (sheet 2)

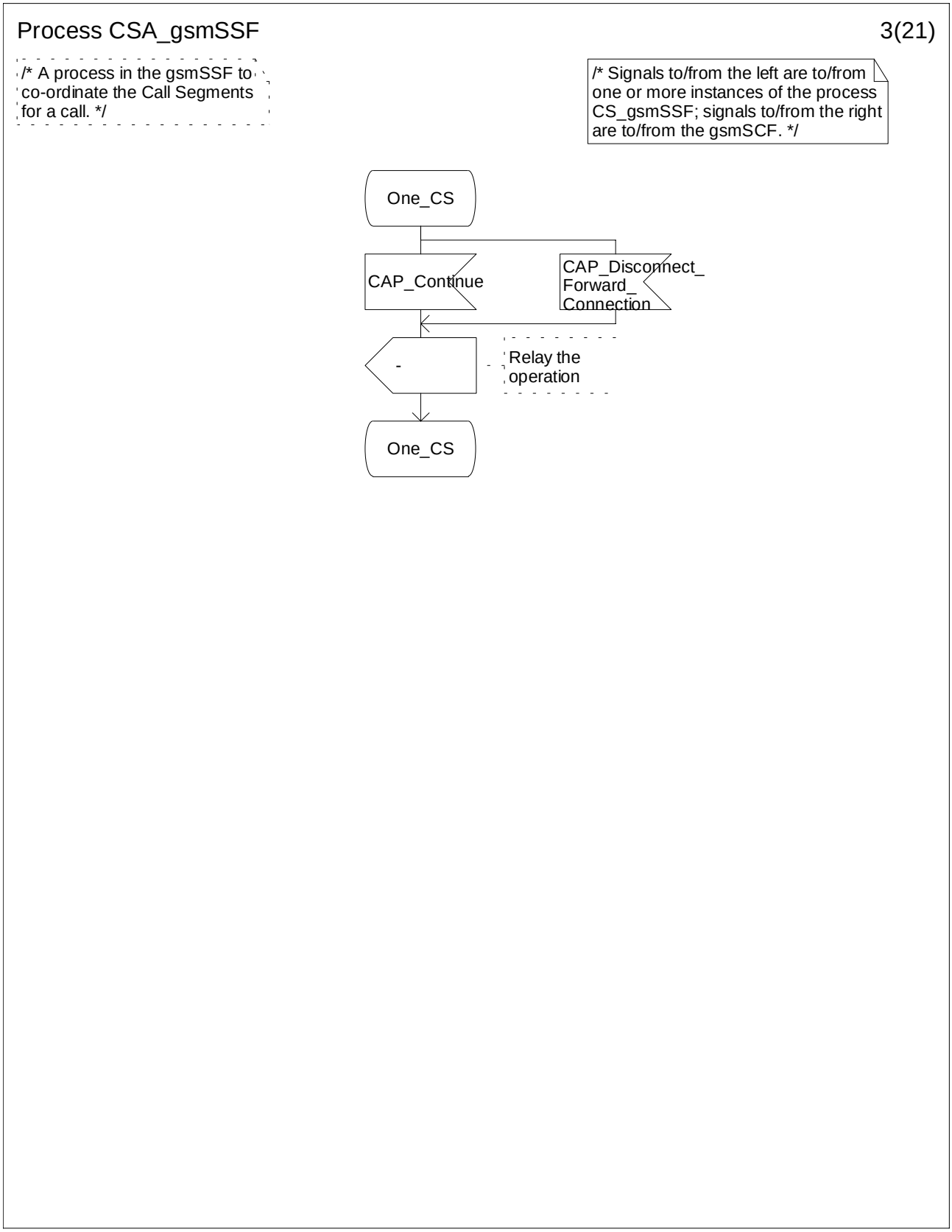


Figure 4.112c: Process CSA_gsmSSF (sheet 3)

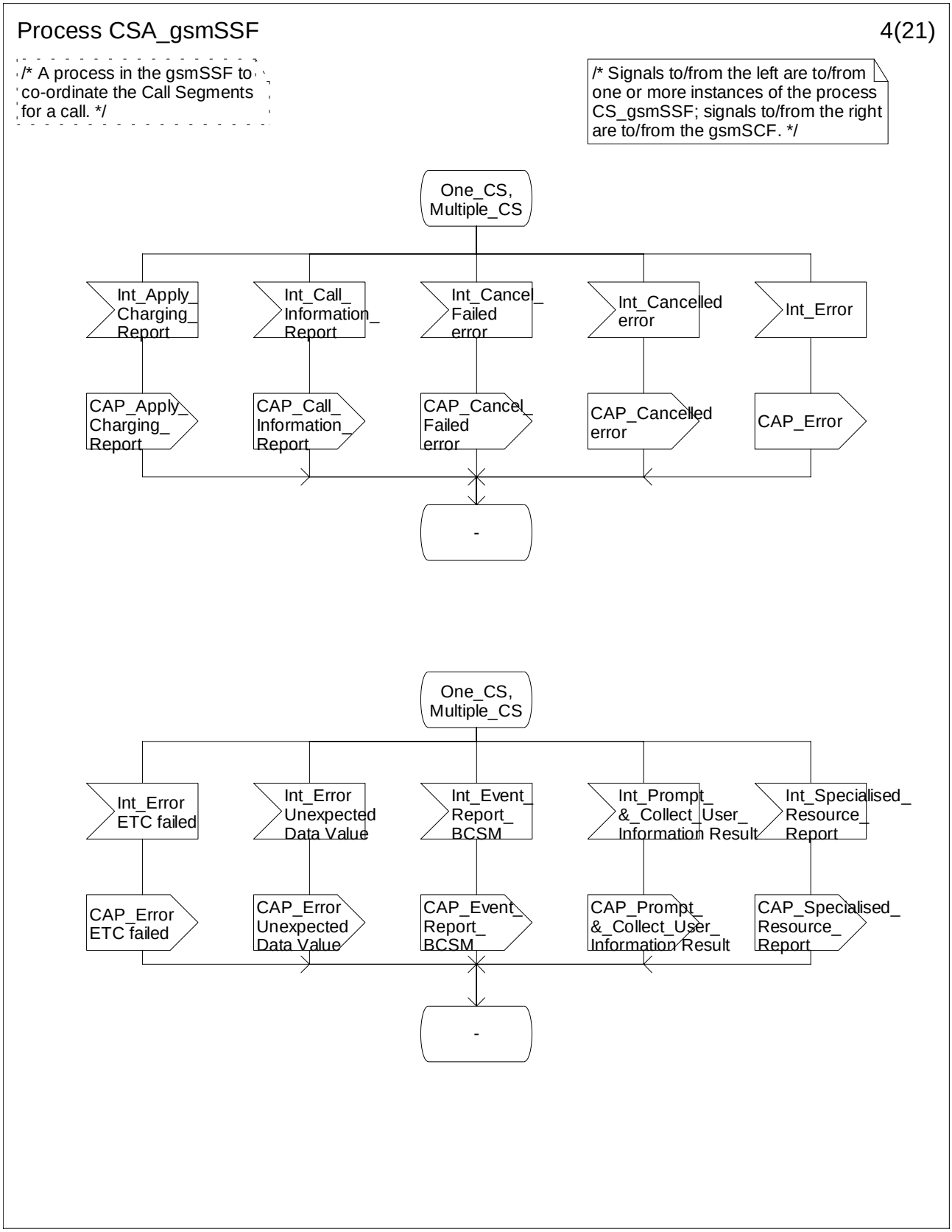


Figure 4.112d: Process CSA_gsmSSF (sheet 4)

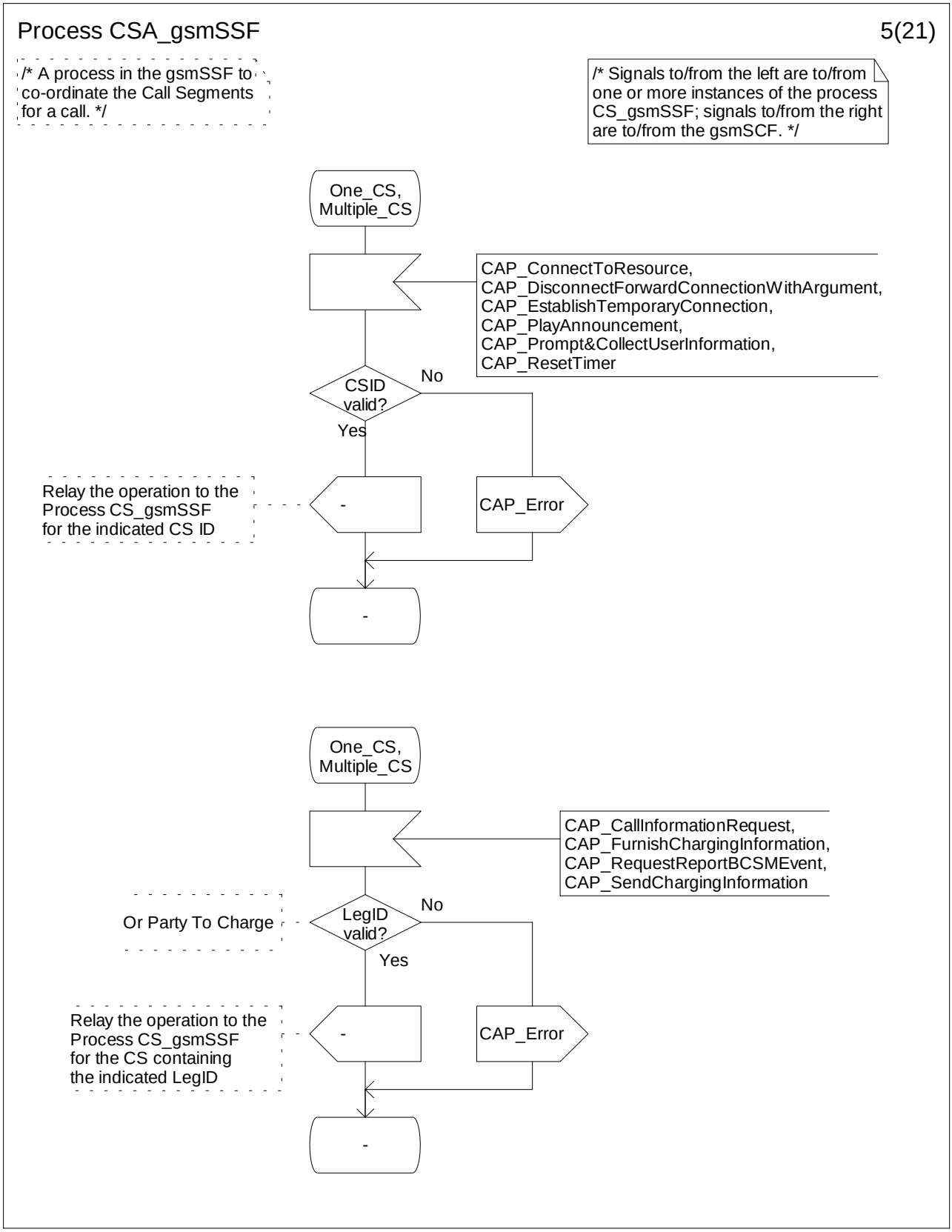


Figure 4.112e: Process CSA_gsmSSF (sheet 5)

