

3GPP TSG CN Plenary Meeting #19
12th - 14th March 2003. Birmingham, U.K.

NP-030089

Source: CN2
Title: CRs on Rel-5 Work Item CAMEL4, CR Pack 3
Agenda item: 8.3
Document for: APPROVAL

Introduction:

This document contains 7 CRs on Rel-5 WI CAMEL4 (TS 23.078). These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #19 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.078	526		N2-030032	Rel-5	Consistent prefix naming of 23.078 signals.	F	5.2.0
23.078	531		N2-030057	Rel-5	Alignment of signal names with TS 29.002	F	5.2.0
23.078	533	2	N2-030154	Rel-5	Buffering of TC messages in the SGSN while waiting for the first SCP response	F	5.2.0
23.078	534		N2-030066	Rel-5	Disallowing ACH-GPRS when PDPc already disconnected	F	5.2.0
23.078	536	1	N2-030148	Rel-5	Correction to timer expiry handling during call forwarding notification	F	5.2.0
23.078	538		N2-030070	Rel-5	Correction to Call Information Request	F	5.2.0
23.078	542	1	N2-030152	Rel-5	Handling of AC and ACR for GPRS	F	5.2.0

CR-Form-v7

CHANGE REQUEST

⌘ **23.078 CR 526** ⌘ rev ⌘ Current version: **5.2.0** ⌘

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:	⌘ Consistent prefix naming of 23.078 signals.		
Source:	⌘ Alcatel		
Work item code:	⌘ CAMEL4	Date:	⌘ 10/12/2002
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> 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 <u>one</u> 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:	⌘ Some signal names used in 23.078 Processes are inconsistent. Signals which are send may never being received and signals supposed to be received will never be send.
Summary of change:	⌘ Use consistent naming of SDL signals: - "Int..." for internal signals between CSA_gsmSSF, CS_gsmSSF and Call Handling. - "CAP..." for signals to or from the gsmSCF. - "Int..." for signals to or from an SRF. The term "SRF" should be used on it's own, without the "external" qualification, as the procedures CAMEL_..._CTR do not distinguish internal/external SRF. Indicate that "relay" of signals implies "Int..." <-> "CAP..." signal name conversion.
Consequences if not approved:	⌘ Sending and / or receipt of unknown signals. The 23.078 SDL specification does not work.

Clauses affected:	⌘ 4.5.2.1, 4.5.3.1, 4.5.5, 4.5.7.4, 4.5.7.6, 4.5.8										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
<input type="checkbox"/>	<input checked="" type="checkbox"/>										
Other comments:	⌘										

— First modified section —

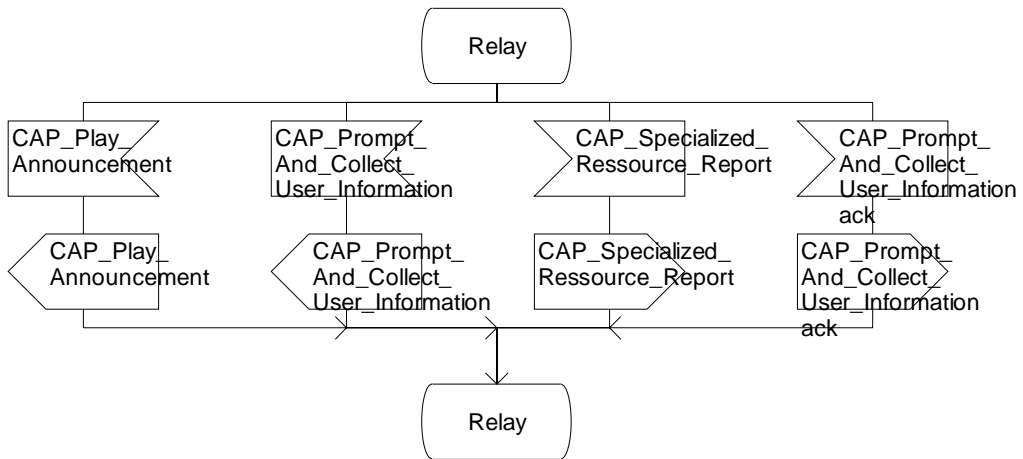
4.5.2.1 Handling of mobile originated calls in the originating MSC

Procedure CAMEL_OCH_CTR

3(5)

Procedure in the originating MSC to handle a Connect To Resource operation

Signals to/from the right are to/from the gsmSSF.
Signals to/from the left are to/from the external SRF.



Procedure CAMEL_OCH_CTR

3(5)

Procedure in the originating MSC to handle a Connect To Resource operation

Signals to/from the right are to/from the gsmSSF.
Signals to/from the left are to/from the SRF.

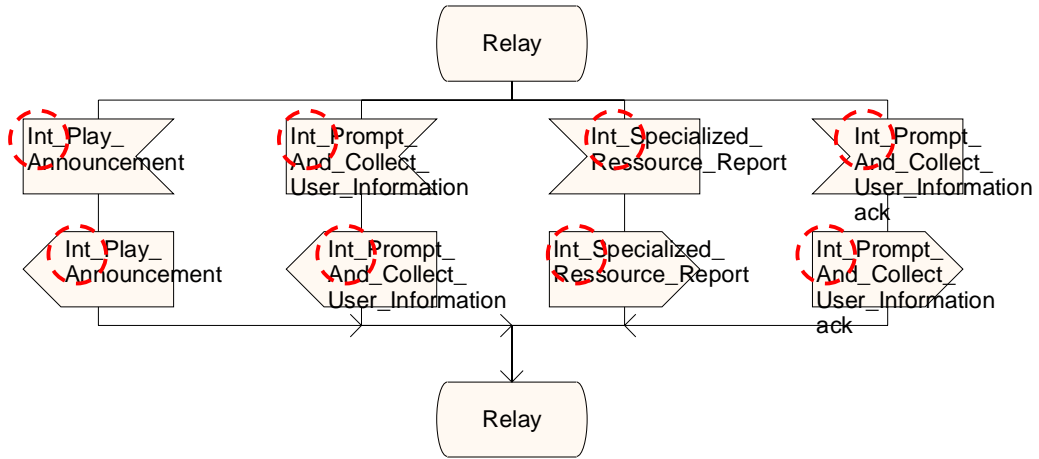


Figure 4.23-3: Procedure CAMEL_OCH_CTR (sheet 3)

— Next modified section —

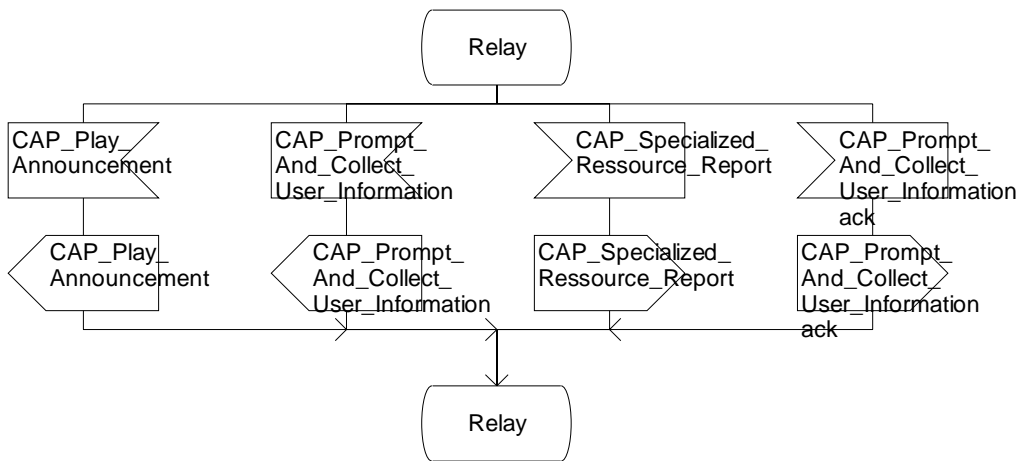
4.5.3.1 Retrieval of routing information in the GMSC

Procedure CAMEL_MT_CTR

3(5)

Procedure in the GMSC to handle a Connect To Resource operation

Signals to/from the right are to/from the gsmSSF.
Signals to/from the left are to/from the external SRF.



Procedure CAMEL_MT_CTR

3(5)

Procedure in the GMSC to handle a Connect To Resource operation

Signals to/from the right are to/from the gsmSSF.
Signals to/from the left are to/from the SRF.

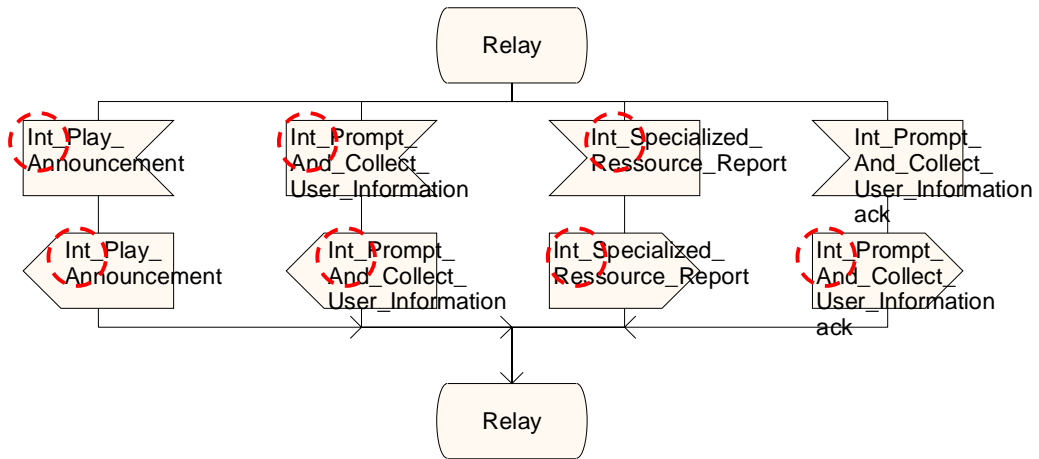


Figure 4.49-3: Procedure CAMEL_MT_CTR (sheet 3)

— Next modified section —

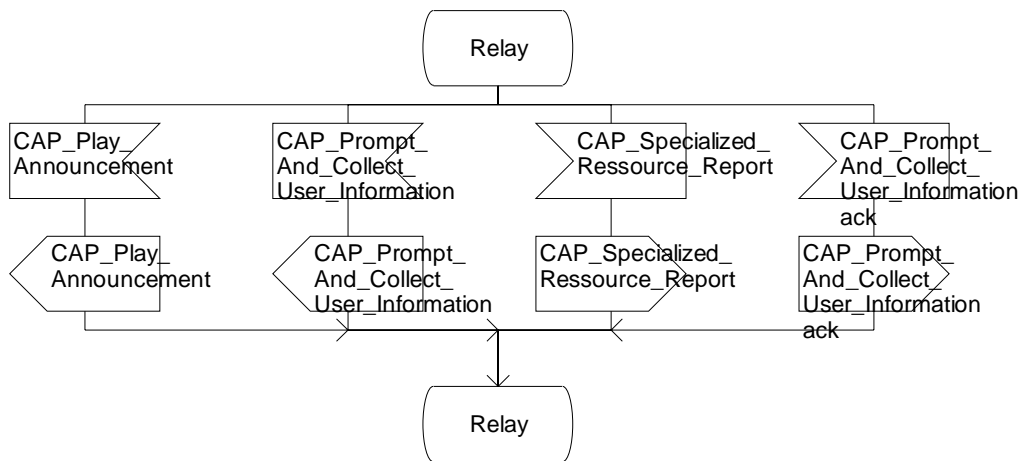
4.5.5 Handling of forwarded calls

Procedure CAMEL_CF_CTR

3(5)

/* Procedure in the MSC to handle a Connect To Resource operation */

/* Signals to/from the right are to/from the gsmSSF. Signals to/from the left are to/from the external SRF. */



Procedure CAMEL_CF_CTR

3(5)

/* Procedure in the MSC to handle a Connect To Resource operation */

/* Signals to/from the right are to/from the gsmSSF. Signals to/from the left are to/from the SRF. */

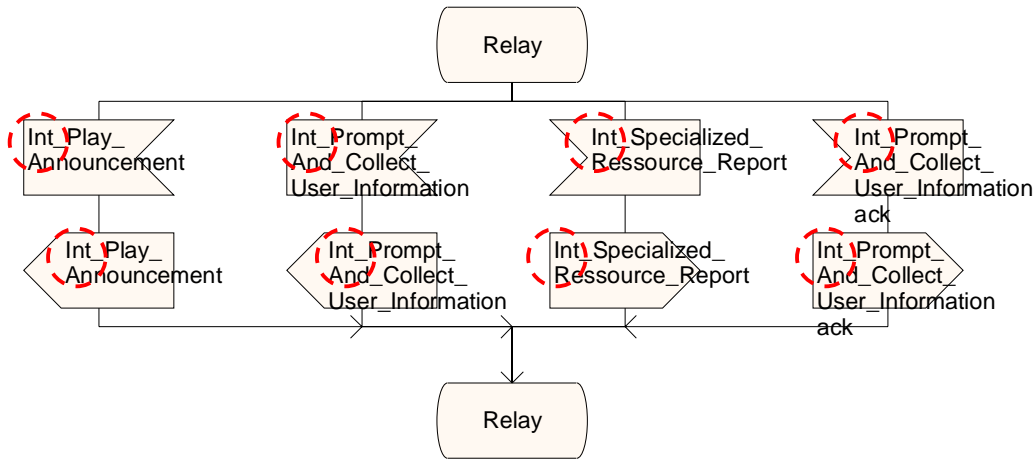


Figure 4.81-3: Procedure CAMEL_CF_CTR (sheet 3)

