

**3GPP TSG\_CN  
Plenary Meeting #9, Oahu, Hawaii  
20<sup>th</sup> – 22<sup>nd</sup> September 2000.**

**Tdoc NP-000456**

**Source:** TSG\_N WG2  
**Title:** CRs to R99 Work Item CAMEL phase 3 - corrections to 23.078  
**Agenda item:** 8.2.2  
**Document for:** APPROVAL

**Introduction:**

This document contains 15 CRs on R99 Work Item **CAMEL phase 3** that has been agreed by TSG\_N WG2, and is forwarded to TSG\_N Plenary meeting #9 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C	Ver_N
23.078	192		N2-000287	R99	Editorial corrections and enhancements	D	3.5.0	3.6.0
23.078	203	1	N2-000342	R99	Move of processing rules for GPRS context.	D	3.5.0	3.6.0
23.078	134	4	N2-000327	R99	Interworking of Call Forwardings and new CAMEL3 trigger detection points	F	3.4.0	3.6.0
23.078	137	4	N2-000418	R99	E-parameter handling of distinct CAP dialogues/TDPs	F	3.5.0	3.6.0
23.078	185	1	N2-000336	R99	Addition of the Handle_FCI_GPRS procedure	F	3.5.0	3.6.0
23.078	186		N2-000275	R99	Correction to Procedure CAMEL_ICH_MSC_INIT	F	3.5.0	3.6.0
23.078	187	1	N2-000358	R99	Transfer of Procedure Check_CD_SII2 from TS 23.072	F	3.5.0	3.6.0
23.078	188	2	N2-000411	R99	Update of References for the Location Information IE	F	3.5.0	3.6.0
23.078	190		N2-000283	R99	Removal of duplicate SGSN address/number from IDP-GPRS	F	3.5.0	3.6.0
23.078	191		N2-000286	R99	Clean-up the Monitoring state User Interaction	F	3.5.0	3.6.0
23.078	193	1	N2-000335	R99	GPRS Change of Position Procedure for Session and Context	F	3.5.0	3.6.0
23.078	194	3	N2-000438	R99	Corrections on GPRS	F	3.5.0	3.6.0
23.078	198	3	N2-000378	R99	Location Number GPRS	F	3.5.0	3.6.0
23.078	200	7	N2-000439	R99	ACR/AC supervision for GPRS	F	3.5.0	3.6.0
23.078	201	1	N2-000326	R99	Correction to Procedure CAMEL_Modify_CUG_Info	F	3.5.0	3.6.0

<h2 style="margin: 0;">CHANGE REQUEST</h2>		Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.	
<b>23.078 CR 192</b>		Current Version: <b>3.5.0</b>	
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team	
For submission to: <b>CN #09</b>	for approval <input checked="" type="checkbox"/>	strategic <input type="checkbox"/>	(for SMG use only)
list expected approval meeting # here ↑	for information <input type="checkbox"/>	non-strategic <input type="checkbox"/>	

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

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

**Source:**    N2    **Date:**    30.06.2000

**Subject:**    Editorial corrections and enhancements

**Work item:**    CAMEL Phase 3

<b>Category:</b>	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input checked="" type="checkbox"/>		<b>Release:</b>	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
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(only one category shall be marked with an X)

**Reason for change:**    Various editorial correction and enhancements

**Clauses affected:**    4.6.9.1.2, 7.6.3.2.2, 7.6.5.2.2

<b>Other specs affected:</b>	Other 3G core specifications <input type="checkbox"/> Other GSM core specifications <input type="checkbox"/> MS test specifications <input type="checkbox"/> BSS test specifications <input type="checkbox"/> O&M specifications <input type="checkbox"/>	→ List of CRs: → List of CRs: → List of CRs: → List of CRs: → List of CRs:
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**Other comments:**

— **First 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 3G TS 23.018 [3] and 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 IE:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
Location Information	C	This IE indicates the location of the served subscriber.
O-CSI	C	This IE identifies the subscriber as having originating CAMEL services.  Shall be sent if O-CSI is active, and CFU or CFNRc has been invoked, or if both O-CSI and T-CSI are active.
D-CSI	C	This IE identifies the subscriber as having originating CAMEL dialled services.  Shall be sent 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: <ul style="list-style-type: none"> <li>- CAMELBusy: The VLR has indicated that the MS is engaged on a transaction for a mobile originating or terminated circuit-switched call.</li> <li>- NetworkDeterminedNotReachable: The VLR has indicated that the network can determine from its internal data that the MS is not reachable.</li> <li>- AssumedIdle: The VLR has indicated that the state of the MS is neither "CAMELBusy" nor "NetworkDeterminedNotReachable".</li> <li>- NotProvidedFromVLR: The VLR did not provide any information on subscriber state even though it was requested.</li> </ul>
T-CSI	C	This IE identifies the subscriber as having terminating CAMEL services.  Shall be sent if T-CSI is active and no Suppress T-CSI indicator is present in the SRI.
Basic Service Code	C	This IE indicates the type of basic service i.e., teleservice or bearer service.
CUG Subscription Flag	C	This IE indicates if the called party has a CUG subscription. It shall only be sent if the T-CSI is active and included in the Send Routing Information ack.

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

Location Information contains the following information:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
Location Number	C	See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.
CellGlobalIdOrServiceAreaIdOrLAI	C	See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.
Geographical Information	C	See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.
Geodetic Information	C	See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.
Age Of Location Information	C	See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.
VLR number	C	See 3G TS 23.018 [3].
Selected LSA Identity	C	See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.

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

O-CSI is defined in subclause 4.3.1.

D-CSI is defined in ~~section~~ subclause 4.3.2.

T-CSI contains the following information:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
gsmSCF Address	M	This IE is described in subclause 4.3.3.
Service Key	M	This IE is described in subclause 4.3.3.
Default Call Handling	M	This IE is described in subclause 4.3.3.
TDP List	M	This IE is described in subclause 4.3.3.
CAMEL Capability Handling	C	This IE is described in subclause 4.3.3. If this IE is absent, this indicates that CAMEL phase 1 is asked.

M Mandatory.

C Conditional.

— Next modified section —

## 7.6.3 HLR to VLR information flows

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### 7.6.3.2 Insert Subscriber Data

#### 7.6.3.2.1 Description

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

#### 7.6.3.2.2 Information Elements

The Insert Subscriber Data contains the following CAMEL specific IE for MO SMS:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
SMS-CSI	C	This IE identifies the subscriber having MO SMS CAMEL services.

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

SMS-CSI contains the following information:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
gsmSCF Address	M	See subclause 7.3.1.1.
Service Key	M	See subclause 7.3.1.2.
Default SMS Handling	M	See subclause 7.3.1.3.
CAMEL Capability Handling	M	See subclause 7.3.1.5.
SMS Triggers	M	<del>See subclause 7.3.1.4. This IE is described in section x.</del> It includes the following trigger: - <i>SMS_Collected_Info</i>

M Mandatory (the IE shall always be sent).

**— Next modified section —**

## 7.6.5 HLR – SGSN information flows

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### 7.6.5.2 Insert Subscriber data

#### 7.6.5.2.1 Description

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

#### 7.6.5.2.2 Information Elements

Insert Subscriber Data contains the following MO SMS specific IE:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
SMS-CSI	C	This IE identifies the subscriber having MO SMS CAMEL services.

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

SMS-CSI contains the following information:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
gsmSCF Address	M	See subclause 7.3.1.1.
Service Key	M	See subclause 7.3.1.2.
Default SMS Handling	M	See subclause 7.3.1.3.
CAMEL Capability Handling	M	See subclause 7.3.1.5.
SMS Triggers	M	<del>See subclause 7.3.1.4. This IE is described in section x.</del> It includes the following trigger: <i>SMS_Collected_Info</i>

M Mandatory (The IE shall always be sent).



— Modified section —

## 6.4.4 GPRS CAMEL Scenarios

Two different scenarios are applicable for CAMEL control of GPRS.

### Scenario 1:

Scenario 1 allows CAMEL control of the GPRS session and of multiple PDP contexts related to this session within a single GPRS dialogue.

### Scenario 2:

Scenario 2 allows CAMEL control of single PDP contexts. Multiple PDP contexts are controlled in this scenario via multiple GPRS dialogues.

Scenario 1 and scenario 2 are mutually exclusive, i.e. it is not possible to use both for one GPRS session at the same time in one SGSN. A GPRS session is involved in GPRS CAMEL at one moment in time either by using scenario 1 or by using possible multiple instances of scenario 2. GPRS sessions in different SGSNs are independent from a CAMEL perspective.

A GPRS dialogue exists between gprsSSF and gsmSCF if at least one of the following conditions is fulfilled:

- There is at least one EDP armed.
- At least one report is pending.
- gprsSSF is in state WaitingForInstructions.

### 6.4.4.1 GPRS CAMEL Scenario 1

Scenario 1 allows CAMEL control of the GPRS session and of multiple PDP contexts related to this session within a single GPRS dialogue (Session dialogue).

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<b>CHANGE REQUEST</b>		Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.	
<b>23.078 CR 134r4</b>		Current Version: <b>3.4.0</b>	
GSM (AA.BB) or 3G (AA.BBB) specification number ↑		↑ CR number as allocated by MCC support team	
For submission to: <b>CN#09</b> <small>list expected approval meeting # here ↑</small>	for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>	strategic <input type="checkbox"/> non-strategic <input type="checkbox"/>	(for SMG use only)

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

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

**Source:**    **N2**    **Date:**    **18-07-00**

**Subject:**    **Interworking of Call Forwardings and new CAMEL3 trigger detection points**

**Work item:**    **CAMEL phase 3**

<b>Category:</b>	F Correction <input checked="" type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	<b>Release:</b>	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
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(only one category shall be marked with an X)

**Reason for change:**    When Call Forwarding is invoked, and there is no existing CAP dialogue to the SCP, the GMSC/VMSC shall use the new TDPs of CAMEL phase 3. This kind of functionality makes CAMEL3 more compatible with CAMEL2. The mapping from the "forwarding reason" to TDP triggering criteria is currently not specified. In addition, the SDLs of 3G TS 23.078 need to be updated. This CR proposes that Call Deflection is mapped to T\_Busy DP.  
 The revision 3 adds the handling of the 'CalledPartyNumber' field in 'Initial-DP' in case of TDPBusy or TDPNo reply.

**Clauses affected:**    \_\_\_\_\_

<b>Other specs affected:</b>	Other 3G core specifications <input type="checkbox"/> → List of CRs: Other GSM core specifications <input type="checkbox"/> → List of CRs: MS test specifications <input type="checkbox"/> → List of CRs: BSS test specifications <input type="checkbox"/> → List of CRs: O&M specifications <input type="checkbox"/> → List of CRs:	
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**Other comments:**    This CR also incorporates the changes presented in CR 23.078-087r6 (tdoc N2A000391 by Alcatel).  
 Tdoc N2a000331 -> N2A000402 -> N2-000231->N2-000325



**** FIRST MODIFIED SECTION ****
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#### 4.2.1.2.5 Criteria at DP T\_Busy and T\_No\_Answer

The HLR may store a list of up to 5 cause values.

The criteria for a mobile terminating call are checked in the GMSC or in MSC.

For mobile terminating calls in the GMSC, the HLR shall include the trigger criteria in the subscriber data sent to the GMSC. Reason is that the cause code received from ISUP is used in the trigger criteria check. The cause code is not known at the time of sending the T-CSI to the GMSC.

**If SRI-Ack includes the Not Reachable FTN, then HLR may decide not to include the trigger criteria, if the HLR has identified that T-CSI includes DP T Busy with cause code Not Reachable.**

If SRI-Ack includes the Not Reachable FTN and also T-CSI, including DP T Busy with cause code, then the not reachable condition shall be mapped to an ISUP release code, which shall be used for triggering check.

For Mobile terminating calls in the VMSC, the trigger criteria are received in the VT-CSI from the HLR in Insert Subscriber Data IF. The triggering is based on the ISUP release cause code (call set up result).

The following criteria are applicable for DP T\_Busy and T\_No\_Answer:

- Release cause code

The trigger criteria are met if the cause code received from ISUP or MAP is equal to at least one of the cause codes in the trigger criteria list.

If trigger criteria are satisfied, either in GMSC or VMSC, then the corresponding Service Logic shall be invoked. If a T-BCSM was already invoked and there is a control relationship at that moment, then no Service Logic shall be invoked.

**When a RCH message is received in the GMSC and the subscriber has T-CSI then the forwarding reason in the RCH message shall be used to perform trigger criteria check for DP T Busy or DP T No Answer. If a match is found, then the corresponding Service Logic shall be invoked.**

**If a T-BCSM was already invoked and there is a relationship at that moment, then no Service Logic shall be invoked.**

**Table 4.x: Mapping of Send Info For Incoming Call (SIFIC) response, Send Routeing Info Ack (SRI-Ack) or Resume Call Handling (RCH) to ISUP release causes for triggering criteria check**

<u>SIFIC response / SRI-Ack / RCH</u> <u>"forwarding reason"</u>	<u>ISUP release cause number</u>	<u>ISUP release cause name</u>
<u>MS not reachable</u>	<u>20</u>	<u>Subscriber absent</u>
<u>MS Busy</u>	<u>17</u>	<u>User busy</u>
<u>Call deflection (note)</u>	<u>21</u>	<u>Call rejected</u>
<u>No reply</u>	<u>19</u>	<u>No answer from user (user alerted)</u>

Note: Call Deflection is used only in the RCH operation, and in the Visited MSC. The same code point in the SIFIC response indicates CFU. However, the CFU invocation in the GMSC triggers in the Terminating Attempt Authorised DP; thus the reason code mapping is not needed in the CFU case.

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

Procedure CAMEL\_MT\_GMSC\_Notify\_CF

1(1)

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

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

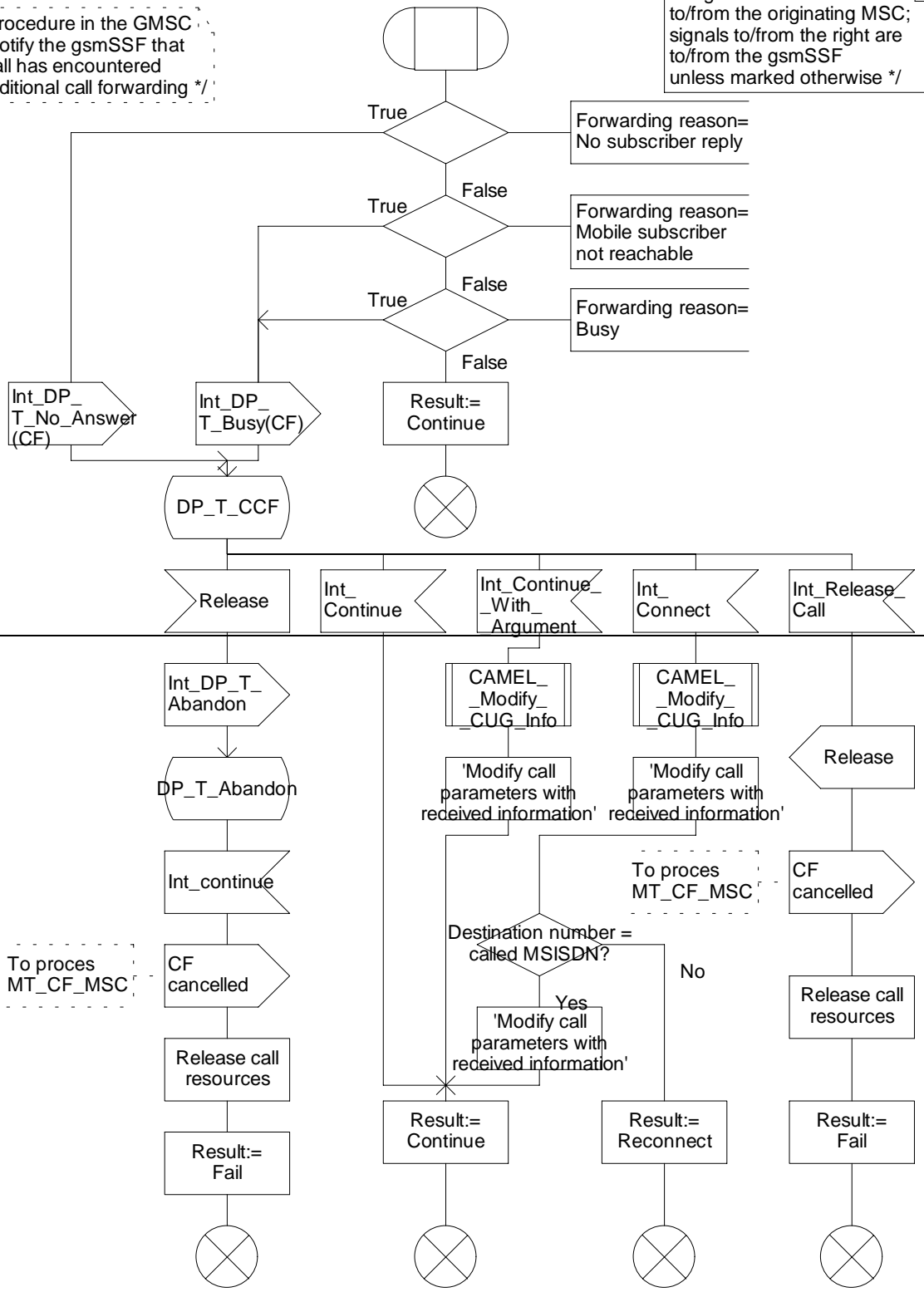


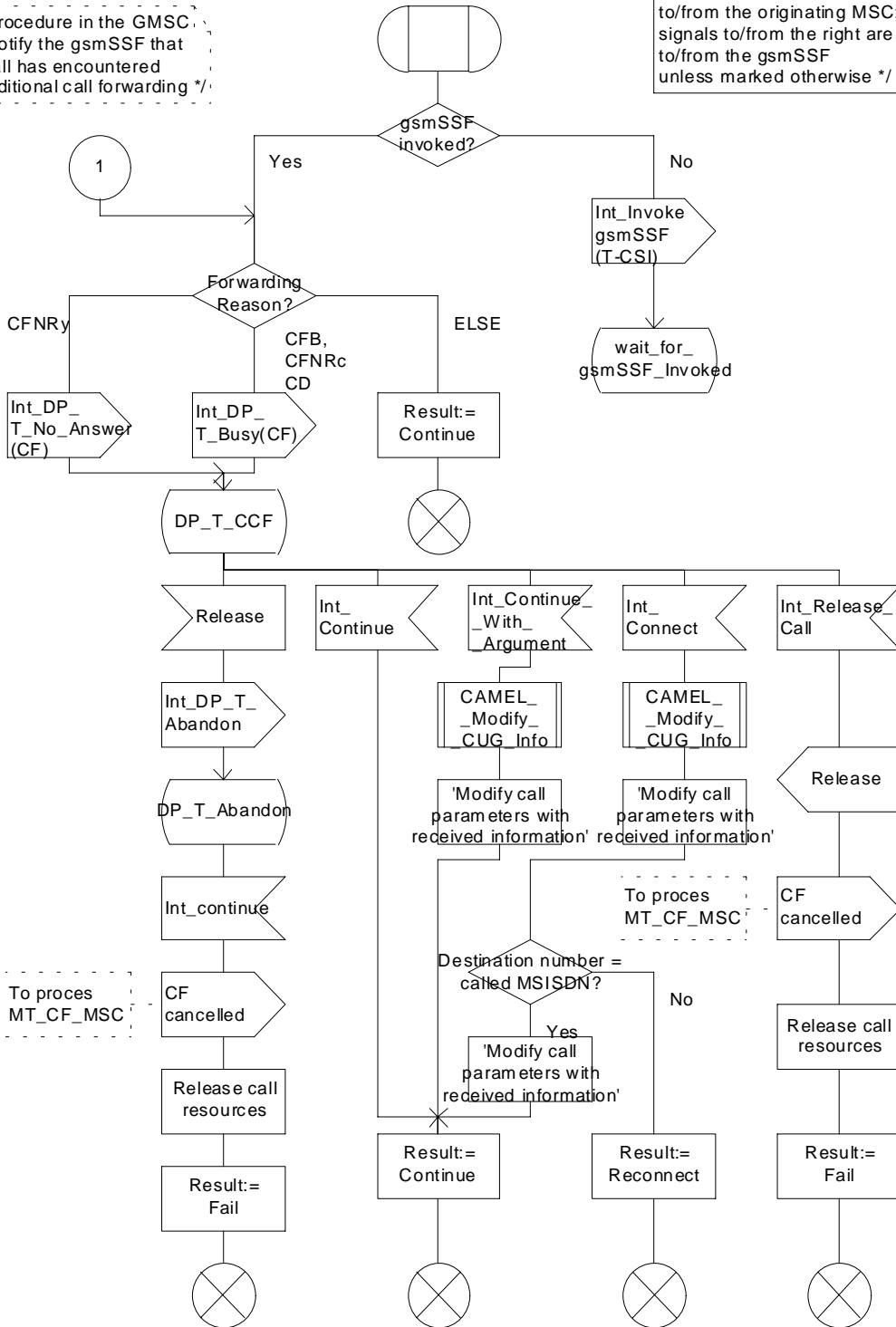
Figure 4.41: Procedure CAMEL\_MT\_GMSC\_Notify\_CF (sheet 1)

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 are to/from the originating MSC; signals to/from the right are to/from the gsmSSF unless marked otherwise \*/

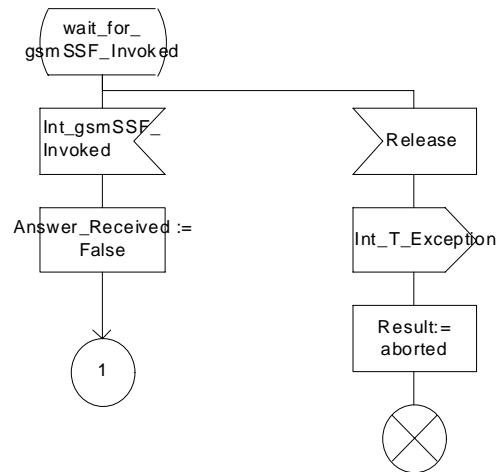


## Procedure CAMEL\_MT\_GMSC\_Notify\_CF

2(2)

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

Signals to/from the left are to/from  
the originating exchange;  
signals to/from the right are to/from  
the gsmSSF



Procedure CAMEL\_MT\_VMSC\_Notify\_CF

1(1)

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

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

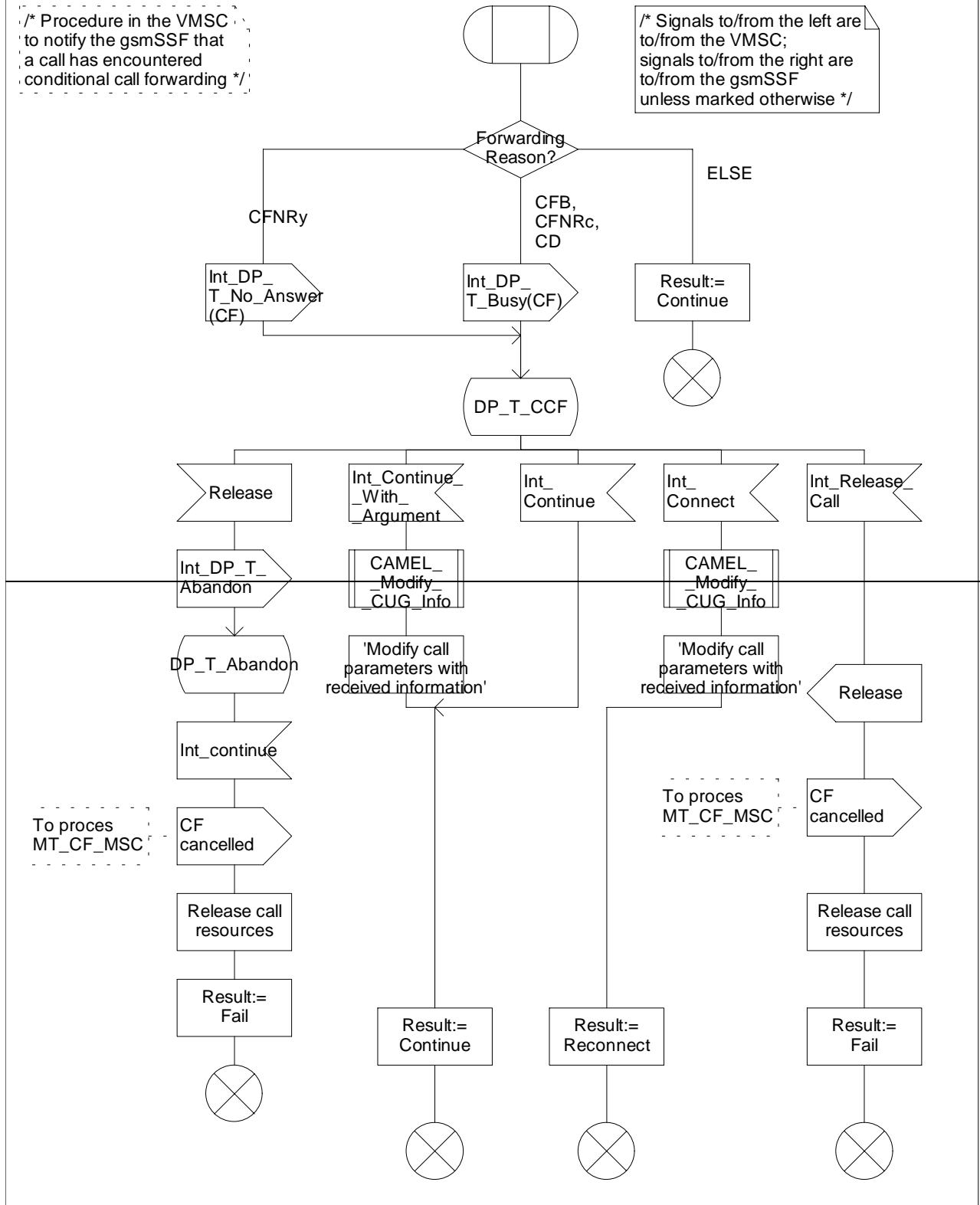


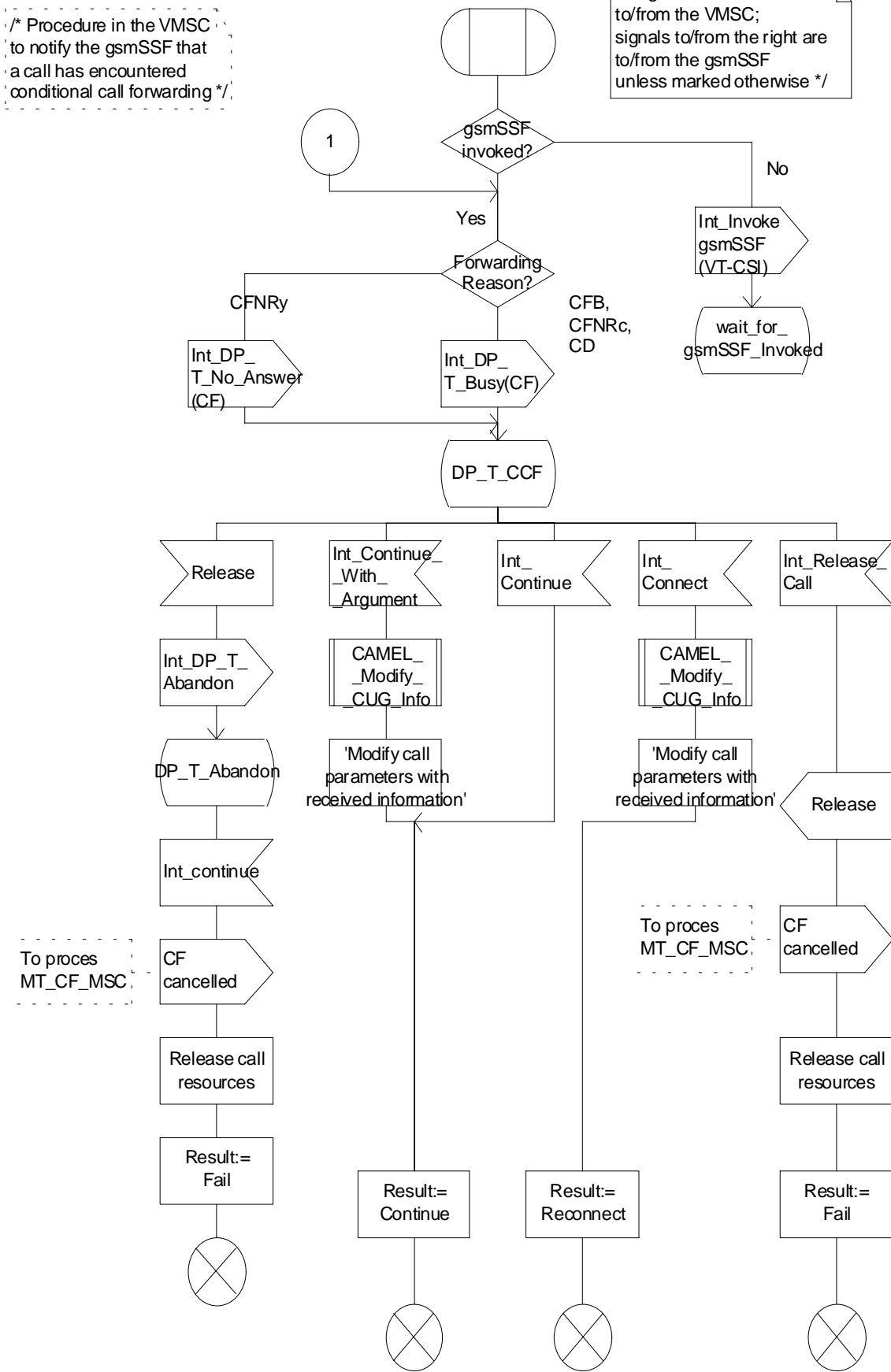
Figure 4.51: Procedure CAMEL\_MT\_VMSC\_Notify\_CF (sheet 1)

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 are to/from the VMSC; signals to/from the right are to/from the gsmSSF unless marked otherwise \*/

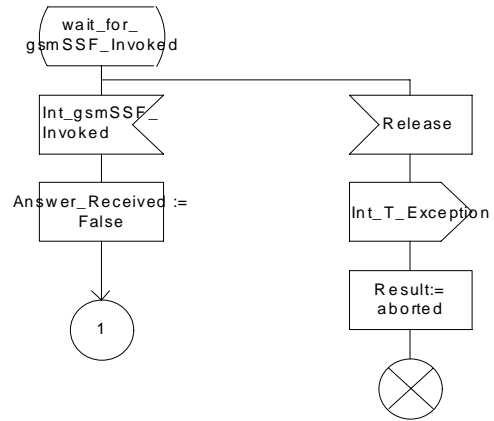


## Procedure CAMEL\_MT\_VMSC\_Notify\_CF

2(2)

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

Signals to/from the left are to/from  
the originating exchange;  
signals to/from the right are to/from  
the gsmSSF



**** NEXT MODIFIED SECTION ****
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## 4.6.1.5 Initial DP

## 4.6.1.5.1 Description

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

## 4.6.1.5.2 Information Elements

The following information elements are required:

Information element name	MO	MF	MT	VT	Description
Additional Calling Party Number	-	C	C	C	The calling party number provided by the access signalling system of the calling user.
Bearer Capability	M	C	C	C	This IE indicates the type of the bearer capability connection to the user.
Called Party Number	<u>C</u> -	M	M	M	<p>This IE contains the number used to identify the called party in the forward direction.</p> <p><u>For the MO and MF calls this parameter 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 a MSRN, or in the case of unsuccessful establishment-establishment received from the HLR via MAP interface, otherwise it is the number used to route the call).</u></p> <p><u>For the 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.</u></p>
Called Party BCD Number	<u>CM</u>	-	-	-	<p>This IE contains the number used to identify the called party in the forward direction. <u>It is used for MO call in all cases except in the case of TDP Route Select Failure.</u></p> <p><u>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.</u></p> <p><u>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 operation, service selection information, such as * and # digits may be present (refer paragraph-see subclause 4.2.1.2.2), or carrier selection information dialled by the subscriber is not present.</u></p>
Calling Party Number	M	C	C	C	This IE carries the calling party number to identify the calling party or the origin of the call.
Calling Partys Category	M	C	C	C	Indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).