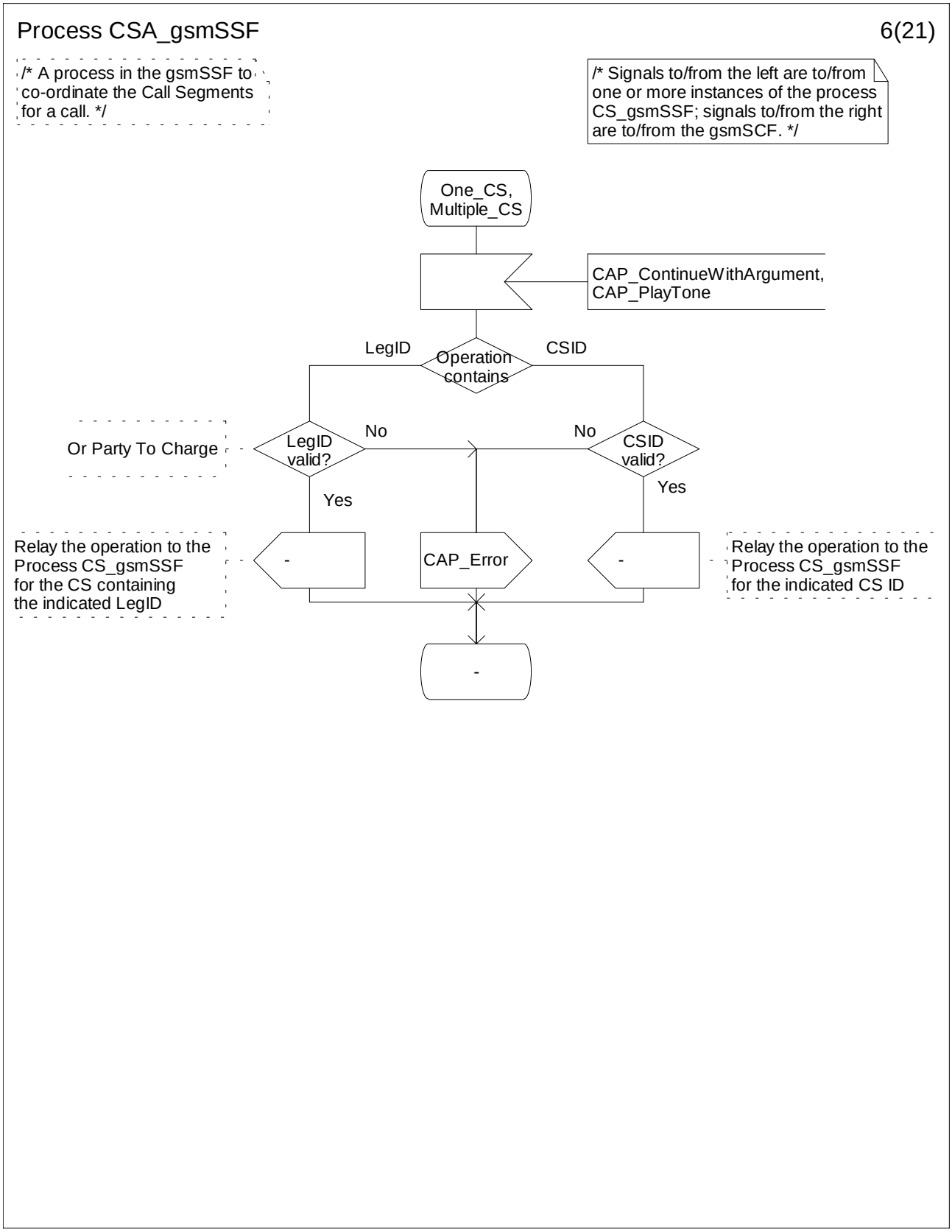


Figure 4.112f: Process CSA_gsmSSF (sheet 6)

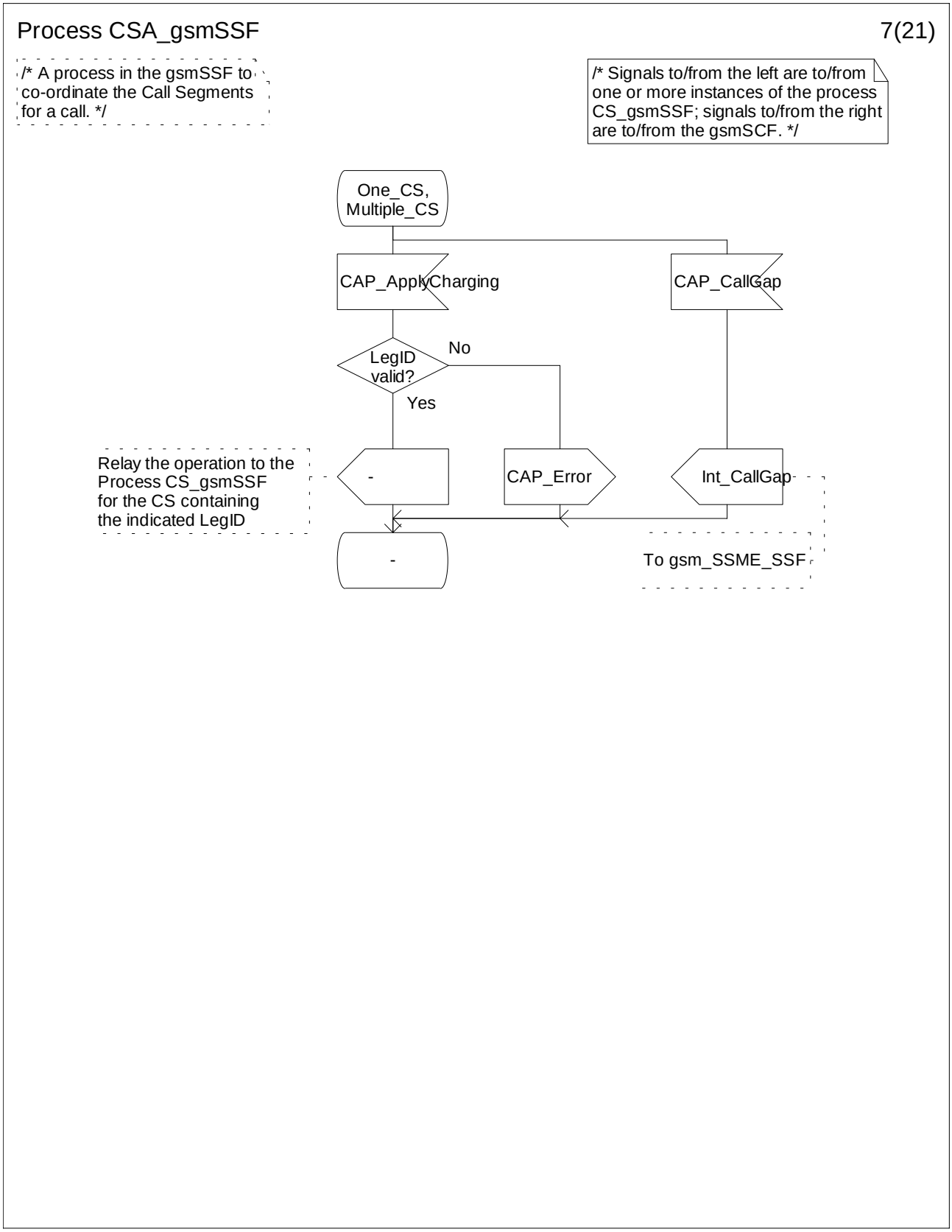


Figure 4.112g: Process CSA_gsmSSF (sheet 7)

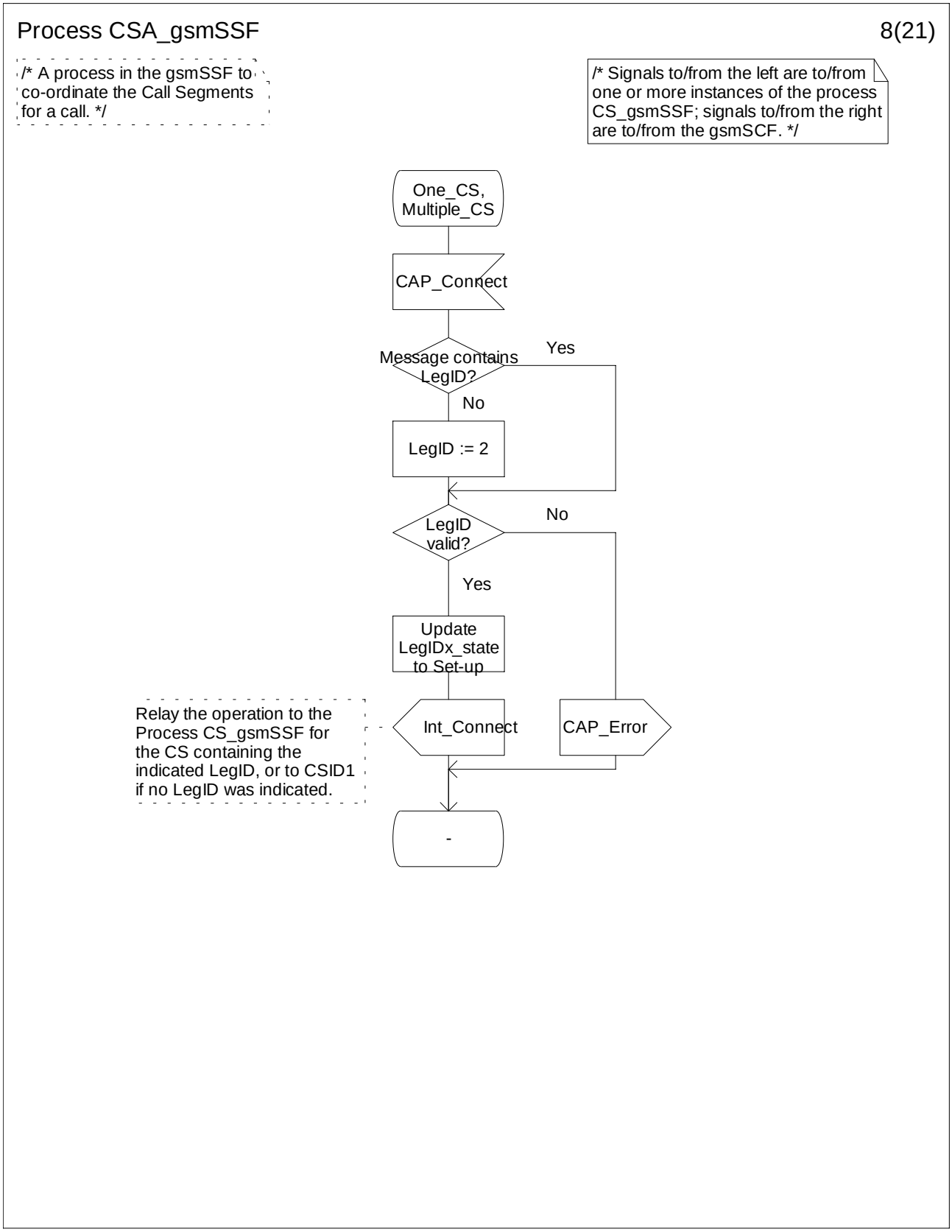


Figure 4.112h: Process CSA_gsmSSF (sheet 8)