— Next modified section —

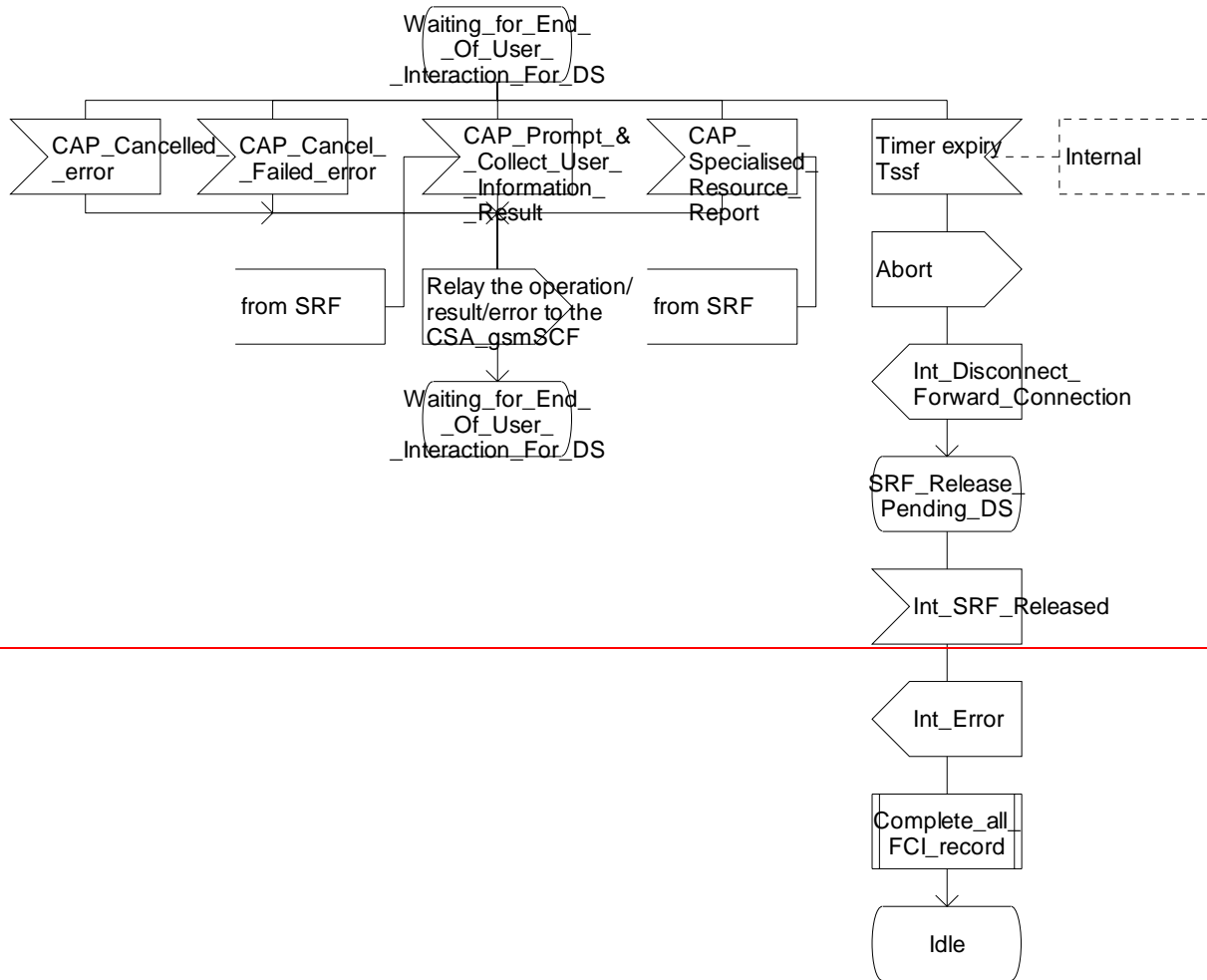
4.5.7.4 Process CS_gsmSSF and procedures

Process CS_gsmSSF

54(57)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the process Generic_SRF; signals to/from the right are to/from the Process CSA_gsmSSF unless otherwise marked. */



Process CS_gsmSSF

54(57)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the process Generic_SRF; signals to/from the right are to/from the Process CSA_gsmSSF unless otherwise marked. */

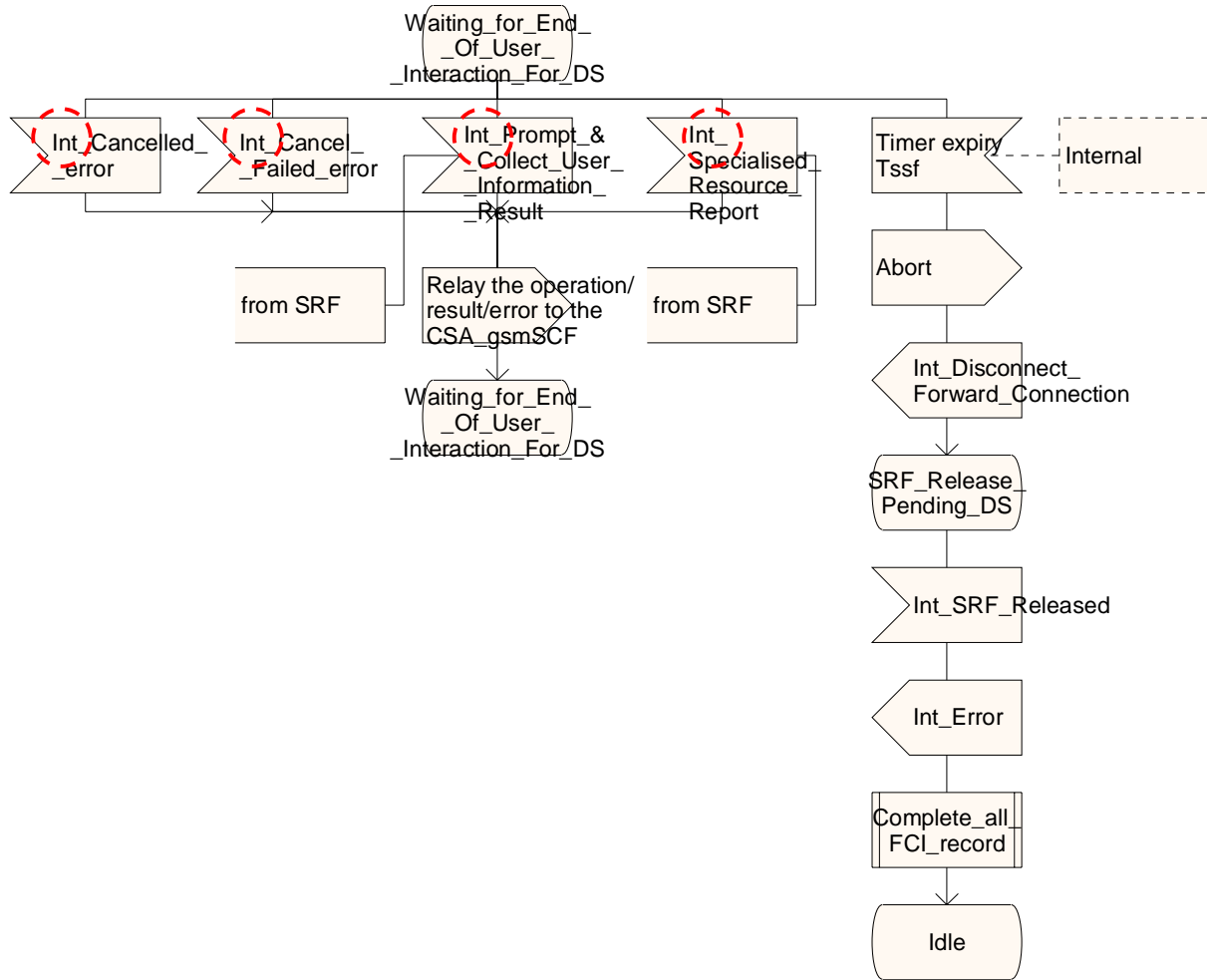


Figure 4.95-54: Process CS_gsmSSF (sheet 54)

— **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.

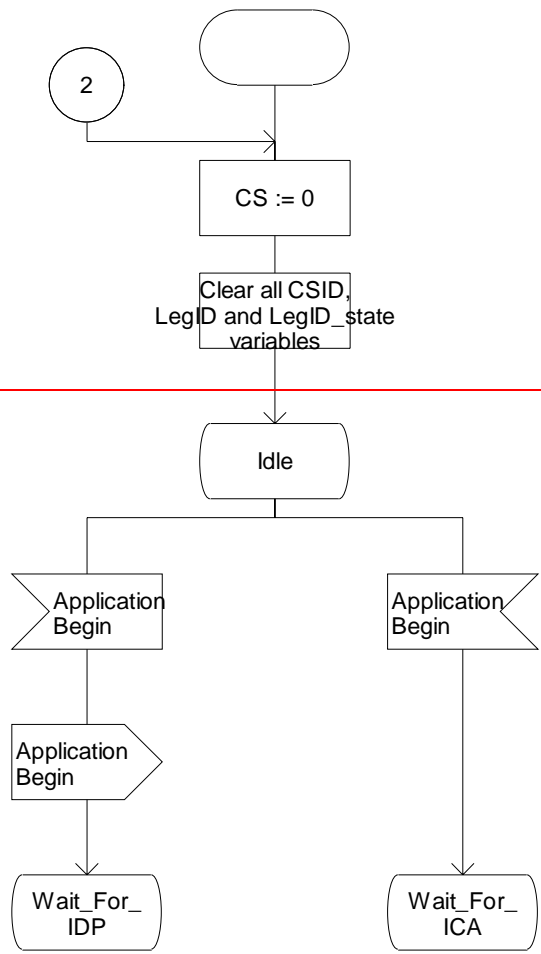
Process CSA_gsmSSF

1(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. */

/* TASK definition:
The Application_Begin signal opens a new relationship with the gsmSCF.
The Application_End or Abort signal terminates the relationship with the gsmSCF.
*/



Process CSA_gsmSSF

1(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. */

/* TASK definition:
The Application_Begin signal opens a new relationship with the gsmSCF.
The Application_End or Abort signal terminates the relationship with the gsmSCF.
*/

/* TASK definition:
The relay of operation and signals implies a "CAP_..." <-> "Int_..." conversion.
"CAP_..." operations are used between the CSA_gsmSSF process and the gsmSCF.
"Int_..." signals are used between the CSA_gsmSSF process and the CS_gsmSSF process.
*/

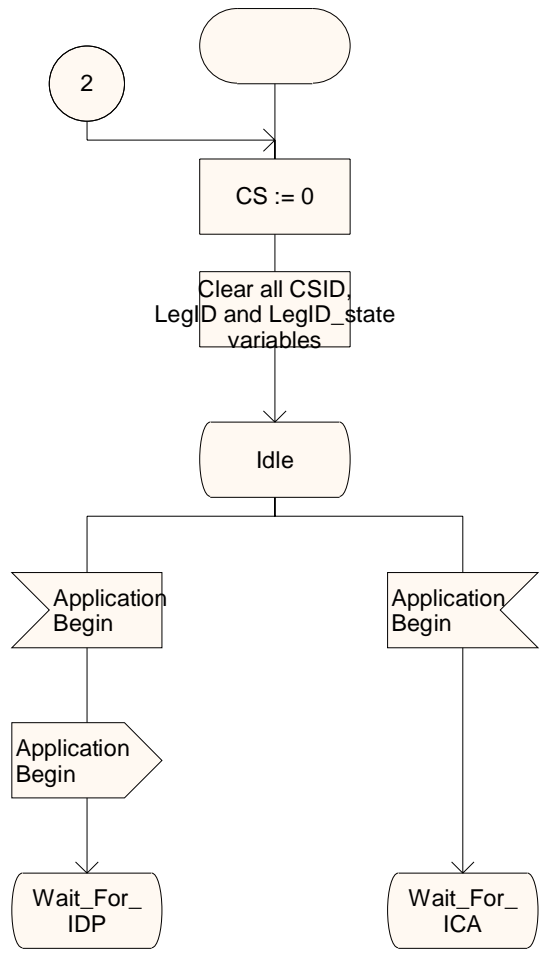


Figure 4.112-1: Process CSA_gsmSSF (sheet 1)

— Next modified section —

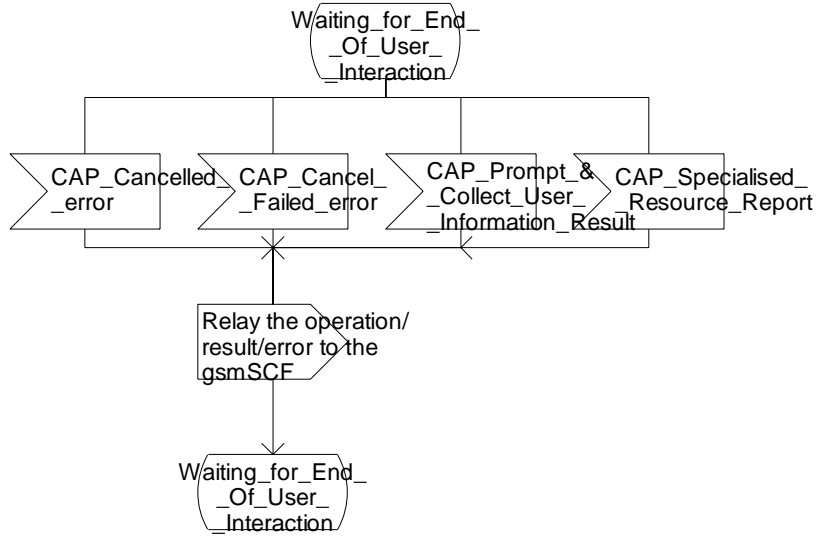
4.5.8 Assisting case

Process assisting_gsmSSF

4(6)

/* Invocation of gsmSSF in MO, MT or CF call case. */

Signals to/from the left are to/from the SRF; signals to/from the right are to/from the gsmSCF.



Process assisting_gsmSSF

4(6)

/* Invocation of gsmSSF in MO, MT or CF call case. */

Signals to/from the left are to/from the SRF; signals to/from the right are to/from the gsmSCF.