Information element name	MO	MF	MT	VT	Description
CallGap Encountered	C	C	C	C	This parameter indicates the type of gapping the related call have been subjected to.  This parameter shall be present only if a call gapping context is applicable to the initialDP operation.
Call Reference Number	M	M	M	M	This IE may be used by the gsmSCF for inclusion in a network optional gsmSCF call record. It has to be coupled with the identity of the MSC which allocated it in order to define unambiguously the identity of the call.  For MO calls, the call reference number is set by the serving VMSC and included in the MO call record.  For MT calls, the call reference number is set by the GMSC and included in the RCF call record in the GMSC and in the MT call record in the terminating MSC.  For VT calls, the call reference number is set by the GMSC and included in the RCF call record in the GMSC and in the MT call record in the terminating MSC.  For CF calls, the call reference number is set by the GMSC and included in the CF record in the forwarding MSC.
Cause	C	C	C	C	This IE indicates the cause specific to the armed BCSM DP event. This IE is applicable to DP Route_Select_Failure and DP T_Busy. The cause may be used by the SCF to decide about the further handling of the call.
Event Type BCSM	M	M	M	M	This IE indicates the armed BCSM DP event, resulting in the Initial DP IF.
Ext-Basic Service Code	C	C	C	C	This IE indicates the type of basic service i.e., teleservice or bearer service.
High Layer Compatibility	C	C	C	C	This IE indicates the type of the high layer compatibility, which will be used to determine the ISDN-teleservice of a connected ISDN terminal.
IMSI	M	M	M	M	This IE identifies the mobile subscriber.
IP SSP Capabilities	C	C	C	C	This IE indicates which SRF resources are supported within the gsmSSF and are available. If this IE is absent, this indicates that no gsmSRF is attached and available.
Location Information	M	-	C	M	This IE is described in the next table.
Location Number	M	C	C	C	For mobile originated calls this IE represents the location of the calling party. For all other call scenarios this IE contains the location number received in incoming ISUP signalling.
MSC Address	M	M	M	M	For MO calls, the MSC Address carries the international E.164 address of the serving VMSC.  For MT calls, the MSC Address carries the international E.164 address of the GMSC.  For VT calls, the MSC Address carries the international E.164 address of the serving VMSC.  For CF calls, the MSC Address carries the international E.164 address of the forwarding MSC.

Information element name	MO	MF	MT	VT	Description
GMSC Address	-	M	-	M	For CF calls, the GMSC Address carries the international E.164 address of the GMSC. For VT calls, the GMSC Address carries the international E.164 address of the GMSC.
NA Carrier Information	C	C	C	C	The content of this IE is described in the next table. The IE may be sent when the VPLMN and the HPLMN of the subscriber are both North American. For MO calls, this IE shall contain any carrier that was dialed by the calling subscriber. If no carrier was dialed, the IE shall contain the calling subscriber's subscribed carrier. For MT and VT calls, the IE shall contain the carrier subscribed to by the called subscriber. For CF calls, the IE shall contain the carrier subscribed to by the forwarding subscriber.
Original Called Party ID	-	C	C	C	This IE carries the dialed digits if the call has met call forwarding on the route to the gsmSSF.
Redirecting Party ID	-	M	C	C	This IE indicates the directory number the call was redirected from.
Redirection Information	-	M	C	C	This IE contains forwarding related information, such as redirection counter.
Service Key	M	M	M	M	This IE indicates to the gsmSCF the requested CAMEL Service. It is used to address the required application/SLP within the gsmSCF.
Subscriber State	-	-	C	C	This IE indicates the status of the MS. The states are: - CAMELBusy: The MS is engaged on a transaction for a mobile originating or terminated circuit-switched call. - NetworkDeterminedNotReachable: The network can determine from its internal data that the MS is not reachable. - AssumedIdle: The state of the MS is neither "CAMELBusy" nor "NetworkDeterminedNotReachable". - Not provided from VLR.
Time And Timezone	M	M	M	M	This IE contains the time that the gsmSSF was triggered, and the time zone the gsmSSF resides in.

Information element name	MO	MF	MT	VT	Description
GSM Forwarding Pending	-	-	C	C	This parameter indicates that a forwarded-to-number was received and the call will be forwarded due to GSM supplementary service call forwarding in the GMSC/VMSC. <u>This parameter is present in the following cases:</u> <ul style="list-style-type: none"> <li>• <u>When the FTN is received from the HLR prior to triggering in the Terminating Attempt Authorised DP.</u></li> <li>• <u>When a conditional call forwarding or call deflection is invoked in the GMSC/MSC, and T_Busy or T_No_answer is reported as a TDP.</u></li> </ul>
Service Interaction Indicators Two	C	C	C	C	This IE is sent if it is received in the ISUP message or due to previous CAMEL processing. The IE is described in a table below.
CUG Index	C	-	-	-	See 3G TS 23.085 [9] for details of this IE.
CUG Interlock Code	C	C	C	C	See 3G TS 23.085 [9] for details of this IE. In the MO case this IE is received from the VLR.
Outgoing Access Indicator	C	C	C	C	See 3G TS 23.085 [9] for details of this IE. In the MO case this IE is received from the VLR.

M Mandatory (The IE shall always be sent)

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

- Not applicable

Location Information contains the following information:

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

M Mandatory (The IE shall always be sent)

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

- Not applicable

**CHANGE REQUEST**

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

**23.078 CR 137r4**

Current Version: **3.5.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **CN#9**  
list expected approval meeting # here ↑

for approval   
for information

strategic   
non-strategic  (for SMG use only)

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

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

**Source:** N2 **Date:** 30 Aug 2000

**Subject:** E-parameter handling of distinct CAP dialogues/TDPs

**Work item:** CAMEL phase 3

**Category:** F Correction  **Release:** Phase 2   
A Corresponds to a correction in an earlier release  Release 96   
B Addition of feature  Release 97   
C Functional modification of feature  Release 98   
D Editorial modification  Release 99   
Release 00   
(only one category shall be marked with an X)

**Reason for change:**

- The terminology on AoC needed some clarification. Especially, term "stored e-parameters" have been used with ambiguous meanings.
- In the DP3 Tariff Switch Timer (Tsw) can not be running, if the operator has followed the rules of the 3G TS 23.078. In addition, there should be no pending e-parameters from other CAP dialogues. Thus these issues need not to be checked at DP3.
- Due to new TDPs of CAMEL phase 3 it is possible that each CAP dialogue gives new set(s) of e-parameters. The interworking of these different dialogues shall be defined. From the service creation point of view it is feasible that each dialogue can do rerouteing, and can give new e-parameters which take the new routeing into account. Therefore Nokia proposes
  - to stop Tsw, when a CAP dialogue / gsmSSF is deleted. From the modelling point of view the Tsw is located in the gsmSSF and thus stopped.
  - Delete any pending (=stored) e-parameters, when the CAP dialogue that has given them is finished.
  - Although CAP dialogue is terminated, the valid e-parameters shall be used (The ones that are not pending).
  - If a new CAP dialogue gives 1 or 2 sets of e-parameters, the valid e-parameters of the previous CAP dialogues shall be overwritten and replaced by the new dialogue.

**Clauses affected:**

**Other specs affected:**

Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
MS test specifications	<input type="checkbox"/>	→ List of CRs:	
BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other  
comments:**

From the modelling point of view gsmSSF/gprsSSF sends e-parameters to the MSC/SGSN when

- SCI/SCI-GPRS arrives, and
- Tariff switch occurs.

Therefore, there is no need to send e-parameters to the MSC at answer DP, nor at the beginning of a user interaction. It is MSC/SGSN that "remembers" the currently valid set of e-parameters, and sends them to the MS if and when appropriate. The CSE provided e-parameters overwrite MSC/SGSN provided e-parameters (e.g. from digit analysis).

Due to this modelling, the e-parameters received in the DP Analyzed\_Information can be used when the call is answered, although the gsmSSF does not exist any more.

### 4.5.6.3 Procedure Handle\_SCI

The following terminology has been used for e-parameters:

- Applicable and in use. The set of e-parameters is currently applicable and the set has been sent to the MS.
- Applicable but waiting. The set of e-parameters is currently applicable but the set has not yet been sent to the MS.
- Applicable but not in use. The set of e-parameters is currently applicable but it is not sent to the MS, e.g. because the Advice of Charge supplementary service is not subscribed.
- Stored. The set of e-parameters is not yet applicable. The stored set of e-parameters becomes applicable when a tariff switch occurs.

- 1) Precondition: before an answer event is detected and no Tsw running at DP Collected\_Info:
  - if 1 set of e-parameters received --> send to the MSC
  - if 2 sets e-parameters received --> error
  - if 1 set of e-parameters and Tariff Switch received --> error
  - if 2 sets of e-parameters and Tariff Switch received --> send 1<sup>st</sup> to the MSC/start Tsw/store 2nd
- 2) Precondition: before an answer event is detected and Tsw running and no e-parameters at DP Collected\_Info:
  - if 1 set of e-parameters received --> error, no e-parameters stored
  - if 2 sets e-parameters received --> send 1<sup>st</sup> to the MSC/store 2nd
  - if 1 set of e-parameters and Tariff Switch received --> error
  - if 2 sets of e-parameters and Tariff Switch received --> error
- 3) Precondition: before an answer event is detected and Tsw running and e-parameters stored at DP Collected\_Info:
  - if 1 set of e-parameters received --> error
  - if 2 sets e-parameters received --> error
  - if 1 set of e-parameters and Tariff Switch received --> error
  - if 2 sets of e-parameters and Tariff Switch received --> error
- 4) Precondition: after an answer event is detected and no Tsw running:
  - if 1 set of e-parameters received --> send to the MSC
  - if 2 sets e-parameters received --> error
  - if 1 set of e-parameters and Tariff Switch received --> start Tsw/store set
  - if 2 sets of e-parameters and Tariff Switch received --> error
- 5) Precondition: after an answer event is detected and Tsw running and no e-parameters
  - if 1 set of e-parameters received --> store e-parameters
  - if 2 sets e-parameters received --> error
  - if 1 set of e-parameters and Tariff Switch received --> error
  - if 2 sets of e-parameters and Tariff Switch received --> error
- 6) Precondition: after an answer event is detected and Tsw running and e-parameters stored:

- if 1 set of e-parameters received --> error
- if 2 sets e-parameters received --> error
- if 1 set of e-parameters and Tariff Switch received --> error
- if 2 sets of e-parameters and Tariff Switch received --> error

7) ~~Precondition: before an answer event is detected and no Tsw running~~ call processing is suspended at DP Analysed\_Information:

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

8) ~~Precondition: before an answer event is detected and Tsw running and no e parameters at DP Analysed\_Information:~~

- ~~if 1 set of e parameters received --> error~~
- ~~if 2 sets e parameters received --> error~~
- ~~if 1 set of e parameters and Tariff Switch received --> error~~
- ~~if 2 sets of e parameters and Tariff Switch received --> error~~

9) ~~Precondition: before an answer event is detected and Tsw running and e parameters stored at DP Analysed\_Information:~~

- ~~if 1 set of e parameters received --> error~~
- ~~if 2 sets e parameters received --> error~~
- ~~if 1 set of e parameters and Tariff Switch received --> error~~
- ~~if 2 sets of e parameters and Tariff Switch received --> error~~

NOTE 1: The MSC shall store the received e-parameters to be sent subsequently to the MS. The MSC shall send these e parameters to the MS in a Connect message or in a Facility message.

NOTE 2: Dialled service gsmSCF can only give e-parameter(s)/Tsw when it is not given previously by Subscriber Service gsmSCF. After Dialled service gsmSCF gives e-parameter(s)/Tsw, Subscriber Service gsmSCF shall not give further on-line charging instructions (i.e. Send Charging Information and Apply Charging)

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

NOTE 3: When a CSE relationship is closed then the stored e-parameters given by that dialogue are discarded. Any Tariff Switch timer (Tsw) is also stopped when the CSE relationship is closed. If the CSE has given any e-parameters which are not stored but which are applicable (regardless of whether they are applicable and in use, applicable but waiting, or applicable but not in use) when the CSE relationship is closed, those e-parameters are also valid after the CSE relationship is closed. If any subsequent CAP dialogues give e-parameters those new e-parameters shall overwrite the applicable e-parameters given by the preceding CAP dialogues.

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

4.5.6.4 Process gsmSSF and procedures

....

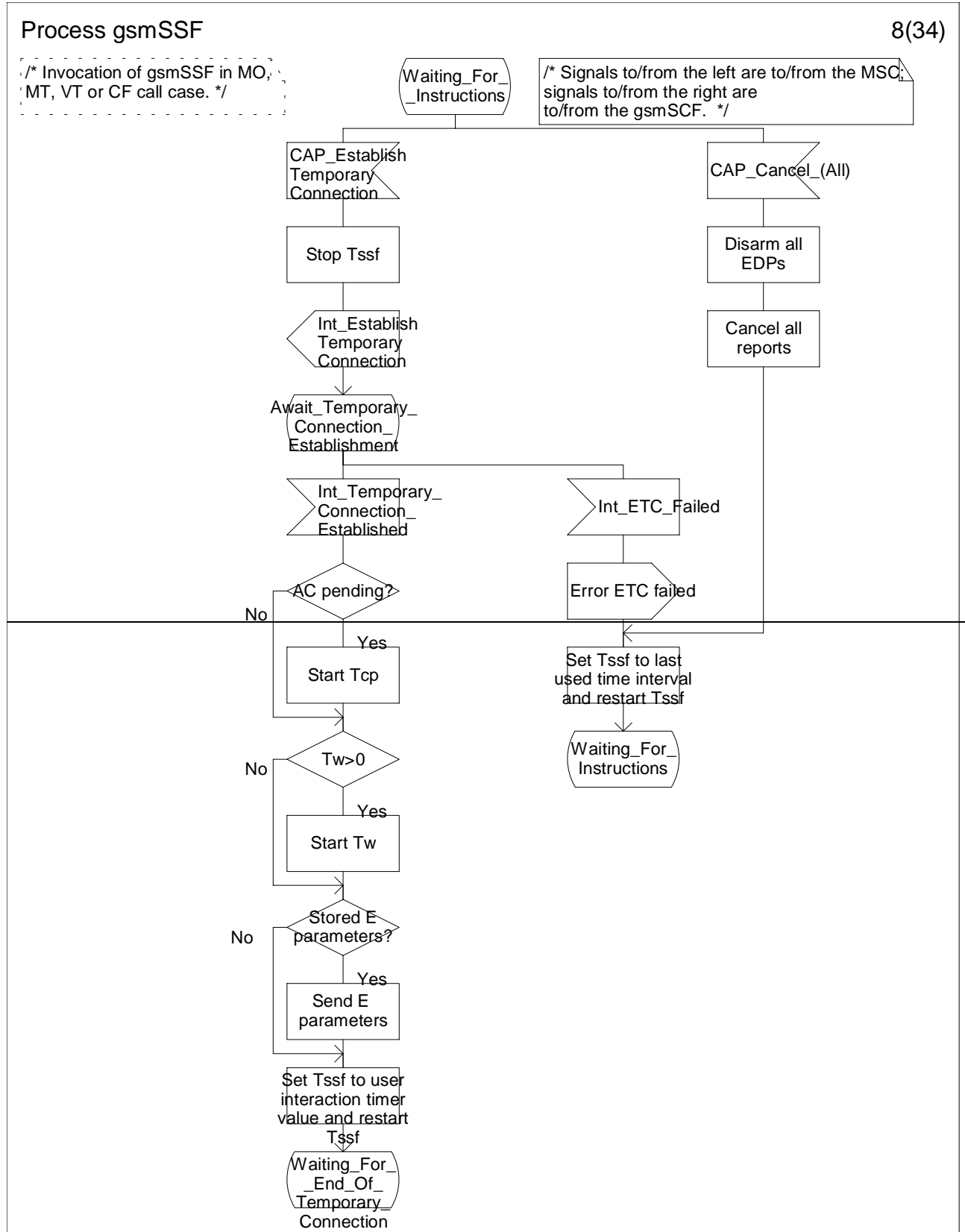


Figure 4.63h: Process gsmSSF (sheet 0)



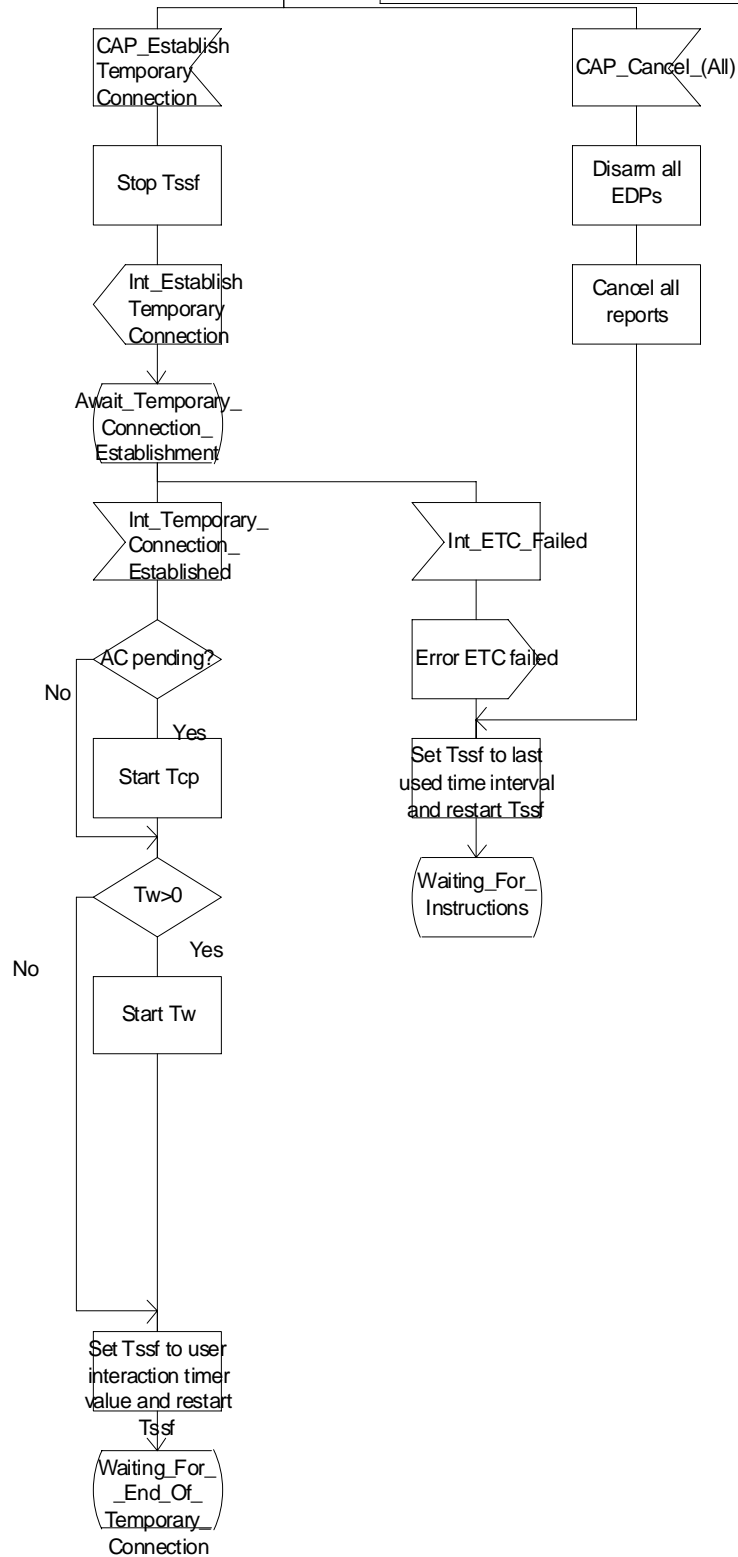
Process gsmSSF

8(34)

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

Waiting\_For\_Instructions

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



\*\*\*\* NEXT MODIFIED PICTURE \*\*\*\*

### Process gsmSSF

9(34)

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

/\* Signals to/from the left are to/from the MSC, signals to/from the right are to/from the gsmSCF. \*/

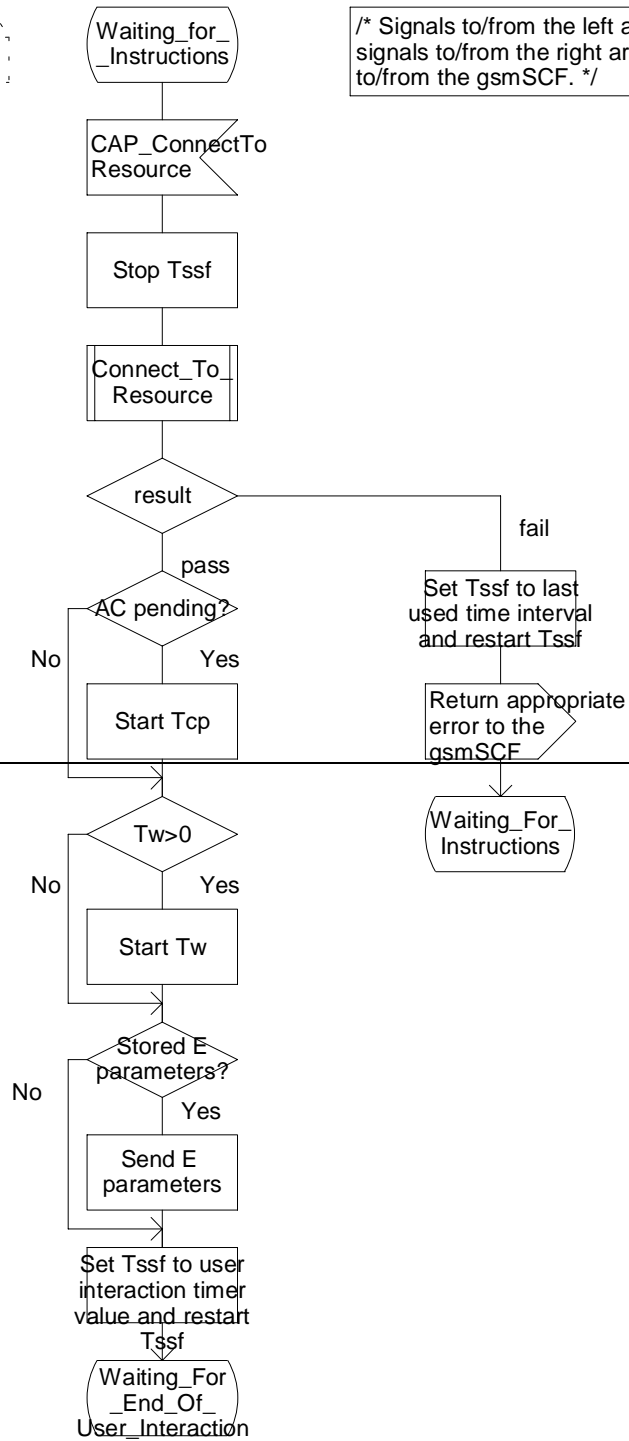


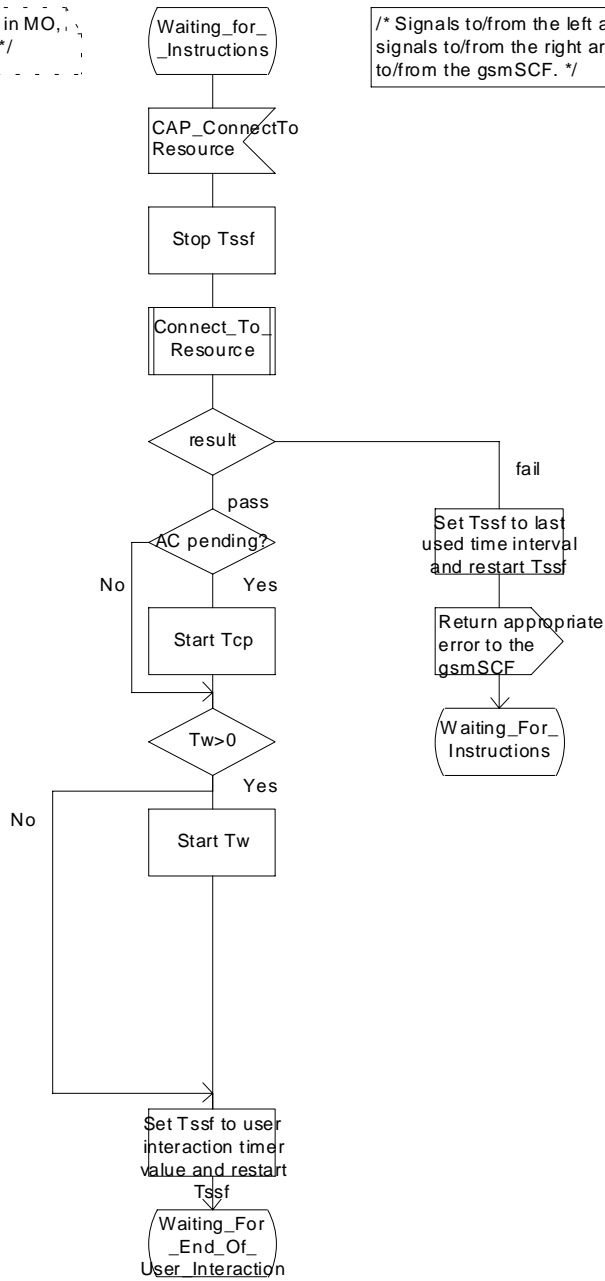
Figure 4.63i: Process gsmSSF (sheet 0)

Process gsmSSF

9(34)