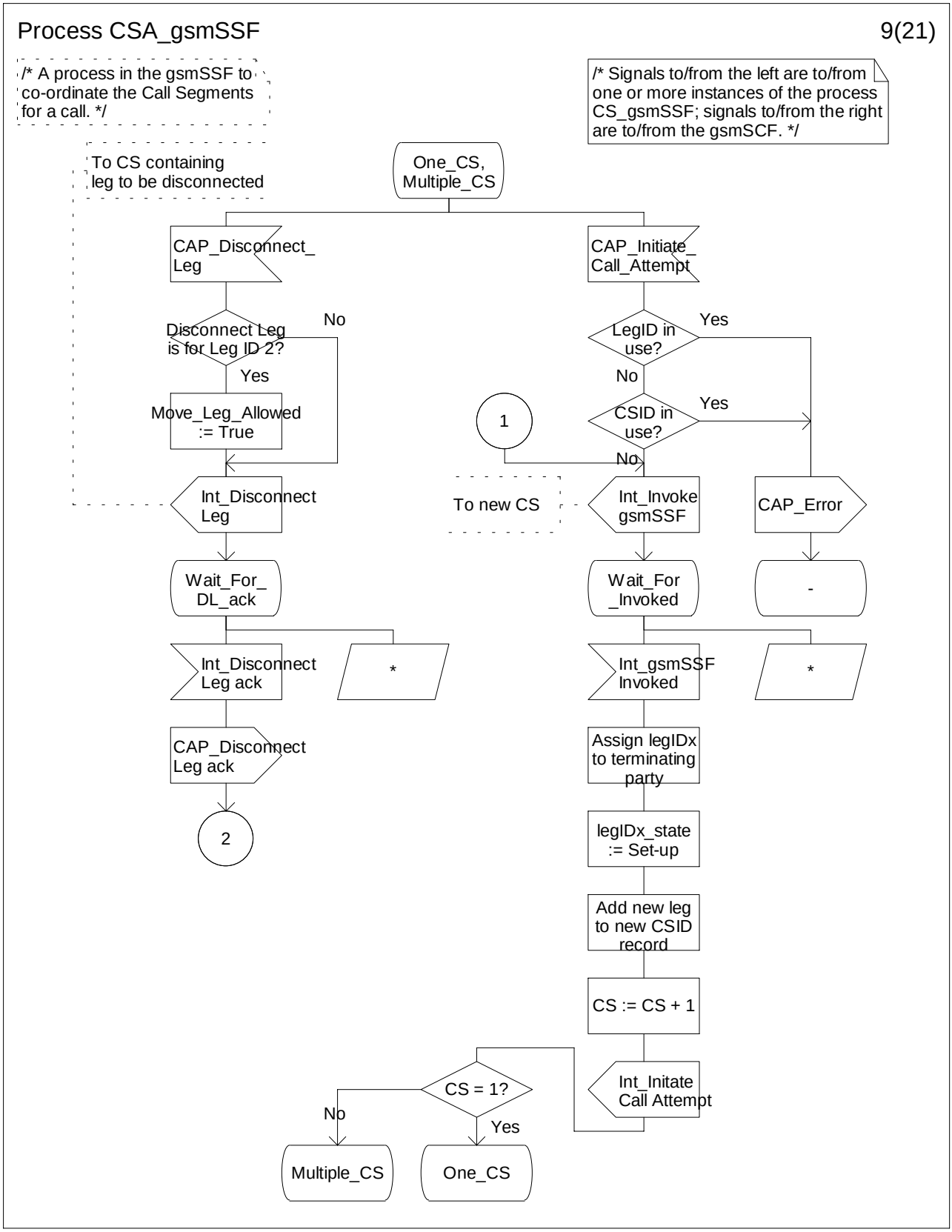


Figure 4.112i: Process CSA_gsmSSF (sheet 9)

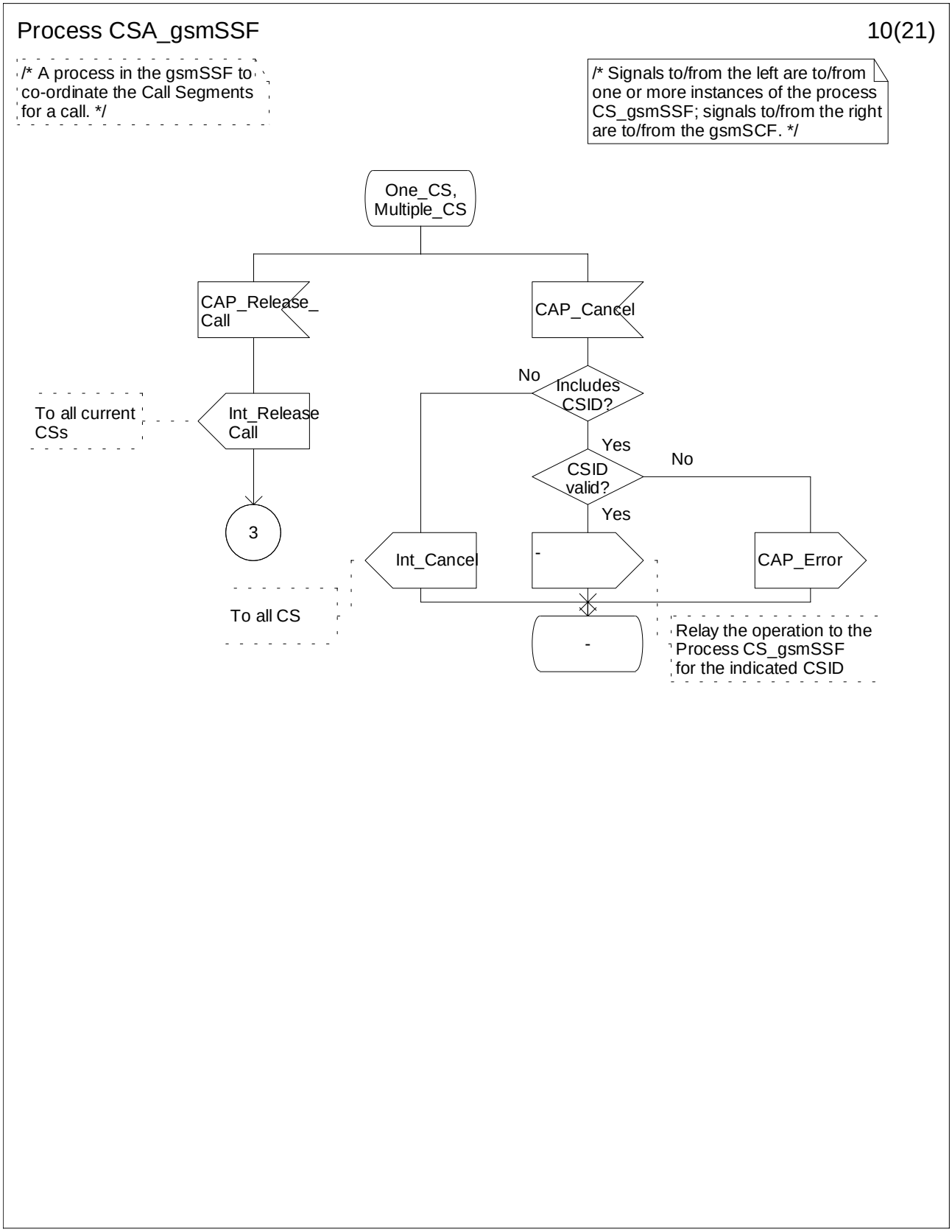


Figure 4.112j: Process CSA_gsmSSF (sheet 10)

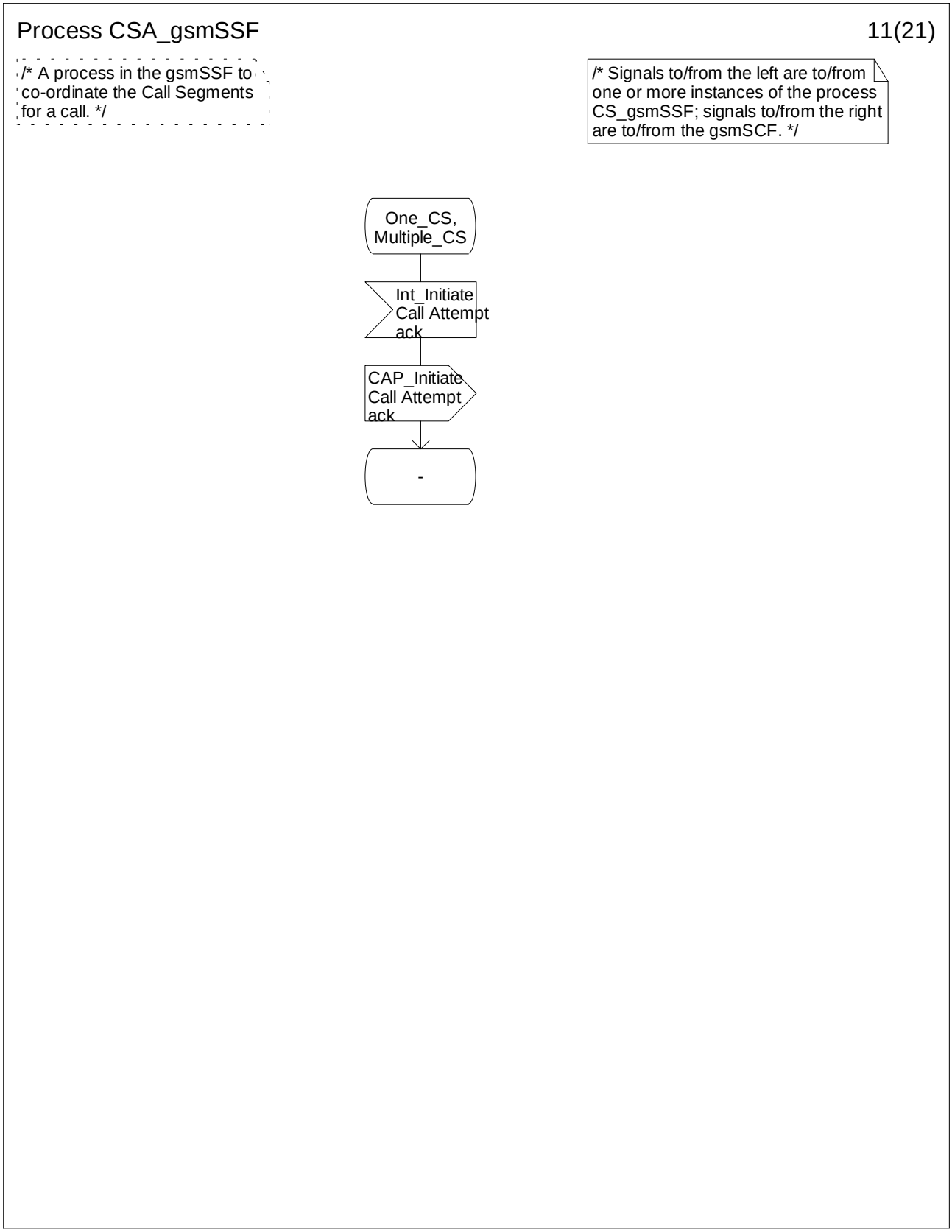
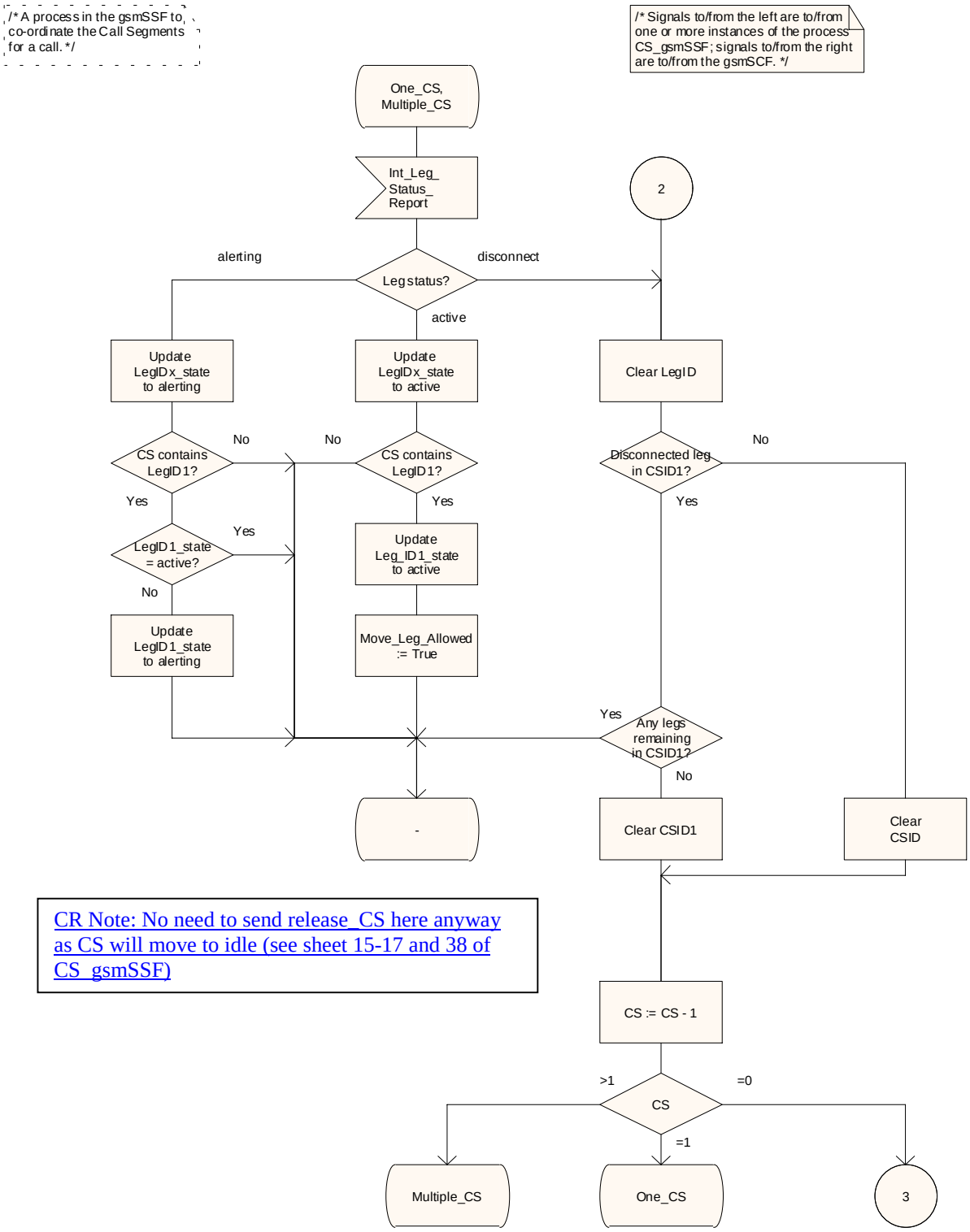