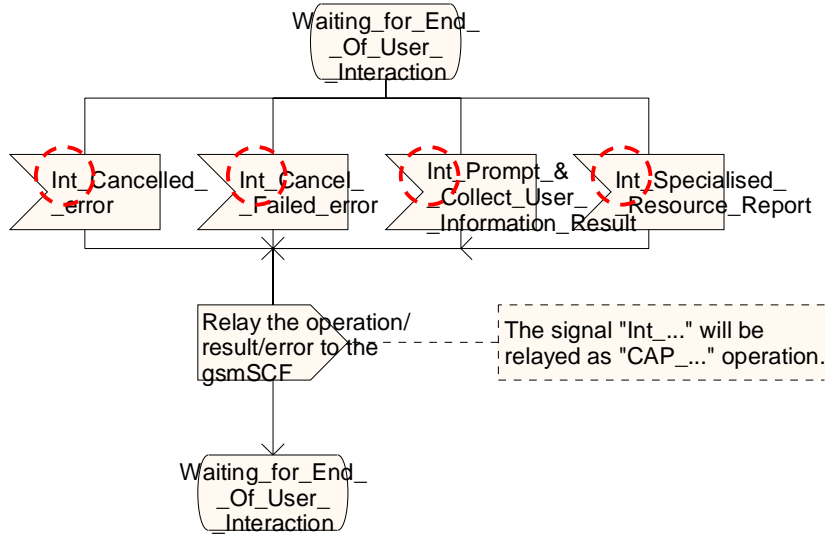


Figure 4.114-4: Process Assisting_gsmSSF (sheet 4)

— END —

CHANGE REQUEST

⌘ **23.078 CR 531** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

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:	⌘ Alignment of signal names with TS 29.002		
Source:	⌘ Vodafone		
Work item code:	⌘ CAMEL4	Date:	⌘ 30/01/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> 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 <u>one</u> 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 procedure CAMEL_MT_SMS_VLR uses signal names which are not aligned with the names used in the SDL for the MSC behaviour in TS 29.002.		
Summary of change:	⌘ Change signal names to the MAP service format used in TS 29.002		
Consequences if not approved:	⌘ Confusion over interworking between MSC and VLR		

Clauses affected:	⌘ 7.5.4.2										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N										
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			Test specifications								
			O&M Specifications								
Other comments:	⌘										

****** For information ******

This SDL is copied from TS 29.002 subclause 23.3.1

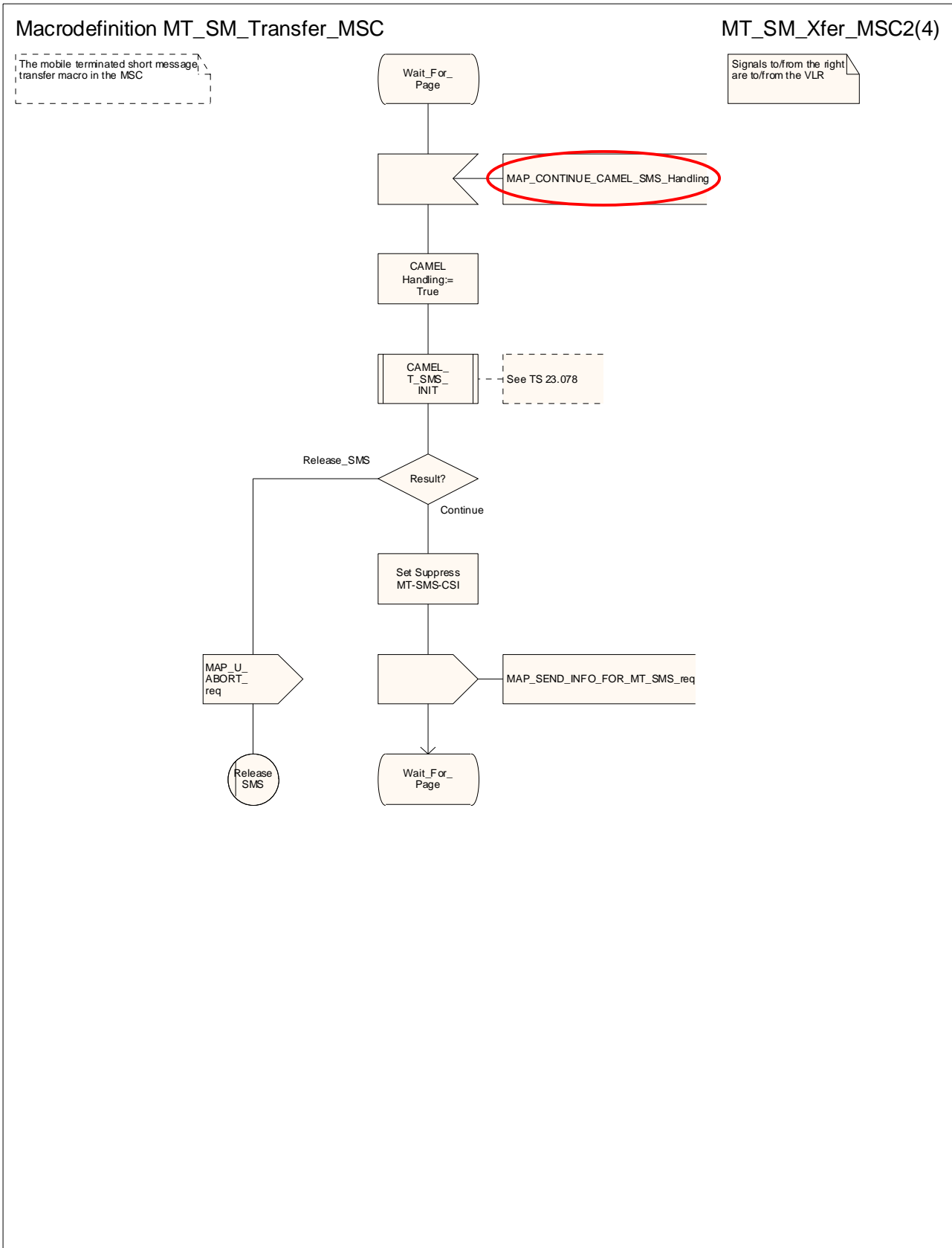


Figure 23.3/4 (sheet 2 of 4): Macro MT_SM_Transfer_MSC

****** 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~~handling specific to CAMEL ~~are~~is specified in the following procedures:

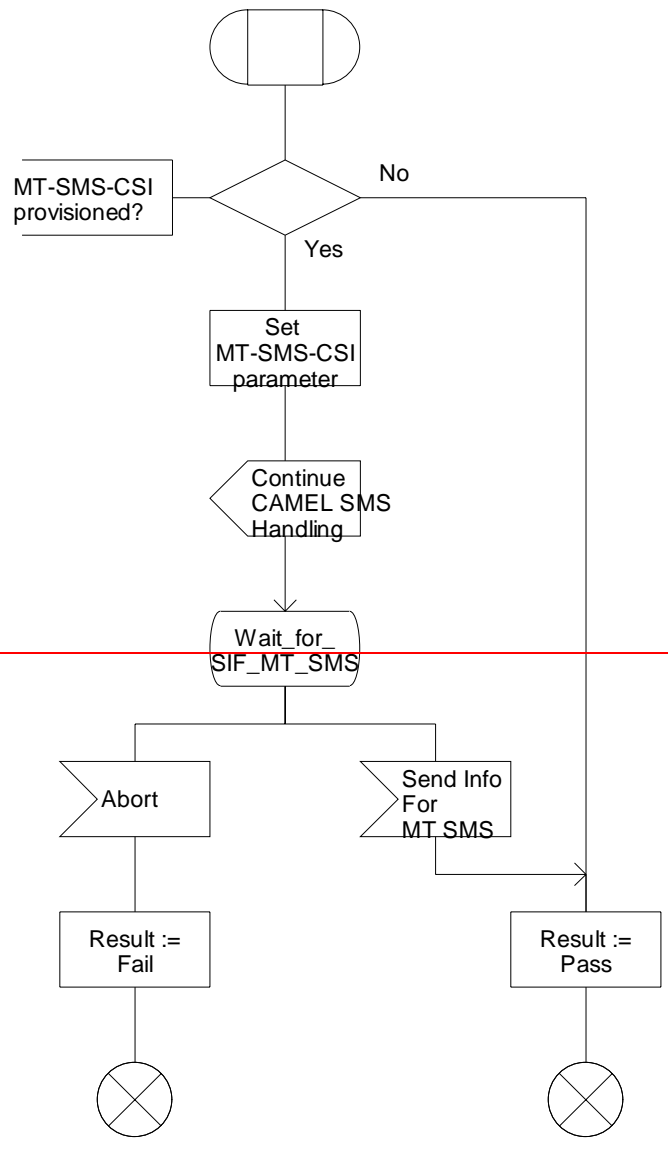
- Procedure CAMEL_MT_SMS_VLR.

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.*/



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 */

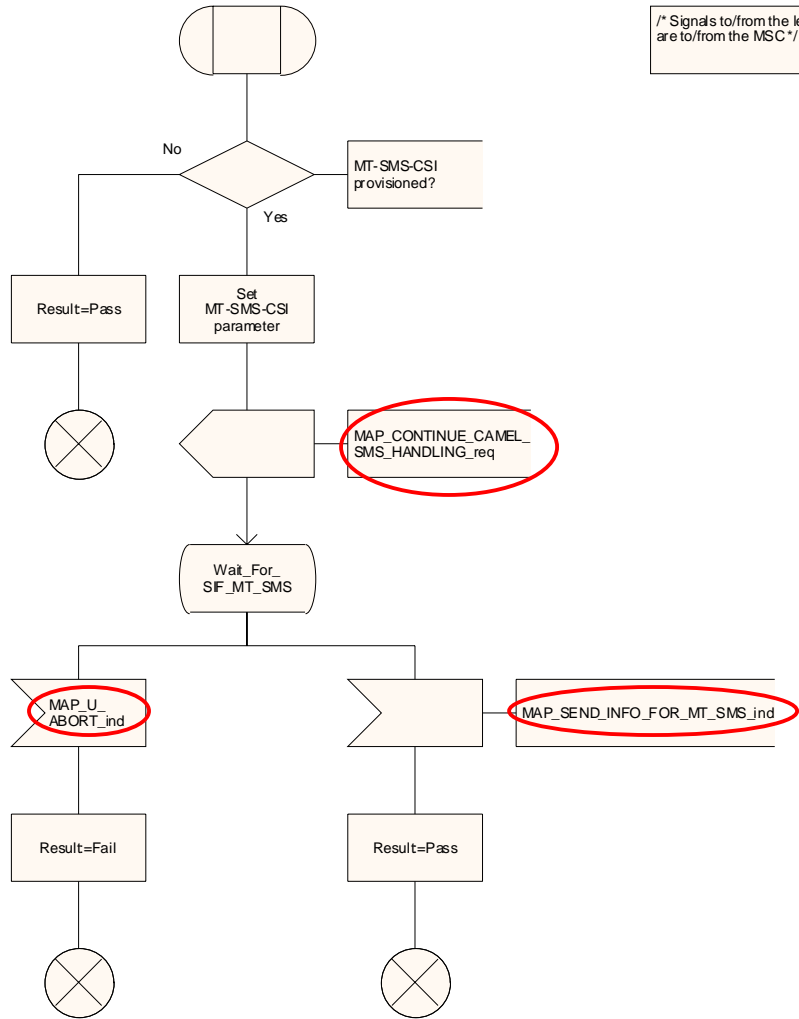


Figure 7.12-1: Procedure CAMEL_MT_SMS_VLR (sheet 1)

**** End of document ****

CHANGE REQUEST

⌘ **23.078 CR 534** ⌘ rev **5.2.0** ⌘ Current version: **5.2.0** ⌘

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Disallowing ACH-GPRS when PDPc already disconnected		
Source:	⌘ Ericsson		
Work item code:	⌘ CAMEL4	Date:	⌘ 31/01/2003
Category:	⌘ F Use <u>one</u> 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)	Release:	⌘ Rel-5 Use <u>one</u> 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 23.078 SDL flows (Fig 6.17-7 and 6.17-16), the report procedure at PDP Context Disconnection sets the **context active** indicator to FALSE and, after that, invokes the Handle_ACR procedure, which issues an ApplyChargingReportGPRS operation for each report that is registered as pending at the SGSN. Thus these reports will indicate active=FALSE. No ApplyChargingReportGPRS operation is issued if not registered as pending.

The SCP may issue an ApplyChargingGPRS operation at any time, provided the preconditions are fulfilled. If the SCP issues an ApplyChargingGPRS operation that is invoked at the SGSN after the SGSN has executed the report procedure at PDP Context Disconnection, then the SGSN has already proceeded to a point beyond the last chance for reporting for that PDP Context.

For EDP-R reporting, the SDL specifies that ApplyChargingReportGPRS, indicating active=false, shall be sent from SGSN prior to the EventReportGPRS for PDP Context Disconnection.

Thus it's not possible, in the case described, for the SGSN to both

- Maintain the specified sequence of CAP operations (23.078 Fig 6.17-7 and 6.17-16) and
- Send ApplyChargingReportGPRS, indicating active=false in response to the late ApplyChargingGPRS operation

There is at present no means to convey to the SCP that the ApplyChargingGPRS operation will never yield any ApplyChargingReportGPRS operation. An error indication is required to convey to the SCP that this situation has occurred.

		The situation for GPRS Session control is similar.
Summary of change: ⌘		Update sheet 3 of process GPRS_SSF (figure 6.17). When the gprsSSF processes Apply Charging GPRS, it shall check whether the GPRS Session or the PDP Context to which the operation applies, is still active. If the PDP Context has already been terminated or the GPRS Session is already in the Detach stage, then the procedure Handle_AC_GPRS shall not be called. The error handling to be applied is specified in the Procedure description in TS 29.078.
Consequences if not approved: ⌘		A CAMEL Service may send ACH after a PDP Context was already disconnected, but the disconnect was not yet processed by the CAMEL Service. In that case, the CAMEL Service may not be informed that the ACH GPRS was not processed and the CAMEL Service will not get the corresponding charging report. This may cause service misbehaviour.

Clauses affected: ⌘		6.5.3.9 (process GPRS_SSF)								
Other specs affected:	<table border="1"> <tr> <td>Y</td> <td>N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications ⌘ TS 29.078 CR 305 Test specifications O&M Specifications
Y	N									
X										
	X									
	X									
Other comments: ⌘										

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

6.5.3.9 SDL diagrams for process GPRS_SSF and procedures

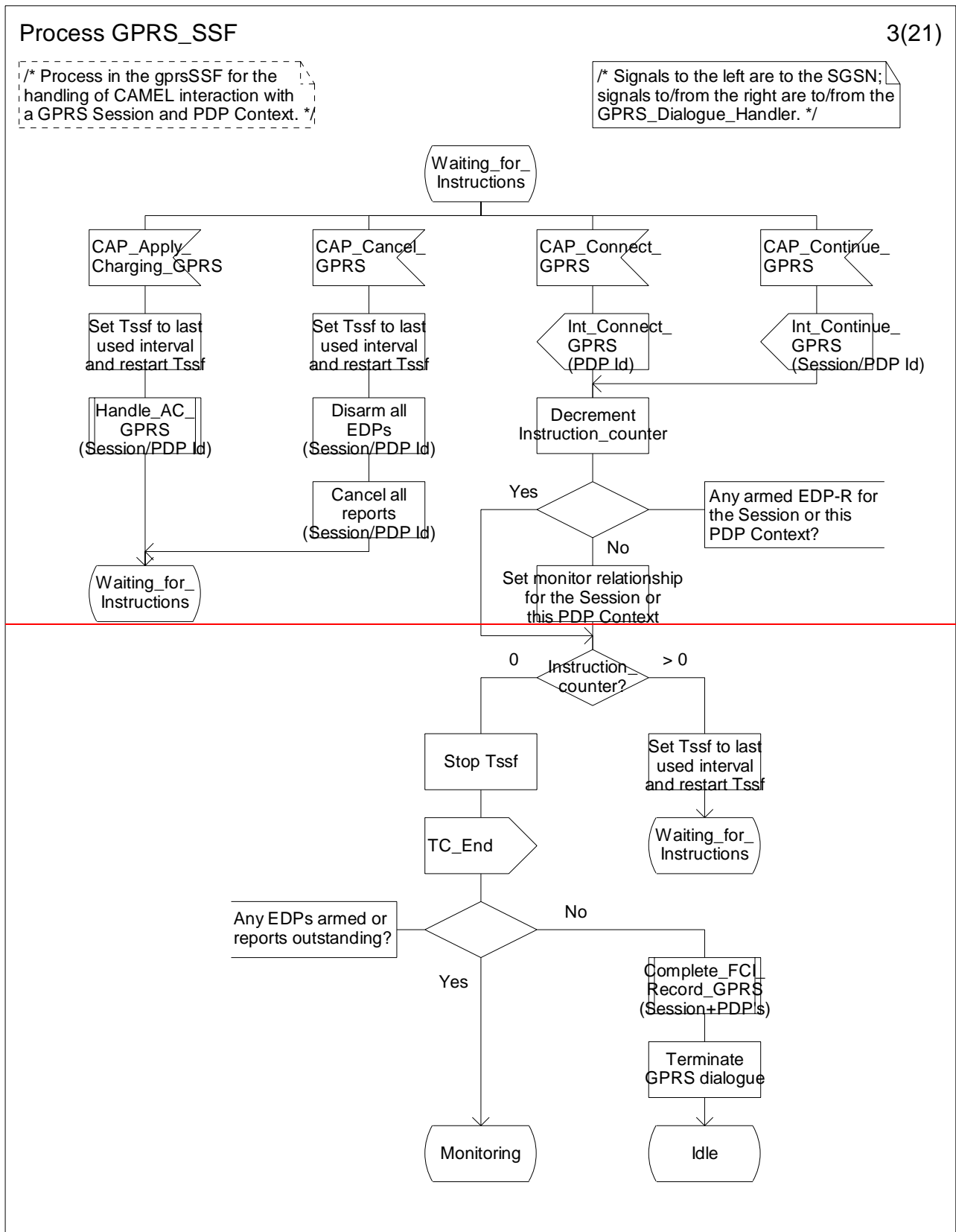


Figure 6.17-3: Process GPRS_SSF (sheet 3)

/* Process in the gprsSSF for the handling of CAMEL interaction a GPRS Session and PDP Context.