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

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



\*\*\*\* NEXT MODIFIED PICTURE \*\*\*\*

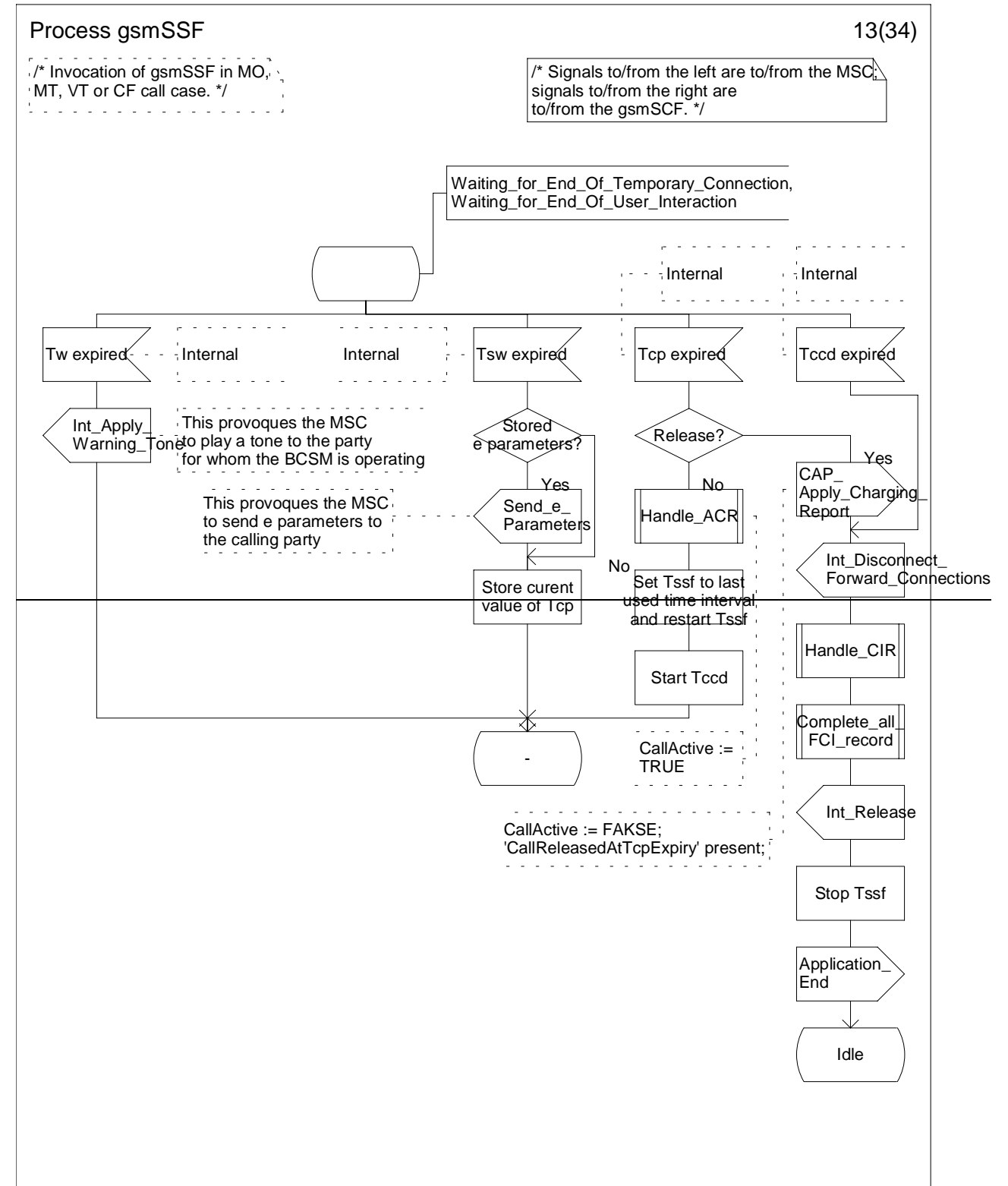


Figure 4.63m: Process gsmSSF (sheet 0)



\*\*\*\* NEXT MODIFIED PICTURE \*\*\*\*

Process gsmSSF

14(34)

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

/\* Signals to/from the left are to/from the MSC, signals to/from the right are to/from the gsmSCF. \*/

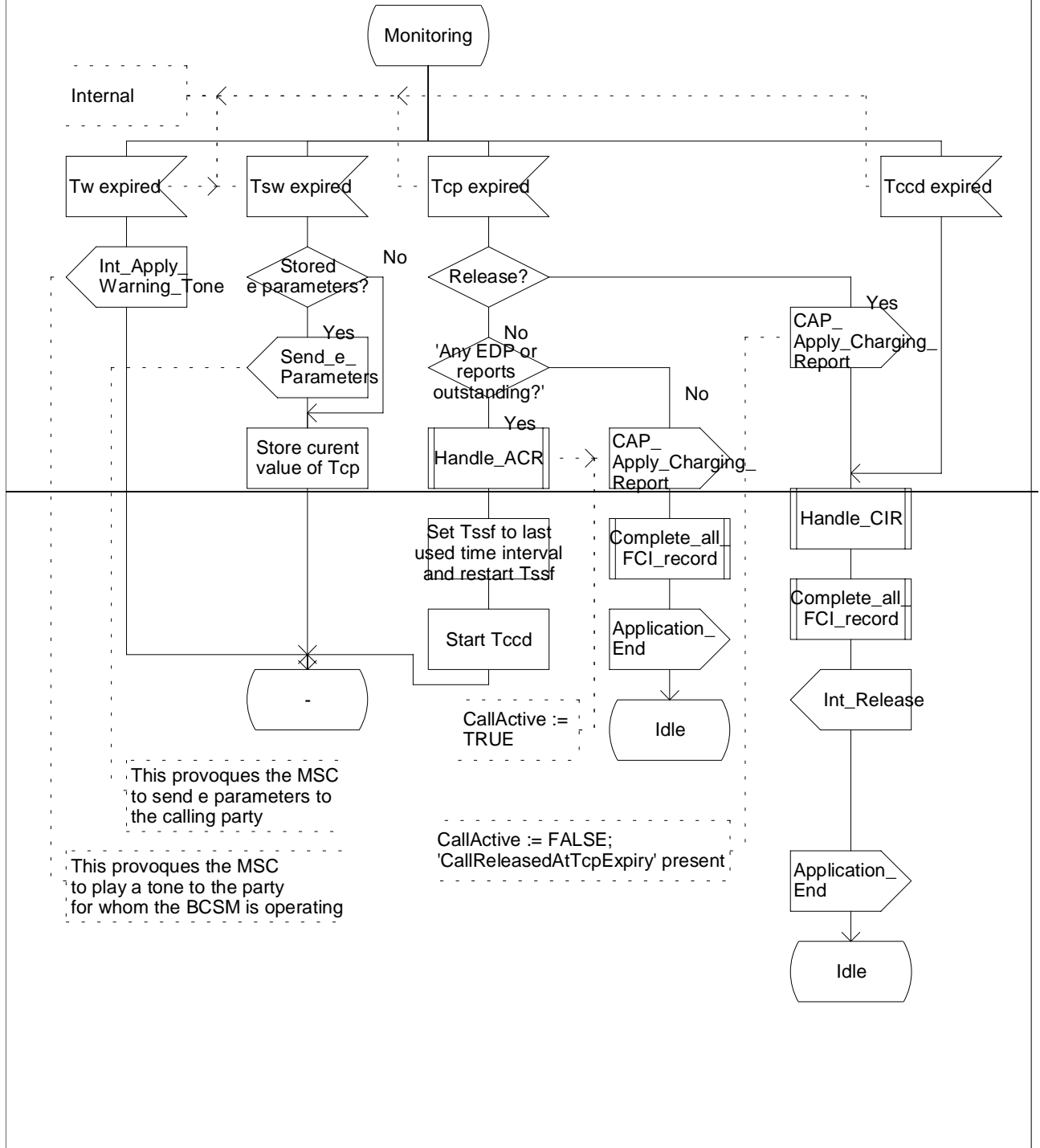


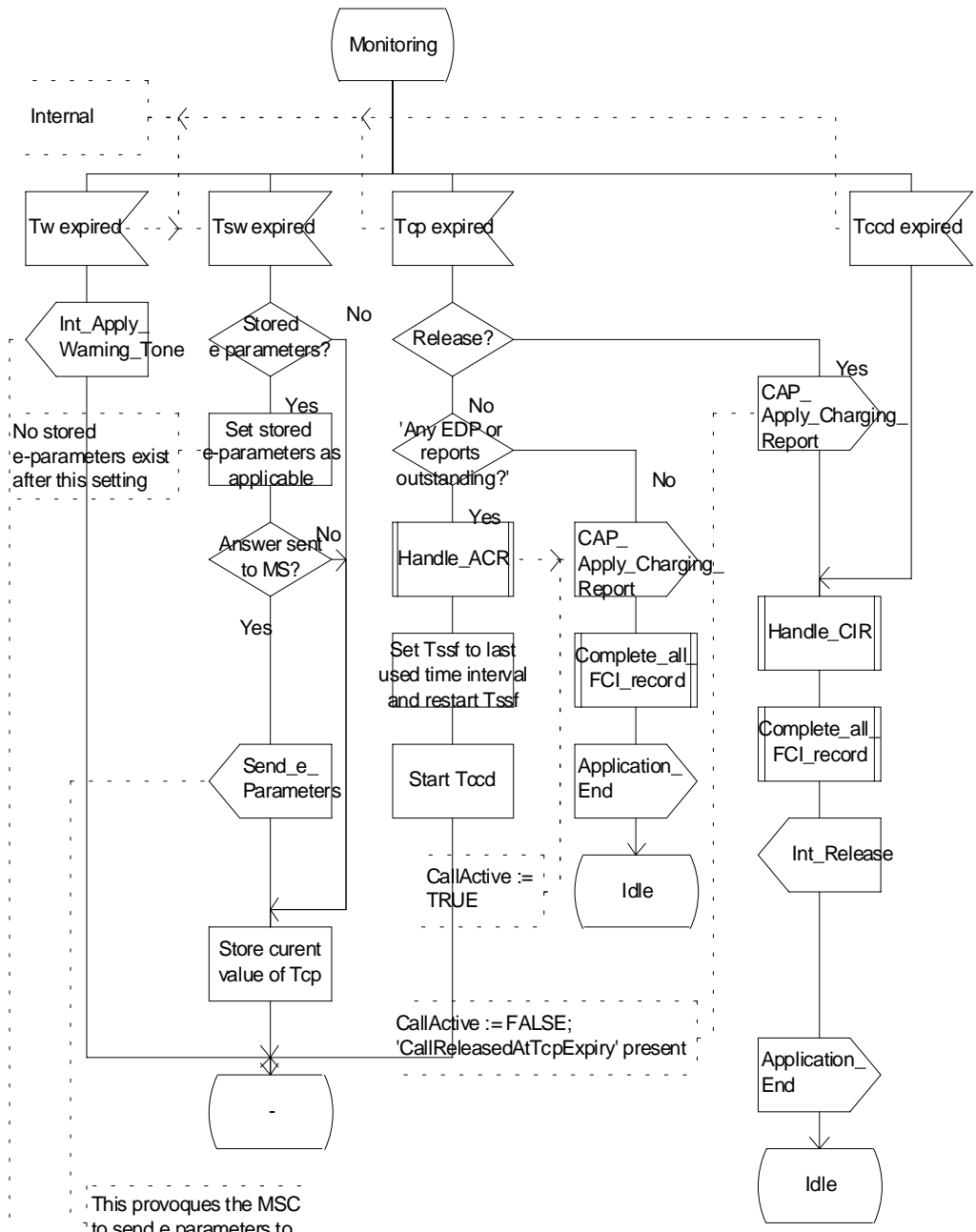
Figure 4.63n: Process gsmSSF (sheet 0)

Process gsmSSF

14(34)

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

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



This provokes the MSC to send e parameters to the calling party

This provokes the MSC to play a tone to the party for whom the BCSM is operating

Procedure Handle\_O\_Answer

1(1)

/\* Procedure in the gsmSSF to handle notification of originating answer from the MSC \*/

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

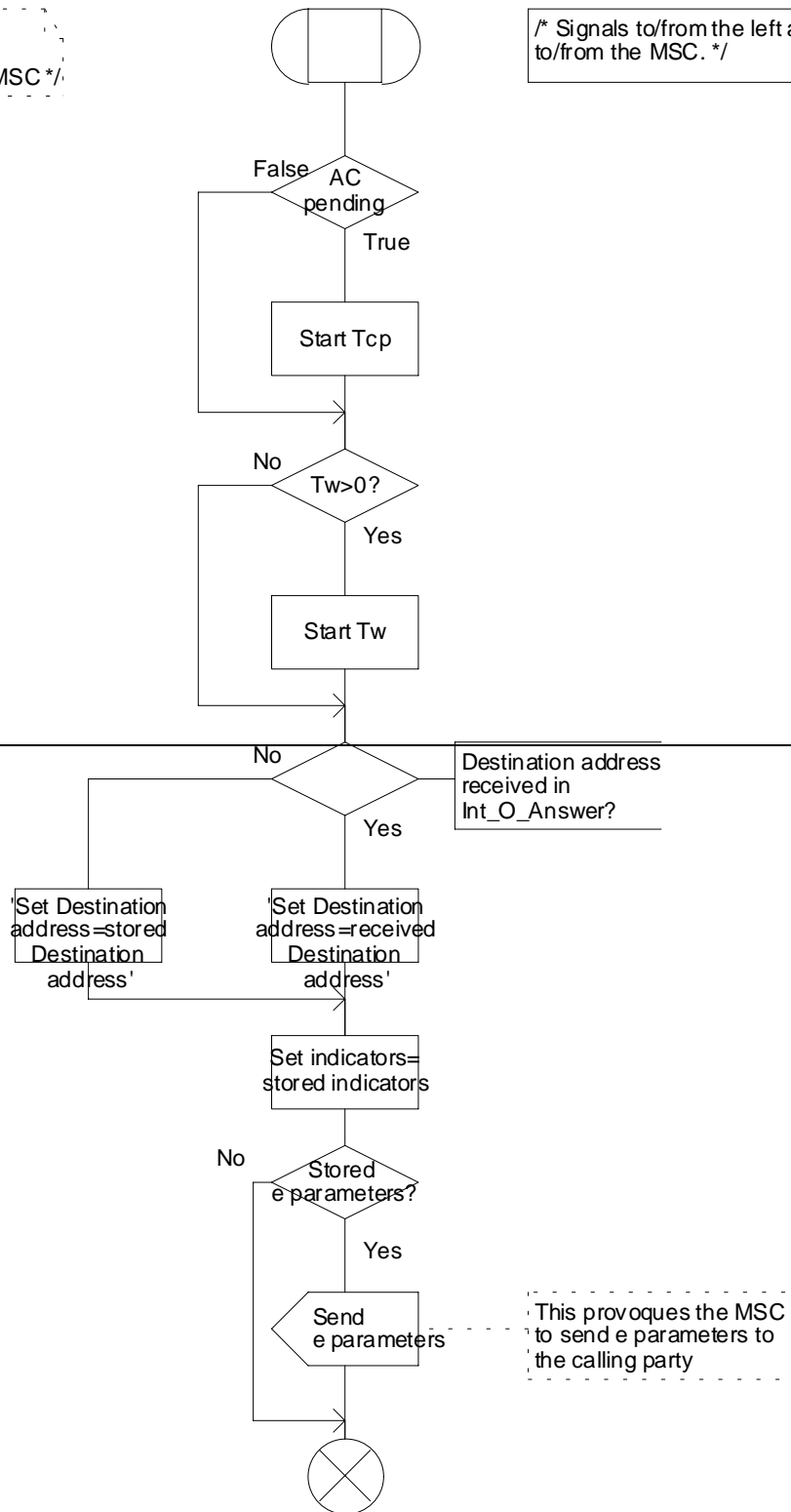


Figure 4.79a: Procedure Handle\_O\_Answer (sheet 1)

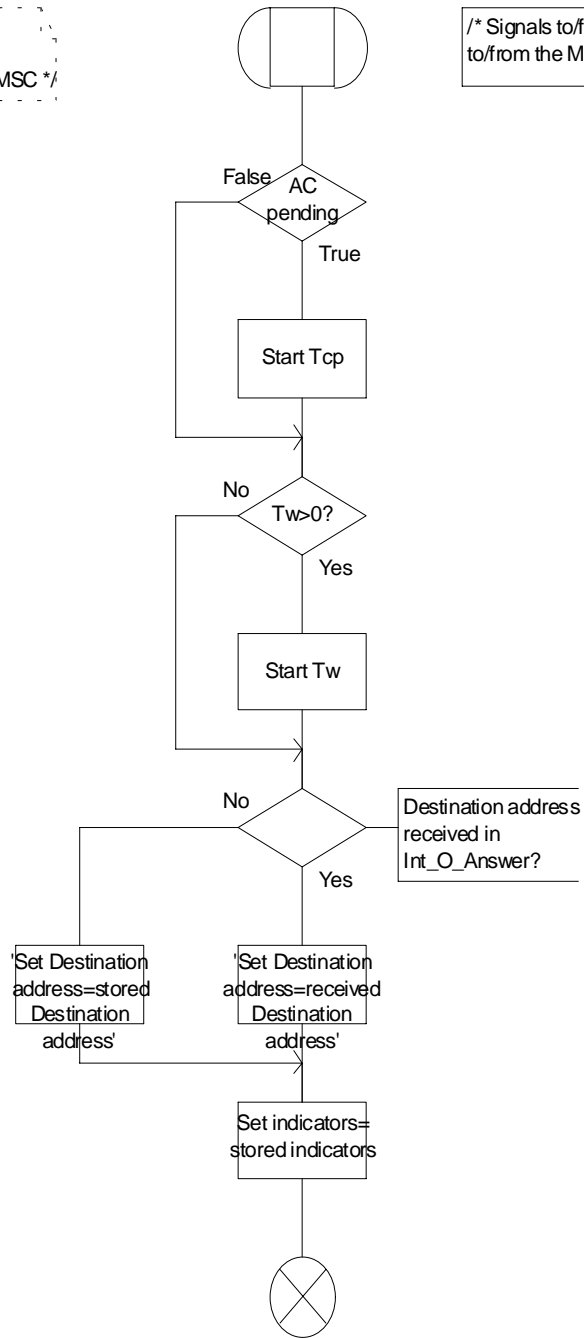


Procedure Handle\_O\_Answer

1(1)

/\* Procedure in the gsmSSF  
to handle notification of  
originating answer from the MSC \*/

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

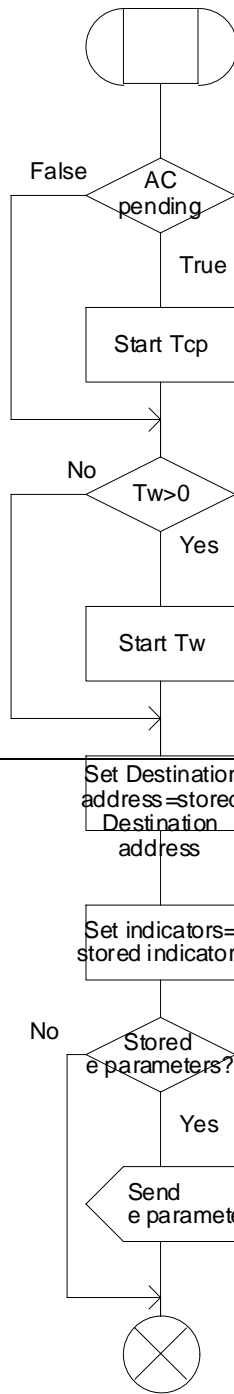


Procedure Handle\_T\_Answer

1(1)

*/\* Procedure in the gsmSSF to handle notification of terminating answer from the MSC \*/*

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



This provokes the MSC to send e parameters to the called party

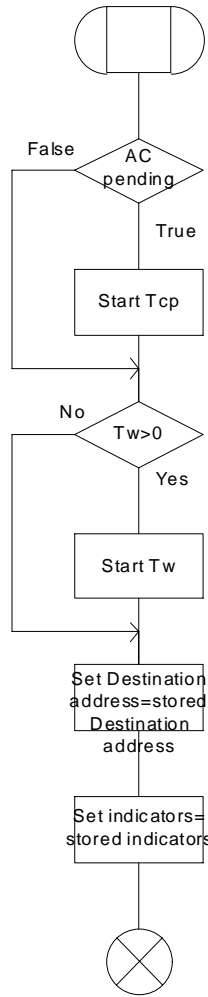
Figure 4.80a: Procedure Handle\_T\_Answer (sheet 1)

Procedure Handle\_T\_Answer

1(1)

/\* Procedure in the gsmSSF to handle notification of terminating answer from the MSC \*/

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



## 6.5.3 Handling GPRS in the gprsSSF

### 6.5.3.1 Procedure Handle\_SCI\_GPRS

For terminology see subclause 4.5.6.3.

- 1) Precondition: before an answer event is detected and no Tsw running:
  - if 1 set of e-parameters received --> send to the SGSN;
  - if 2 sets e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> send 1st to the SGSN/start Tsw/store 2nd;
- 2) Precondition: before an answer event is detected and Tsw running and no e-parameters;
  - if 1 set of e-parameters received --> error, no e-parameters stored;
  - if 2 sets e-parameters received --> send 1st to the SGSN/store 2nd;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.
- 3) Precondition: before an answer event is detected and Tsw running and e-parameters stored:
  - if 1 set of e-parameters received --> error;
  - if 2 sets e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.
- 4) Precondition: after an answer event is detected and no Tsw running:
  - if 1 set of e-parameters received --> send to the SGSN;
  - if 2 sets e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> start Tsw/store set;
  - if 2 sets of e-parameters and Tariff Switch received --> error;
- 5) Precondition: after an answer event is detected and Tsw running and no e-parameters;
  - if 1 set of e-parameters received --> store e-parameters;
  - if 2 sets e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.
- 6) Precondition: after an answer event is detected and Tsw running and e-parameters stored:
  - if 1 set of e-parameters received --> error;
  - if 2 sets e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.

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

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

### 6.5.3.2 Process GPRS\_SSF and procedures

#### Process GPRS\_SSF

17(17)

```

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

```

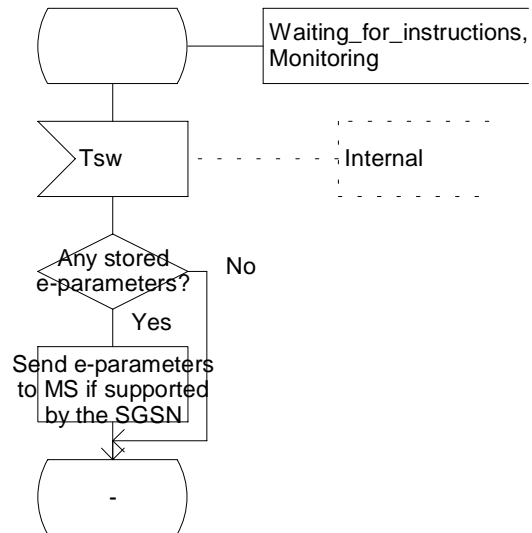


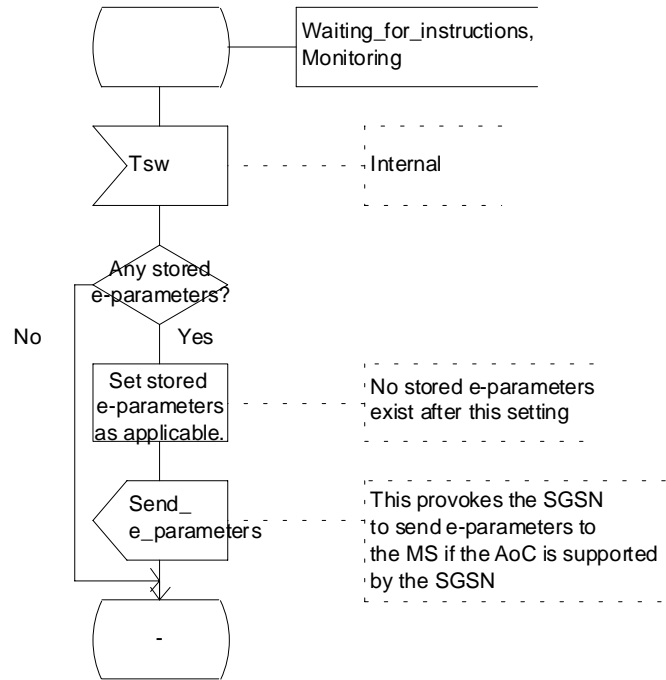
Figure 6.16q: Process GPRS\_SSF (sheet 17)

### Process GPRS\_SSF

17(17)

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

/\* Signals to/from the left are to/from the SGSN; \*/







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

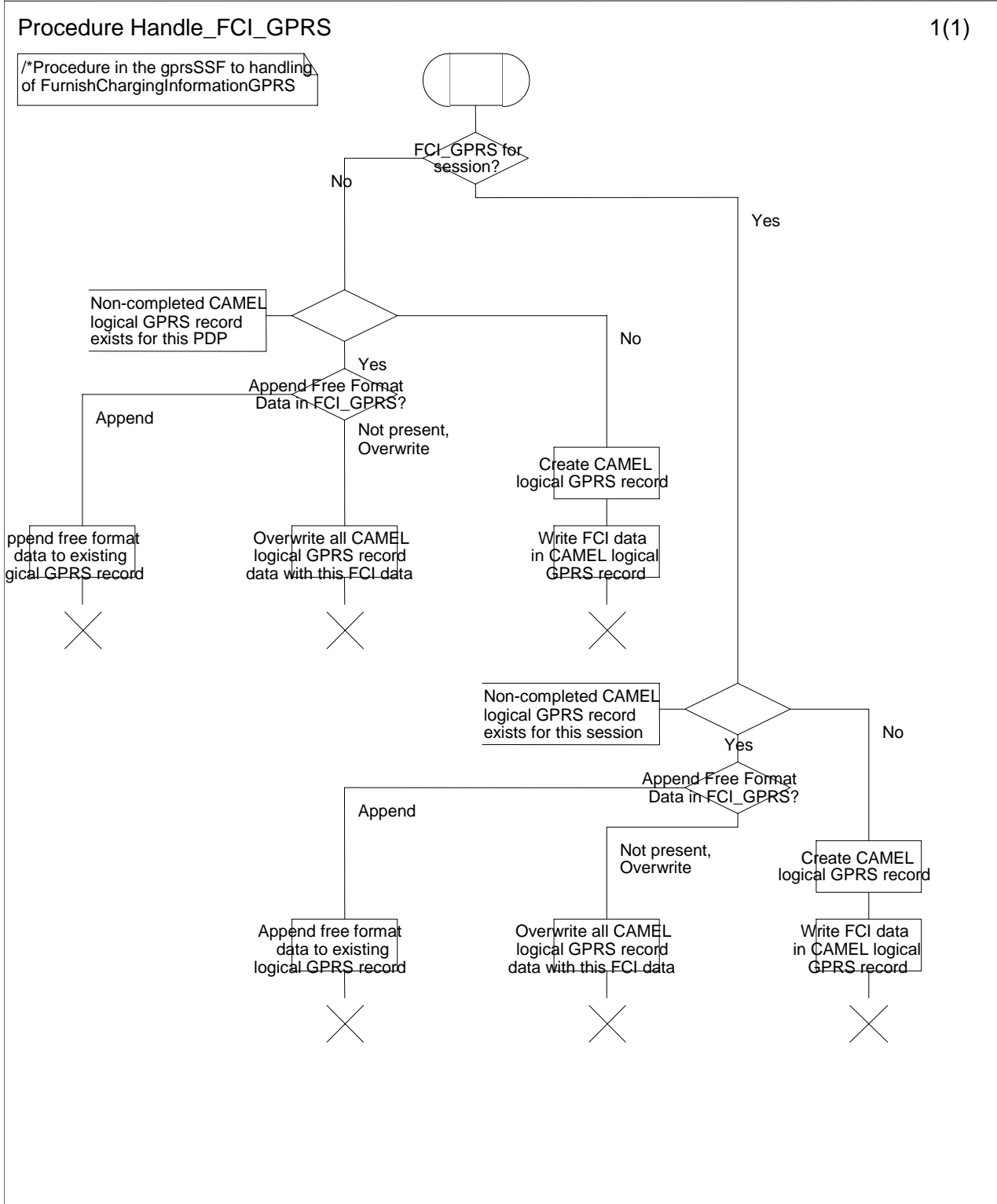


Figure 6.xx: Procedure Handle\_FCI\_GPRS (sheet 1) \*New figure\*

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

### Procedure Complete\_FCI\_Record\_GPRS

1(1)

/\* Procedure in the gprsSSF to write Furnish Charging Information data to a PDP context for the specified PDPID, or session. \*/

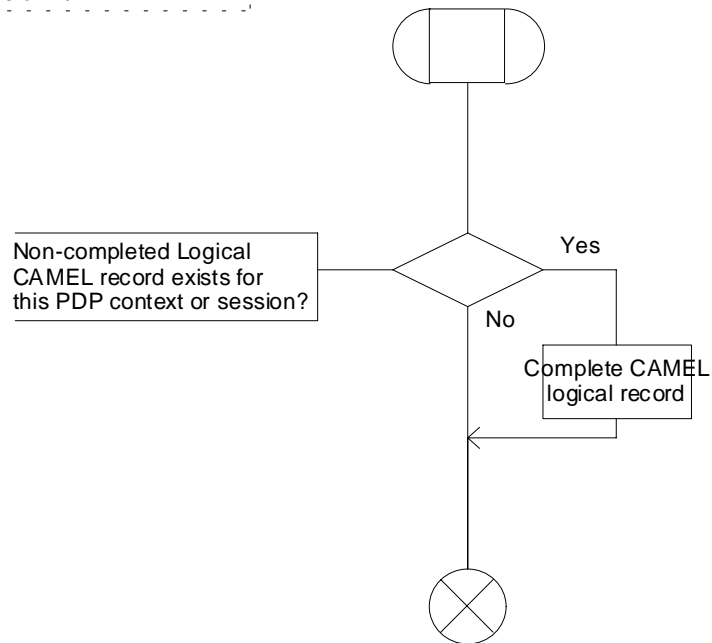


Figure 6.24 a: Procedure Complete\_FCI\_Record\_GPRS (sheet 1)

## Procedure Complete\_FCI\_Record\_GPRS

1(1)

/\* Procedure in the gprsSSF to  
write Furnish Charging Information  
data to a PDP context for the specified  
PDPID, or session. \*/

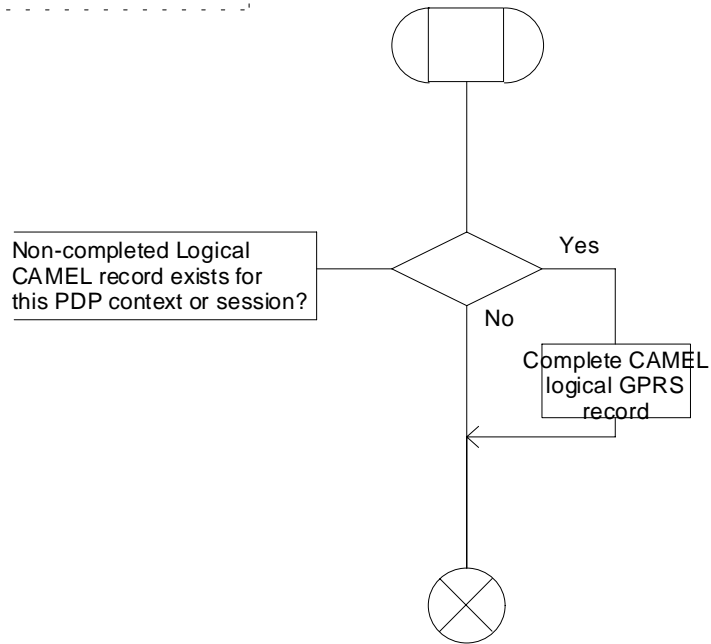


Figure Error! Reference source not found..2 a: Procedure Complete\_FCI\_Record\_GPRS (sheet 1)

## CHANGE REQUEST

**23.078 CR 186**

Current Version: 3.5.0

For submission to: TSG-N #9

for approval   
for information

strategic   
non-strategic

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

**Source:** N2 **Date:** 10<sup>th</sup> July 2000

**Subject:** Correction to Procedure CAMEL\_ICH\_MSC\_INIT

**Work item:** CAMEL phase 3

<b>Category:</b>	F Correction	<input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>
				Release 00	<input type="checkbox"/>

**Reason for change:** The "Yes" and "No" branches of the test "Destination Number = Called MSISDN" are the wrong way around.