Figure 4.112k: Process CSA_gsmSSF (sheet 11)

Process CSA_gsmSSF 12(21)



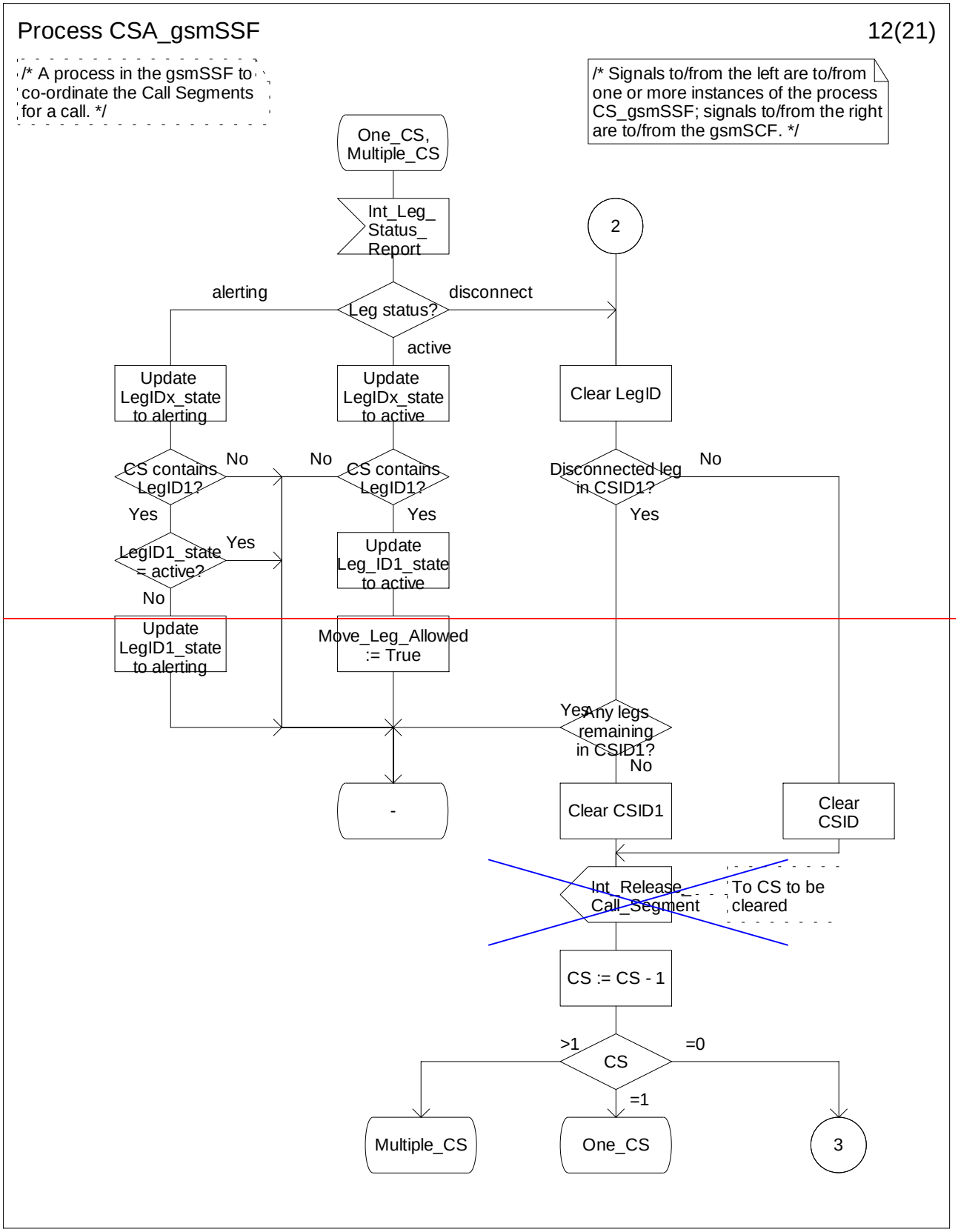


Figure 4.112l: Process CSA_gsmSSF (sheet 12)

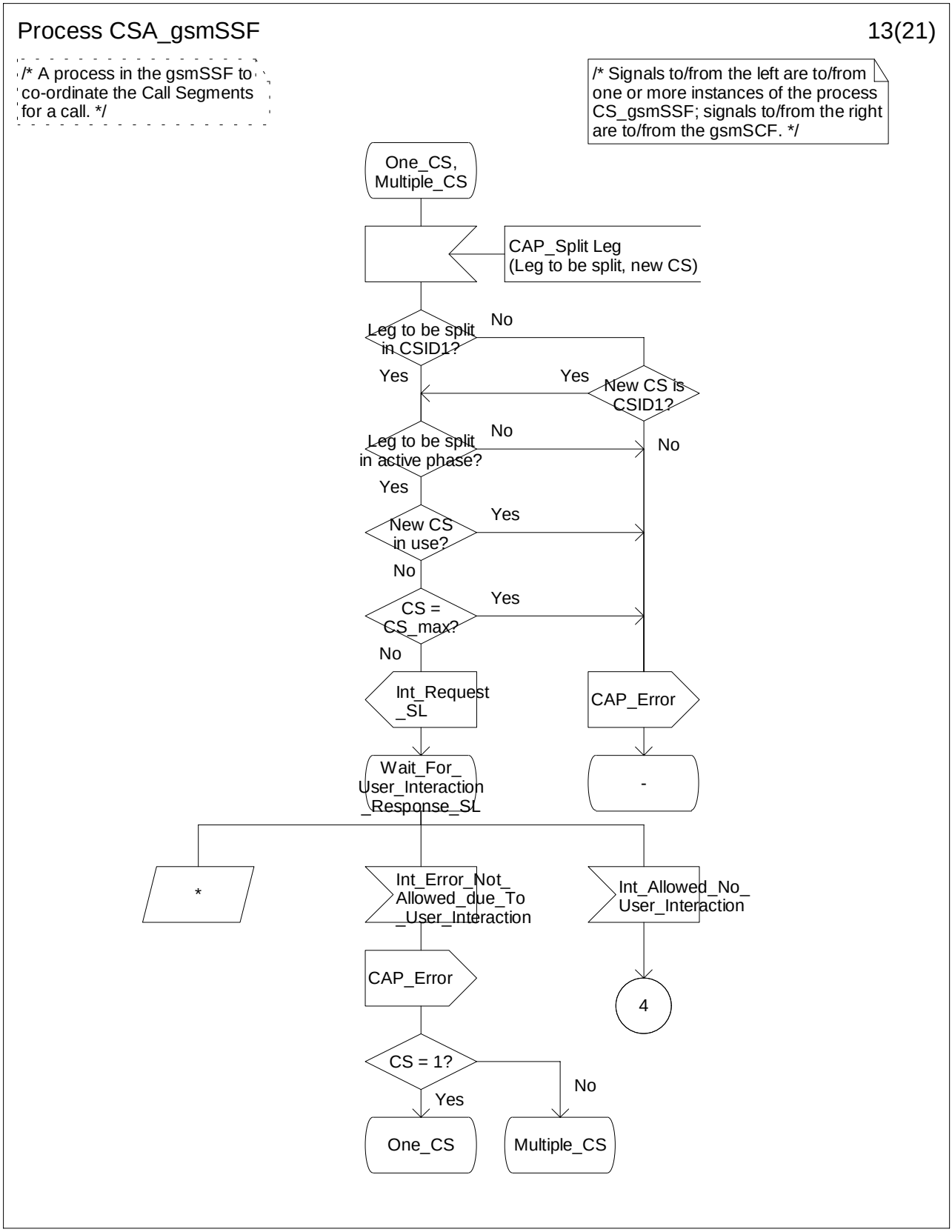


Figure 4.112m: Process CSA_gsmSSF (sheet 13)