/* Signals to the left are to the signals to/from the right are to/from the GPRS_Dialogue_Handler.

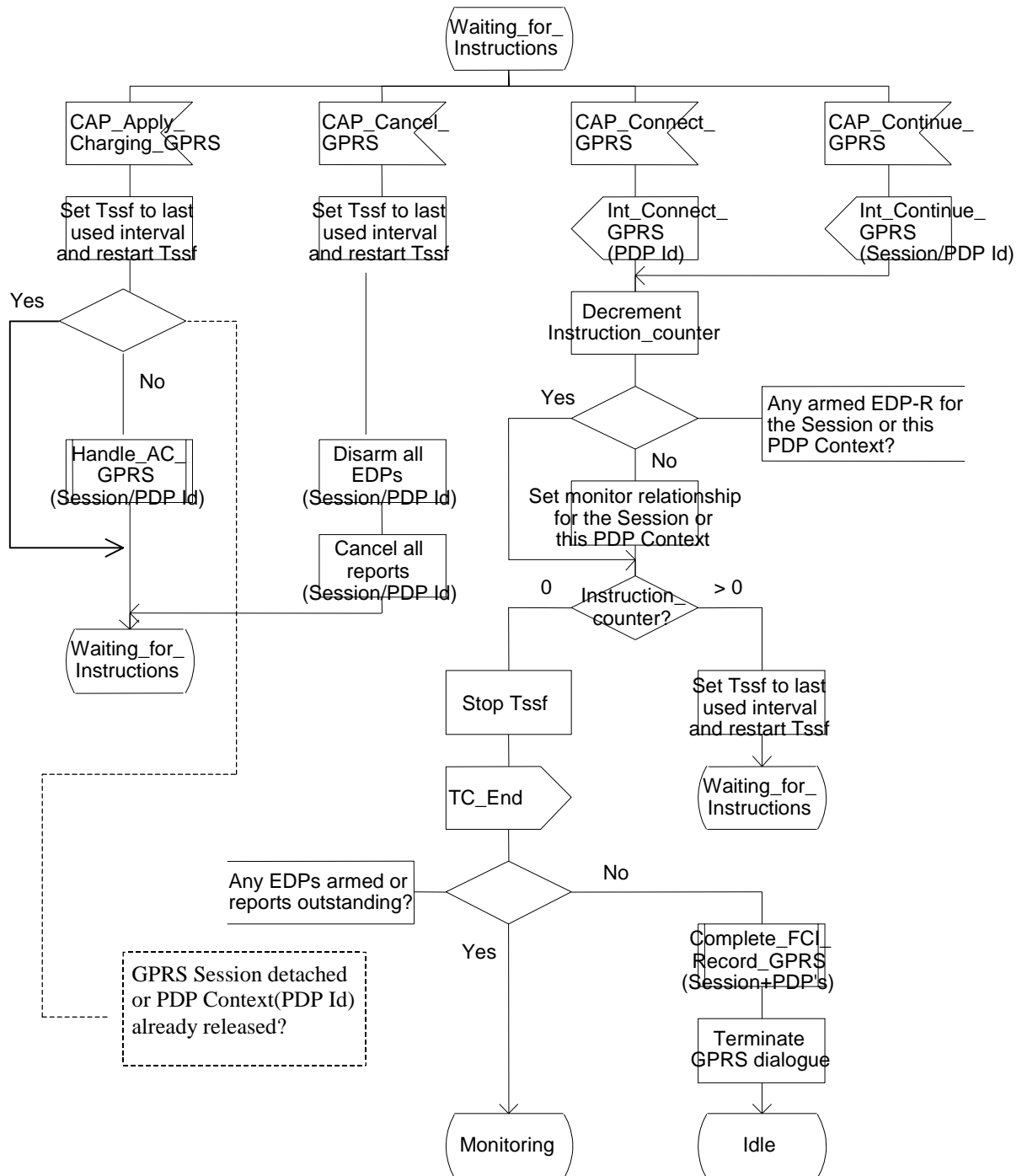


Figure 6.17-3: Process GPRS_SSF (sheet 3)

*** End of Document ***

CHANGE REQUEST

⌘ **23.078 CR 538** ⌘ rev ⌘ Current version: **5.2.0** ⌘

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Correction to Call Information Request		
Source:	⌘ Ericsson		
Work item code:	⌘ CAMEL4	Date:	⌘ 30/01/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
		Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	⌘ The description of the Call Information Request (CIRq) and Call Information Report (CIRp) information flows specify that CIRq and CIRp may be used to collect and report information related to a single call . However, CIRq and CIRp are used on a per call leg basis. Hence, the wording in the descriptions of CIRq and CIRp, "single call " shall be replaced by "single call party ".
Summary of change:	⌘ Correct the descriptions of Call Information Request and Call Information Report.
Consequences if not approved:	⌘ Ambiguity for system designers (gsmSCF, gsmSSF) and for CAMEL service developers; it will be unclear how Call Information Request and Call Information Report may be used.

Clauses affected:	⌘ 4.6.1.3, 4.6.2.4						
Other specs Affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
	<input checked="" type="checkbox"/>	Test specifications					
	<input checked="" type="checkbox"/>	O&M Specifications					
Other comments:	⌘ 						

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

4.6.1.3 Call Information Report

4.6.1.3.1 Description

This IF is used to send specific call information for a single call [party](#) to the gsmSCF as requested by the gsmSCF in a previous Call Information Request IF.

4.6.1.3.2 Information Elements

Information element name	Status	Description
Requested Information List	M	This IE specifies the requested information.
Leg ID	M	This IE indicates the party in the call for which information shall be collected.

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

4.6.2.4 Call Information Request

4.6.2.4.1 Description

This IF is used to request the gsmSSF to record specific information about a single call [party](#) and report it to the gsmSCF (with a Call Information Report IF).

4.6.2.4.2 Information Elements

Information element name	Status	Description
Requested Information Type List	M	This IE is described in a table below. This IE specifies a list of specific items of information which are requested.
Leg ID	M	This IE indicates the party in the call for which the information shall be collected.

Requested Information Type List contains the following information elements:

Information element name	Status	Description
Call Attempt Elapsed Time	O	This IE indicates that the Call Attempt Elapsed Time is requested in the Call Information Report. Call Attempt Elapsed Time is the duration between the end of the CAMEL processing initiating call setup (Connect, Continue or Continue With Argument IF) and the received answer indication from the called party side. For the Calling Party, the value of Call Attempt Elapsed Time in the Call Information Report shall be set to 0.
Call Stop Time	O	This IE indicates that the Call Stop Time is requested in the Call Information Report. Call Stop Time is the time stamp when the connection is released.
Call Connected Elapsed Time	O	This IE indicates that the Call Connected Elapsed Time is requested in the Call Information Report. Call Connected Elapsed Time is the duration between the received answer indication from the called party side and the release of the connection. For a Calling Party, it indicates the duration between the sending of the Initial DP IF and the release of that party.
Release Cause	O	This IE indicates that the Release Cause for the call party is requested in the Call Information Report.

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

CHANGE REQUEST

⌘ **23.078 CR 536** ⌘ rev **1** ⌘ Current version: **5.2.0** ⌘

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Correction to timer expiry handling during call forwarding notification		
Source:	⌘ Ericsson		
Work item code:	⌘ CAMEL4	Date:	⌘ 13/02/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
			Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ When the gsmSSF signals to the gsmSCF that a conditional call forwarding event has occurred, and the notification is sent in interrupt mode (EDP-R), then the gsmSSF FSM transits to the state Waiting For Instructions. The MSC is now in the state DP_T_CCF and waits for an internal signal from the gsmSSF. Refer to the figures 4.50-1 (Procedure CAMEL_MT_GMSC_Notify_CF) and 4.66-1 (Procedure CAMEL_MT_VMSC_Notify_CF) in TS 23.078.
	If the gsmSSF does not get a response from the gsmSCF, then there will be Tssf timer expiry in the gsmSSF. The gsmSSF will react by sending the internal signal Int_Error to the MSC. Refer to figure 4.95-21 (Process CS_gsmSSF).
	However, the MSC processes do not have the corresponding input signal.
	This is an omission in the SDL of the respective MSC processes. When the MSC receives the Int_Error signal from the gsmSSF in this case, it shall check the Default Call Handling (DCH) value. If DCH = Continue, then call processing shall continue; if DCH = ReleaseCall, then the call shall be released.
Summary of change:	⌘ Add the Int_Error input signal to the MSC procedures CAMEL_MT_GMSC_Notify_CF and CAMEL_MT_VMSC_Notify_CF. The processing of the Int_Error signal in these procedures shall be identical to the processing of the Int_Release_Call signal in these respective procedures.
Consequences if not approved:	⌘ Ambiguity for designers; incorrect (G)MSC behaviour; compatibility problems between equipment from different vendors.

Clauses affected: ⌘ 4.5.3, 4.5.4

**Other specs
affected:**

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

⌘

Other comments: ⌘

4.5.3 Retrieval of routing information

4.5.3.1 Retrieval of routing information in the GMSC

The functional behaviour of the GMSC is specified in 3GPP TS 23.018 [Error! Reference source not found.]. The procedures specific to CAMEL are specified in this subclause:

- Procedure CAMEL_Set_ORA_Parameters;
- Procedure CAMEL_MT_GMSC_INIT;
- Procedure CAMEL_MT_MSC_ALERTING;
- Procedure CAMEL_MT_GMSC_ANSWER;
- Procedure CAMEL_MT_GMSC_DISC1;
- Procedure CAMEL_MT_GMSC_DISC2;
- Procedure CAMEL_MT_GMSC_DISC3;
- Procedure CAMEL_MT_GMSC_DISC4;
- Procedure CAMEL_MT_GMSC_DISC5;
- Procedure CAMEL_MT_GMSC_DISC6;
- Procedure CAMEL_MT_CTR;
- Procedure CAMEL_MT_ETC;
- Procedure CAMEL_Start_TNRy;
- Procedure CAMEL_Stop_TNRy;
- Procedure CAMEL_MT_GMSC_Notify_CF;
- Procedure CAMEL_MT_LEG2_GMSC;
- Process CAMEL_MT_LEG1_GMSC;
- Procedure CAMEL_MT_RECONNECT_GMSC.

< ... unmodified ... >

Procedure CAMEL_MT_GMSC_Notify_CF

1(2)

/* Procedure in the GMSC to notify the gsmSSF that a call has encountered conditional call forwarding

/* Signals to/from the left to/from the originating signals to/from the right are to/from the gsmSSF unless marked otherwise */

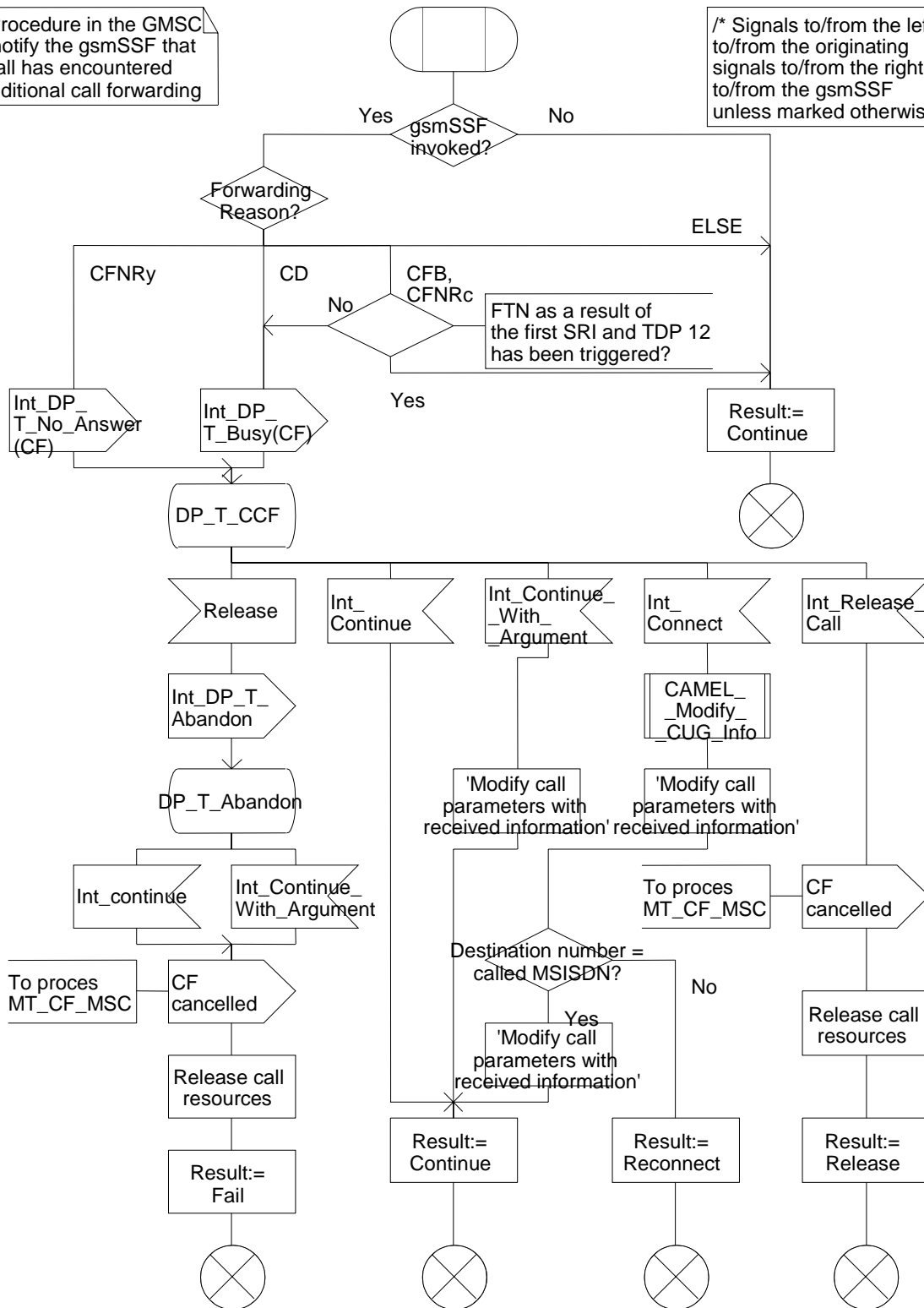


Figure 4.50-1: Procedure CAMEL_MT_GMSC_Notify_CF (sheet 1)