**Clauses affected:** 4.5.4.1

<b>Other specs affected:</b>	Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:** The SDL has also been tidied up.

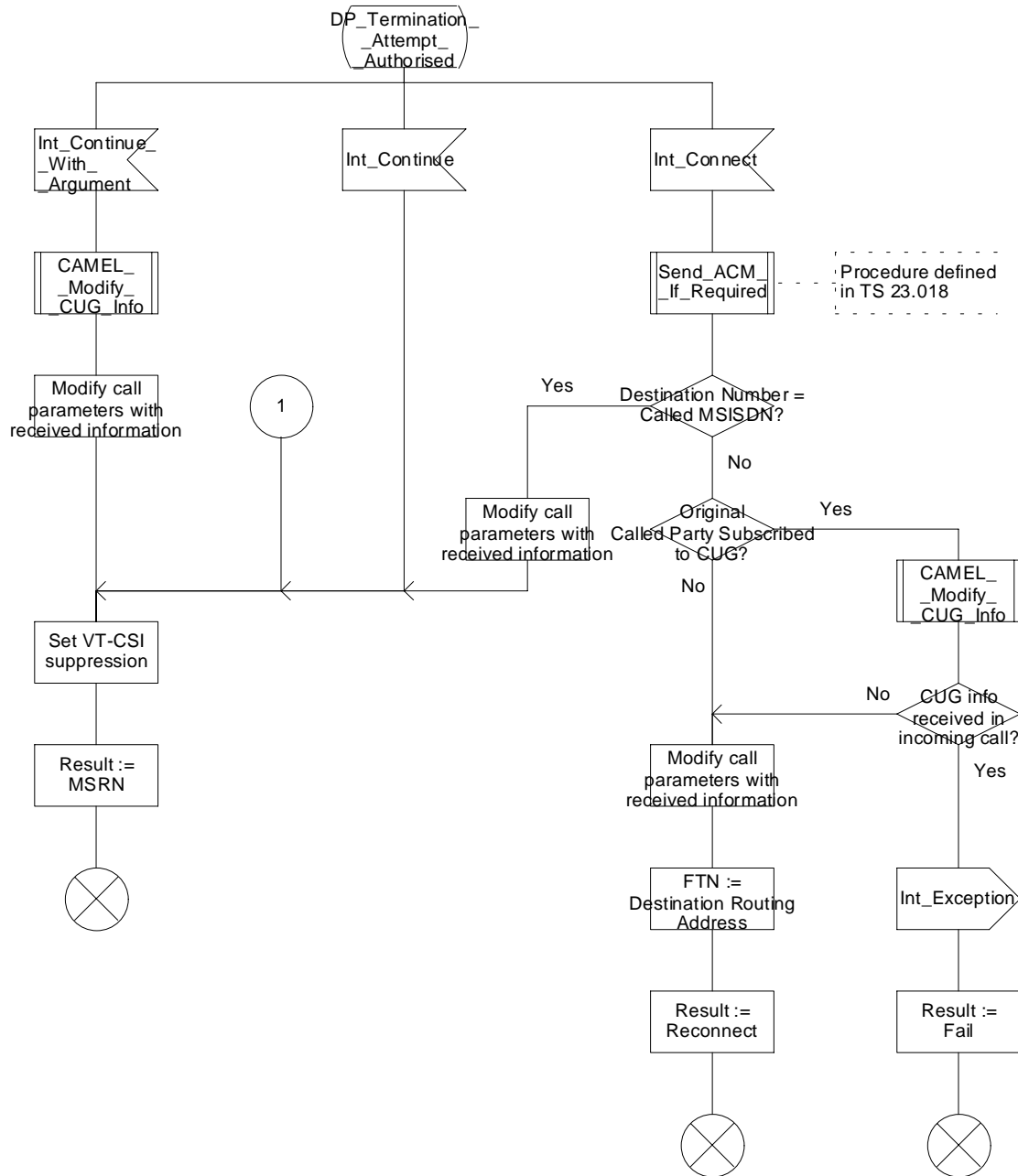
### 4.5.4.1 Handling of mobile terminating calls in the terminating VMSC

#### Procedure CAMEL\_ICH\_MSC\_INIT

3(5)

/\* Process in the VMSC-B to handle a terminating call request \*/

/\* Signals to/from the left are to/from the originating exchange; signals to/from the right are to/from the gsmSSF; if not otherwise stated. \*/



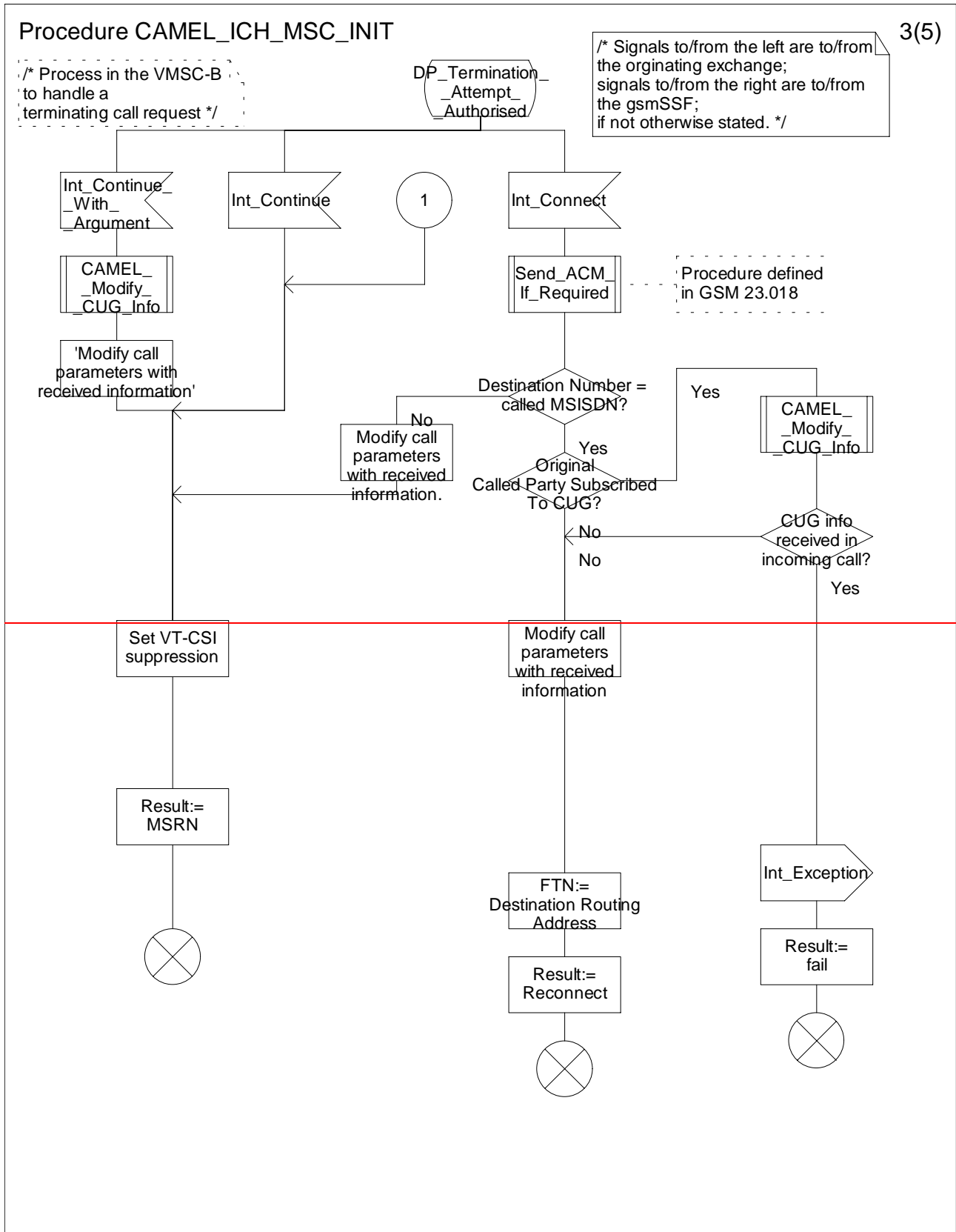


Figure 4.51c: Procedure CAMEL\_ICH\_MSC\_INIT (sheet 3)

## CHANGE REQUEST

**23.078 CR 187r1**

Current Version: 3.5.0

For submission to: TSG-N #9 for approval  for information  strategic  non-strategic

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

**Source:** N2 **Date:** 21<sup>st</sup> August 2000

**Subject:** Transfer of Procedure Check\_CD\_SII2 from TS 23.072

**Work item:** CAMEL Phase 3

<b>Category:</b>	F Correction	<input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>
				Release 00	<input type="checkbox"/>

**Reason for change:** The procedure Check\_CD\_SII2 is used to check if the invocation of Call Deflection is prohibited by the Service Interaction Indicators Two parameter. However, this procedure should also be used to check if the invocation of Call Forwarding is prohibited, and hence should be moved from TS 23.072 to TS 23.078

**Clauses affected:** 4.5.3.2

**Other specs** Other 3G core specifications  → List of CRs: 23.018-057 (N4-000577)  
23.072-004 (N4-000534)  
23.072-005 (N4-000578)  
23.078-205 (N2-000357)  
23.093-004 (N4-000579)

**affected:** Other GSM core specifications  → List of CRs:  
MS test specifications  → List of CRs:  
BSS test specifications  → List of CRs:  
O&M specifications  → List of CRs:

**Other comments:** The procedure name has been changed to CAMEL\_CHECK\_SII2\_CDTI to avoid confusion.

#### 4.5.3.2 Retrieval of routing information in the HLR

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

- CAMEL\_HLR\_INIT;
- CAMEL\_CSI\_Check\_HLR;
- CAMEL\_O\_CSI\_CHECK\_HLR;
- CAMEL\_D\_CSI\_CHECK\_HLR;
- CAMEL\_T\_CSI\_CHECK\_HLR;
- [CAMEL\\_CHECK\\_SII2\\_CDTI](#).

The procedure CAMEL\_Provide\_Subscriber\_Info is specified in subclause 4.5.8.

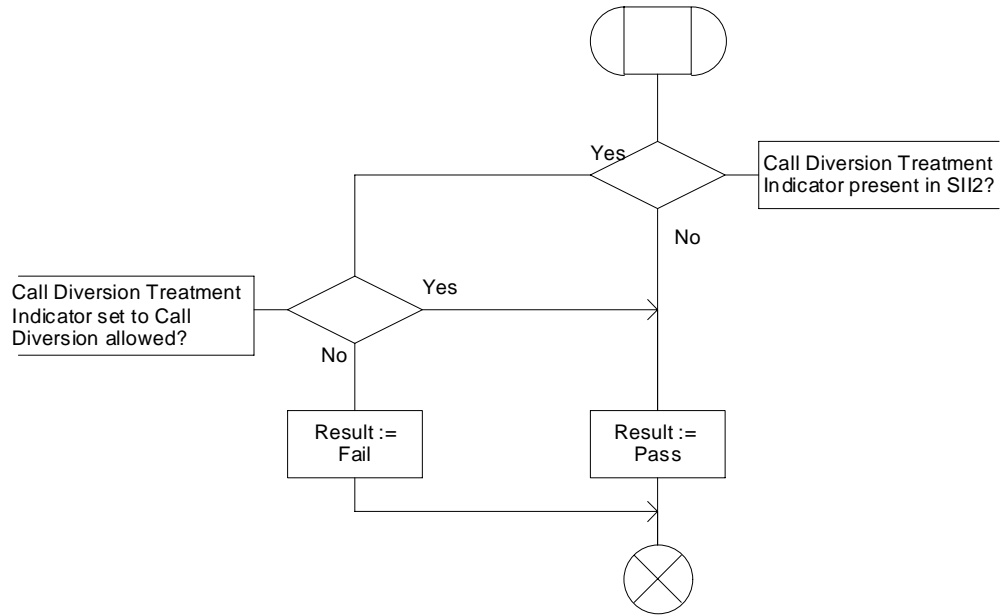
...



Procedure CAMEL\_CHECK\_SII2\_CDTI

1(1)

/\* Procedure in the HLR or MSC to determine if the SII2 allows or disallows invocation of Call Forwarding or Call Deflection. \*/



[Figure 4.x: Procedure CAMEL\\_CHECK\\_SII2\\_CDTI \(sheet 1\)](#)

## CHANGE REQUEST

**23.078 CR 188r2**

Current Version: 3.5.0

For submission to: TSG-N 9#

for approval   
for information

strategic   
non-strategic

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

**Source:** N2 **Date:** 29 August 2000

**Subject:** Update of References for the Location Information IE

**Work item:** CAMEL Phase 3

<b>Category:</b>	F Correction	<input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>
				Release 00	<input type="checkbox"/>

**Reason for change:** The Location Information IE is defined in 3G TS 23.018. Instead of re-defining the Location Information IE every time it is used, 3G TS 23.078 should refer back to 23.018 and needs only to state where this instance of the IE differs from the definition in 23.018.

**Clauses affected:** 4.6.1.5, 4.6.9.1, 7.6.1.2, 9.4.1.1, 11.3.2.1 and 11.3.4.1

<b>Other specs affected:</b>	Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:**

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

## 4.6.1.5 Initial DP

## 4.6.1.5.2 Information Elements

...

Location Information [is defined in 3G TS 23.018 \[3\]. The following differences apply:](#)~~contains the following information:~~

Information element name	MO	MF	MT	VT	Description
Location Number	-	-	C	C	See 3G TS 23.018 [3].
<del>CellGlobalIdOrServiceAreaIdOrLAI</del> <a href="#">Service area ID</a>	<del>C2</del> <u>M</u>	-	C	C	See 3G TS 23.018 [3].
<a href="#">Cell ID</a>	<u>C2</u>	=	<u>C</u>	<u>C</u>	<a href="#">See 3G TS 23.018 [3]</a>
Geographical <del>I</del> information	C	-	C	C	See 3G TS 23.018 [3].
Geodetic <del>I</del> information	C	-	C	C	See 3G TS 23.018 [3].
<a href="#">VLR number</a>	<u>M</u>	=	<u>C</u>	<u>M</u>	<a href="#">See 3G TS 23.018 [3]</a> .
Age Of <del>L</del> ocation <del>I</del> nformation	M	-	C	C	See 3G TS 23.018 [3].
<a href="#">Current Location Retrieved</a>	=	=	=	=	<a href="#">Not applicable</a>
<del>VLR number</del>	<del>M</del>	-	<del>C</del>	<del>M</del>	<del>See 3G TS 23.018 [3].</del>
<a href="#">Location area ID</a>	<u>C2</u>	=	<u>C</u>	<u>C</u>	<a href="#">See 3G TS 23.003 [37]</a> .
Selected LSA Identity	<u>C1</u>	-	<u>C1</u>	<u>C1</u>	This IE indicates the LSA identity associated with the current position of the MS. <del>Send</del> <a href="#">Shall be present</a> if the LSA ID <a href="#">in the subscriber data of subscription and LSA ID of the used cell</a> matches <a href="#">the LSA ID of the current cell</a> . In the case of multiple matches the <del>one</del> <a href="#">LSA ID</a> with the highest priority <del>is</del> <a href="#">shall be</a> sent. See 3G TS 23.073 [23]. <del>The IE shall only be sent, if SoLSA is supported.</del>

M Mandatory (The IE shall always be sent).

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

[C1 Conditional \(The IE shall be sent, if available and SoLSA is supported\).](#)

[C2 Conditional \(One and only one of the three conditional IEs shall be sent\).](#)

- Not applicable.

...

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

## 4.6.9.1 Send Routing Info ack

## 4.6.9.1.2 Information Elements

...

Location Information [is defined in 3G TS 23.018](#). The following differences apply:~~contains the following information:~~

Information element name	Required	Description
<del>Location Number</del>	<del>C</del>	<del>See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.</del>
<a href="#">Current Location Retrieved</a>	-	<a href="#">Not applicable</a>
<del>CellGlobalIdOrServiceAreaIdOrLA</del>	<del>C</del>	<del>See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.</del>
<del>Geographical Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.</del>
<del>Geodetic Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.</del>
<del>Age Of Location Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.</del>
<del>VLR number</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<a href="#">Location area ID</a>	<a href="#">C</a>	<a href="#">See 3G TS 23.003 [37]. Only one of the following conditional IEs shall be sent:</a> <ul style="list-style-type: none"> <li><a href="#">▪ Cell ID</a></li> <li><a href="#">▪ Service area ID</a></li> <li><a href="#">▪ Location area ID</a></li> </ul>
Selected LSA Identity	C	<a href="#">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. In the case of multiple matches the LSA ID with the highest priority shall be sent. See 3G TS 23.073 [23].</a> <del>See 3G TS 23.018 [3]. The IE shall be sent, if available and indicated by Subscriber Information in Send Routeing Information ack indicator.</del>

C Conditional (The IE shall be sent, if available [and SoLSA is supported](#).~~Further conditions are in the description column~~).

- [Not applicable](#)

...

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

7.6.1.2 Initial DP SMS

7.6.1.2.2 Information Elements

...

Location Information in MSC [is based on the Location Information IE defined in 3G TS 23.018](#). The following [differences apply](#):~~contains the following information:~~

Information element name	Required	Description
<a href="#">Location number</a>	-	<a href="#">Not applicable</a>
<del>CellGlobalIDOrServiceAreaIdOrLAI</del>	<del>M</del>	<del>See 3G TS 23.018 [3].</del>
<del>Geographical Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Geodetic Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
VLR number	M	See 3G TS 23.018 [3].
<a href="#">Age of location information</a>	-	<a href="#">Not applicable</a>
<a href="#">Current Location Retrieved</a>	-	<a href="#">Not applicable</a>
<a href="#">Location area ID</a>	<u>C</u>	<a href="#">See 3G TS 23.003 [37]. Only one of the following conditional IEs shall be sent:</a> <ul style="list-style-type: none"> <li>▪ <a href="#">Cell ID</a></li> <li>▪ <a href="#">Service area ID</a></li> <li>▪ <a href="#">Location area ID</a></li> </ul>
Selected LSA Identity	C1	This IE indicates the LSA identity associated with the current position of the MS. <del>Send</del> <a href="#">Shall be sent</a> if the LSA ID <del>of subscription in the subscriber data and LSA ID of the used cell</del> matches <a href="#">the LSA ID of the current cell</a> . In the case of multiple matches the <del>one</del> <a href="#">LSA ID</a> with the highest priority <del>shall be</del> <a href="#">is</a> sent. See 3GPP TS 23.073[23]

M Mandatory (The IE shall always be sent).

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

C1 Conditional (The IE shall be sent, if available and SoLSA is supported).

- [Not applicable](#)

Location Information in ~~the GPRS case contains the following information~~[SGSN is based on the Location Information IE defined in 3G TS 23.018. The following differences apply:](#)

Information element name	Required	Description
<del>CellGlobalIDOrServiceAreaIdOrRAI</del>	<del>M</del>	<del>See 3G TS 23.018 [3] and 3G TS 23.060 [11].</del>
<a href="#">Location number</a>	-	<a href="#">Not applicable</a>
Geographical information	C	See 3G TS 23.018 [3].
<a href="#">Geodetic information</a>	-	<a href="#">Not applicable</a>
<a href="#">VLR number</a>	-	<a href="#">Not applicable</a>
<a href="#">Age of location information</a>	-	<a href="#">Not applicable</a>
<a href="#">Current Location Retrieved</a>	-	<a href="#">Not applicable</a>
<a href="#">Location area ID</a>	<del>C</del>	<del>Not applicable</del> <a href="#">See 3G TS 23.003 [37]. Only one of the following conditional IEs shall be sent:</a> <ul style="list-style-type: none"> <li>□ <a href="#">Cell ID</a></li> <li>□ <a href="#">Service area ID</a></li> <li>□ <a href="#">Location area ID</a></li> </ul>
SGSN number	M	Global Title of the Serving GPRS Service Node. See 3G TS 23.060 [11].

M Mandatory (The IE shall always be sent).

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

- [Not applicable](#)

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

#### 9.4.1.1 Mobility Management event Notification

...

#### 9.4.1.1.2 Information Elements

...

Location Information ~~contains the following information~~ is defined in 3G TS 23.018 [3]. The following differences apply:

Information element name	Required	Description
<del>Location Number</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>CellGlobalIdOrServiceAreaIdOrLAI</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Geographical Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Geodetic Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Age Of Location Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>VLR number</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Current Location Retrieved</del>	<del>=</del>	<del>Not applicable</del>
<del>Location area ID</del>	<del>C</del>	<del>See 3G TS 23.003 [37]. Only one of the following conditional IEs shall be sent:</del> <ul style="list-style-type: none"> <li><del>▪ Cell ID</del></li> <li><del>▪ Service area ID</del></li> <li><del>▪ Location area ID</del></li> </ul>
Selected LSA Identity	C	This IE indicates the LSA identity associated with the current position of the MS. <del>Send</del> <u>Shall be sent</u> if the LSA ID <u>in the subscriber data</u> of subscription and LSA ID of the used cell matches <u>the LSA ID of the current cell</u> . In the case of multiple matches the <u>LSA Id one</u> with the highest priority <u>shall be</u> sent. See 3G TS 23.073 [23]. <del>The IE shall only be sent if SoLSA is supported.</del>

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

- Not applicable

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

### 11.3.2.1 Any Time Interrogation ack

...

#### 11.3.2.1.2 Information Elements

...

Location Information ~~contains the following information~~ is defined in 3G TS 23.018 [3]. The following differences apply:

Information element name	Required	Description
<u>Location number</u>	<u>=</u>	<u>Not applicable</u>
<u>Service area ID</u>	<u>=</u>	<u>Not applicable</u>
<u>Cell ID</u>	<u>=</u>	<u>Not applicable</u>
Geographical <del>Information</del>	C	See 3G TS 23.032 [34]. The GMLC receives Extended Geographical Information from the MSC. The Extended Geographical Information shall be converted to the Geographical Information by the GMLC.
<del>Geodetic Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<u>VLR number</u>	<u>=</u>	<u>Not applicable</u>
<del>Age Of Location Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<u>Current Location Retrieved</u>	<u>=</u>	<u>Not applicable</u>
MSC number	C	<del>See 3G TS 23.032 [34].</del> The GMLC receives the MSC number from the HLR in the SendRoutingInfoForLCS MAP message.

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

- Not applicable

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

11.3.4.1 Any Time Interrogation ack

...

11.3.4.1.2 Information Elements

...

Location Information [is defined in 3G TS 23.018 \[3\]](#). ~~The contains the~~ following ~~information~~[differences apply](#):

Information element name	Required	Description
<del>Location Number</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>CellGlobalIDOrServiceAreaIdOrLA</del> <del>↓</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Geographical Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Geodetic Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>Age Of Location Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<del>VLR number</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
<a href="#">Location area ID</a>	<a href="#">C</a>	<a href="#">See 3G TS 23.003 [37]. Only one of the following conditional IEs shall be sent:</a> <ul style="list-style-type: none"> <li>▪ <a href="#">Cell ID</a></li> <li>▪ <a href="#">Service area ID</a></li> <li>▪ <a href="#">Location area ID</a></li> </ul>
Selected LSA Identity	C	<del>See 3G TS 23.018 [3]. This IE indicates the LSA identity associated with the current position of the MS. Shall be sent 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 sent. See 3G TS 23.073 [23].</del>
<del>Current Location Retrieved</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>

C Conditional (The IE shall be sent, if available [and SoLSA is supported](#)).

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

## CHANGE REQUEST

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

**23.078 CR 190**

Current Version: **3.5.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **CN#09**  
list expected approval meeting # here ↑

for approval   
for information

strategic   
non-strategic  (for SMG use only)

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

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

(U)SIM  ME  UTRAN / Radio  Core Network

**Source:**

**N2**

**Date:**

**10 July 2000**

**Subject:**

**Removal of duplicate SGSN address/number from IDP-GPRS**

**Work item:**

**CAMEL phase 3**

**Category:**

(only one category shall be marked with an X)

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

**Release:**

Phase 2	<input type="checkbox"/>
Release 96	<input type="checkbox"/>
Release 97	<input type="checkbox"/>
Release 98	<input type="checkbox"/>
Release 99	<input checked="" type="checkbox"/>
Release 00	<input type="checkbox"/>

**Reason for change:**

Currently the SGSN SS7 address is twice in the InitialDP-GPRS CAP operation. The duplication is removed. The correct terminology is:

- SGSN Number = The SS7 number of the SGSN currently serving this MS.
- SGSN Address = The IP address of the SGSN currently serving this MS.

**Clauses affected:**

**Other specs affected:**

Other 3G core specifications	<input checked="" type="checkbox"/>	→ List of CRs:	29.078-CR102 (N2-000270)
Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
MS test specifications	<input type="checkbox"/>	→ List of CRs:	
BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:**



\*\*\*\* **NON MODIFIED SECTION** \*\*\*\*

\*\*\*\* **For Your Information** \*\*\*\*

### 7.6.1.3 Initial DP SMS

#### 7.6.1.3.1 Description

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

#### 7.6.1.3.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Destination Subscriber Number	M	This IE contains a number to identify the Destination short message entity.  The Destination Subscriber Number shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
Calling Party Number	M	This IE carries the MSISDN of the subscriber who sent the short message.
Event Type	M	This IE indicates the armed event (i.e., <i>SMS_Collected_Info</i> ) resulting in the Initial DP SMS IF.
IMSI	M	This IE identifies the mobile subscriber.
Location Information in MSC	C	This IE is described in the next table.
Location Information in SGSN	C	This IE is described in the table below.
Service Key	M	This IE indicates to the gsmSCF the requested CAMEL Service. It is used to address the required application/SLP within the gsmSCF.
Time And Timezone	M	This IE contains the time that the gsmSSF/gprsSSF was triggered, and the time zone the gsmSSF/gprsSSF resides in.
TP Short Message Submission Specific Information	M	This IE contains the 1 <sup>st</sup> octet of the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].  The 1 <sup>st</sup> octet includes the following information: <ul style="list-style-type: none"> <li>- Message Type Indicator</li> <li>- Reject Duplicates</li> <li>- Validity Period Format</li> <li>- Status Report Request</li> <li>- User Data Header Indicator</li> <li>- Reply Path</li> </ul>
TP Protocol Identifier	M	This IE indicates the protocol used above SM-Transfer Layer.  The TP Protocol Identifier shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
TP Data Coding Scheme	M	This IE indicates the data coding scheme of the TP-User Data field, and may indicate a message class. The message class may indicate e.g. the originator of Short Message.  The TP Data Coding Scheme shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
TP Validity Period	C	This IE indicates the length of the validity period or the absolute time of the validity period termination.  The TP Validity Period shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
SMSC Address	M	This I.E defines the address of the SMSC to which the MO short message is intended to be submitted.

M Mandatory (The IE shall always be sent).

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

Location Information in MSC contains the following information:

Information element name	Required	Description
CellGlobalIDOrServiceAreaIdOrLAI	M	See 3G TS 23.018 [3].
Geographical Information	C	See 3G TS 23.018 [3].
Geodetic Information	C	See 3G TS 23.018 [3].
VLR number	M	See 3G TS 23.018 [3].
Selected LSA Identity	C1	This IE indicates the LSA identity associated with the current position of the MS. Send if the LSA ID of subscription and LSA ID of the used cell matches. In the case of multiple matches the one with the highest priority is sent. See 3GPP TS 23.073[23]

M Mandatory (The IE shall always be sent).

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

C1 Conditional (The IE shall be sent, if available and SoLSA is supported).

Location Information in the GPRS case contains the following information:

Information element name	Required	Description
CellGlobalIDOrServiceAreaIdOrRAI	M	See 3G TS 23.018 [3] and 3G TS 23.060 [11].
Geographical Information	C	See 3G TS 23.018 [3].
SGSN number	M	Global Title of the Serving GPRS Service Node. See 3G TS 23.060 [11].

M Mandatory (The IE shall always be sent).

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

\*\*\*\* **FIRST and LAST MODIFIED SECTION** \*\*\*\*

## 6.6.1.5 Initial DP GPRS

### 6.6.1.5.1 Description

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

### 6.6.1.5.2 Information Elements

The following information elements are required:

<u>Information element name</u>	<u>Required</u>	<u>Description</u>
SGSN Address	M	<del>This IE contains the international E.164 address of the SGSN.</del>
Gprs Reference Number	M	This IE consists of a number assigned by the gprsSSF. It is used for TCAP dialogue segmentation. Refer to 3G TS 29.078 [5] for the usage of this element.
ServiceKey	M	This IE indicates to the gsmSCF the requested CAMEL Service. It is used to address the required application/SLP within the gsmSCF.
GPRS Event Type	M	This IE indicates the armed GPRS DP event resulting in the Initial Data Event IF.
MSISDN	M	This IE contains the basic MSISDN of the MS.
IMSI	M	This IE identifies the mobile subscriber.
Time and Time zone	M	This IE contains the time that the gprsSSF was triggered, and the time zone the gprsSSF resides in.
GPRS MS Class	C	This IE contains the MS network and radio access capabilities.
PDP Type	C	This IE identifies the PDP Type, e.g. X.25 or IP.
Quality of Service	C	This IE is described in the table below.
Access Point Name	C	This IE identifies the address Access Point Name the MS has requested to connect to.
Routeing Area Identity	C	This IE contains the location information of the MS.
Charging ID	C	This IE contains the Charging ID received from the GGSN for the PDP context.
SGSN Capabilities	C	This IE specifies the capabilities of the SGSN node to support the CAMEL interwork, e.g. support of Advice of Charge.
<u>Location Information in SGSN</u>	M	This IE is described in the subclause 7.6.1.3.2.