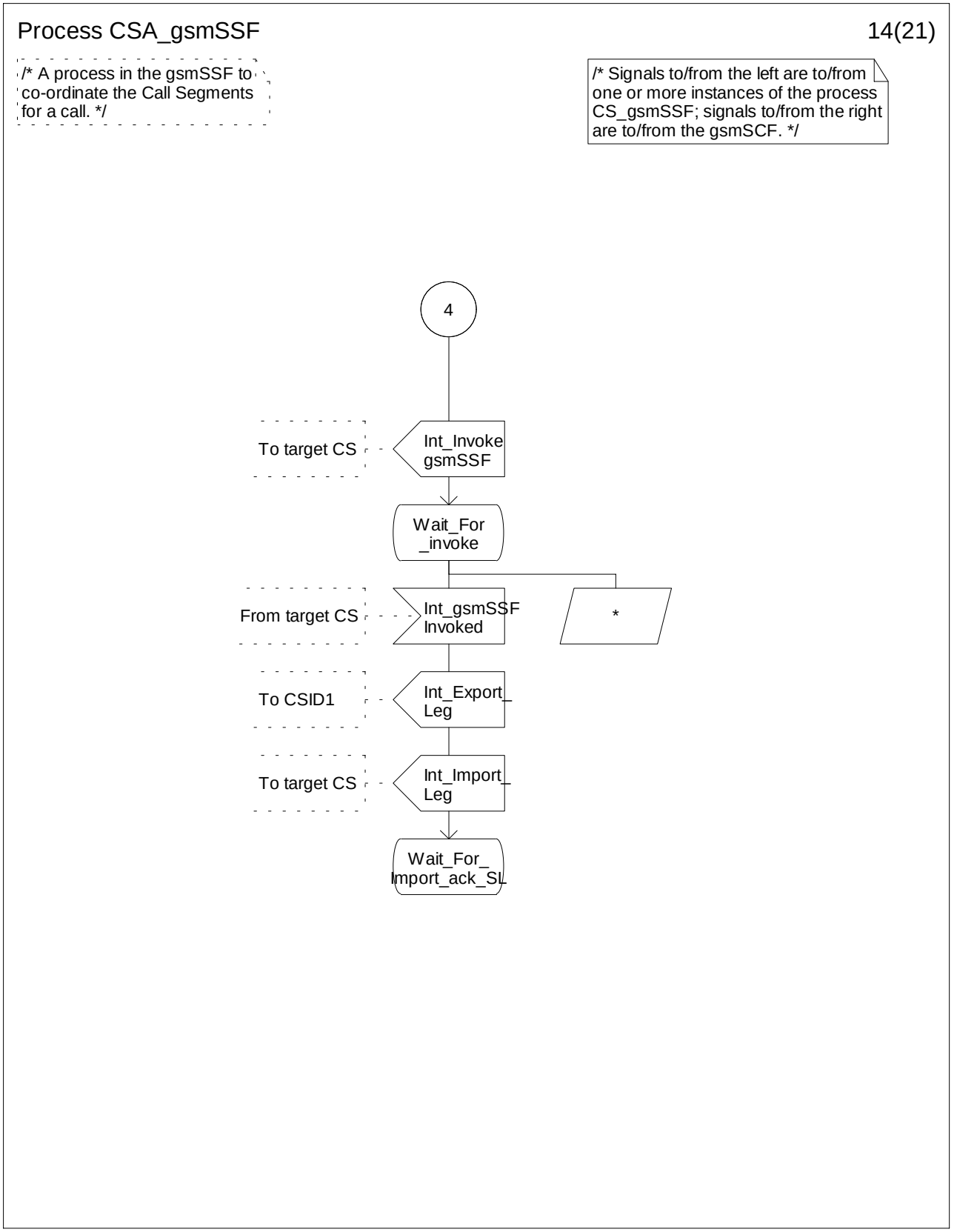


Figure 4.112n: Process CSA_gsmSSF (sheet 14)

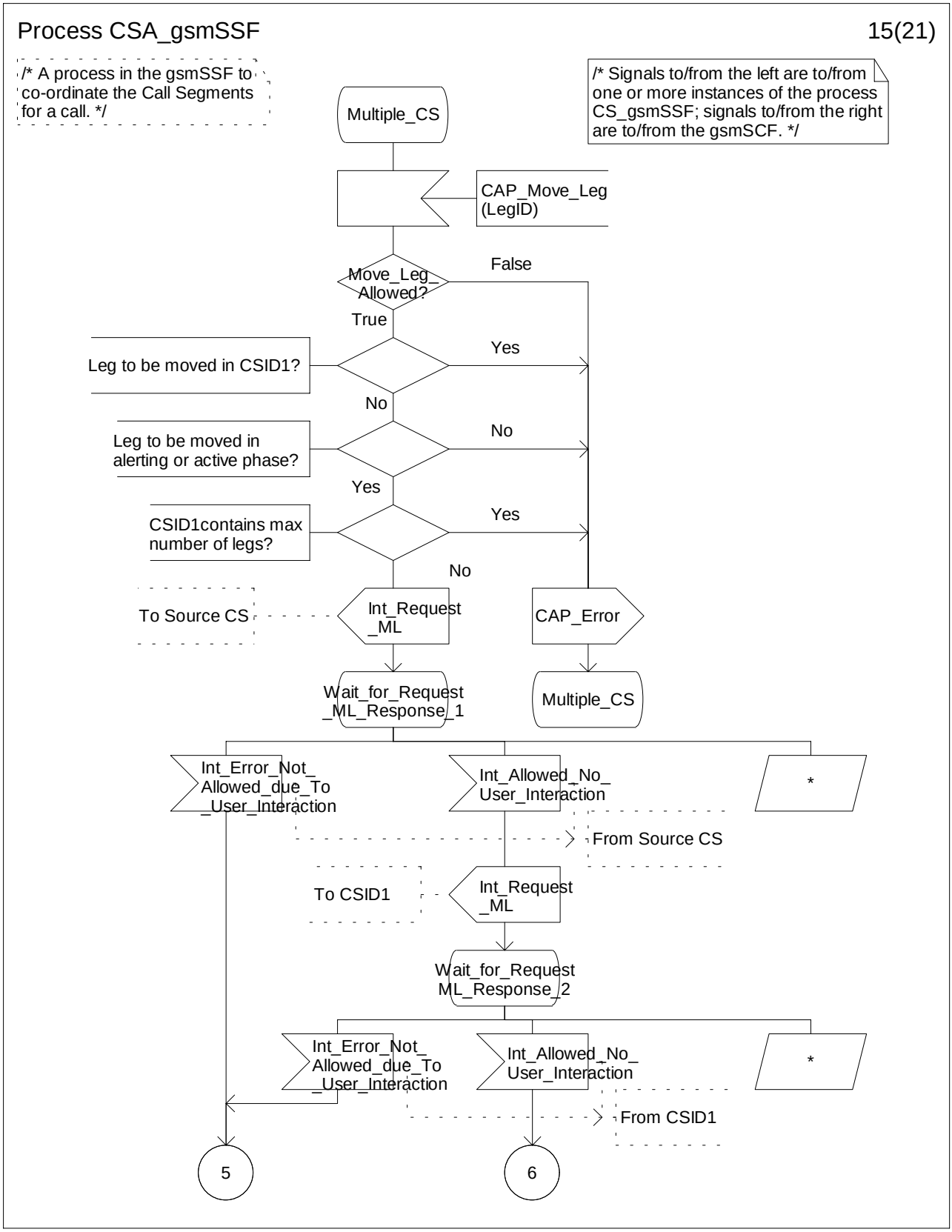


Figure 4.112o: Process CSA_gsmSSF (sheet 15)

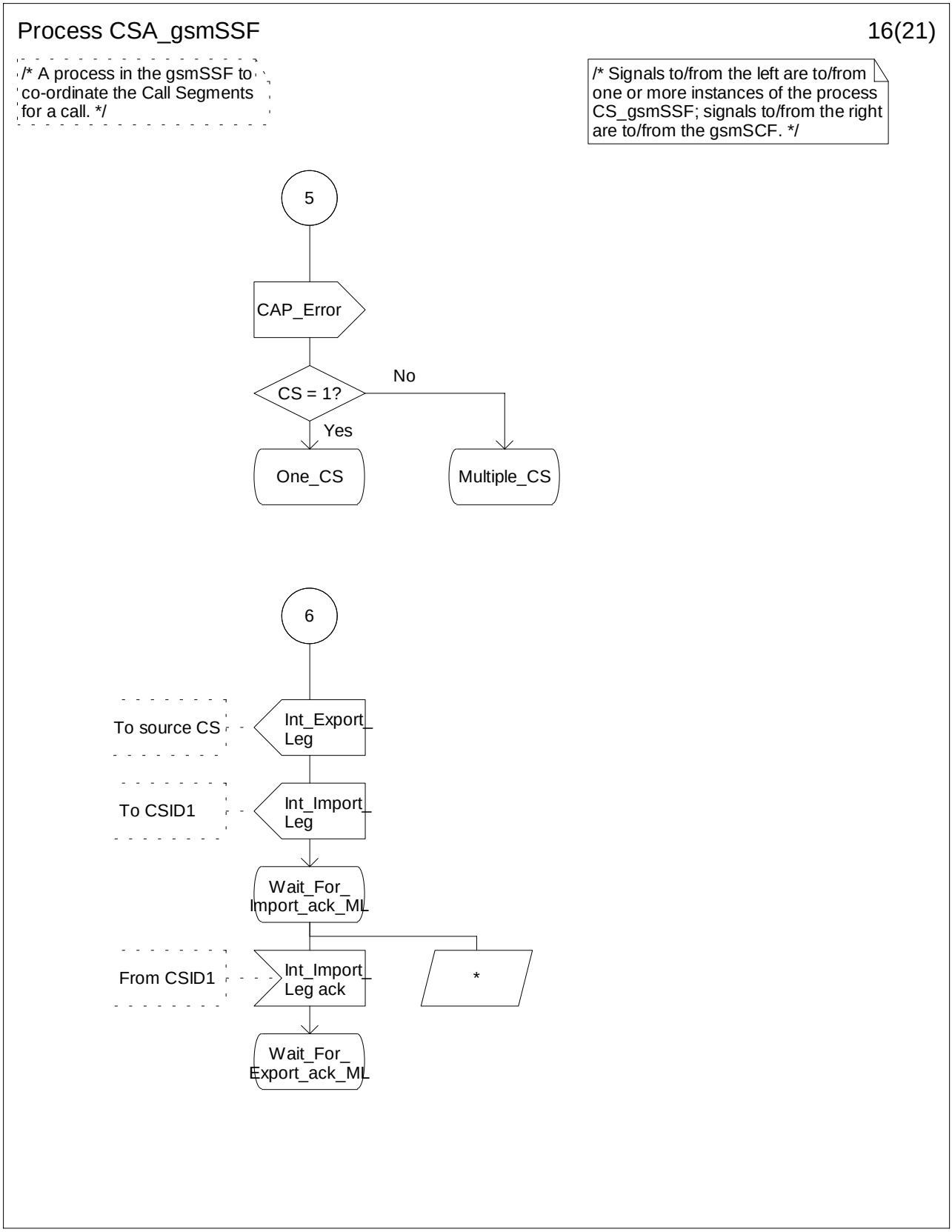


Figure 4.112p: Process CSA_gsmSSF (sheet 16)