Procedure CAMEL_MT_GMSC_Notify_CF

2(2)

/* Procedure in the GMSC to notify the gsmSSF that a call has encountered conditional call forwarding

/* Signals to/from the right are from the gsmSSF, unless marked otherwise. */

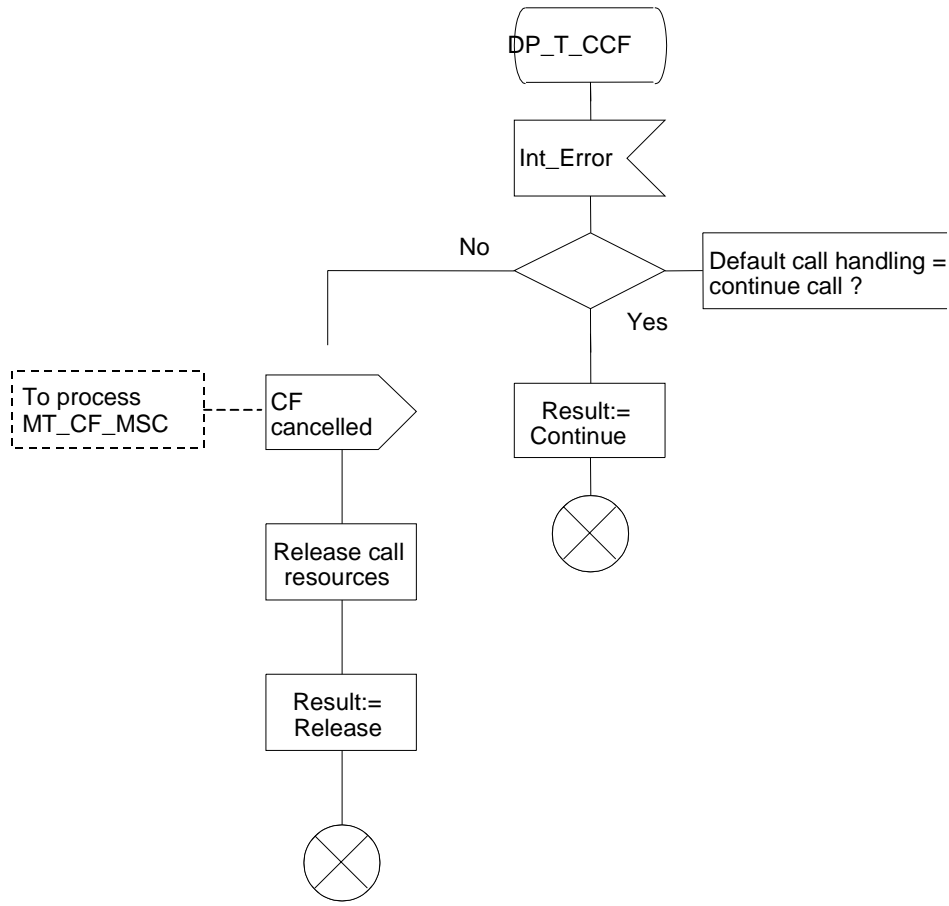


Figure 4.50-2: Procedure CAMEL_MT_GMSC_Notify_CF (sheet 2)

4.5.4 Handling of mobile terminating calls

4.5.4.1 Handling of mobile terminating calls in the terminating VMSC

The functional behaviour of the terminating VMSC is specified in 3GPP TS 23.018 [**Error! Reference source not found.**].

The behaviour specific to CAMEL is:

- the inclusion of the O-CSI and/or D-CSI parameter in the Perform Call Forwarding information flow sent to the process MT_CF_MSC if O-CSI and/or D-CSI was received in the Send Info For Incoming Call ack information flow;
- the requirement to suppress the connection of announcements or tones if the VLR includes the suppression of announcements parameter in the Send Info For Incoming Call negative response information flow.

The processes and procedures specific to CAMEL are specified in this subclause:

- Procedure CAMEL_ICH_VLR;
- Procedure CAMEL_O_CSI_Check_VLR;
- Procedure CAMEL_D_CSI_Check_VLR;
- Procedure CAMEL_VT_CSI_Check_VLR;
- Procedure CAMEL_ICH_MSC_INIT;
- Procedure CAMEL_MT_VMSC_Notify_CF;
- Procedure CAMEL_ICH_LEG2_MSC;
- Procedure CAMEL_ICH_LEG2_CF_MSC;
- Process CAMEL_ICH_LEG1_MSC;
- Procedure CAMEL_ICH_RECONNECT_MSC;
- Process CAMEL_T_CHANGE_OF_POSITION_MSC.

< ... unmodified ... >

Procedure CAMEL_MT_VMSC_Notify_CF

1(2)

/* Procedure in the VMSC to notify the gsmSSF that a call has encountered conditional call forwarding

/* Signals to/from the left to/from the VMSC; signals to/from the right are to/from the gsmSSF, unless marked otherwise */

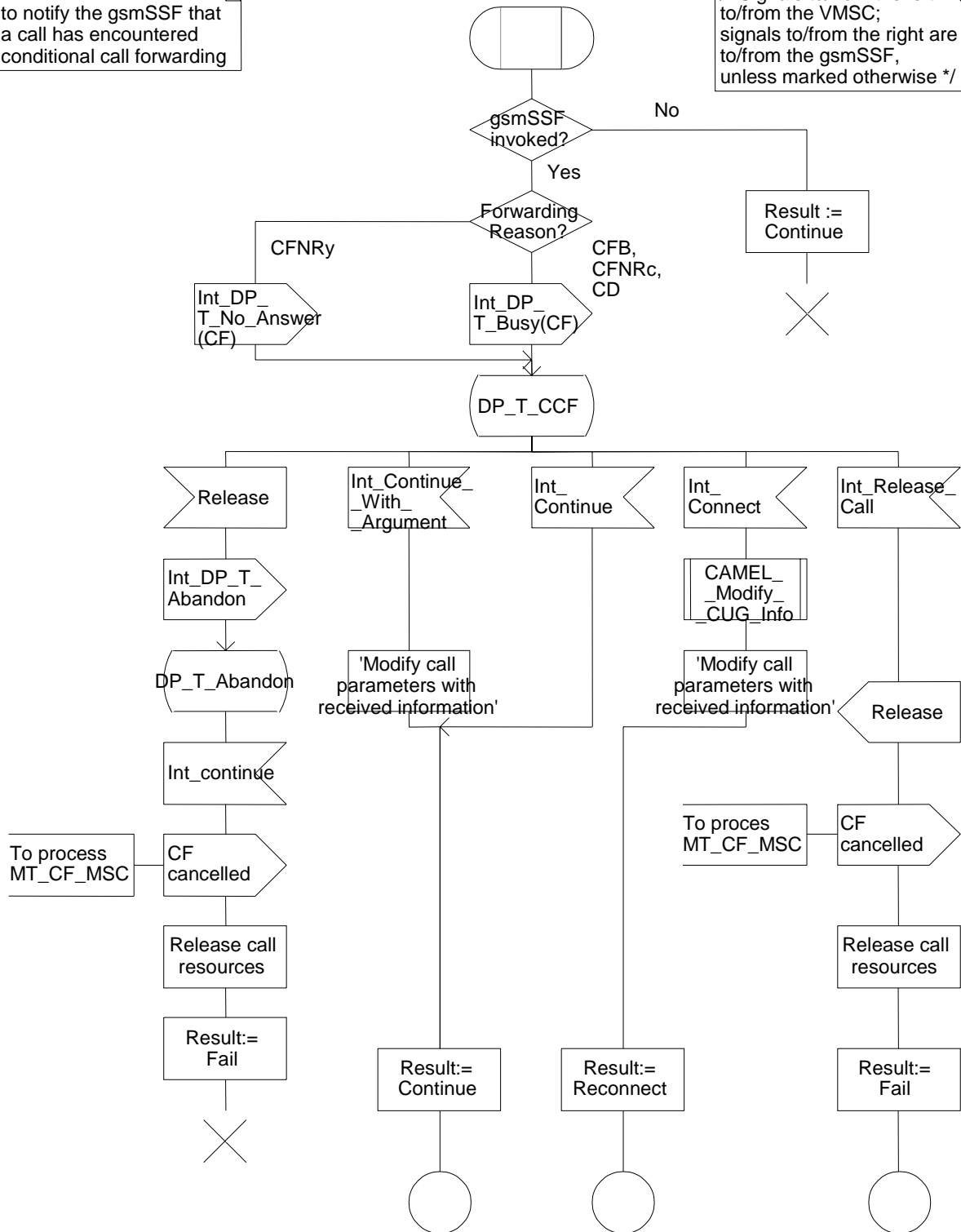


Figure 4.66-1: Procedure CAMEL_MT_VMSC_Notify_CF (sheet 1)

/* Procedure in the VMSC to notify the gsmSSF that a call has encountered conditional call forwarding

/* Signals to/from the right are from the gsmSSF.

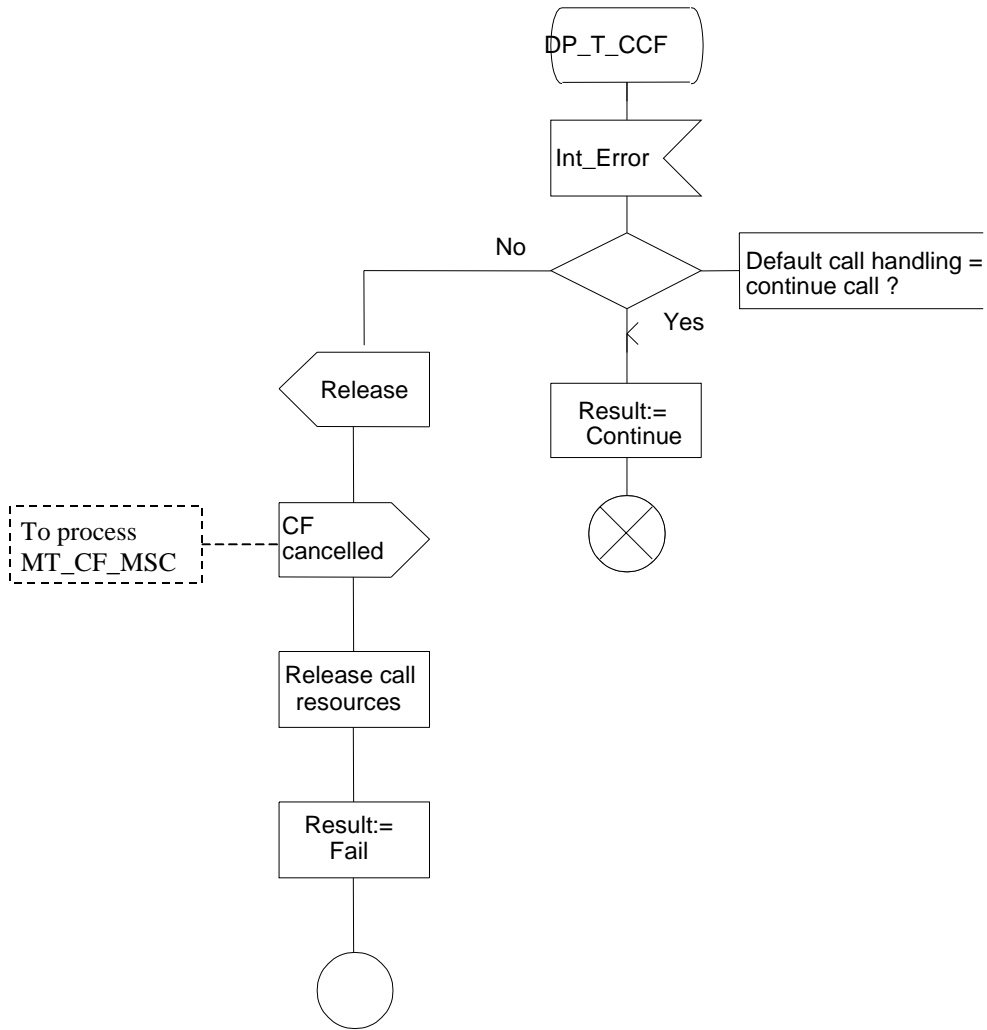


Figure 4.66-2: Procedure CAMEL_MT_VMSC_Notify_CF (sheet 2)

*** End of Document ***

CR-Form-v7

CHANGE REQUEST

№ **23.078 CR 542** № rev **1** № Current version: **5.2.0** №

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:	№ Handling of AC and ACR for GPRS		
Source:	№ Vodafone		
Work item code:	№ CAMEL4	Date:	№ 14/02/2003
Category:	№ F	Release:	№ REL-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2 (GSM Phase 2)	
	A (corresponds to a correction in an earlier release)	R96 (Release 1996)	
	B (addition of feature),	R97 (Release 1997)	
	C (functional modification of feature)	R98 (Release 1998)	
	D (editorial modification)	R99 (Release 1999)	
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Rel-4 (Release 4)	
		Rel-5 (Release 5)	
		Rel-6 (Release 6)	

Reason for change:	№ Service Designers are having difficulty establishing exactly how Apply Charging and Apply Charging Report work for GPRS. CN2 have agreed an example in a discussion paper that clarifies the mechanism. So that this information is not lost, it should be included as an informative annex in 23.078.
Summary of change:	№ Introduction of a new Annex A (informative) containing an example information flow for Apply Charging and Apply Charging Report, and associated text. As a consequence, the change history is moved to Annex B.
Consequences if not approved:	№ Potential mis-interpretations of the handling of Apply Charging and Apply Charging Report for GPRS.

Clauses affected:	№ 6.5.3.8.1, Annex A (new), Annex B (renumbered)						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	№
	Y	N					
	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test specifications					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	O&M Specifications					
Other comments:	№ This example is also applicable to CAMEL3 (R99 onwards), however it is not seen as an essential correction for R99 – the inclusion in Rel-5 is sufficient as a guide for service designers and implementers.						