M Mandatory (The IE shall always be sent).

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

Quality of Service contains the following information elements:

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

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



<b>— First modified section —</b>
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#### 4.5.6.4 Process gsmSSF and procedures

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

...

Process gsmSSF

19(34)

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

/\* Signals to/from the left are to/from the MSC, signals to/from the right are to/from the gsmSCF. \*/

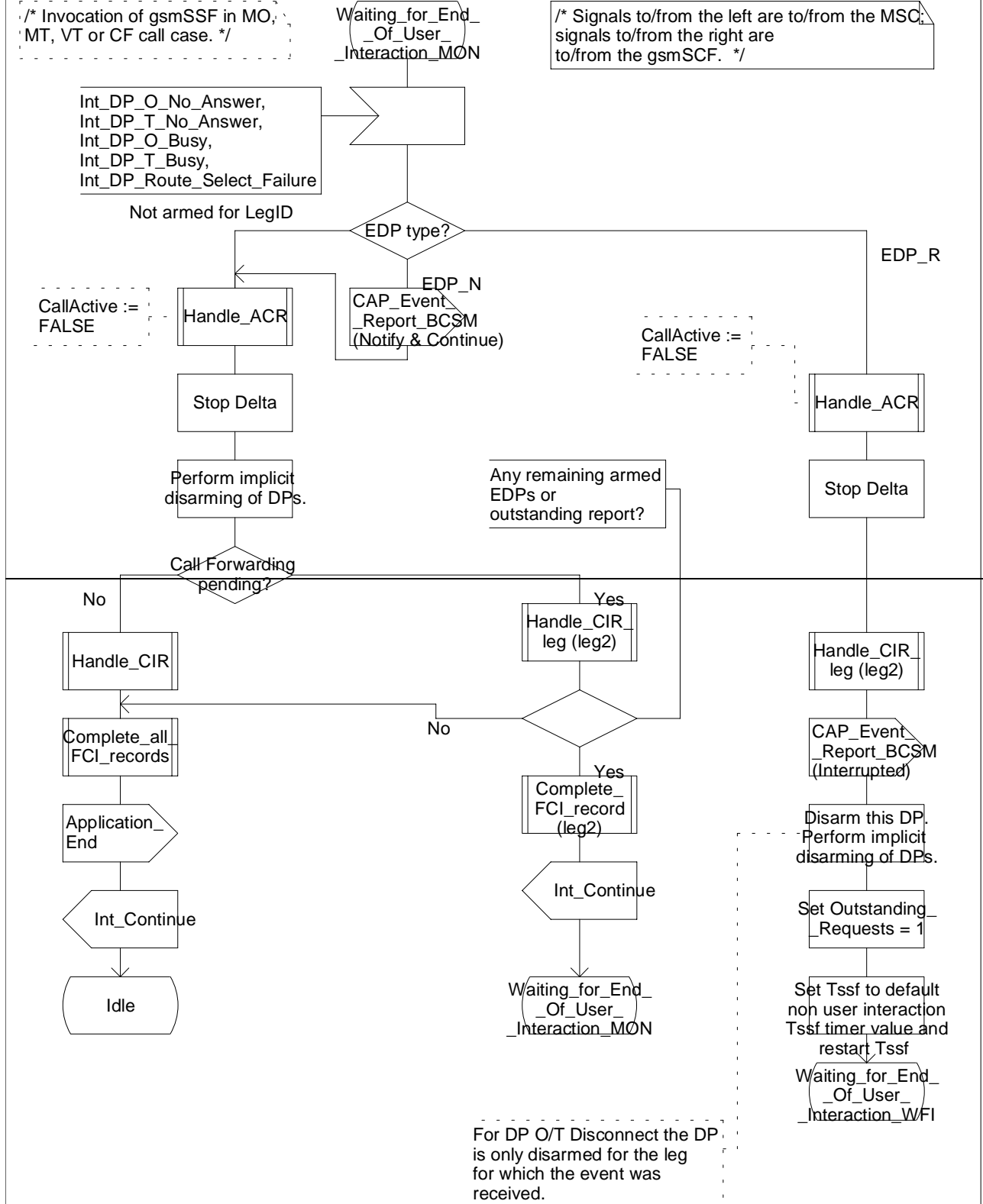


Figure 4.63s: Process gsmSSF (sheet 19)





— **First modified section** —

## 6.5.2 Handling GPRS in the SGSN

The functional behaviour of the SGSN is specified in 3G TS 23.060 [11]. The procedures specific to CAMEL are specified in this subclause :

- Procedure CAMEL\_GPRS\_Attach\_Request;
- Procedure CAMEL\_GPRS\_Detach\_Indication;
- Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Session;
- Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Context;
- Procedure CAMEL\_GPRS\_Context\_Acknowledge;
- Procedure CAMEL\_GPRS\_Activate\_PDP\_Context;
- Procedure CAMEL\_GPRS\_Create\_PDP\_Context;
- Procedure CAMEL\_GPRS\_Modify\_PDP\_Context;
- Procedure CAMEL\_GPRS\_Deactivate\_PDP\_Context.

— Next modified section —

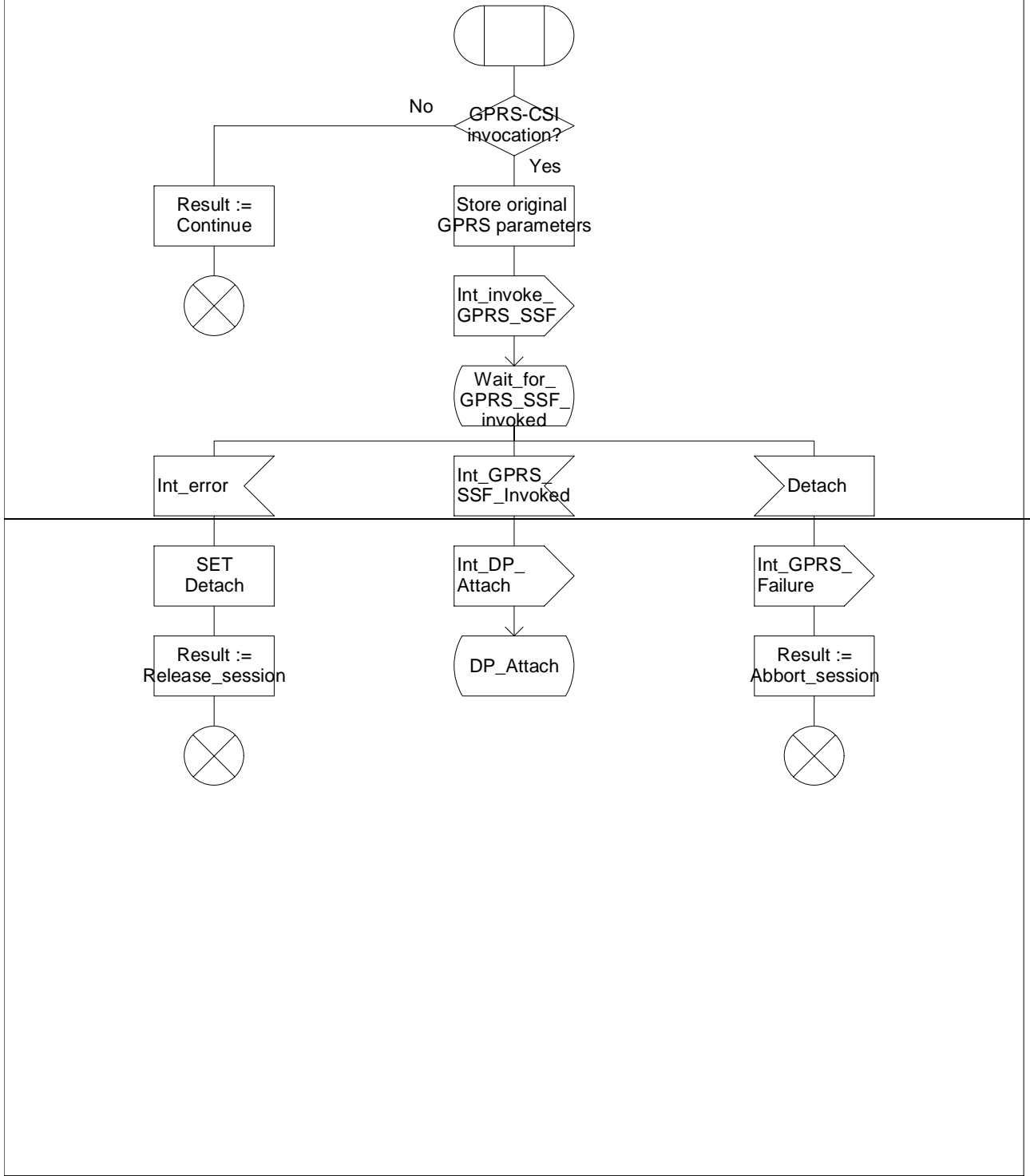
6.5.2.3 Handling of GPRS Attach/Detach

Procedure CAMEL\_GPRS\_Attach\_Request

1(2)

/\* Procedure in the SGSN for CAMEL handling of MS Attach \*/

/\* Signals to/from the right are to/from the gprsSSF; signal from the left is from the MS. \*/



Procedure CAMEL\_GPRS\_Attach\_Request

1(2)

/\* Procedure in the SGSN for CAMEL handling of MS Attach \*/

/\* Signals to/from the right are to/from the gprsSSF; signal from the left is from the MS. \*/

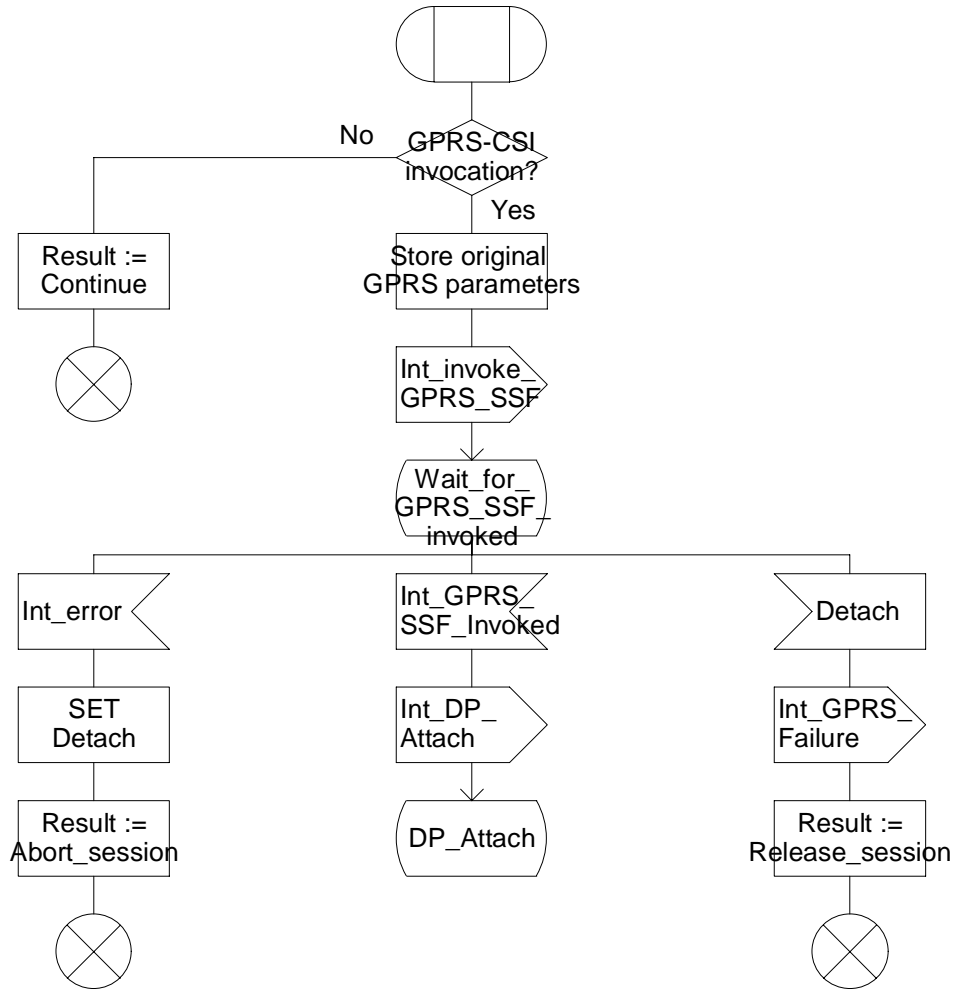


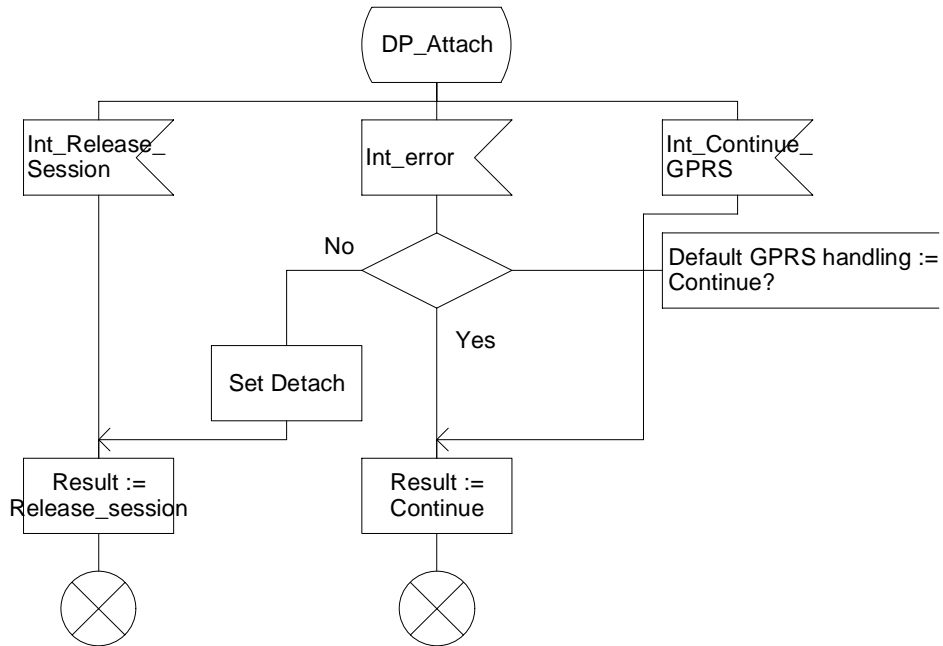
Figure 6.1 a: Procedure CAMEL\_GPRS\_Attach\_Request (sheet 1)

## Procedure CAMEL\_GPRS\_Attach\_Request

2(2)

/\* Procedure in the SGSN for CAMEL  
handling of MS Attach \*/

/\* Signals from the right are from the gprsSSF.\*/



## Procedure CAMEL\_GPRS\_Attach\_Request

2(2)

/\* Procedure in the SGSN for CAMEL handling of MS Attach \*/

/\* Signals from the right are from the gprsSSF. \*/

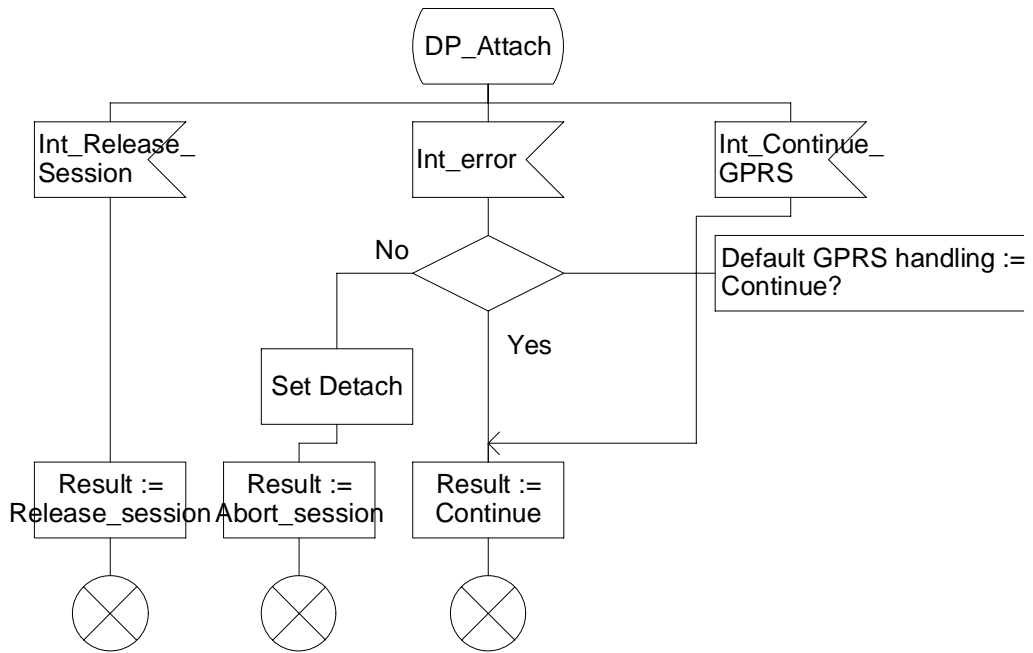


Figure 6.1 b: Procedure CAMEL\_GPRS\_Attach\_Request (sheet 2)

## Procedure CAMEL\_GPRS\_Detach\_Indication

1(1)

/\* Procedure in the SGSN for CAMEL  
handling of MS or network indicated Detach \*/

/\* Signals to/from the right are to/from the gprsSSF \*/

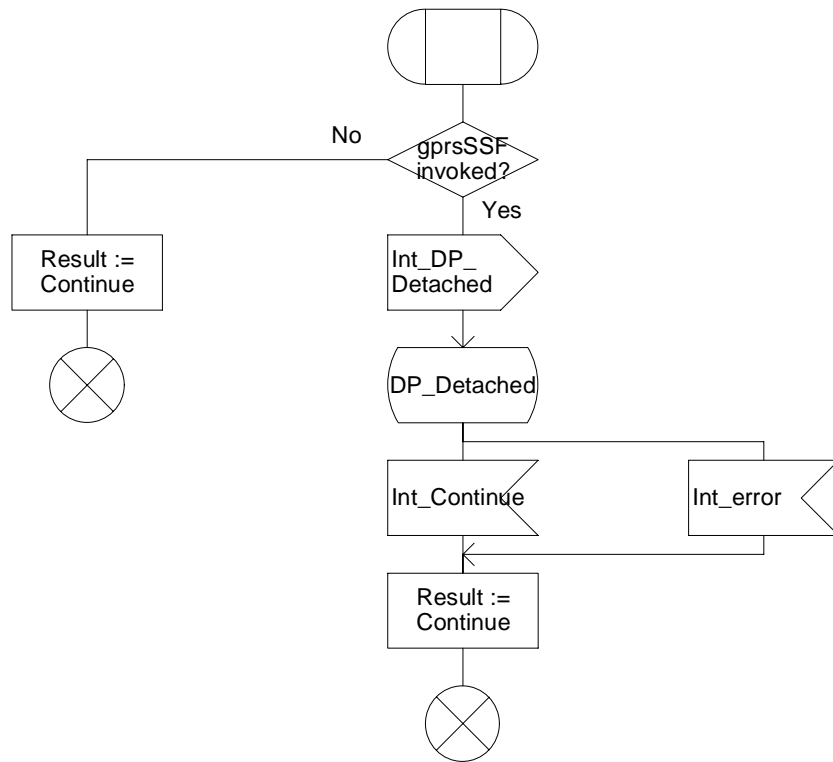


Figure 6.2: Procedure CAMEL\_GPRS\_Detach\_Indication (sheet 1)

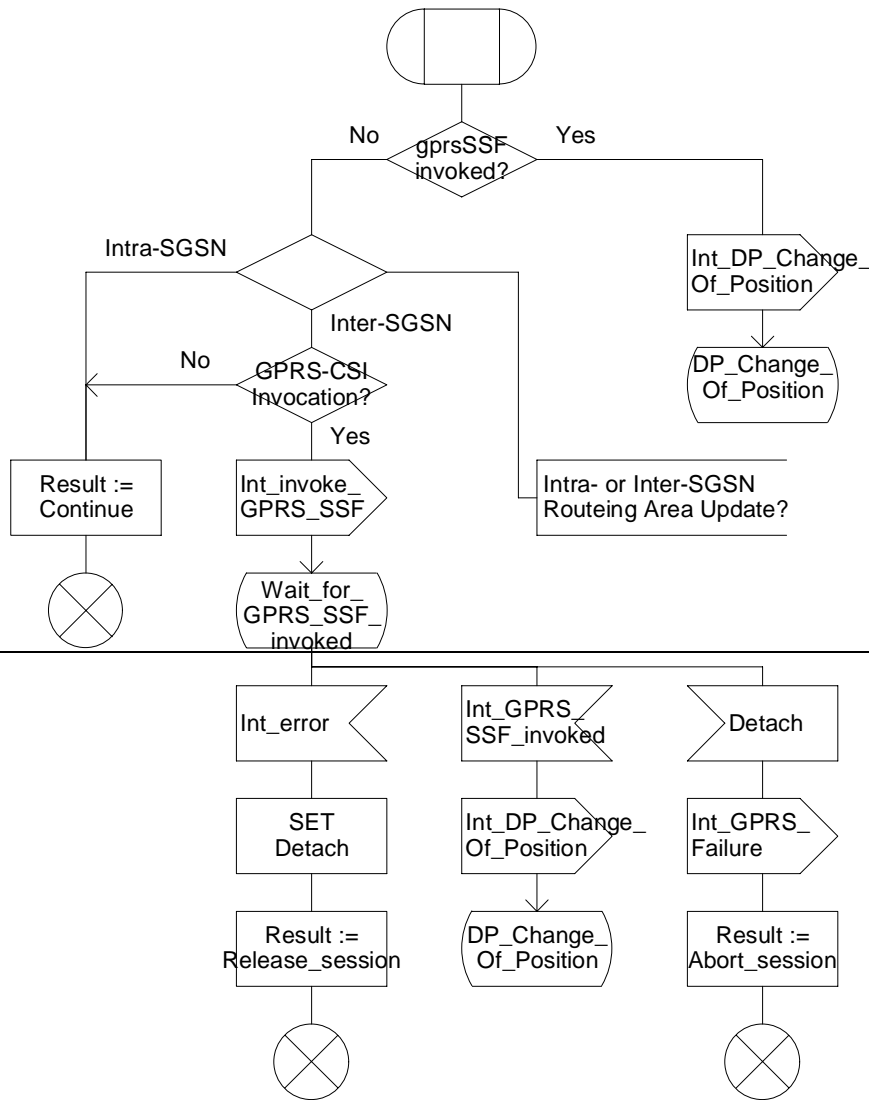
6.5.2.4 Handling of GPRS Routing Area Update

Procedure CAMEL\_GPRS\_Routeing\_Area\_Update

1(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routeing Area Update, or  
 - inter-SGSN Routeing Area Update in the new SGSN \*/

/\* Signals to/from the right are to/from the gprsSSF;  
 signal from the left is from the MS. \*/





Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Session

1(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routeing Area Update, or  
 - inter-SGSN Routeing Area Update in the new SGSN \*/

/\* Signals to/from the right are to/from the gprsSSF,  
 signal from the left is from the MS \*/

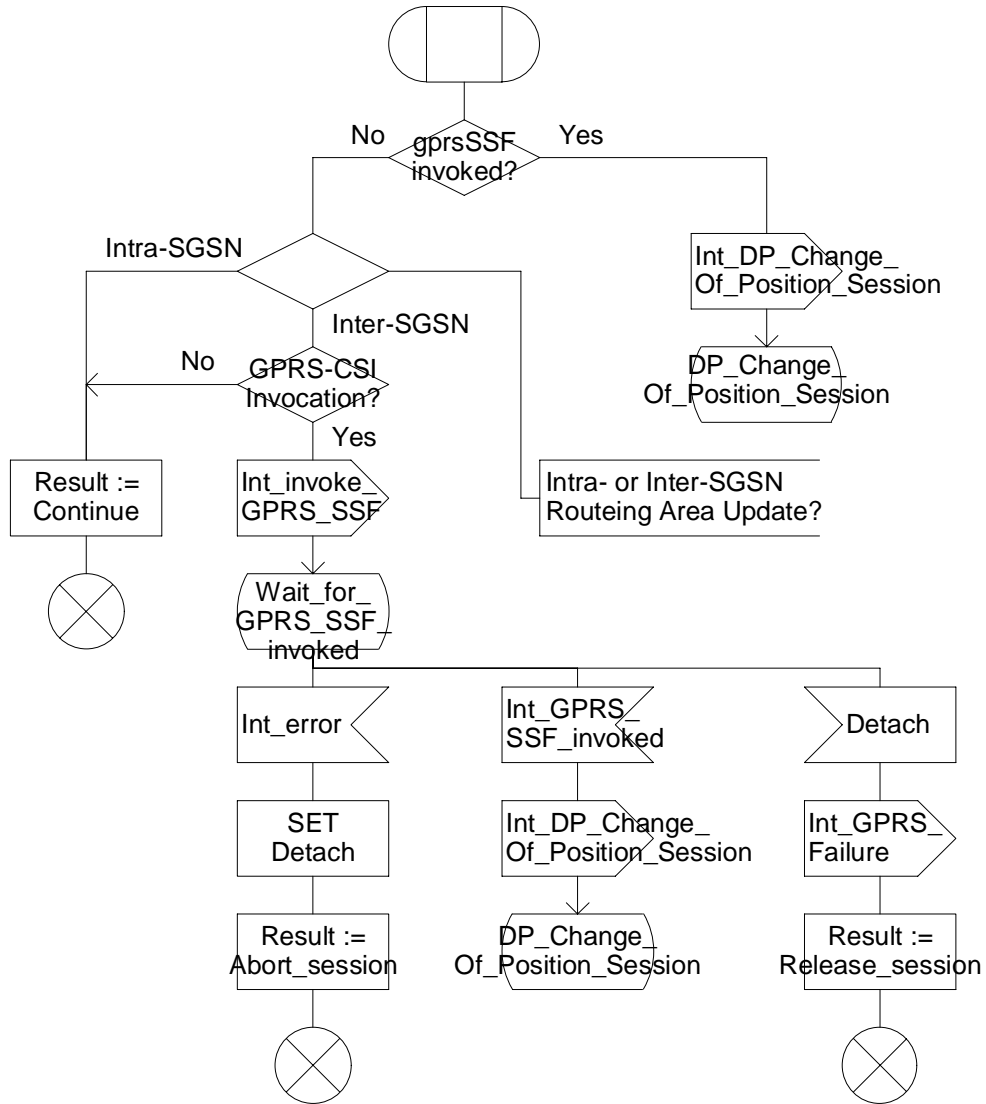


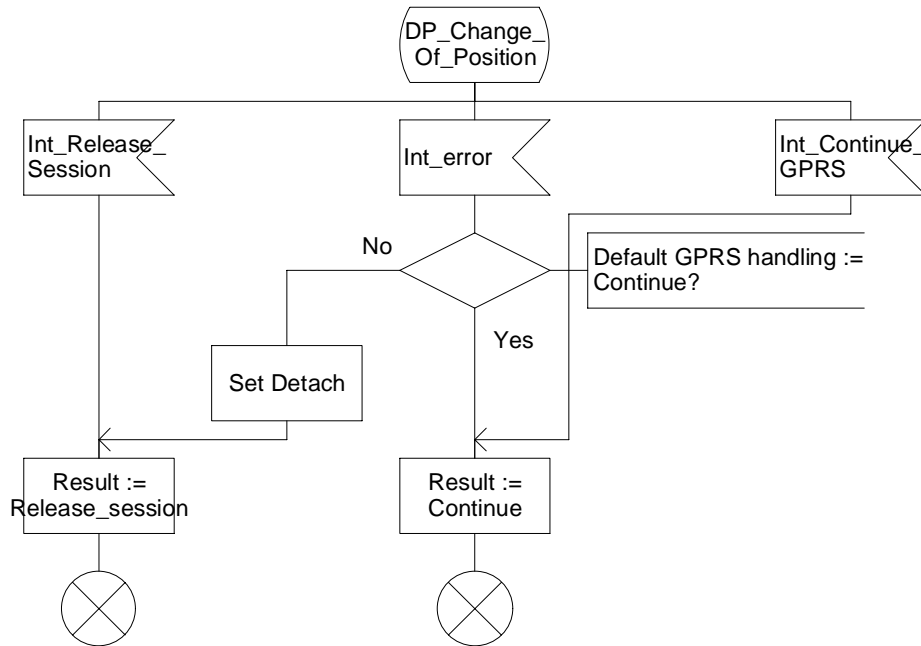
Figure 6.10a: Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Session (sheet 1)

## Procedure CAMEL\_GPRS\_Routeing\_Area\_Update

2(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routeing Area Update, or  
 - inter-SGSN Routeing Area Update in the new SGSN \*/

/\* Signals from the right are from the gprsSSF.\*/



Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Session

2(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routeing Area Update, or  
 - inter-SGSN Routeing Area Update in the new SGSN \*/  
 /\* Signals from the right are from the gprsSSF. \*/