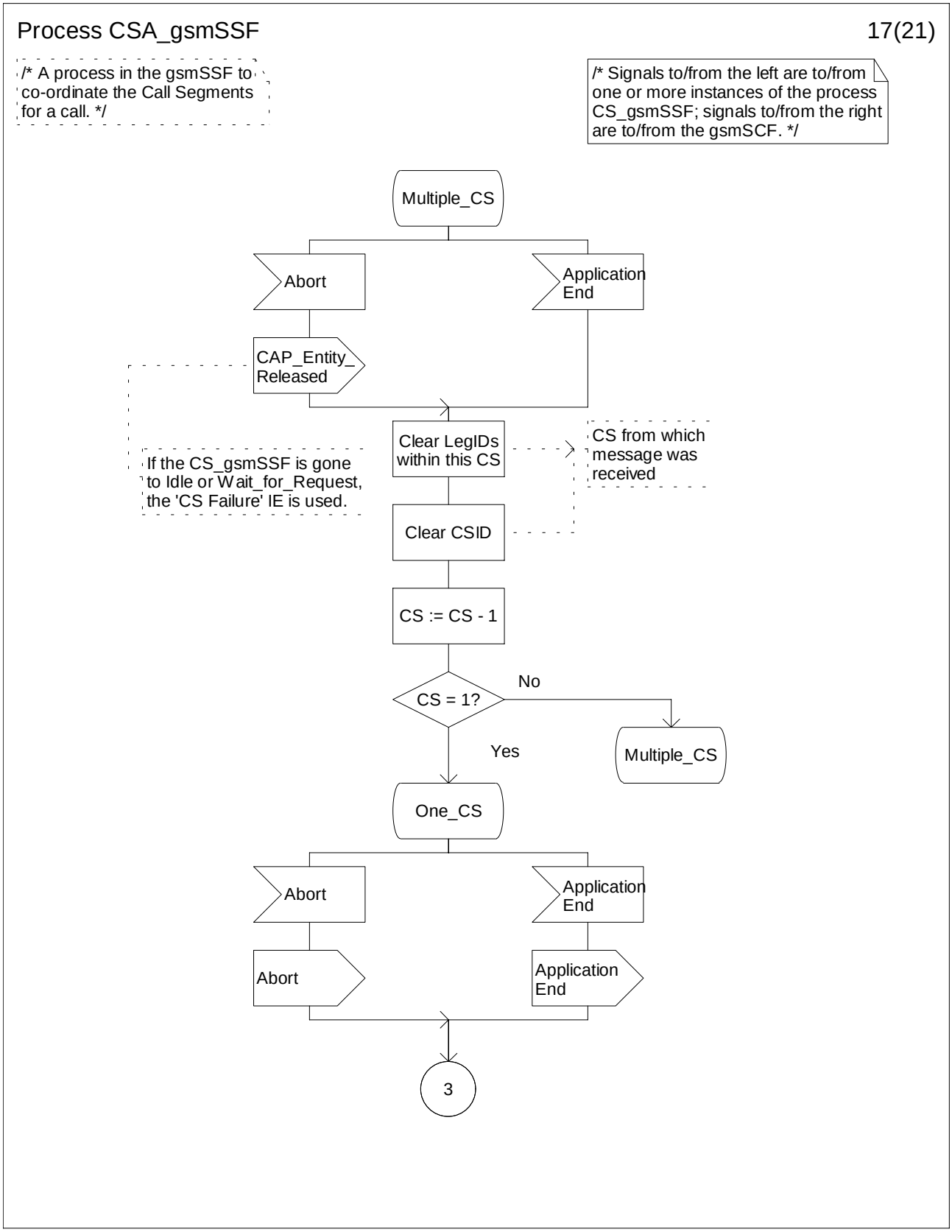
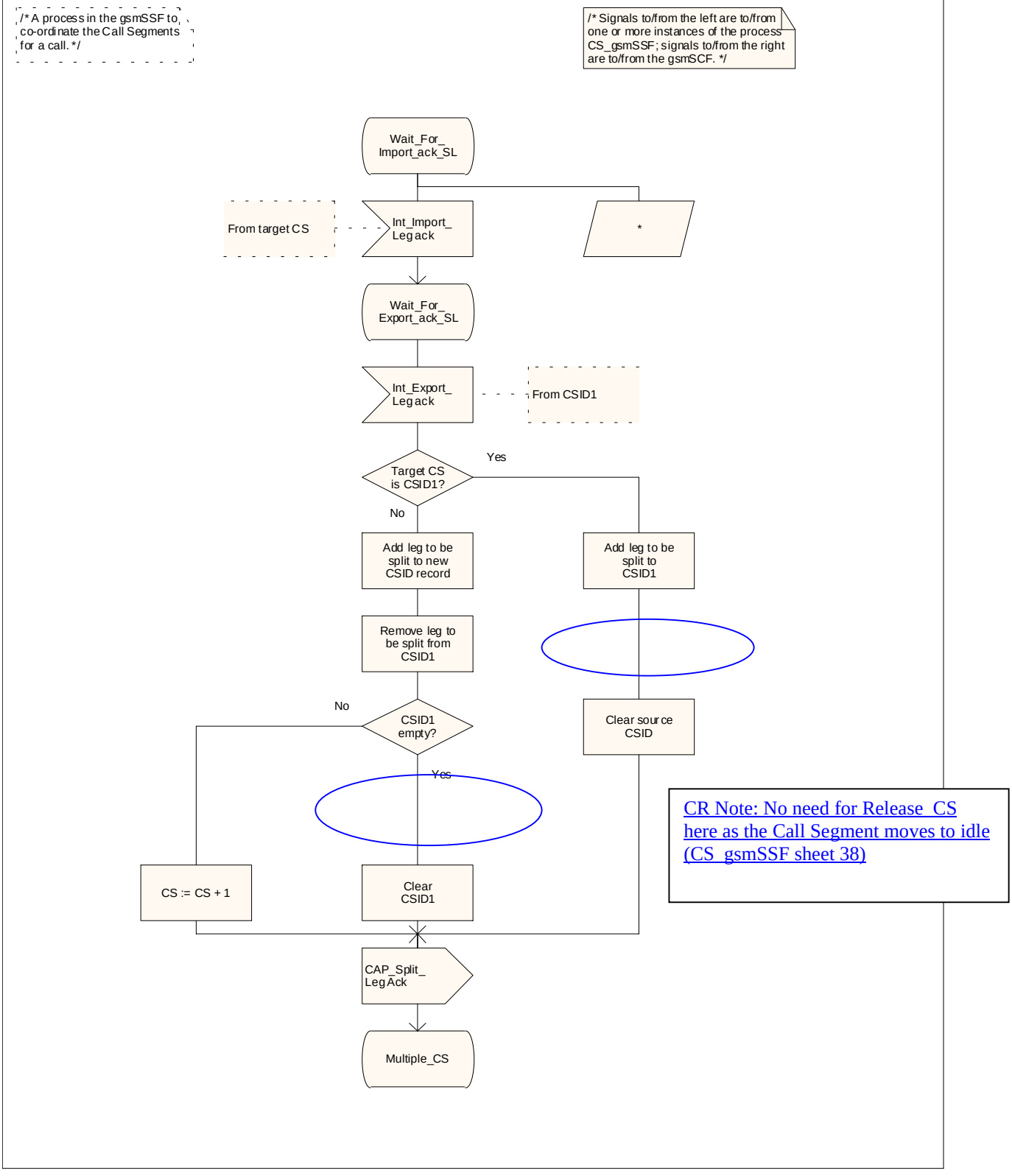


Figure 4.112q: Process CSA_gsmSSF (sheet 17)

Process CSA_gsmSSF 18(21)