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

6.5.3.8 GPRS duration and volume control

6.5.3.8.1 Examples of information flows for GPRS session and PDP context control

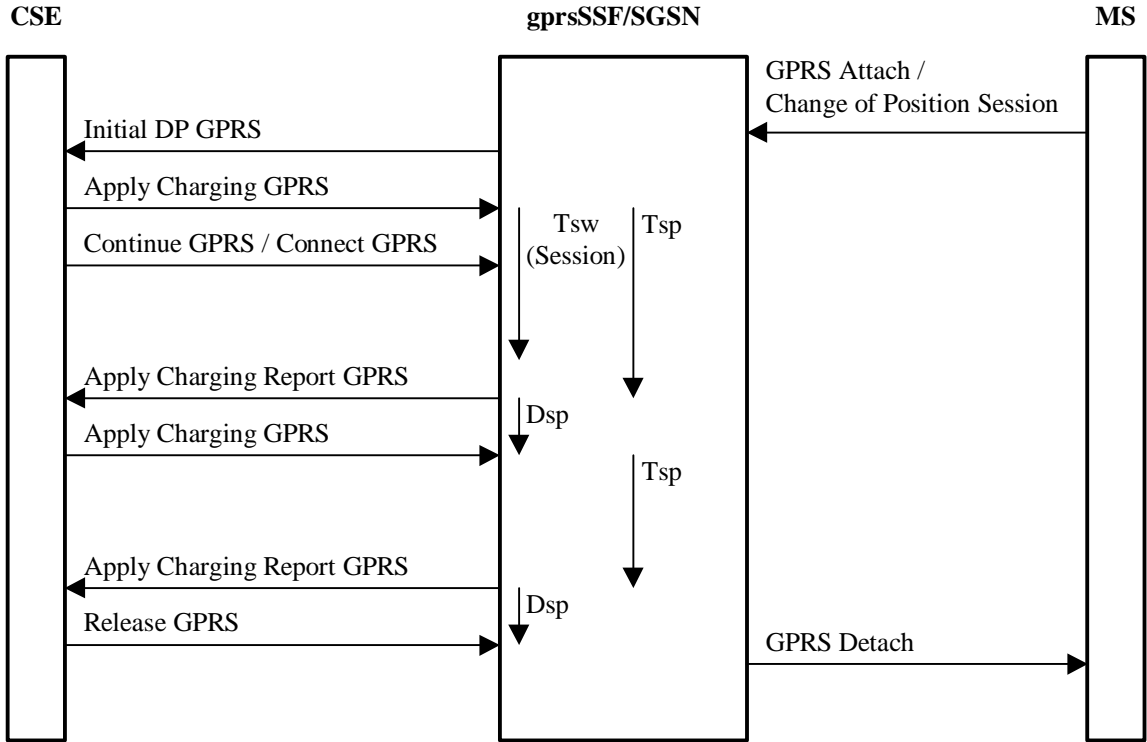


Figure 6.16-1: Example of information flows for GPRS session duration at GPRS attach and change of position session

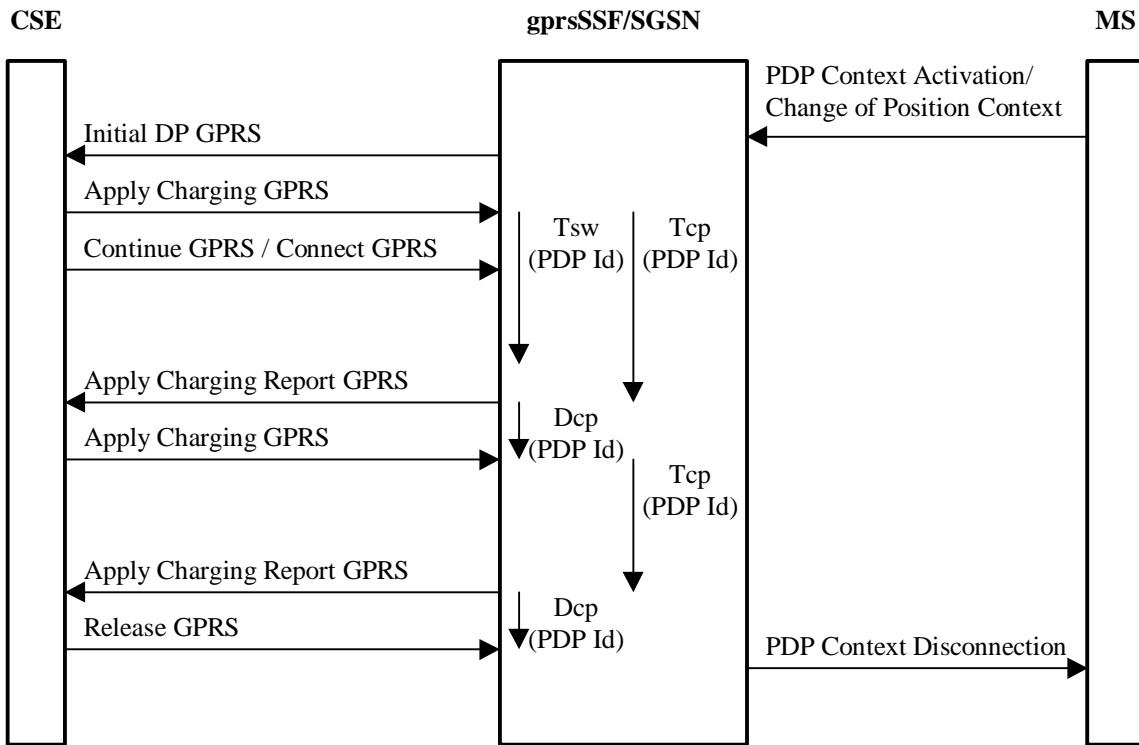


Figure 6.16-2: Example of information flows for PDP context duration control at context activation and change of position context

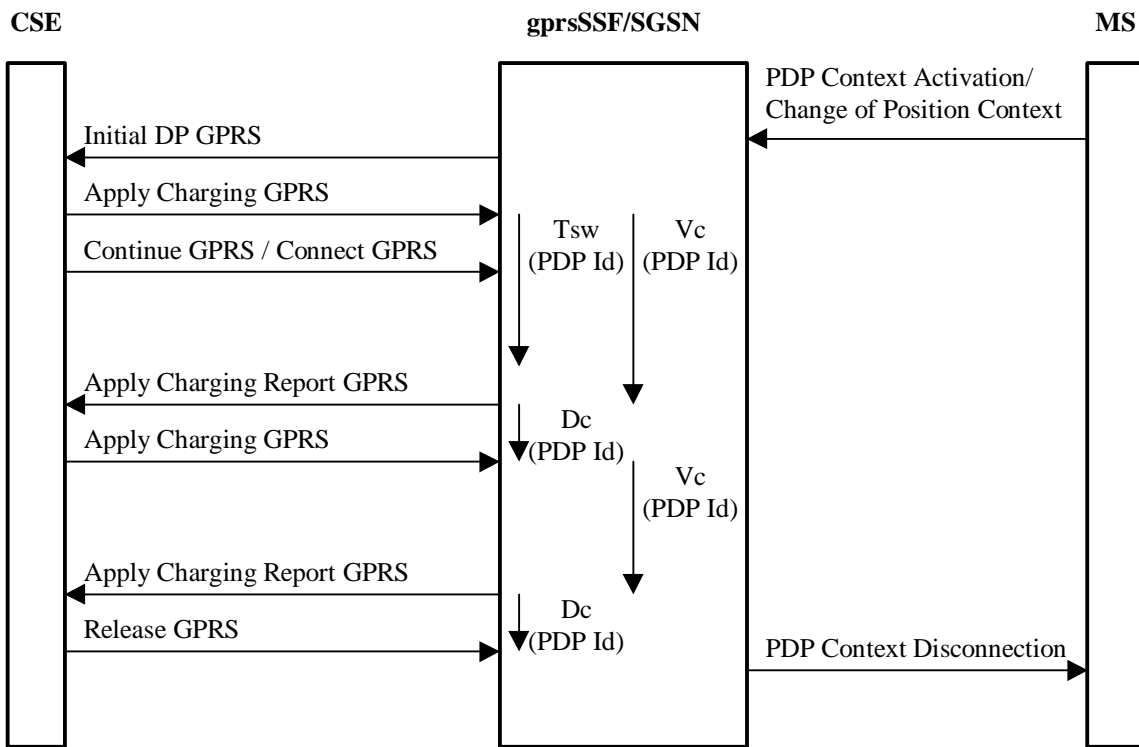
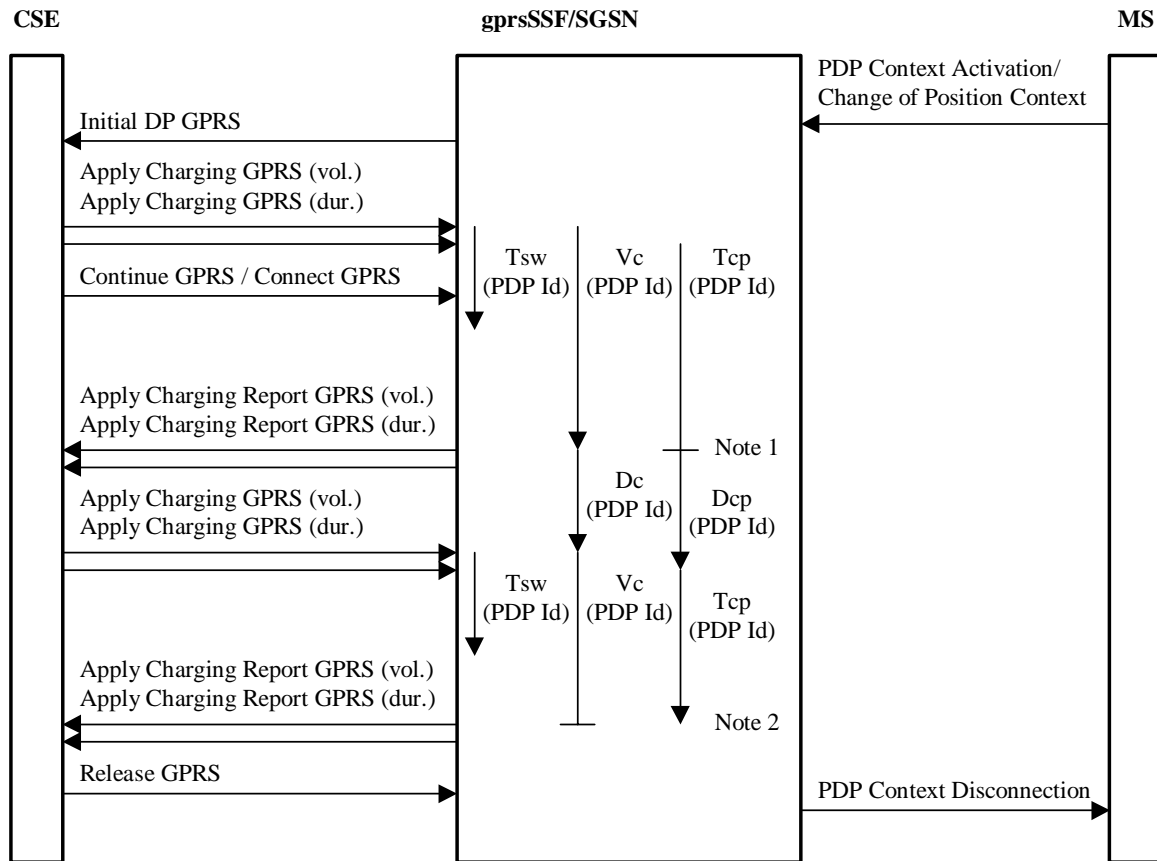


Figure 6.16-3: Example of information flows for PDP context volume control at context activation and change of position context



Note1: Vc threshold reached, Tcp is stopped.
 Note2: Tcp time out, Vc is stopped.

Figure 6.16-4: Example of information flows for PDP context volume and duration control at context activation and change of position context

These figures 6.16-1 to 6.16-4 show examples of handling of the timers that are used in the process gprsSSF and in the procedures Handle_AC_GPRS and Handle_ACR_GPRS.

Duration timers (Tsp for the GPRS session and one Tcp for each PDP context) are used if the charging is on duration of the GPRS session or a PDP context.

Tariff Switch Timers (Tsw(Session) for the GPRS session and one Tsw(PDP Id) for each PDP context) define the start point of a new Tariff. Tsw(Session) is used for charging on duration. Tsw(PDP Id) is used for both methods of charging: duration charging and volume charging. If a PDP context is charged on duration and volume, only one Tsw(PDP Id) timer will be accepted from the gsmSCF for that PDP context.

Delta timers measure the response time of the gsmSCF after an Apply Charging Report GPRS information flow:

- Dsp for the GPRS session; this delta timer is used for GPRS session period timing.
- Dcp for each PDP context; these delta timers are used for PDP context period timing.
- Dc for each PDP context; these delta counters are used for PDP context volume counting.

After the sending of Apply Charging Report GPRS, the gsmSCF may reply either with:

- Apply Charging GPRS, if the gsmSCF sends a new duration because of the expiration of the previous period or because of QOS change.
- Release GPRS, if the gsmSCF decides to release the GPRS session or PDP context.