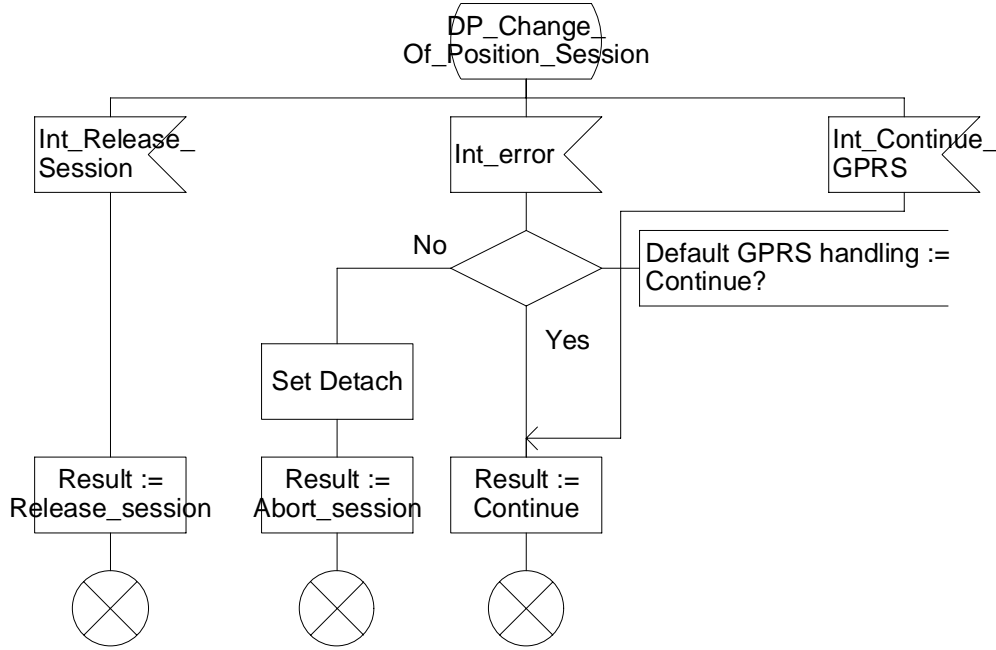


Figure 6.10b: Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Session (sheet 2)

Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Context

1(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routeing Area Update, or  
 - inter-SGSN Routeing Area Update in the new SGSN \*/

/\* Signals to/from the right are to/from the gprsSSF, signal from the left is from the MS \*/

/\* NOTE: See Table Table 7: 'Description of GPRS PDP Context DPs in the SGSN' Note 3 for further explanation whether reporting occurs within a new gprsSSF or in an existing (invoked) one.\*/

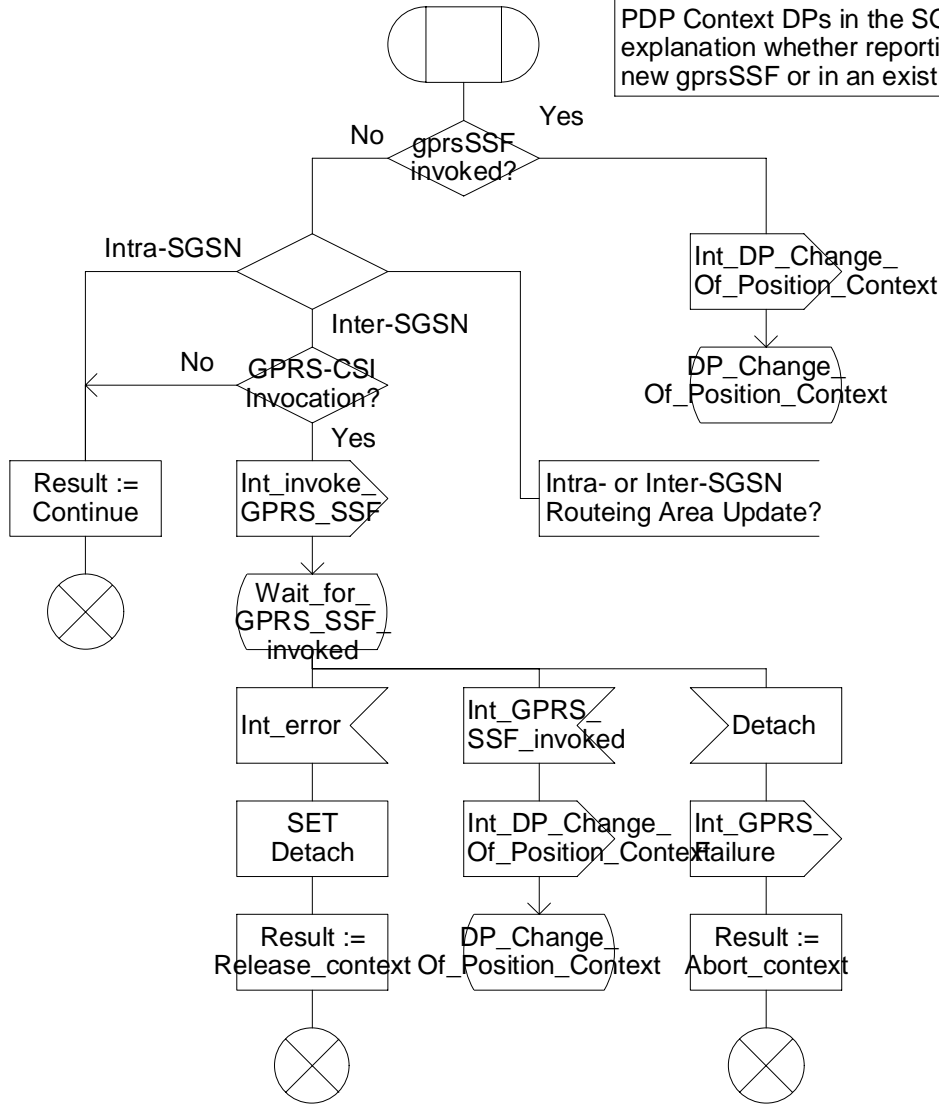


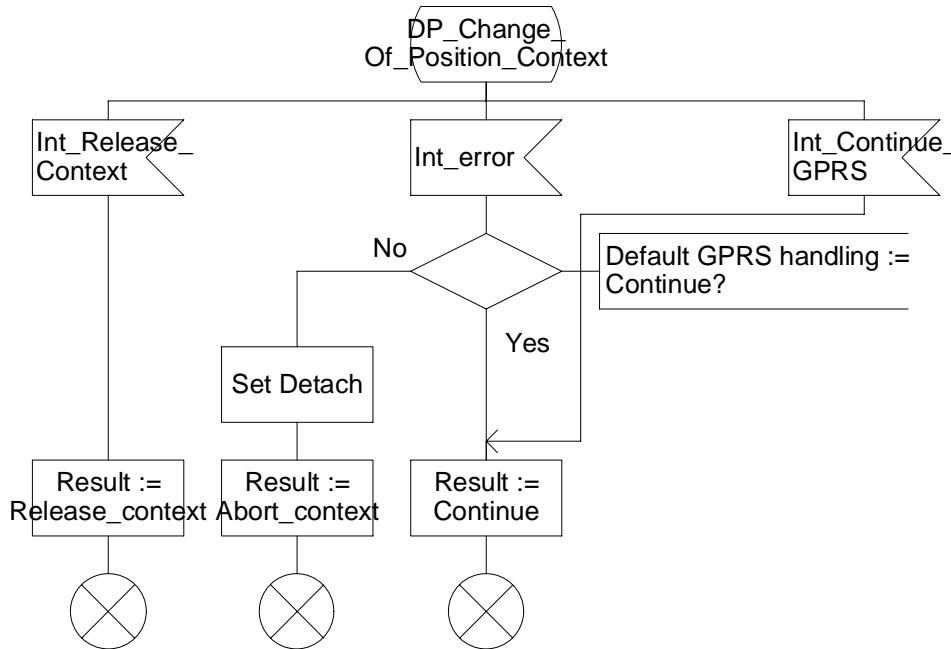
Figure 6.x a: Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Context (sheet 1)

## Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Context

2(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routeing Area Update, or  
 - inter-SGSN Routeing Area Update in the new SGSN \*/

/\* Signals from the right are from the gprsSSF. \*/



**Figure 6.x b: Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Context (sheet 2)**

y

## Procedure CAMEL\_GPRS\_Context\_Acknowledge

1(1)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Deactivation due to the inter-SGSN Routing Area Update \*/

/\* Signal to the right is to the gprsSSF. \*/

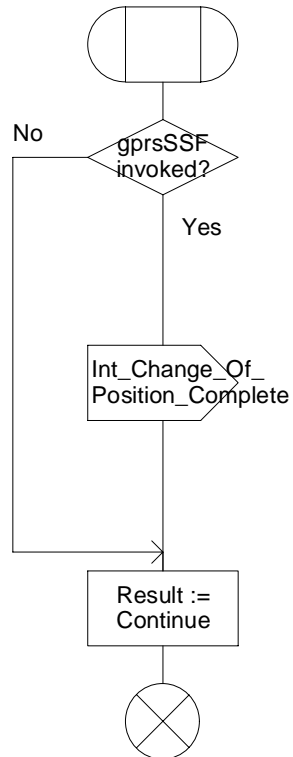


Figure 6.11: Procedure CAMEL\_GPRS\_Context\_Acknowledge (sheet 1)

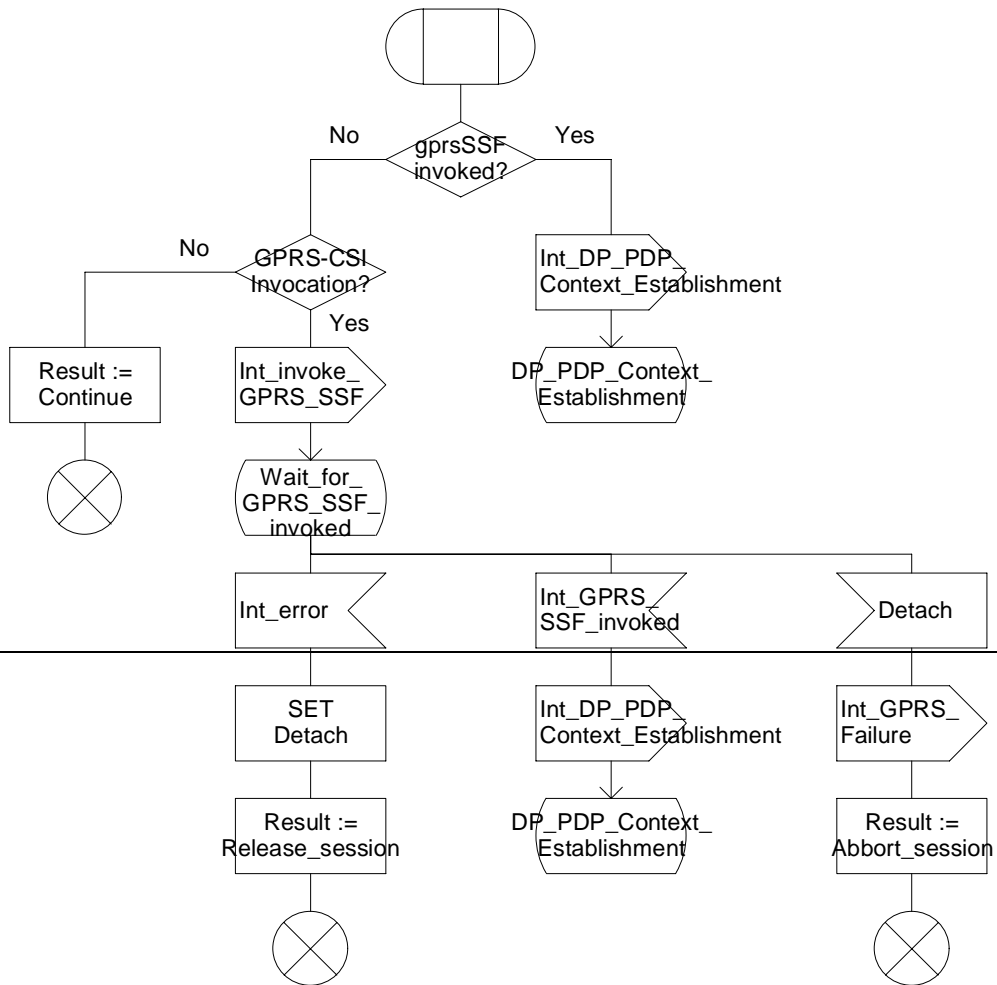
6.5.2.5 Handling of PDP Context establishment and deactivation

Procedure CAMEL\_GPRS\_Activate\_PDP\_Context

1(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation \*/

/\* Signals to/from the right are to/from the gprsSSF; signal from the left is from the MS. \*/



Procedure CAMEL\_GPRS\_Activate\_PDP\_Context

1(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation \*/

/\* Signals to/from the right are to/from the gprsSSF; signal from the left is from the MS. \*/

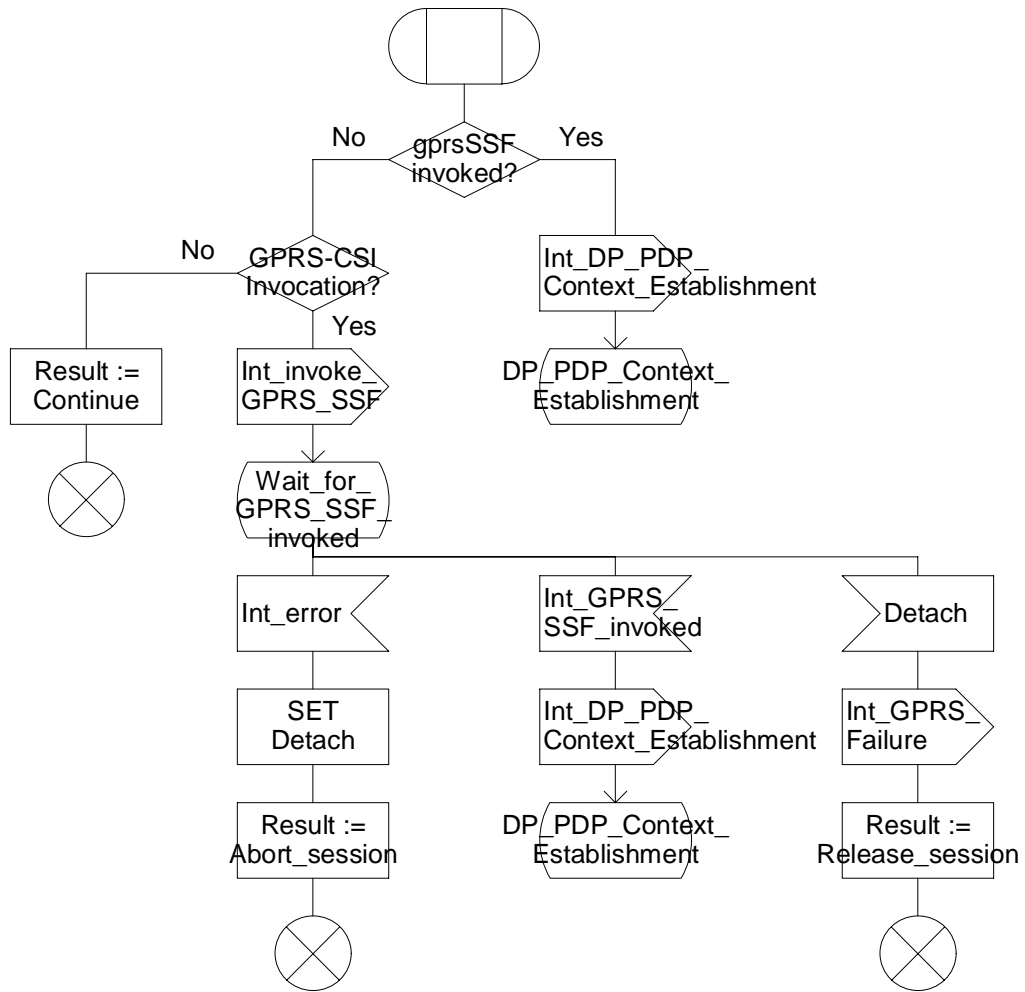


Figure 6.3 a: Procedure CAMEL\_GPRS\_Activate\_PDP\_Context (sheet 1)

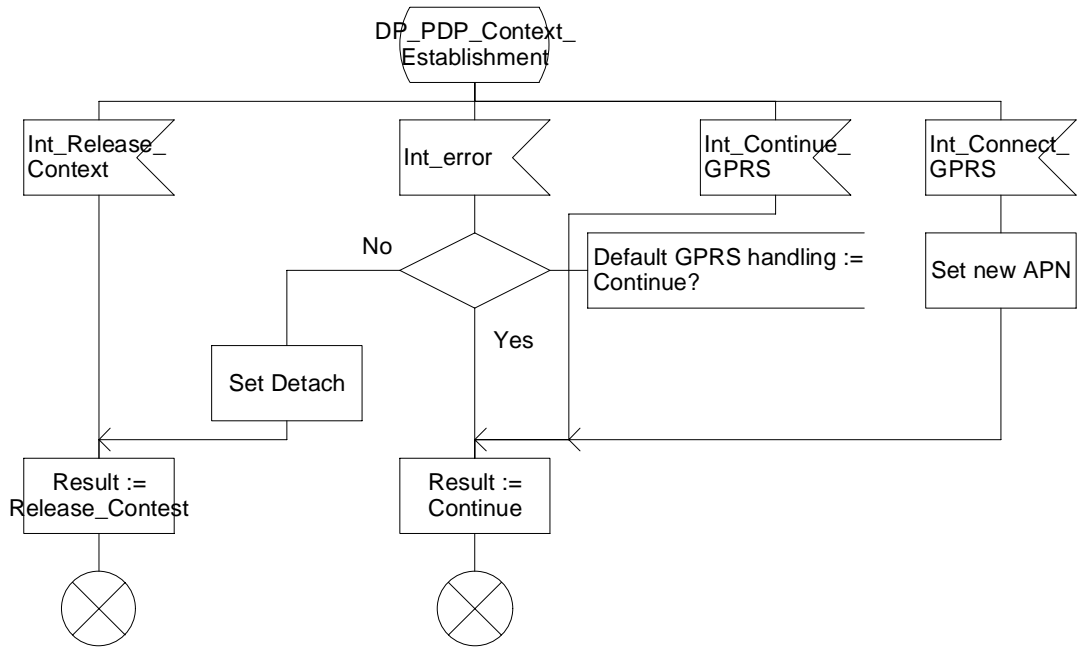


Procedure CAMEL\_GPRS\_Activate\_PDP\_Context

2(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation \*/

/\* Signals from the right are from the gprsSSF. \*/



Procedure CAMEL\_GPRS\_Activate\_PDP\_Context

2(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation \*/

/\* Signals from the right are from the gprsSSF. \*/

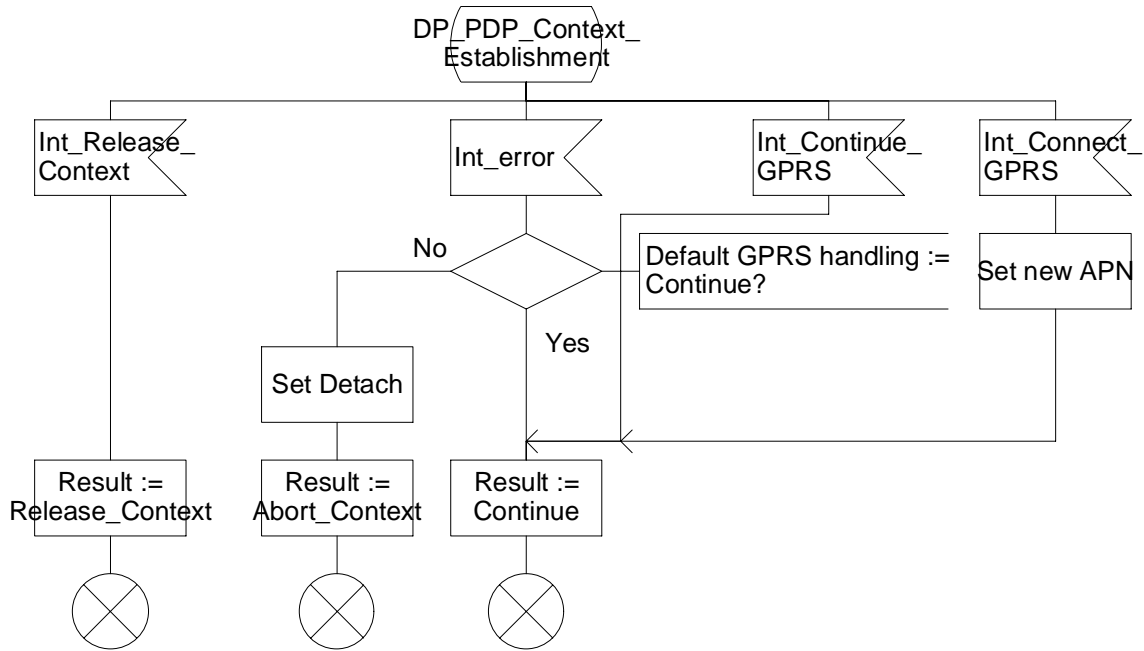


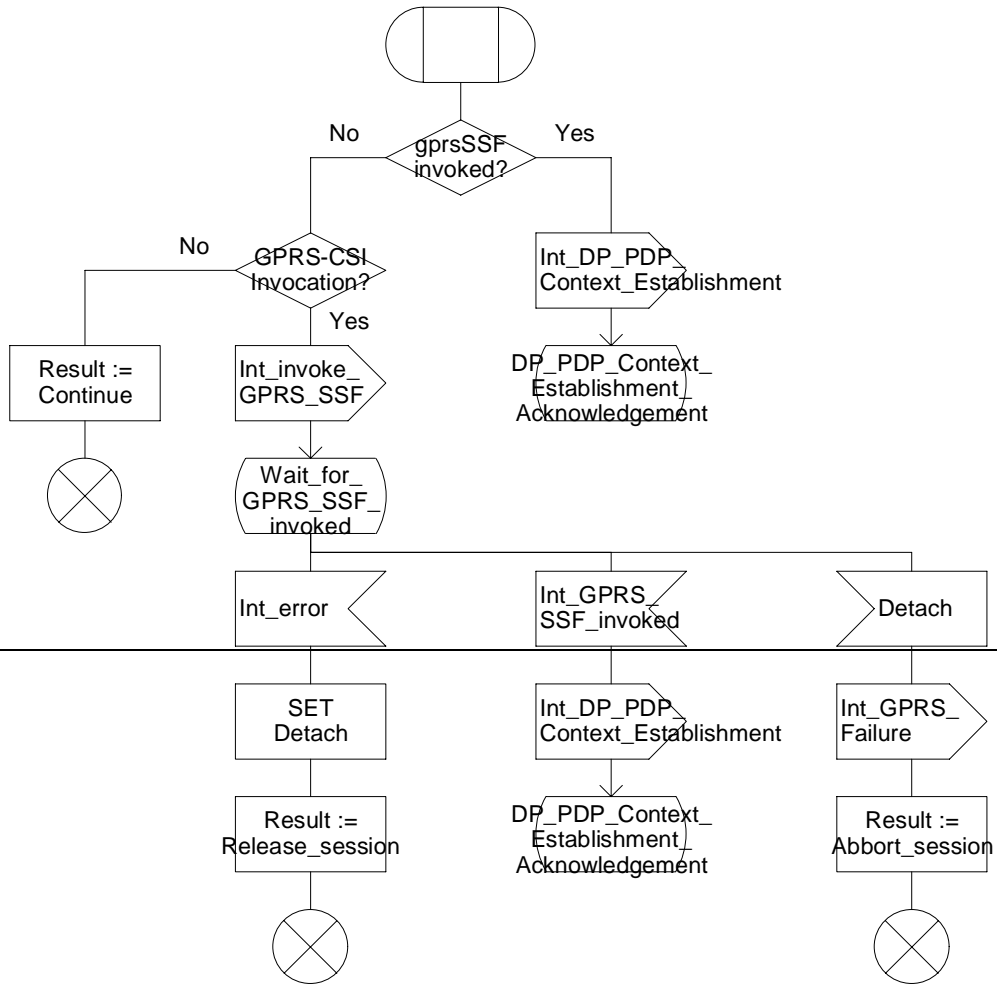
Figure 6.3 b: Procedure CAMEL\_GPRS\_Activate\_PDP\_Context (sheet 2)

Procedure CAMEL\_GPRS\_Create\_PDP\_Context

1(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation Acknowledgement \*/

/\* Signals to/from the right are to/from the gprsSSF; signal from the left is from the MS. \*/



## Procedure CAMEL\_GPRS\_Create\_PDP\_Context

1(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation Acknowledgement \*/

/\* Signals to/from the right are to/from the gprsSSF, signal from the left is from the MS. \*/

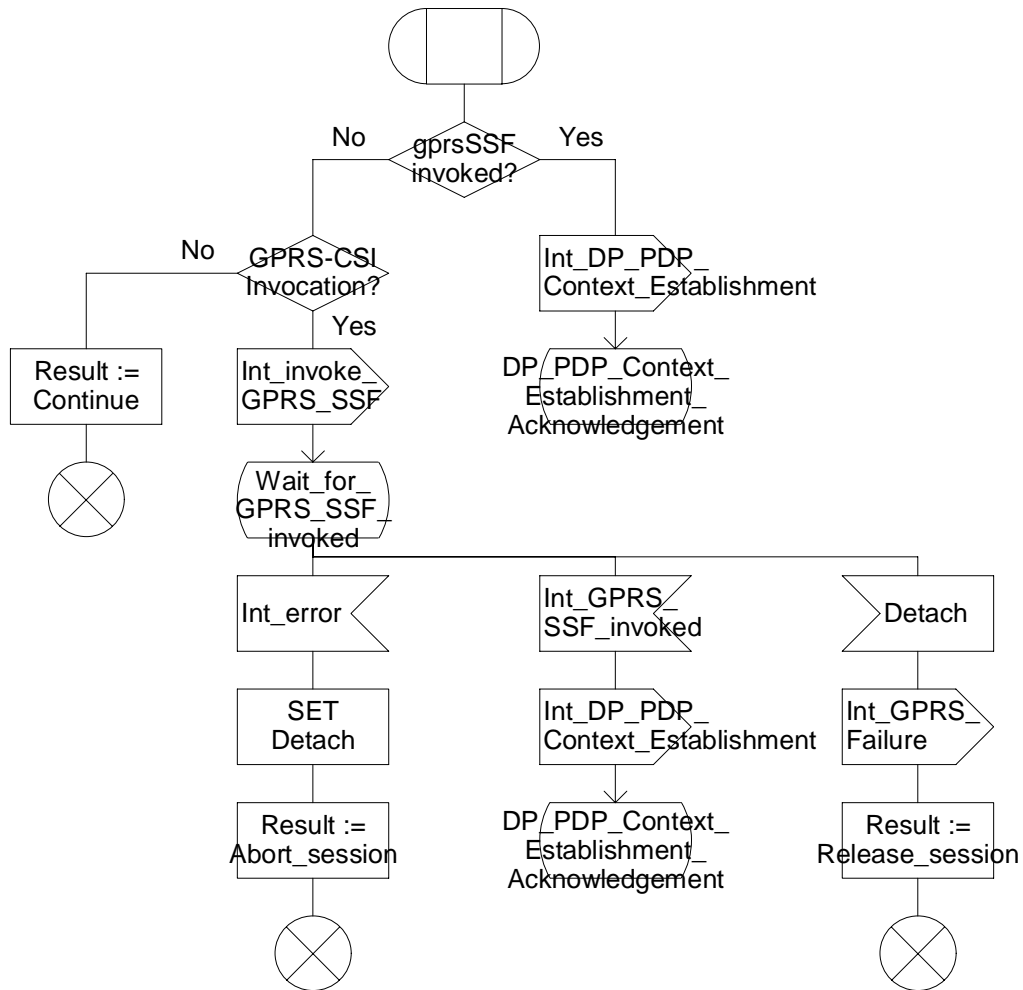


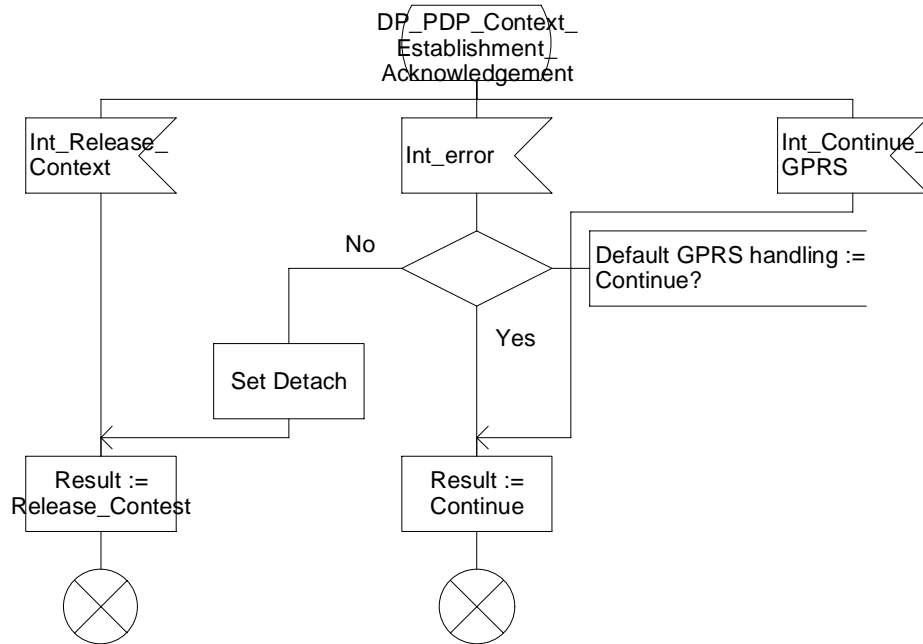
Figure 6.4 a: Procedure CAMEL\_GPRS\_Create\_PDP\_Context (sheet 1)

## Procedure CAMEL\_GPRS\_Create\_PDP\_Context

2(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation Acknowledgement \*/

/\* Signals from the right are from the gprsSSF. \*/



## Procedure CAMEL\_GPRS\_Create\_PDP\_Context

2(2)

/\* Procedure in the SGSN for CAMEL  
handling of PDP Context Activation  
Acknowledgement \*/

/\* Signals from the right are from the gprsSSF. \*/

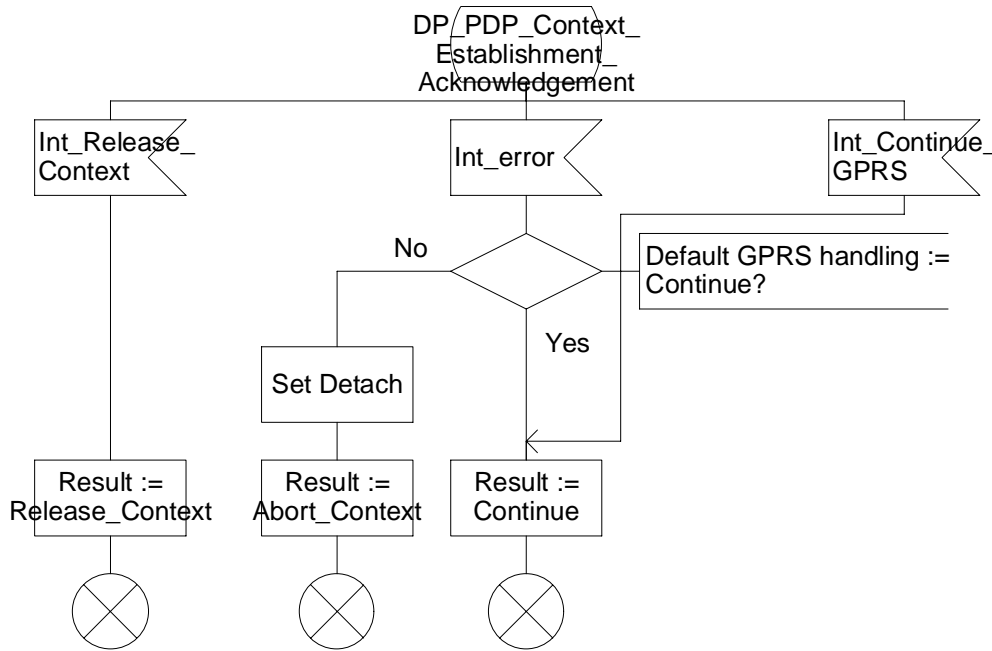


Figure 6.4 b: Procedure CAMEL\_GPRS\_Create\_PDP\_Context (sheet 2)

## CHANGE REQUEST

**23.078 CR 194r3**

Current Version: 3.5.0

For submission to: CN#9 for approval  strategic   
for information  non-strategic

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

**Source:** N2 **Date:** 01 09 2000

**Subject:** Corrections on GPRS

**Work item:** CAMEL Phase 3

<b>Category:</b>	F Correction	<input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>
				Release 00	<input type="checkbox"/>

**Reason for change:** Corrections to the GPRS SDLs.  
See the table starting from page for a detailed overview of the proposed changes.