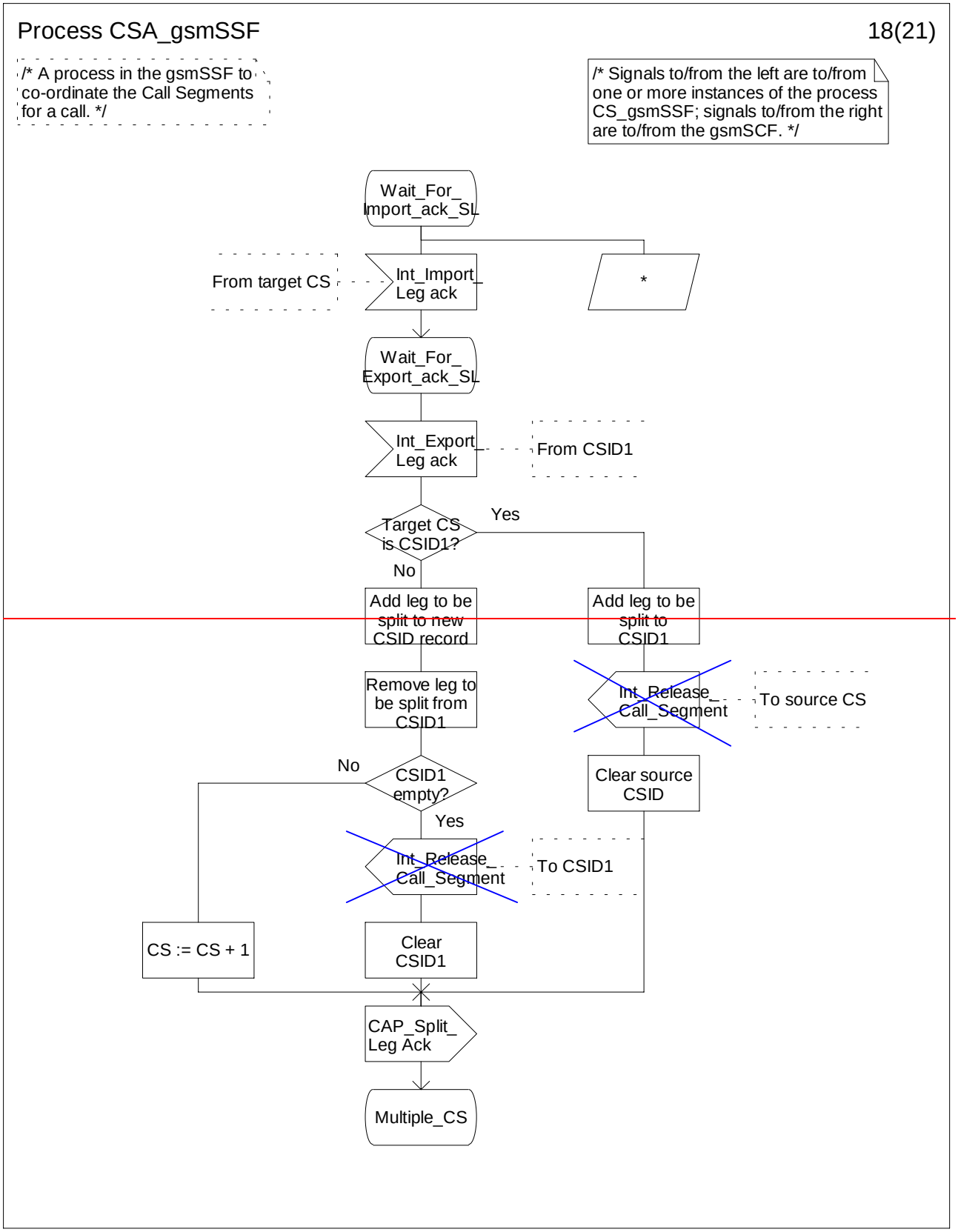
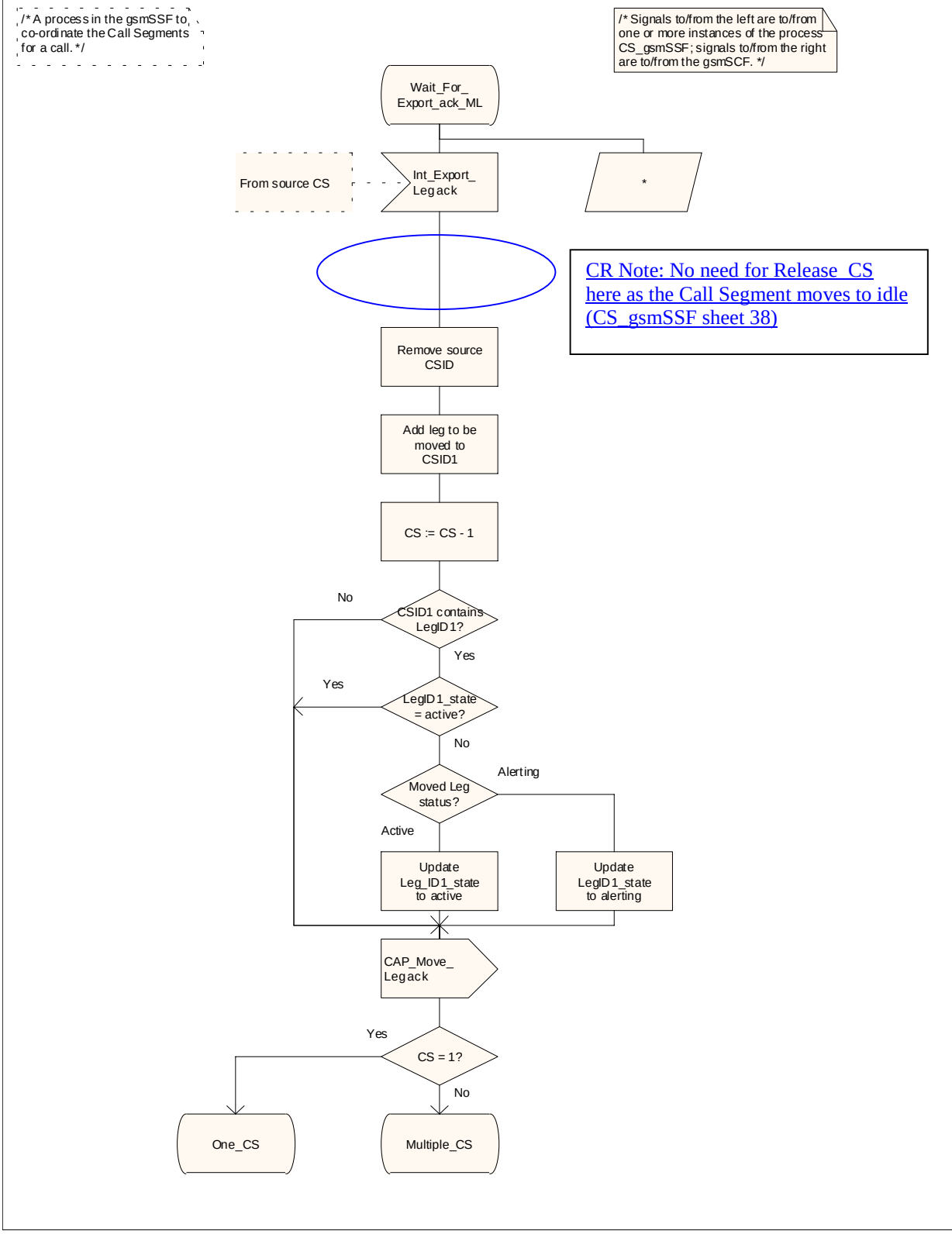


Figure 4.112r: Process CSA_gsmSSF (sheet 18)

Process CSA_gsmSSF 19(21)



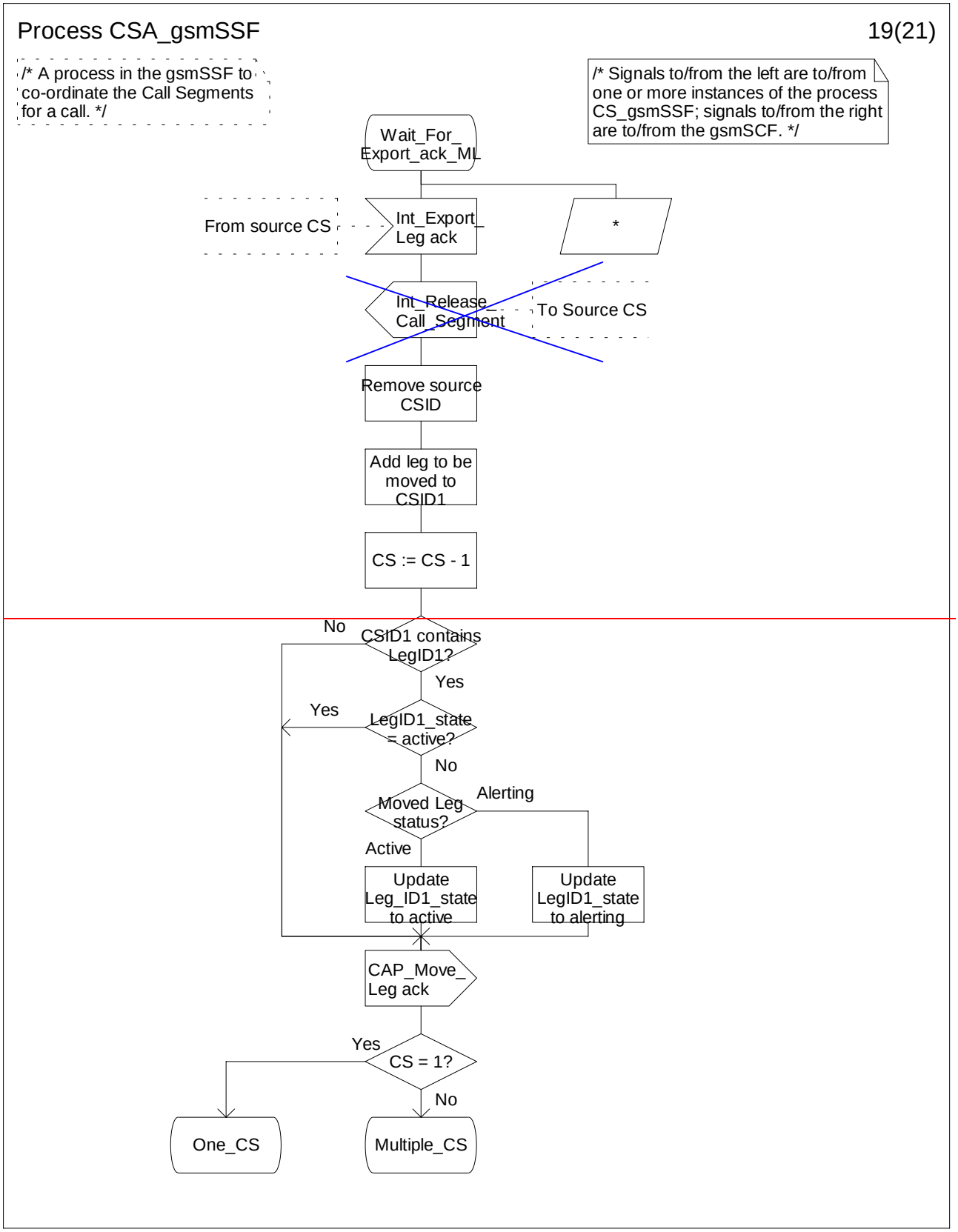
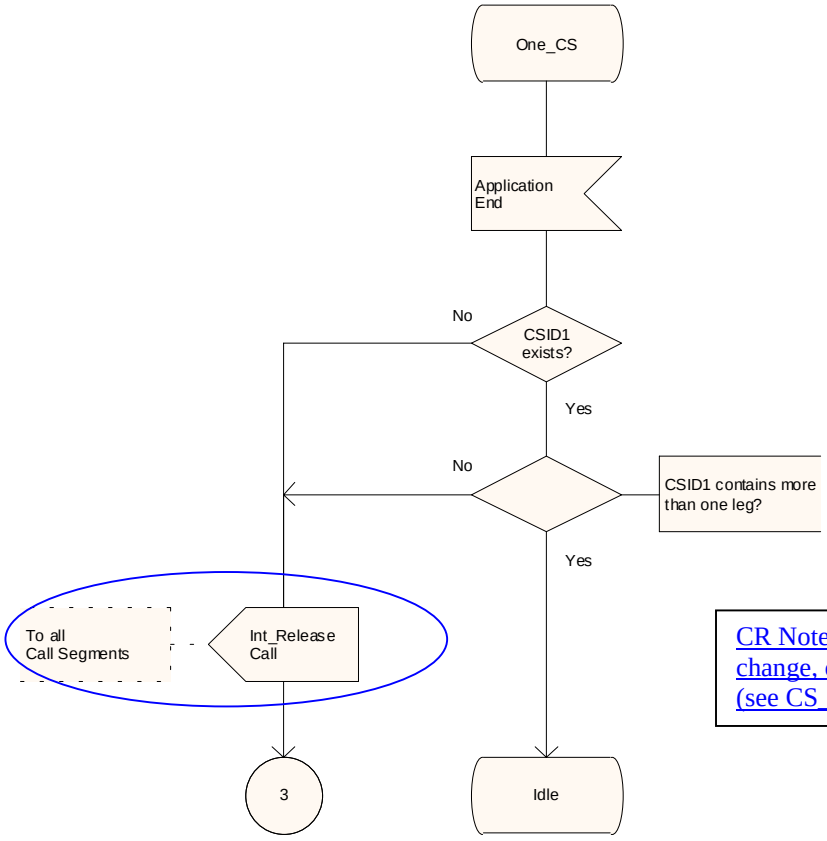


Figure 4.112s: Process CSA_gsmSSF (sheet 19)

Process CSA_gsmSSF 20(21)

/* A process in the gsmSSF to co-ordinate the Call Segments for a call. */

/* Signals to/from the left are to/from one or more instances of the process CS_gsmSSF; signals to/from the right are to/from the gsmSCF. */



CR Note: This is not a technical change, only a modelling change (see CS_gsmSSF page 18)