[For a more detailed example of the handling of the Apply Charging GPRS and Apply Charging Report GPRS information flows, see Annex A.](#)

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

[Annex A \(informative\): Handling of Apply Charging and Apply Charging Report for GPRS](#)

[This Annex provides an example to demonstrate the handling of Apply Charging and Apply Charging Report for GPRS.](#)

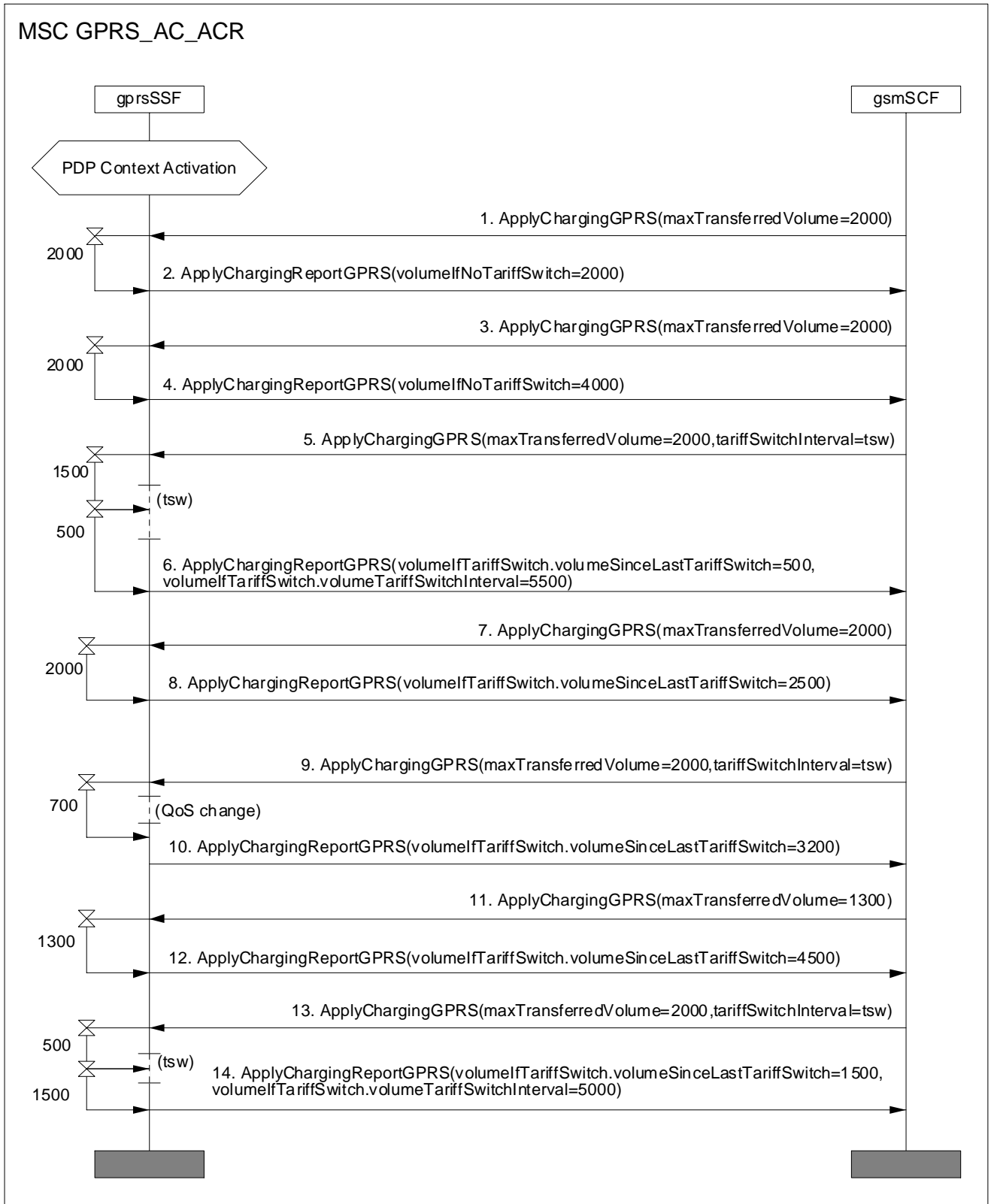


Figure A.1: Example of Handling of Apply Charging and Apply Charging Report for GPRS

In Figure A.1, data volumes transferred for the active PDP context are listed on the left-hand side of diagram. The following is a description of the example:

1. [Apply Charging GPRSthreshold set to 2000, no tariff switch timer set.](#)
2. [After 2000 units of data have been transferred, an Apply Charging Report GPRS is sent to the gsmSCF.](#)

3. The gsmSCF sends another Apply Charging GPRS with a 2000 unit threshold.
4. After 2000 units of data have been transferred, an Apply Charging Report GPRS is sent to the gsmSCF.
5. Another threshold (2000) is set by the gsmSCF in Apply Charging GPRS, and a tariff switch timer is set.
6. After 2000 units have been transferred, Apply Charging Report GPRS is sent to the gsmSCF, as a tariff switch timer has expired since the last Apply Charging GPRS, values for volumeTariffSwitchInterval and Volume transferred since the tariff switch are sent. The gsmSCF stores the value volumeTariffSwitchInterval.
7. The gsmSCF sends another Apply Charging GPRS with a 2000 unit threshold.
8. After 2000 units of data have been transferred, an Apply Charging Report GPRS is sent to the gsmSCF.
9. Apply Charging GPRS sets a tariff switch timer, which does not expire before the next Apply Charging Report GPRS.
10. A change in QoS is reported so Apply Charging Report GPRS is returned to the gsmSCF containing VolumeIfNoTariffSwitch as no tariff switch has occurred since the last Apply Charging Report GPRS. The gsmSCF should store this value if the volume of data transferred at each QoS level is to be calculated. The tsw sent in the previous Apply Charging GPRS is stopped. In this example the tariff switch timer (tsw) does not expire before this QoS change. If tsw had expired the Apply Charging Report GPRS would report the volumeTariffSwitchInterval in the normal way.
11. An Apply Charging GPRS is sent giving a new threshold. *This threshold is service logic dependant and does not rely on any previous value sent. In the example it is 'previous threshold - volume transferred since last threshold was set'.
12. The VolumeSinceLastTariffSwitch is reported in the Apply Charging Report GPRS. Note: this includes data transferred before and after the QoS change.
13. Note that a tariff switch timer is set and expires.
14. A final A Apply Charging Report GPRS is returned containing the data volume transferred since the last tariff switch, and also the total volume transferred at the previous tariff.

The calculations made by the gsmSCF in this example are:

1. Total Data Volume Transferred in this example:

Total of all volumeTariffSwitchInterval received + final volumeSinceLastTariff switch.

(5500 + 5000) + 1500 = 12000 units of data

2. Data Volume transferred for each tariff: (periods separated by tsw in figure A.1)

1st Tariff: taken from ApplyChargingReport (signal No. 6) volumeTariffSwitchInterval = 5500 units of data

2nd Tariff: taken from ApplyChargingReport (signal No. 14) volumeTariffSwitchInterval = 5000 units of data

3rd Tariff: taken from VolumeSinceLastTariffSwitch (signal No. 14) volumeTariffSwitchInterval = 1500 units of data

3. Data Volume Transferred at each QoS level (One QoS Change Occurs in figure A.1)

1st QoS level (up to signal 10):

All volumeTariffSwitchIntervals + final VolumeSinceLastTariffSwitch at QoS change

5500 + 3200 = 8700 units of data

2nd QoS level (from signal 10 onwards):

(Value of first VolumeTariffSwitchInterval received after QoS change - VolumeNoTariffSwitch Received directly after QoS change) + Volume transferred since this tariff switch

(5000-3200) + 1500 = 3300 units of data

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Note: The volume reported to the gsmSCF in an Apply Charging Report GPRS may exceed the threshold sent in the previous Apply Charging GPRS, e.g. if the delta timer exceeds the threshold received in the subsequent Apply Charging GPRS or a data packet is transferred causing the threshold to be exceeded.

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

Annex **BA** (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2002-06	CN#16	NP-020205	394	1	Composite changes for CAMEL phase 4	4.4.0	5.0.0
2002-09	CN#17	NP-020343	412	1	CPH clarification on overall SDL architecture	5.0.0	5.1.0
2002-09	CN#17	NP-020343	414		Move Leg not allowed before Active phase of "normal" A-B call	5.0.0	5.1.0
2002-09	CN#17	NP-020343	415	1	Disconnect of penultimate leg in CSID1	5.0.0	5.1.0
2002-09	CN#17	NP-020347	416	3	Handling of partial implementations of CAMEL phase 4	5.0.0	5.1.0
2002-09	CN#17	NP-020345	417		Removal of ChargingNotification feature	5.0.0	5.1.0
2002-09	CN#17	NP-020343	419	1	No use of Call Segment ID for the direct gsmSCF - gsmSRF case	5.0.0	5.1.0
2002-09	CN#17	NP-020345	420	1	Clean-up of LocationInformation table for Call_Accepted DP	5.0.0	5.1.0
2002-09	CN#17	NP-020342	421		Correction of clause 4.3.3 N-CSI	5.0.0	5.1.0
2002-09	CN#17	NP-020342	422		Inconsistency for the negotiated Camel Capability handling of the D-CSI	5.0.0	5.1.0
2002-09	CN#17	NP-020343	423		Change "Initial Call Segment" to "CSID1"	5.0.0	5.1.0
2002-09	CN#17	NP-020343	424		Removal of DP_MidCall state from CAMEL_EXPORT_LEG_MSC	5.0.0	5.1.0
2002-09	CN#17	NP-020343	425		FtN in Perform Call Handling ack	5.0.0	5.1.0
2002-09	CN#17	NP-020476	426	1	CSA_gsmSSF: Handling signals in states such as DL_ack	5.0.0	5.1.0
2002-09	CN#17	NP-020476	429		Wrong State Name in CSA_gsmSSF	5.0.0	5.1.0
2002-09	CN#17	NP-020476	430		Change Int_Continue_Without_Leg2 to Int_Disconnect_Leg (Leg2)	5.0.0	5.1.0
2002-09	CN#17	NP-020476	431		Contents of CWA at MidCall DP	5.0.0	5.1.0
2002-09	CN#17	NP-020343	432	1	Introduction of CPH Definitions	5.0.0	5.1.0
2002-09	CN#17	NP-020340	435	1	Correction in CAMEL_MO_Dialled_Services procedure	5.0.0	5.1.0
2002-09	CN#17	NP-020340	443	1	Inconsistent description on ACR: time information	5.0.0	5.1.0
2002-09	CN#17	NP-020342	446	1	Secondary PDP context for DP change of position context	5.0.0	5.1.0
2002-09	CN#17	NP-020342	447	2	Detail description for applicability of call cases	5.0.0	5.1.0
2002-09	CN#17	NP-020341	450		CAMEL3 inter-working with Rel-4 GPRS barring	5.0.0	5.1.0
2002-12	CN#18	NP-020527	418	4	Playing of Warning Tones	5.1.0	5.2.0
2002-12	CN#18	NP-020526	427	2	Use of Release Call & Release Call Segment in gsmSSF processes	5.1.0	5.2.0
2002-12	CN#18	NP-020526	449	1	Correction of handling of MT-SMS in the SGSN	5.1.0	5.2.0
2002-12	CN#18	NP-020526	452	2	Clarification of architecture for CAMEL control of SMS	5.1.0	5.2.0

2002-12	CN#18	NP-020526	453		Correction of handling of MT-SMS in the VLR	5.1.0	5.2.0
2002-12	CN#18	NP-020526	454		Correction of IDPs in new section 4.5.1	5.1.0	5.2.0
2002-12	CN#18	NP-020526	456		Add result from GPRS mobility management procedure	5.1.0	5.2.0
2002-12	CN#18	NP-020526	457	1	Detach report in inter-SGSN routeing area update	5.1.0	5.2.0
2002-12	CN#18	NP-020525	461		Correction to interaction between MO-SMS and CB / ODB	5.1.0	5.2.0
2002-12	CN#18	NP-020527	466	1	Correction to VLR Address in Location Information	5.1.0	5.2.0
2002-12	CN#18	NP-020526	470	2	Resolving of open issues on "Support of partial implementation of CAMEL"	5.1.0	5.2.0
2002-12	CN#18	NP-020523	480		Correction to QoS reporting and delta timer overflow	5.1.0	5.2.0
2002-12	CN#18	NP-020527	482		Correction on DP name	5.1.0	5.2.0
2002-12	CN#18	NP-020529	483		Figure and table numbers	5.1.0	5.2.0
2002-12	CN#18	NP-020528	484	1	Better SDL CSA_gsmSSF	5.1.0	5.2.0
2002-12	CN#18	NP-020527	485	1	Correction of "Support of partial implementation of CAMEL"	5.1.0	5.2.0
2002-12	CN#18	NP-020524	489	1	Number comparison for D-CSI	5.1.0	5.2.0
2002-12	CN#18	NP-020528	490	1	Handling of Apply Charging after gsmSCF terminates dialogue or sends 'Release Call'	5.1.0	5.2.0
2002-12	CN#18	NP-020527	494		Inconsistent description "Store destination address"	5.1.0	5.2.0
2002-12	CN#18	NP-020528	495	1	Correction to ATI handling in HLR	5.1.0	5.2.0
2002-12	CN#18	NP-020528	499	1	MSC-number in MAP Location Information	5.1.0	5.2.0
2002-12	CN#18	NP-020528	500	1	ASN default for Flexible Tone BurstInterval due to MEGACO	5.1.0	5.2.0
2002-12	CN#18	NP-020527	504		Removal of redundant information elements from Location Information	5.1.0	5.2.0
2002-12	CN#18	NP-020524	507	2	Clarification on ATM -> NSDC when status of one SS impacts another SS status	5.1.0	5.2.0
2002-12	CN#18	NP-020524	512		Correction to Dialed Services criteria	5.1.0	5.2.0

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

CHANGE REQUEST

⌘ **23.078 CR 533** ⌘ rev **2** ⌘ Current version: **5.2.0** ⌘

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:	⌘ Buffering of TC messages in the SGSN while waiting for the first SCP response		
Source:	⌘ Nokia		
Work item code:	⌘ CAMEL4	Date:	⌘ 14/02/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> 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 <u>one</u> 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:	⌘ An interworking problem exists in a case when SGSN/gprsSSF opens a TC dialogue, and is waiting for first response from SCP/gsmSCF. During the waiting state an event occurs in SGSN. Shall the gprsSSF process be halted while waiting, or shall the GPRS_Dialogue_Handler process (or TC) buffer the message? The problem can be highlighted with the following example: 1. CAMEL relationship exists, CAMEL relationship open, DPs armed, ApplyChargingGPRS report pending. 2. ApplyChargingGPRS Treshold reached (volume or duration) 3. TC-BEGIN(ACR-GPRS) to SCP from SGSN. 4. Subscriber clears before SCP responds. 5. Therefore, Int_DP_PDP_Context_Disconnection to gprsSSF in state Monitoring. 6. gprsSSF sends CAP-Event_Report_GPRS to GPRS_Dialogue_handler process. (Shall GPRS_Dialogue_handler buffer the message, not shown in SDL?) 7. SCP sends TC-CONTINUE(ACR-GPRS-result, AC) to SGSN 8. SGSN may respond now with CAP-Event_Report_GPRS but 9. SCP may expect ACR-GPRS as set pending. If this CR is accepted then CAP-Event_Report_GPRS shall be sent as in number
---------------------------	--

8.

The handling of AC-GPRS received in (7) depends on the fact whether SCP sends ContinueGPRS or ReleaseGPRS operation. This handling is not changed in this CR.

Summary of change: ⌘ GPRS_Dialogue_Handler SDL process is changed to buffer messages when the gprsSSF opens a TC dialogue.

Consequences if not approved: ⌘ Inter-working problem remains, especially when PDP context is cleared before SCP responds to TC-BEGIN.

Clauses affected: ⌘

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

Other comments: ⌘

1. In our understanding TC does not buffer messages in ITU specifications.
2. gprsSSF shall not be halted while waiting the SCP response. The SGSN behaviour shall be identical in all cases regardless whether TC dialogue is open or not. Also MSC reports DPs instantly.
3. In state "Active" all saved messages are discarded also in the SDL. However, in this state there should be no saved messages. Messages are to be discarded at receipt of TC-ABORT and TC-END. It should be noted that SGSN is expected to close TC dialogues with TC-END, not the SCP.

-- For Your Information --

6.5.3.2 Process GPRS_Dialogue_Handler

When process gprsSSF sends a TC_End request primitive to process GPRS_Dialogue_Handler, then the corresponding TC_End TC Message shall be sent to the gsmSCF only when the following conditions have been fulfilled:

- The gprsSSF has processed all information flows that the gprsSSF has received from the gsmSCF.
- No information flows remain to be sent from the gprsSSF to the gsmSCF.
- The gprsSSF is not waiting for a Result or Error component for any information flows that the gprsSSF has sent to the gsmSCF.