**Clauses affected:** 6

<b>Other specs</b>	Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
<b>affected:</b>	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:** SDL figure numbering shall be updated.

### Detailed overview of proposed changes.

Sect. 6.1.1	Figure has been modified: 'IPLMN' has been removed (not relevant for GPRS) etc.
6.4.2	(figure and table) The DP shall be called 'Detach'; this name is used throughout the spec.
6.4.3	Capital letter used in figure and table.
6.4.4.1	Explanatory line added (first reporting of PDP Id)
6.4.5.2	Explanatory text added: handling of Session and PDP Contexts in old SGSN at hand-over.
6.4.6	Disarming rule table split in two: one for scenarion #1, one for scenario #2. A single table does not properly indicate what the rules are for the two scenario's. Also, table two indicates which events may be armed through the PDP Context dialogue.
6.5.2	Consistent Procedure naming is proposed. The procedure names shall correspond with the events that trigger these procedures. These procedure names shall also be used in 23.060.  Procedure CAMEL_GPRS_Context_Acknowledge is not needed. PDP Context disconnection due to inter-SGSN hand-over is reported with DP PDP_Context_Disconnection.

SDL Figure	Change
Fig 6.8a	Left branch: not needed; the Int_error signal is an internal signal which can occur in any state; this does not have to be specified.  Right branch: The signal 'Abort' shall be used here. It covers internal errors in the SGSN and premature detach from the subscriber.
Fig. 6.8b	The box 'Set Detach' is not needed and shall be removed
Fig 6.9	When Detach is armed as EDP-R (6.16p), then gsmSCF may send CAP_Continue (6.16c); gprsSSF then sends Int_Continue_GPRS to the SGSN.
Fig 6.10a	Left branch: not needed here, see above.  The figure has been split up in two, one figure to handle Session update, one figure to handle Context update. This is in alignment with the CAMEL procedure calls in 23.060. The signal names and state names are tailored for the Session update or Context update.
Fig 6.10b	The figure has been split up in two, one figure to handle Session update, one figure to handle Context update. See above.  Box 'Set Detach' is not needed. This parameter is not used by the calling procedure in 23.060.  The signal Int_Continue may be returned by process GPRS_SSF.
Fig 6.11a/b	New figure. This figure specifies the change of context. See figure 6.10a/b.
Fig 6.11	Figure not needed. At hand-over, Session release in old SGSN or PDP Context Disconnection in old SGSN is reported as EDP ('Detach', 'PDP Context Disconnection').
Fig 6.12a	Left branch: not needed here, see above.  Signal 'int_DP_PDP_Context_Establishment' shall carry a PDP Id.
Fig 6.12b	Box 'Set Detach' is not needed. This parameter is not used by the calling procedure in 23.060.  If PDP Context Establishment is not armed or armed as EDP-N, then gprsSSF returns 'Int_Continue' (6.16).
Fig 6.13a	Left branch: not needed here, see above.  Signal 'int_DP_PDP_Context_Establishment_Acknowledgement' shall carry a PDP Id.
Fig 6.13b	Box 'Set Detach' is not needed. This parameter is not used by the calling procedure in 23.060.  If PDP Context Establishment Acknowledgement is not armed or armed as EDP-N, then gprsSSF returns 'Int_Continue' (6.16).
Fig 6.14	Signal 'Int_QoS_Change' shall carry a PDP Id.
Fig 6.15	Signal 'Int_DP_PDP_Context_Disconnection' shall carry a PDP Id.  When PDP Context disconnection is armed as EDP-R, then gsmSCF may send CAP_Continue; gprsSSF then sends Int_Continue_GPRS to the SGSN.
Sect. 6.5.3.1	SCI-GPRS may be destined for a Session or for a PDP Context. The term 'Answer' is not applicable.  When SCI-GPRS is received for the Session, then that Session is always 'active'.  When SCI-GPRS is received for a PDP Context, then that PDP Context is 'active' only after acknowledgement.



	<p>The section has been split up in two parts, one for SCI_GPRS for PDP Context and one for SCI_GPRS for the Session.</p> <p>It shall be possible for the gsmSCF to send SendChargingInformationGPRS to the gprsSSF after PDP Context activation, whereby the SCI-GPRS operation contains two sets of e-parameters (bullet 4 and 5 of section 6.5.3.1.1).</p> <p>Explanatory text added for various procedures.</p>
Fig 6.16	A more descriptive text in top left corner is proposed.
Fig 6.16a	Tssf description added; Tsw shall carry a qualifier: Session or PDP Id; Volume counting for the session is removed (agreed by SA1 and CN2).
Fig 6.16b	<p>Correction to Tssf description</p> <p>Open GPRS Dialogue added (When gprsSSF goes to Idle, there is also a box 'Terminate GPRS Dialogue'); setting the GPRS Reference number ia part of 'Open GPRS Dialogue'</p> <p>SessionActive or ContextActive shall be set TRUE (it is set FALSE upon Detach or Disconnection)</p>
6.16c	<p>Handle_AC_GPRS shall carry Session / PDP indicator.</p> <p>Move Set Tssf... in second branch up (SDL consistency)</p> <p>For Cancel_GPRS, only cancel EDPs and reports for Session or indicated PDP Context.</p> <p>Stop Tssf after Connect_GPRS is not needed; it is done already later in the SDL.</p> <p>Signals Int_Connect_GPRS and Int_Continue_GPRS shall carry a Session or PDP indicator.</p> <p>'Relationship' is specific for Session or PDP Context. To determine if the gprsSSF shall transit to Monitoring or Idle, it shall be checked if 'any' report or EDP is outstanding. To determine the new Monitor Relationship, only the EDPs for the Session or PDP Context in question shall be checked.</p> <p>Before going to Idle, close <b>all</b> CDRs.</p>
Fig 6.16d	<p>The boxes 'Handle_FCI_GPRS', 'perform arming of events' and 'handle_SCI_GPRS' shall carry Session or PDP indication.</p> <p>RequestReportGPRSEvent may also result in <b>dis</b>arming of events.</p> <p>Correction to Tssf.</p>
Fig 6.16e	<p>On Session release, all outstanding reports shall be sent up; all PDP shall be set to false</p> <p>Setting instruction counter to 0 before going to Idle is not needed</p> <p>Signal 'Int_Release_Context' shall carry a PDP Id.</p> <p>PDP Context CDR shall be closed when the Context is released</p> <p>Before going to Idle, close <b>all</b> CDRs.</p> <p>Before going to Idle, check for EDPs <b>and</b> reports</p> <p>When remaining in state WFI, restart Tssf</p>
Fig 6.16f	<p>Signal Int_Change_of_Position_Complete does not exist; PDP_Context_Disconnection is used instead</p> <p>Int_Continue shall carry a PDP Id; same for Entity_Released_GPRS</p> <p>Tssf shall be reset after sending Entity_Released_GPRS</p> <p>For the disconnected PDP, the CDR shall be closed</p>
Fig 6.16g	<p>Starting Delta timers is done in Handle_ACR_GPRS</p> <p>Tssf shall be set. Reason is that an operation is sent to the SCP in state WFI (ACR-GPRS); after sending an operation in state WFI, Tssf shall be set.</p> <p>Session or PDP Id shall be passed on to Handle_ACR_GPRS as input parameter.</p> <p>Volume counting for the session is removed (agreed by SA1 and CN2).</p>
Fig 6.16h	<p>Int_Error is not sent to some internal process; it is sent to the <b>SGSN</b>.</p> <p>All CAMEL procedures that are waiting for instructions from the gsmSCF shall receive an Int_Error signal (the instruction counter is used hereto).</p> <p>The gprsSSF shall send signal 'TC_Abort' tho the GPRS dialogue handler, instead of signal 'Abort'.</p> <p>TC_Abort is the TC message that shall be sent to the gsmSCF. (analogous to sending 'TC_End' to the GPRS dialogue handler. TC_End is the TC message that shall be sent to the gsmSCF)</p> <p>The 'Default GPRS Handling' parameter shall be to used to determine whether to continue or to release. (the Int_Error signal to the active procedures has the same effect)</p>
Fig 6.16i	Procedure calls need to carry a Session or PDP indicator.

	<p>Second branch from left. After disarming EDPs and reports for the Session or a PDP Context, check for outstanding EDPs and reports before going to Idle.</p> <p>Before going to Idle, close <b>all</b> CDRs.</p> <p>Third branch from left, SDL layout consistency.</p>
Fig 6.16j	<p>Procedure calls need to carry a Session or PDP indicator.</p> <p>Before going to Idle, close <b>all</b> CDRs.</p> <p>When the Session is released, all reports shall be sent; all PDP shall be marked as inactive</p> <p>Int_Release_Context shall carry a PDP Id</p> <p>When a PDP Context is force released, the CDR for that PDP Context shall be closed.</p> <p>check for outstanding EDPs <u>and</u> reports before going to Idle</p>
Fig 6.16k	<p>Operation name corrected</p> <p>Disarming events may be for Session or PDP Context</p> <p>When the last EDP-R for a PDP Context has been cancelled, the CDR for that PDP Context shall be closed.</p> <p>'Relationship' is specific for Session or PDP Context. See above.</p> <p>Before going to Idle, close <b>all</b> CDRs.</p>
Fig 6.16l	<p>Signal Int_Change_of_Position_Complete does not exist; PDP_Context_Disconnection is used instead</p> <p>In the case of EDP-N and not armed, the CDR for the PDP Context shall be closed.</p> <p>Int_Continue, EntityReleasedGPRS shall carry a PDP Id</p> <p>Middle branch, Stop Tssf is not needed; gprsSSF is in monitoring and stays in monitoring or goes to Idle.</p> <p>Before going to Idle, close <b>all</b> CDRs.</p> <p>Rightmost branch, Tssf correction</p> <p>Rightmost branch, Instruction counter can be set to 1.</p>
Fig 6.16m	<p>An event is detected, so Implicit Disarming shall be performed</p> <p>When the event is not armed, then gprsSSF shall send Int_Continue to the SGSN; otherwise the SGSN will hang.</p> <p>Before going to Idle, close <b>all</b> CDRs.</p> <p>Rightmost branch, Tssf correction</p> <p>Check for outstanding EDPs <u>and</u> reports before going to Idle</p> <p>Procedure Handle_PDP_Acknowledgement is called (this is a new procedure)</p>
New figure	<p>Same input signals as figure 6.16m, but now for state WFI</p>
Fig 6.16n	<p>Starting Delta timers is done in Handle_ACR_GPRS</p> <p>Before going to Idle, close <b>all</b> CDRs.</p> <p>The expired timer shall be passed on to Handle_ACR_GPRS as input parameter</p> <p>Volume counting for the session is removed (agreed by SA1 and CN2).</p>
Fig 6.16o	<p>Internal signal shall carry a PDP Id.</p> <p>If a report is pending for the PDP Context, then Handle_ACR shall be called and the TC dialogue shall be closed (TC_End).</p>
New figure	<p>Same as figure 6.16o, but in state WFI</p> <p>Tssf shall be restarted if an operation has been sent to the gsmSCF</p>
Fig 6.16p	<p>Signal Int_Change_of_Position_Session does not exist; Int_DP_Detach is used instead.</p> <p>If an event is not armed or it is armed as EDP-N, then first stop Tssf.</p> <p>Set all PDP Context Active indicators to False; they are used in ACR-GPRS (PDP Id)</p> <p>The user is detached, so send up <b>all</b> outstanding reports.</p> <p>If an event is not armed or it is armed as EDP-N, then close <b>all</b> CDRs.</p> <p>Rightmost branch, Tssf correction.</p>
Fig 6.16q	<p>Figure split up in two parts: one for Tsw (Session) and one for Tsw (PDP). The handling of the tariff switch for the Session is different from the handling of the tariff switch for a PDP Context.</p>
Fig 6.17a	<p>When more TC components (operations) are to be sent to the gsmSCF or operations from the gsmSCF</p>

	<p>are waiting to be processed, then the TC dialogue shall not be closed. The dialogue handler may receive 'TC_Abort' from process GPRS_SSF. Textual correction.</p>
Fig 6.18a	<p>Textual corrections in check-diamonds. Volume counting for the session is removed (agreed by SA1 and CN2). Tsp shall be started in right branch</p>
Fig 6.18b	<p>Textual corrections in check-diamond When the SCP sends AC-GPRS, containing a Context volume counter, then a Tariff switch may also be provided. (Tsw handling added in left branch). When AC-GPRS for PDP Context is received before a PDP Context is acknowledged, then the timing/counting shall only start when the PDP Context is acknowledged. The report is set to pending.</p>
Fig 6.19a	<p>Textual corrections in check-diamond Volume counting for the session is removed (agreed by SA1 and CN2). The SDL shall indicate clearly <b>which</b> e-parameters shall be checked and discarded.</p>
Fig 6.19b	<p>Textual corrections in check-diamond The SDL shall indicate clearly <b>which</b> e-parameters shall be checked and discarded.</p>
Fig 6.20	<p>This figure has been added. It follows the description in section 6.5.3.1 in the present CR.</p>
Fig. 6.22	<p>New figure. When a PDP Context is acknowledged or when a PDP Context is handed over to a new SGSN (scenario #1), then the PDP Context shall be marked as Active. When a PDP Context is acknowledged, pending e-parameters for that PDP Context shall be sent to the SGSN. If a timer or counter is pending for that PDP Context, that timer or counter shall be started.</p>

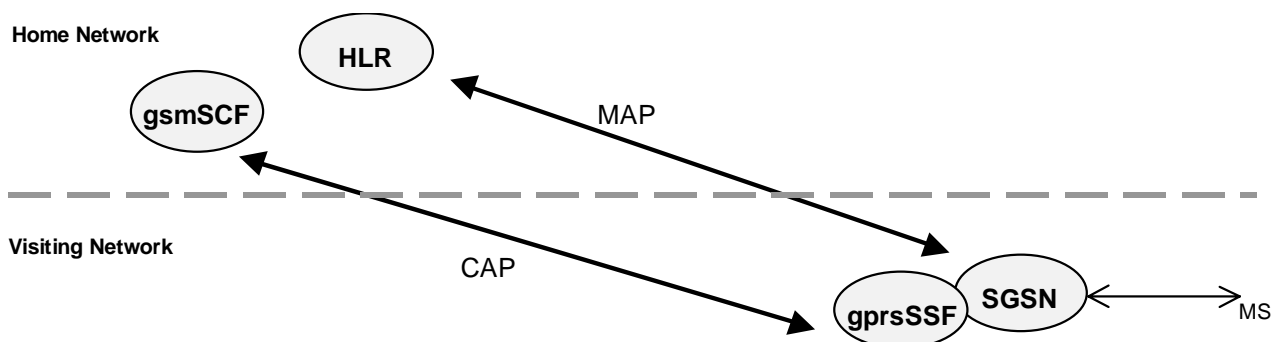
\*\*\*\* FIRST CHANGE \*\*\*\*

## 6 GPRS interworking

### 6.1 Architecture

#### 6.1.1 Functional Entities used for CAMEL

This subclause describes the functional architecture needed to support GPRS interworking for CAMEL. Figure 6.1 shows the functional entities involved in a GPRS session requiring CAMEL support. The architecture is applicable to the third phase of CAMEL.



**Figure 6.1 Functional architecture for support of CAMEL**

**HLR:** The HLR stores for subscribers requiring CAMEL support the information relevant to the current subscription GPRS-CSI. The GPRS-CSI is stored in the HLR only.

**SGSN:** When processing GPRS Attach requests or Inter-SGSN Routeing Area Updates for subscribers requiring CAMEL support, the SGSN receives a GPRS-CSI from the HLR, indicating the SGSN to request instructions from the gprsSSF. The SGSN monitors on request the GPRS events and informs the gprsSSF of these events during processing, enabling the gprsSSF to control the execution of the GPRS session or individual PDP contexts in the SGSN.

**gprsSSF:** see subclause 3.1.

**gsmSCF:** see subclause 3.1.

#### 6.1.2 Interfaces defined for CAMEL

##### 6.1.2.1 SGSN - gprsSSF interface

This is an internal interface. The interface is described in the specification to make it easier to understand the handling of DPs (arming/disarming of DPs, DP processing etc.).

##### 6.1.2.2 gprsSSF - gsmSCF interface

This interface is used by the gsmSCF to control a GPRS session or individual PDP Context in a certain gprsSSF. Relationships between the gprsSSF and the gsmSCF (GPRS dialogues) on this interface are opened as a result of the gprsSSF sending a request for instructions to the gsmSCF.

##### 6.1.2.3 HLR – SGSN interface

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

## 6.2 Detection Points (DPs)

See subclause 4.2.

## 6.3 Description of CAMEL Subscriber Data

### 6.3.1 GPRS CAMEL Subscription Information (GPRS-CSI)

This subclause defines the contents of the GPRS CAMEL Subscription Information.

#### 6.3.1.1 gsmSCF Address

Address to be used to access the gsmSCF for a particular subscriber. The address shall be an E.164 number to be used for routing.

#### 6.3.1.2 Service Key

The Service Key identifies to the gsmSCF the service logic that shall apply.

#### 6.3.1.3 Default GPRS Handling

The Default GPRS Handling indicates whether the GPRS session or PDP context shall be released or continued as requested in case of error in the gprsSSF to gsmSCF dialogue.

#### 6.3.1.4 TDP List

The TDP List indicates on which detection point triggering shall take place.

#### 6.3.1.5 CAMEL Capability Handling

CAMEL Capability Handling indicates the phase of CAMEL which is asked by the gsmSCF for the service.

#### 6.3.1.6 CSI state

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

#### 6.3.1.7 Notification flag

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

#### 6.3.1.8 gsmSCF address list for CSI

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

## 6.4 Description of CAMEL State Models

GPRS can support multiple PDP contexts simultaneously for an attached subscriber, requiring the behaviour of a GPRS session to be modelled by two state models, one for the attach/detach procedures (GPRS Attach/Detach State Model) and the other for modelling individual PDP Contexts (GPRS PDP Context State Model).

### 6.4.1 General Handling

The GPRS State Model is used to describe the actions in an SGSN during processing of a GPRS session or PDP Contexts.

The GPRS State Model identifies the points in basic GPRS processing when Operator Specific Service (OSS) logic instances (accessed through the gsmSCF) are permitted to interact with basic GPRS control capabilities.

Figure shows the components that have been identified to describe a GPRS State Model.

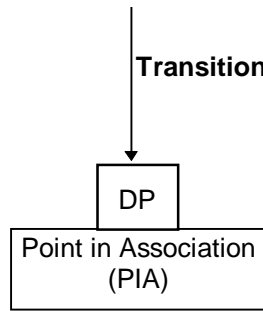


Figure 6.2: GPRS State Model Components

### 6.4.2 GPRS Attach/Detach State Model

The GPRS Attach/Detach State Model is used to model the behaviour of the GPRS attach/detach procedures.

When encountering a DP the Attach/Detach State Model processing is suspended at the DP and the SGSN indicates this to the gprsSSF which determines what action, if any, shall be taken in case the DP is armed.

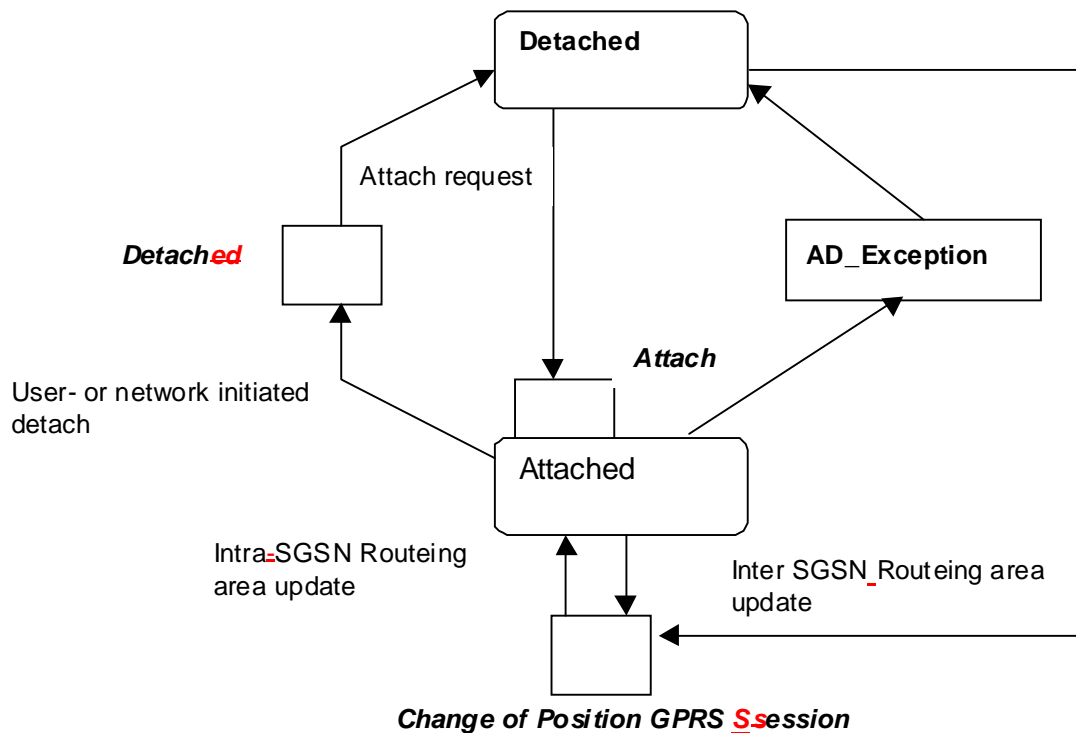


Figure 6.3: GPRS Attach/Detach State Model

**Table 1: Description of GPRS Attach/Detach DPs in the SGSN**

CAMEL Detection Point	DP Type	Description
DP Attach	TDP-R	A request to attach is received.
DP Change of Position GPRS Session	TDP-R <sup>1)</sup> , EDP-N	Routeing Area Update is accepted.
DP Detached	EDP-N, EDP-R	A detach request is received either from the MS, the SGSN or a 'Cancel Location' received from HLR or Inter SGSN Routeing update occurred in the old SGSN.
Note 1: Change of Position GPRS session is reported as TDP-R in the case of Inter-SGSN Routeing Area Update (provided that this DP is statically armed in GPRS-CSI). Change of Position GPRS session is reported as EDP-N in the case of Intra-SGSN Routeing Area Update (provided that this DP is dynamically armed by the Service Logic).		

### 6.4.2.1 Description of the Attach/Detach model (PIAs)

This subclause describes the model for the attach and detach a GPRS session in the SGSN. For each PIA a description can be found of the entry events, actions and exit events.

#### 6.4.2.1.1 Detached

Entry events:

- Detach (user or network initiated) and clearing of a previous GPRS session.
- Processing of exceptional conditions, e.g. STANDBY timer expiry in the SGSN.

Actions:

- Interface is idled.
- Attach request is received from MS containing the IMSI/P-TMSI and the type of attach requested and, the identity of the MS is established (IMSI) (DP Attach), or Inter-SGSN Routeing Area Update Request is accepted (DP Change of position GPRS session).
- Information being analyzed, e.g. GPRS-CSI is analyzed.

Exit events:

- GPRS-CSI is analyzed (DP Attach or DP Change of position GPRS session).

#### 6.4.2.1.2 Attached

Entry events:

- GPRS-CSI is analyzed (DP Attach).

Actions:

- MM contexts are established at the MS and the SGSN.

Exit events:

- A GPRS Detach request is received from the MS or the GGSN (DP Detached).
- Intra-SGSN Routeing Area Update is accepted (DP Change of position GPRS session).
- An exception is encountered, e.g. STANDBY timer expiry.

The GPRS Attach/Detach State Model shall only have one or more GPRS PDP Context State Models associated with it when in the Attached state. A GPRS PDP Context State Model cannot exist without its associated GPRS Attach/Detach State Model being in the Attached state. Closure of the GPRS Attach/Detach State Model via a detach will result in the idling of all associated GPRS PDP Context State Models and the release of the associated GPRS PDP Contexts.

It shall not be necessary to trigger a relationship from the GPRS Attach/Detach State Model to the gsmSCF in order for triggering to occur in an associated GPRS PDP Context State Model. However, in this latter case a GPRS Attach/Detach State Model shall still exist at the SGSN. This is so that CSE-initiated detach events sent within a given GPRS PDP Context relationship shall result in the GPRS Attach/Detach State Model transiting to the Detached state.

As noted above, in this state no PDP Contexts can exist and so all associated GPRS PDP Context State Models will transit to state Idle.

### 6.4.3 GPRS PDP Context State Model

The GPRS PDP Context State Model is used to model the behaviour for the GPRS PDP Context procedures. There is one PDP Context State Model per GPRS PDP context.

When encountering a DP the PDP Context State Model processing is suspended at the DP and the SGSN indicates this to the gprsSSF which determines what action, if any, shall be taken in case the DP is armed.