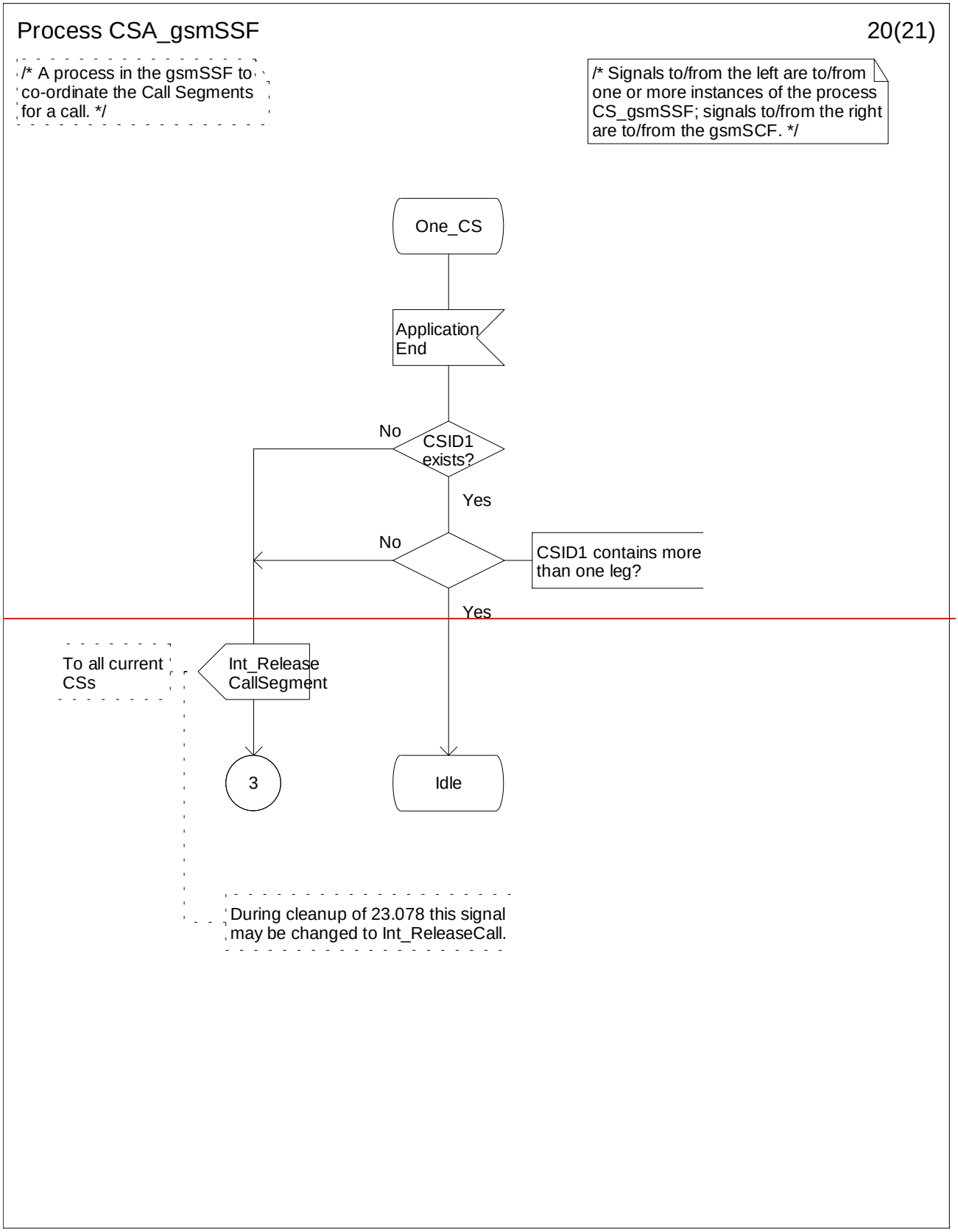
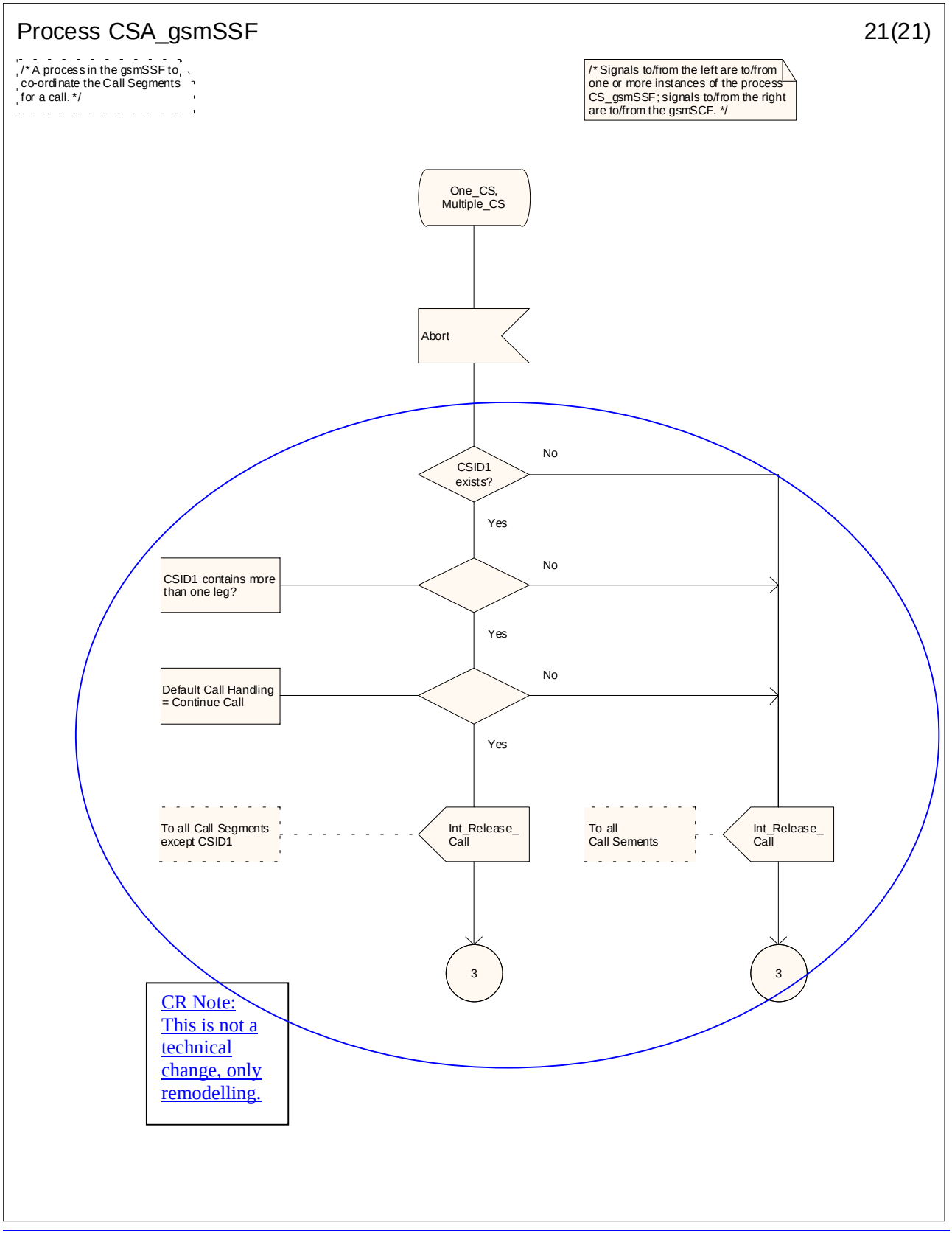


Figure 4.112t: Process CSA_gsmSSF (sheet 20)


Process CSA_gsmSSF
21(21)
/* A process in the gsmSSF to co-ordinate the Call Segments for a call. */
/* Signals to/from the left are to/from one or more instances of the process CS_gsmSSF; signals to/from the right are to/from the gsmSCF. */
One_CS, Multiple_CS
Abort
CSID1 exists?
No
Yes
CSID1 contains more than one leg?
No
Yes
Default Call Handling = Continue Call
No
Yes
To all Call Segments except CSID1
Int_Release_ Call
To all Call Sements
Int_Release_ Call
3
3
CR Note: This is not a technical change, only remodelling.

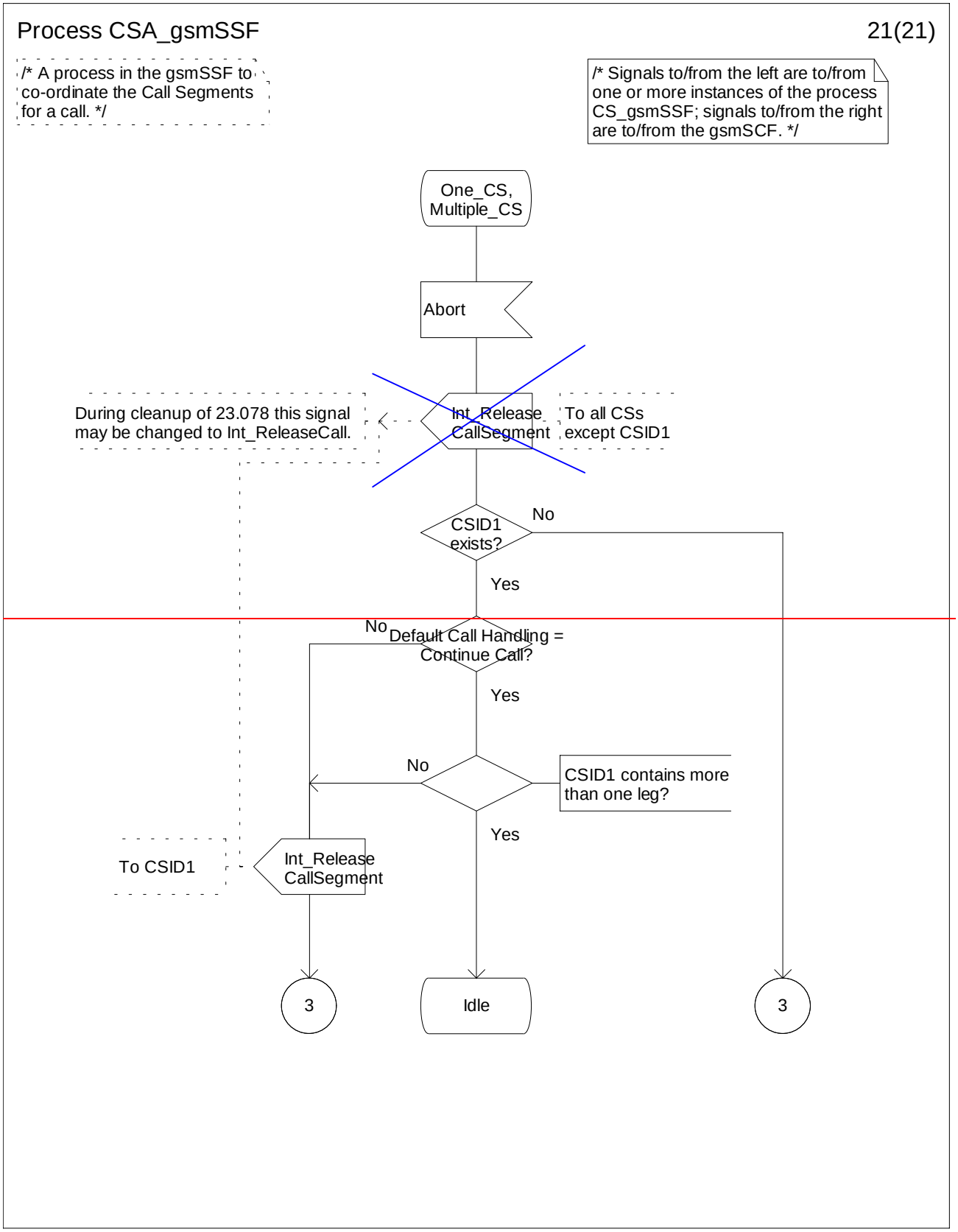


Figure 4.112u: Process CSA_gsmSSF (sheet 21)

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