-- First Modified Section --

6.5.3.9 SDL diagrams for process GPRS_SSF and procedures

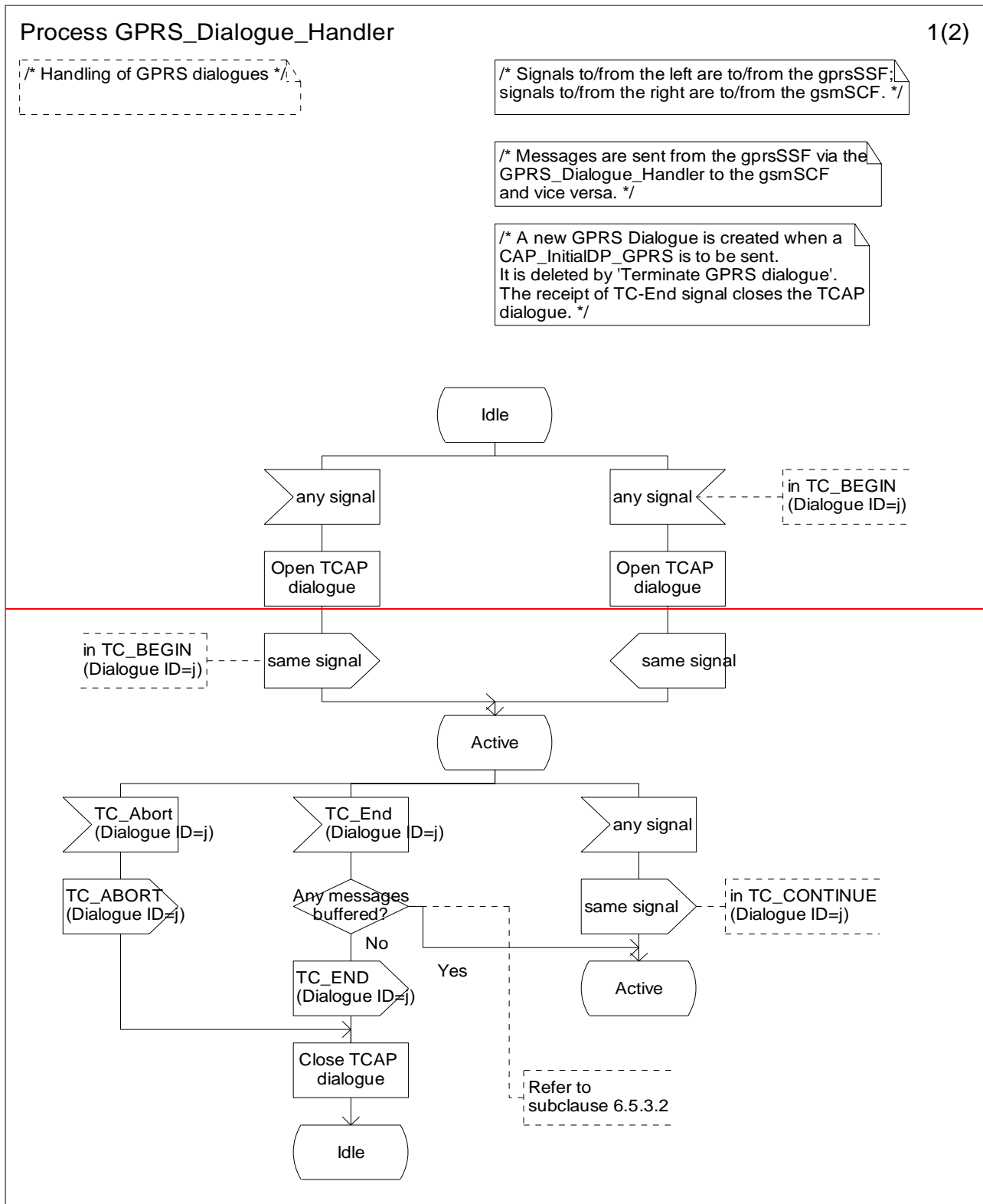


Figure Error! Reference source not found..1-1: Process GPRS_Dialogue_Handler (sheet 1)

Process GPRS_Dialogue_Handler

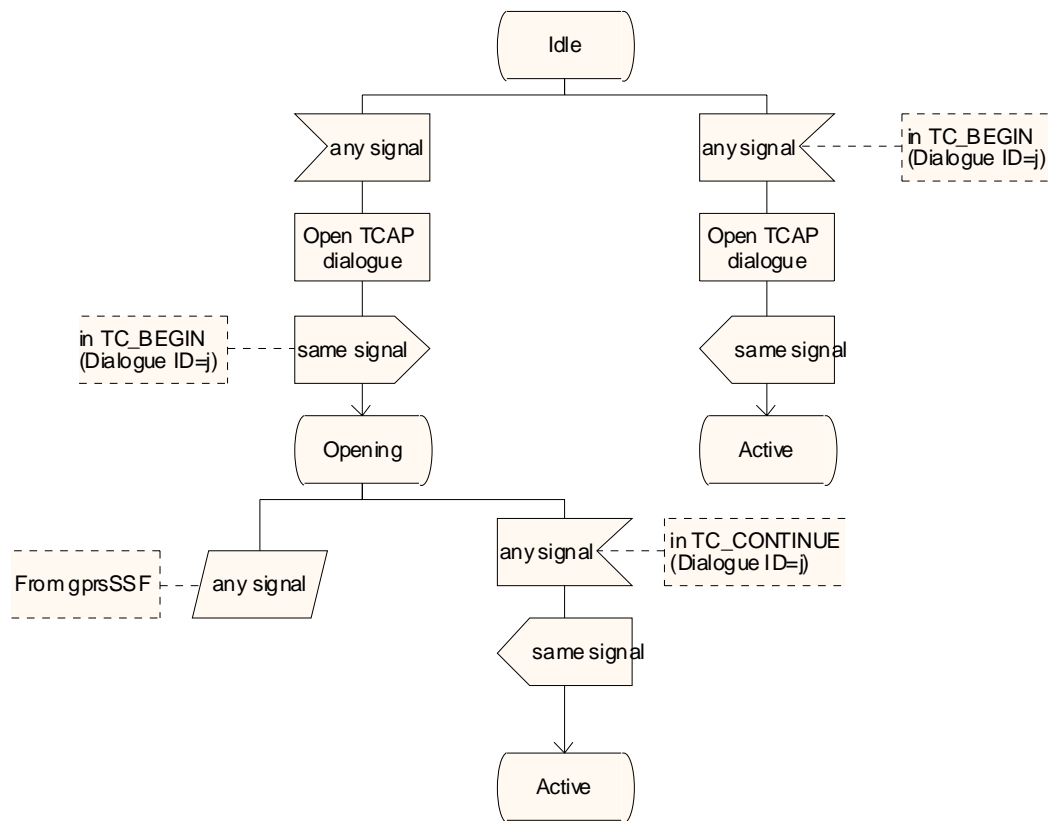
1(3)

/* Handling of GPRS dialogues */

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

/* Messages are sent from the gprsSSF via the GPRS_Dialogue_Handler to the gsmSCF and vice versa. */

/* A new GPRS Dialogue is created when a CAP_InitialDP_GPRS is to be sent. It is deleted by 'Terminate GPRS dialogue'. The receipt of TC-End signal closes the TCAP dialogue. */



Process GPRS_Dialogue_Handler

2(2)

/ Handling of GPRS dialogues */*

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

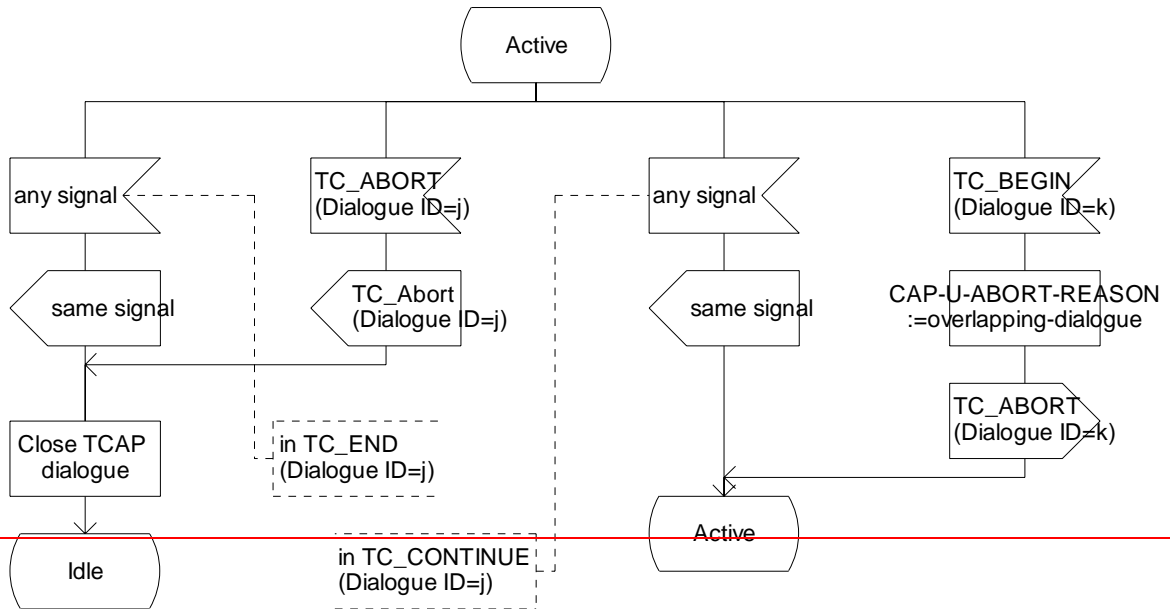
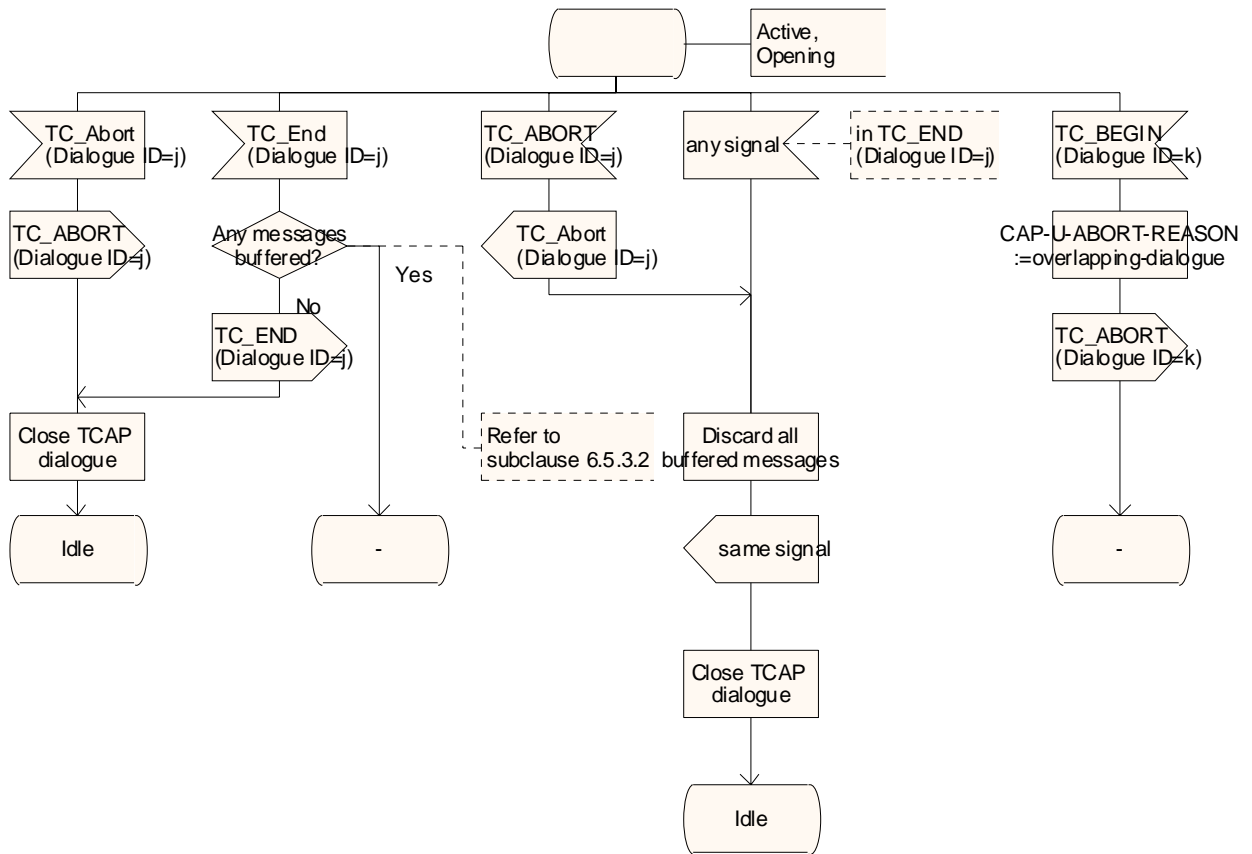


Figure 6.18-2: Process GPRS_Dialogue_Handler (sheet 2)

Process GPRS_Dialogue_Handler

2(3)

/* Handling of GPRS dialogues */



Process GPRS_Dialogue_Handler

3(3)

** Handling of GPRS dialogues **

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

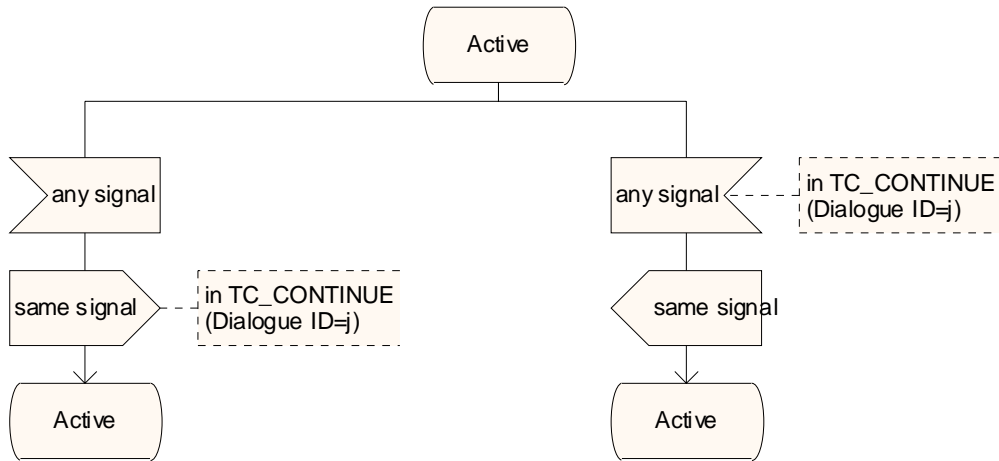


Figure 6.18-3: Process GPRS_Dialogue_Handler (sheet 3)