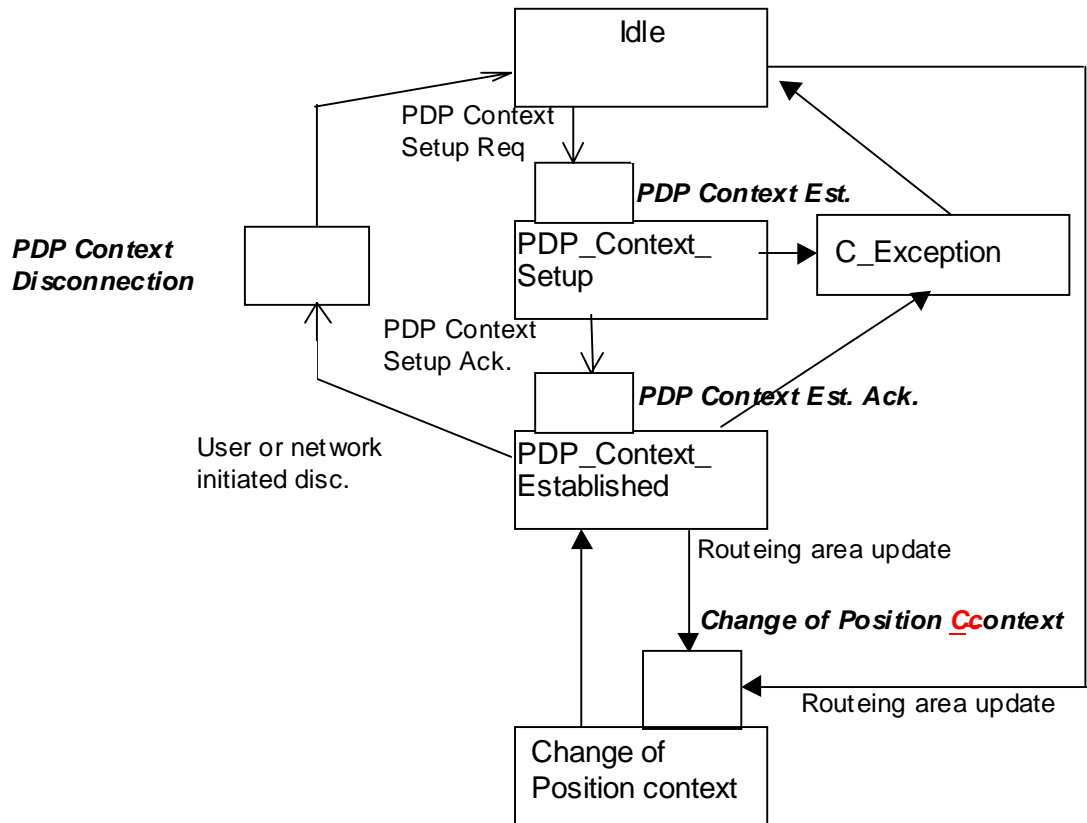


Figure 6.4: GPRS PDP Context State Model



**Table 2: Description of GPRS PDP Context DPs in the SGSN**

CAMEL Detection Point	DP Type	Description
DP PDP Context Establishment	TDP-R <sup>1)</sup> , EDP-R	Activate PDP Context request is received from the MS.
DP PDP Context Establishment Acknowledgement	TDP-R <sup>2)</sup> , EDP-R, EDP-N	Create PDP Context response is received from the GGSN.
DP PDP Context <u>D</u> isconnection	EDP-N, EDP-R	Deactivate PDP Context Request is received from the MS, Delete PDP Context request is received from the GGSN. Inter SGSN Routeing update occurred in old SGSN.
DP Change of <u>P</u> osition <u>C</u> ontext	TDP-R <sup>3)</sup> , EDP-N, EDP-R	Routeing Area Update is accepted.
<p>NOTE 1: The PDP Context Establishment shall be reported as TDP-R (provided that this DP is statically armed in GPRS-CSI) if there is no relationship with the gsmSCF. If there is a relationship with the gsmSCF it shall be reported as EDP-R or EDP-N if armed so.</p> <p>NOTE 2: The PDP Context Establishment Acknowledgment shall be reported as TDP-R (provided that this DP is statically armed in GPRS-CSI) if there is no relationship with gsmSCF. If there is a relationship with the gsmSCF, it shall be reported as EDP-R or EDP-N if armed so.</p> <p>NOTE 3: Change of Position context is reported as TDP-R in the case of Inter-SGSN Routeing Area Update (provided that this DP is statically armed in GPRS-CSI) if there is no relationship with the gsmSCF. Change of Position context is reported as EDP-N or EDP-R in the case of Inter-SGSN Routeing Area Update (provided that this DP is armed as generic EDP) if there is a relationship with the gsmSCF. Change of Position context is reported as EDP-N in the case of Intra-SGSN Routeing Area Update (provided that this DP is dynamically armed by the Service Logic).</p>		

### 6.4.3.1 Description of the PDP Context model (PIAs)

This subclause describes the model for PDP Context State Model in the SGSN. For each PIA a description can be found of the entry events, actions and exit events.

#### 6.4.3.1.1 Idle

Entry events:

- Deactivation (user or network initiated) and clearing of a previous PDP Context.
- Processing of exceptional conditions.

Actions:

- Interface is idled.
- Activate PDP Context request is received from MS (containing NSAPI, PDP Type, PDP Address, Access Point Name, QoS Requested, PDP Configuration Options), or Inter-SGSN Routeing Area Update is accepted (DP Change of position context).
- Information being analyzed, e.g. GPRS-CSI is analyzed.

Exit events:

- GPRS-CSI is analyzed (DP PDP Context Establishment or DP Change of position context, new SGSN).

#### 6.4.3.1.2 PDP Context Setup

Entry events:

- GPRS-CSI is analyzed (DP PDP Context Establishment).

Actions:

- GGSN address is derived from the Access Point Name by interrogation of a DNS.
- Create PDP Context Request is sent to the GGSN.

Exit events:

- Create PDP Context Response is received from the the GGSN (DP PDP Context Establishment Acknowledgement).
- An exception is encountered.

#### 6.4.3.1.3 PDP Context Established

Entry events:

- GPRS-CSI is analyzed (DP PDP Context Establishment Acknowledgement or DP Change of position context).

Actions:

- PDP context is established at the MS and the SGSN.

Exit events:

- Deactivation of the PDP Context is received from the MS or the GGSN, or is due to an inter SGSN routing area update (DP PDP Context disconnection, old SGSN).
- Intra-SGSN Routeing Area Update Request is received from the MS (DP Change of position context).
- Inter-SGSN Routeing Area Update (DP Change of position, new SGSN).
- An exception is encountered.

#### 6.4.3.1.4 Change of position context

Entry events:

- Inter SGSN Routing Area update accepted (new SGSN).
- Intra SGSN Routeing Area update request received from the MS.

Actions:

- PDP Context (containing NSAPI, PDP Type, PDP Address, Access Point Name, QoS Requested, PDP Configuration Options) is reestablished in case of Inter-SGSN Routeing Area update accepted (new SGSN).
- Intra SGSN Routeing Area updated.

Exit events:

- reestablishment of the PDP context at the new SGSN and return to PDP context established in case of inter SGSN Routeing Area update accepted in new SGSN (PIA PDP context established).
- Routeing Area update completed in case of intra SGSN Routeing Area update (PIA PDP context established).

### 6.4.4 GPRS CAMEL Scenarios

Two different scenarios are applicable for CAMEL control of GPRS.

#### Scenario 1:

Scenario 1 allows CAMEL control of the GPRS session and of multiple PDP contexts related to this session within a single GPRS dialogue.

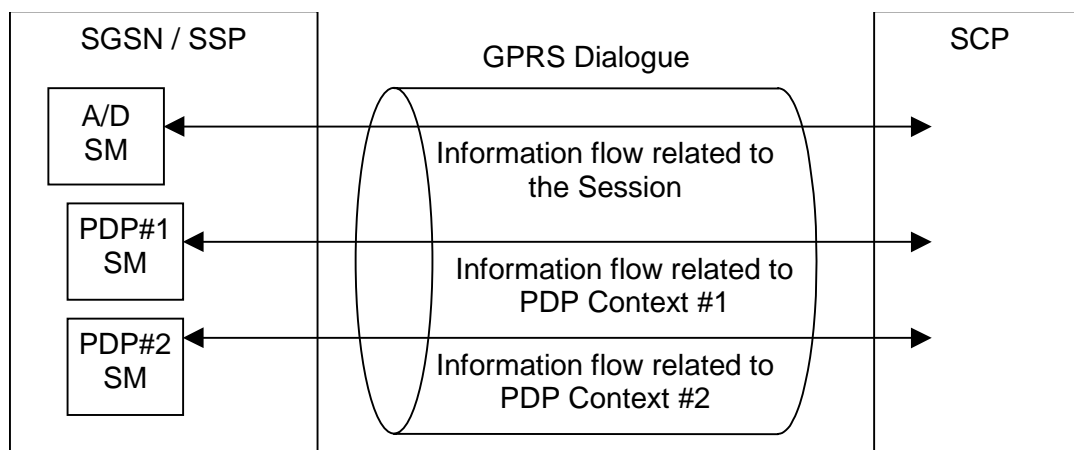
#### Scenario 2:

Scenario 2 allows CAMEL control of single PDP contexts. Multiple PDP contexts are controlled in this scenario via multiple GPRS dialogues.

Scenario 1 and scenario 2 are mutually exclusive, i.e. it is not possible to use both for one GPRS session at the same time in one SGSN. A GPRS session is involved in GPRS CAMEL at one moment in time either by using scenario 1 or by using possible multiple instances of scenario 2. GPRS sessions in different SGSNs are independent from a CAMEL perspective.

#### 6.4.4.1 GPRS CAMEL Scenario 1

Scenario 1 allows CAMEL control of the GPRS session and of multiple PDP contexts related to this session within a single GPRS dialogue (Session dialogue).



**Figure 6.5: GPRS CAMEL Scenario 1**

A GPRS dialogue in scenario 1 always consists of one GPRS Attach/Detach State Model and optionally of additional multiple GPRS PDP Context State Models related to the Attach/Detach State Model for the GPRS session. There is at most one GPRS Attach/Detach State Model per non idle GPRS session in one SGSN and at most one PDP Context State Model per active GPRS PDP context in one SGSN. The various PDP Context State Models are treated independently of each other.

The GPRS dialogue and the relationship between the GPRS Attach/Detach State Model and the gsmSCF are always initiated using the TDPs of the GPRS Attach/Detach State Model.

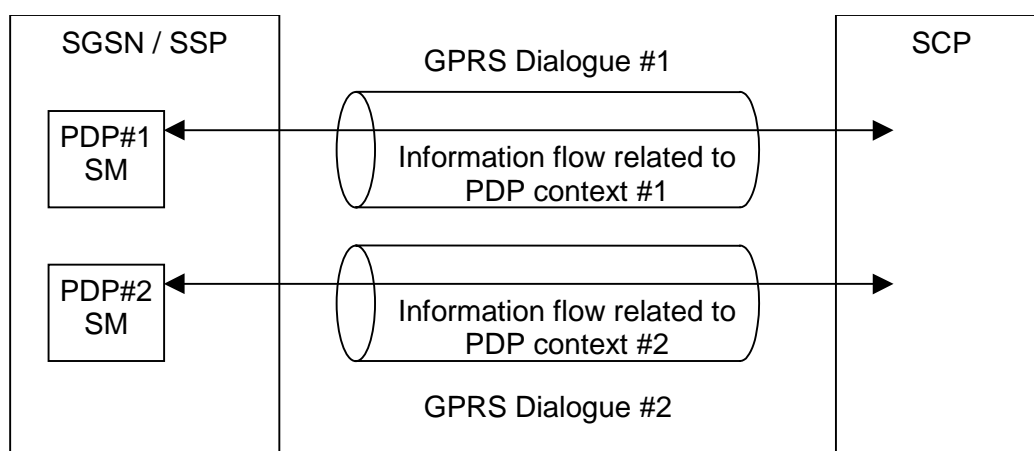
The gsmSCf requests further control or monitoring of individual GPRS PDP contexts using the Request Report GPRS Event information flow. To be informed about new individual PDP contexts the gsmSCF arms the DP 'PDP Context Establishment' or the DP 'PDP Context Establishment Acknowledgement' generically, i.e. without a PDP ID, as an EDP. To be informed about the handed over PDP contexts the gsmSCF arms the DP 'Change of position context' generically as an EDP-N or EDP-R.

Each GPRS PDP context is identified by a PDP ID. The PDP ID is assigned by the SGSN during PDP context establishment. The PDP ID is unique within one GPRS dialogue. The Request Report GPRS Event information flows to control new or handed over PDP contexts do not include a PDP ID. There is no 'PDP ID' related to the GPRS Attach/Detach State Model.

[The PDP Id is reported to the gsmSCF in the first event notification for that PDP Context.](#)

#### 6.4.4.2 GPRS CAMEL Scenario 2

Scenario 2 allows CAMEL control of single PDP contexts. Multiple PDP contexts are controlled in this scenario via multiple GPRS dialogues (PDP Context dialogues).



**Figure 6.6: GPRS CAMEL Scenario 2**

A GPRS dialogue in scenario 2 consists of a single GPRS PDP Context State Model. There is no GPRS Attach/Detach State Model involved in this scenario. There is at most one PDP Context State Model per active GPRS PDP context in one SGSN.

There might be multiple GPRS dialogues in scenarios 2 for one GPRS session, each of the dialogues controlling a single GPRS PDP context. The various GPRS dialogues are independent of each other.

The GPRS dialogue and the relationship between the GPRS PDP Context State Model and the gsmSCF are always initiated using the TDPs for the GPRS PDP Context State Model.

Control of further individual GPRS PDP contexts in the same GPRS dialogue as in scenario 1 is not possible. There are no PDP IDs in this scenario.

## 6.4.5 SGSN Routeing Area Update

### 6.4.5.1 Intra-SGSN Routeing Area Update

Intra-SGSN Routeing Area Update will be detected via the DP 'Change of position GPRS session' for the session using the GPRS Attach/Detach State Model and via the DPs 'Change of position context' for the individual PDP contexts using the GPRS PDP Context State Models.

It will be reported via an EDP-N if the necessary EDP-N is armed.

### 6.4.5.2 Inter-SGSN Routeing Area Update

Inter-SGSN Routeing Area Update from the old SGSN to the new SGSN will be detected via the DP 'Change of position GPRS session' for the session using the GPRS Attach/Detach State Model and via the DPs 'Change of position context' using the GPRS PDP Context State Models for the individual PDP contexts which have been handed over.

Scenario 1:

Inter-SGSN Routeing Area Update from the old SGSN to the new SGSN will be detected in the new SGSN via the DP 'Change of position GPRS session' for the session using the GPRS Attach/Detach State Model and in the new SGSN via the DPs 'Change of position context' using the GPRS PDP Context State Models for the individual PDP contexts which have been handed over.

In this scenario the DP 'Change of position GPRS session' is armed as a TDP-R. If the Routeing Area Update is accepted the gprsSSF reports this TDP-R to the gsmSCF using the Initial DP GPRS information flow. To be informed about new PDP contexts the gsmSCF arms the DP 'PDP Context Establishment' or the DP 'PDP Context Establishment Acknowledgement' generically as EDP-R or EDP-N. The DPs 'Change of position context' for the PDP contexts which have been handed over will be reported with all necessary information to the gsmSCF when the gprsSSF is continued, i.e. it is not longer waiting for instructions. Contexts which are not continued in the new SGSN are not reported. The EDPs for new PDP contexts are reported as usual.

[The Detach in the old SGSN is reported to the gsmSCF, provided this event is armed. All outstanding reports in the old SGSN are sent to the gsmSCF and all open CDRs are closed.](#)

Scenario 2:

Inter-SGSN Routeing Area Update from the old SGSN to the new SGSN will be detected in the new SGSN via the DPs 'Change of position context' using the GPRS PDP Context State Models for the individual PDP contexts which have been handed over.

In this scenario the DP 'Change of position context' is armed as TDP-R. If the the Routeing Area Update is accepted the gprsSSF reports these TDP-Rs PDP contexts which have been handed over to the gsmSCF using the Initial DP GPRS information flows in multiple GPRS dialogues.

[The PDP Context Disconnection in the old SGSN is reported to the gsmSCF, provided this event is armed. All outstanding reports in the old SGSN are sent to the gsmSCF and the open CDR is closed.](#)

## 6.4.6 Rules for Implicit Disarming of Detection Points<sup>1</sup>

The following [two tables](#) give<sup>s</sup> the rules for implicit disarming of event detection points.

Implicit EDP disarming rules are specified ~~in the table below~~ for the Attach/Detach State Model and PDP Context State Model. The tables specify which EDPs shall be disarmed (i.e. MonitorMode set to Transparent) if/when each EDP is encountered, irrespective of the EDPs MonitorMode (Transparent, NotifyAndContinue, or Request).

EDPs which are armed generically for GPRS PDP Context State Models shall only be implicitly disarmed at the end of the GPRS dialogue. Explicit disarming is possible.

When EDPs are armed with MonitorMode ‘Request’ (EDP-Rs) are encountered, any implicit EDP disarming shall take place before reporting the EDP and transiting the gprsSSF to the WFI state (if not already suspended in the WFI state).

The table entry ‘X’ means that if one DP occurs (independently of arming and reporting to the gsmSCF) the marked one is implicitly disarmed. It shall be possible to rearm explicitly an implicitly disarmed DP.

**Table 3: Implicit disarmed DPs in the Attach/Detach State Model and PDP Context State Model**  
**Table 3: Implicit disarming rules for Scenario 1 (the rules apply for non-generically armed DPs)**

Encountered DP	Implicit disarmed DPs						
	DP Attach	DP Change of Position GPRS Session	DP Change of Position Context	DP Detached	DP PDP Context Establishment	DP PDP Context Establishment Acknowledgement	DP PDP Context Disconnection
<del>DP Attach</del>	X	<u>Row shall be removed</u>					
DP Change of Position GPRS Session	X	Note	Note	Note	Note	Note	Note
DP Change of Position Context	X	Note	Note	Note	Note	Note	Note
DP Detached	X	X	X	X	X	X	X
DP PDP Context Establishment	X				X		
DP PDP Context Establishment Acknowledgement	X				X	X	
DP PDP Context Disconnection	X		X			X	X

NOTE: Disarmed in the case of inter-SSSN Routing Area update.

**Table 4: Implicit disarming rules for Scenario 2 (the rules apply for non-generically armed DPs)**

Encountered DP	Implicit disarmed DPs		
	DP Change of Position Context	DP PDP Context Establishment Acknowledgement	DP PDP Context Disconnection
DP PDP Context Establishment Acknowledgement		X	
DP PDP Context Disconnection	X	X	X
DP Change of Position Context			

## 6.5 Procedures for CAMEL GPRS

### 6.5.1 Overall SDL Architecture

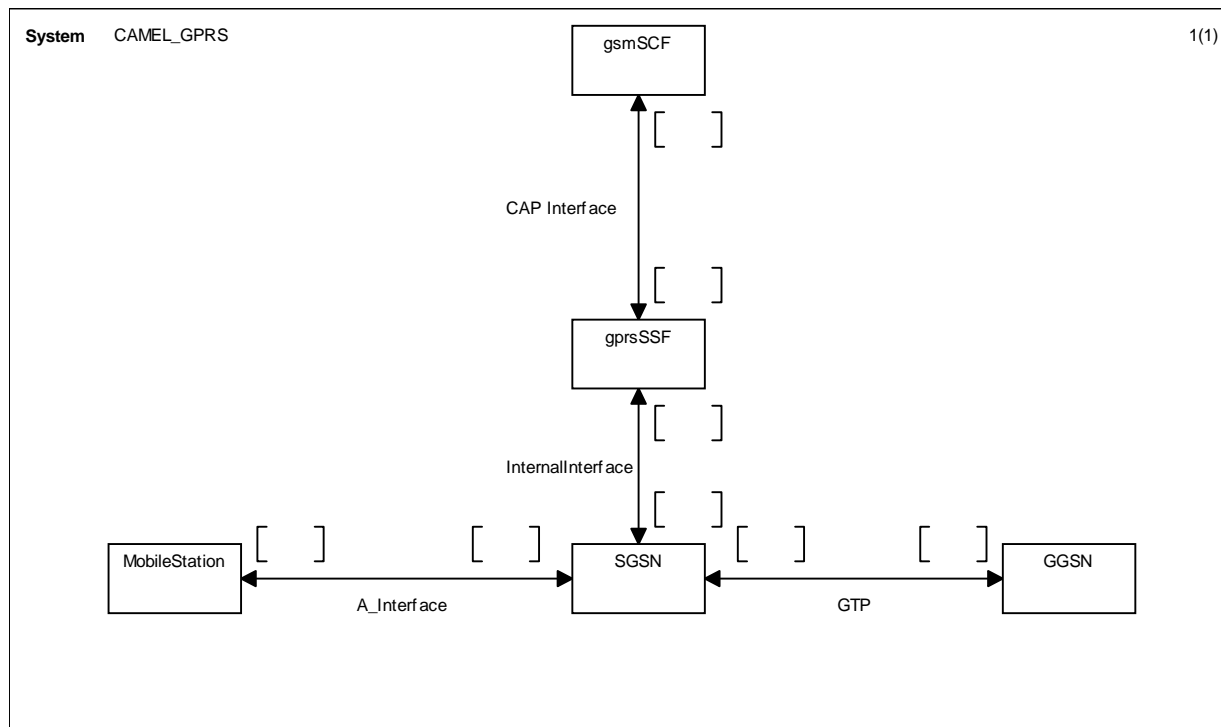


Figure 6.7: Architecture for CAMEL/GPRS interworking

### 6.5.2 Handling GPRS in the SGSN

The functional behaviour of the SGSN is specified in 3G TS 23.060 [11]. The procedures specific to CAMEL are specified in this subclause :

- Procedure CAMEL\_GPRS\_Attach\_Request;
- Procedure CAMEL\_GPRS\_Detach\_Indication;
- Procedure CAMEL\_GPRS\_Routing\_Area\_UpdateChange\_of\_Position;
- ~~- Procedure CAMEL\_GPRS\_Context\_Acknowledge;~~
- Procedure CAMEL\_GPRS\_Activate\_PDP\_ContextPDP\_Context\_Establishment;
- Procedure CAMEL\_GPRS\_Create\_PDP\_ContextPDP\_Context\_Establishment\_Acknowledgement;
- Procedure CAMEL\_GPRS\_Modify\_PDP\_ContextChange\_of\_QoS;
- Procedure CAMEL\_GPRS\_Deactivate\_PDP\_ContextPDP\_Context\_Disconnection.

#### 6.5.2.1 Actions of the SGSN on receipt of Int\_Error

The SGSN checks the default GPRS Handling parameter in GPRS-CSI.

If the default GPRS handling is release, a Detach indication is sent to the MS. The SGSN then releases all resources and the invoked CAMEL procedure ends.

If the default GPRS handling is continue, the SGSN continues processing without CAMEL support.

### 6.5.2.2 Actions of the SGSN on receipt of Int\_Continue

The SGSN continues processing without any modification of GPRS parameters.

6.5.2.3 Handling of GPRS Attach/Detach

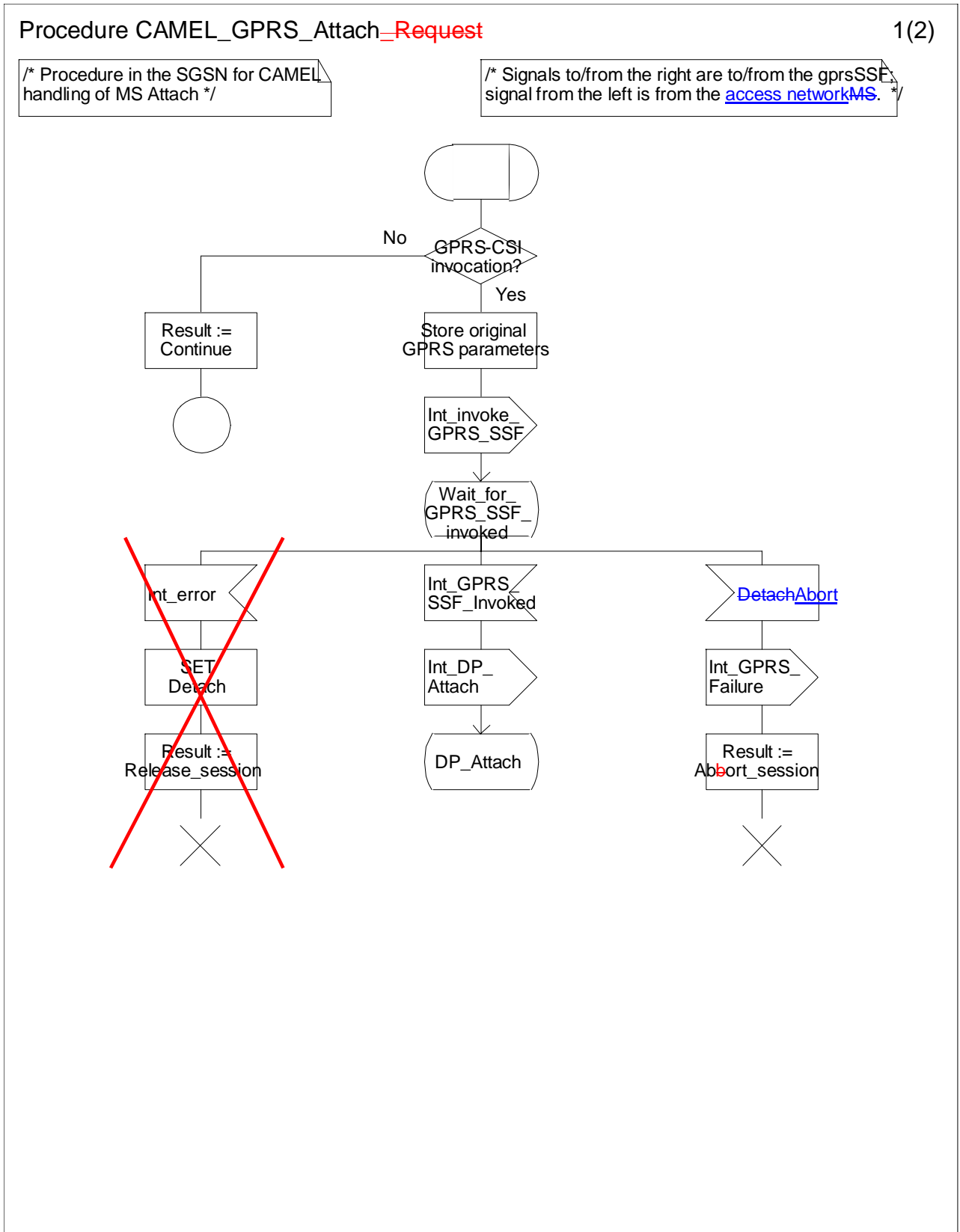


Figure 6.8a: Procedure CAMEL\_GPRS\_Attach\_Request (sheet 1)



### Procedure CAMEL\_GPRS\_Attach\_Request

2(2)

/\* Procedure in the SGSN for CAMEL handling of MS Attach \*/

/\* Signals from the right are from the gprsSSF. \*/

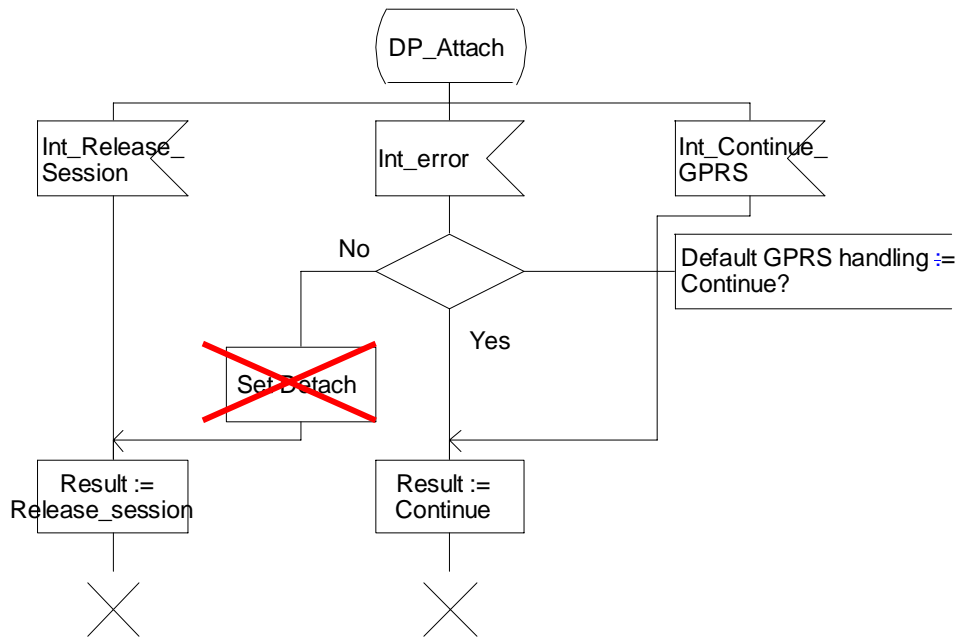


Figure 6.8 b: Procedure CAMEL\_GPRS\_Attach\_Request (sheet 2)

Procedure CAMEL\_GPRS\_Detach\_Indication

1(1)

/\* Procedure in the SGSN for CAMEL handling of MS or network indicated Detach \*/

/\* Signals to/from the right are to/from the gprsSSF \*/

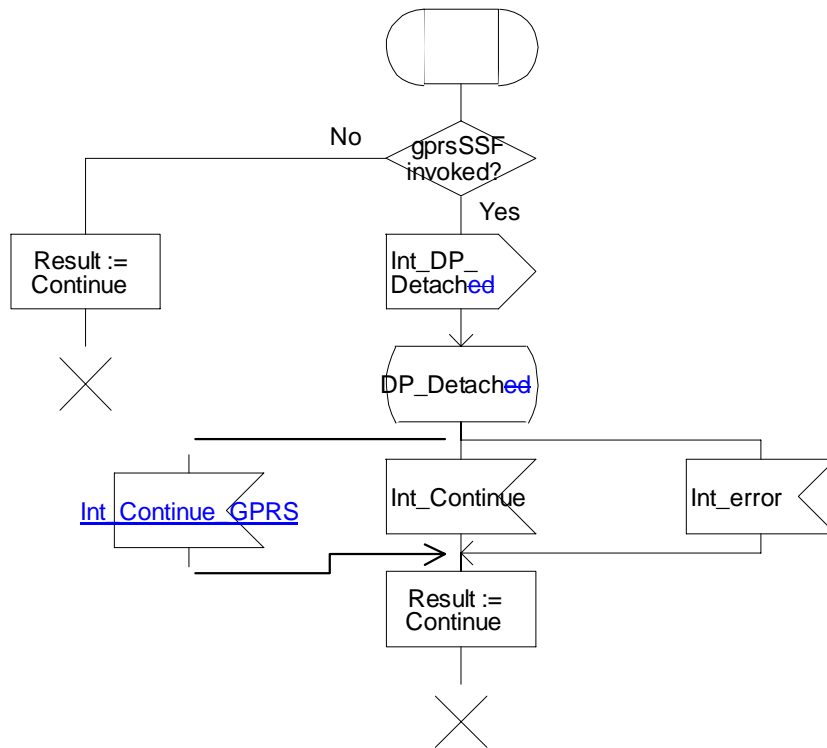


Figure 6.9: Procedure CAMEL\_GPRS\_Detach\_Indication (sheet 1)

6.5.2.4 Handling of GPRS Routeing Area Update

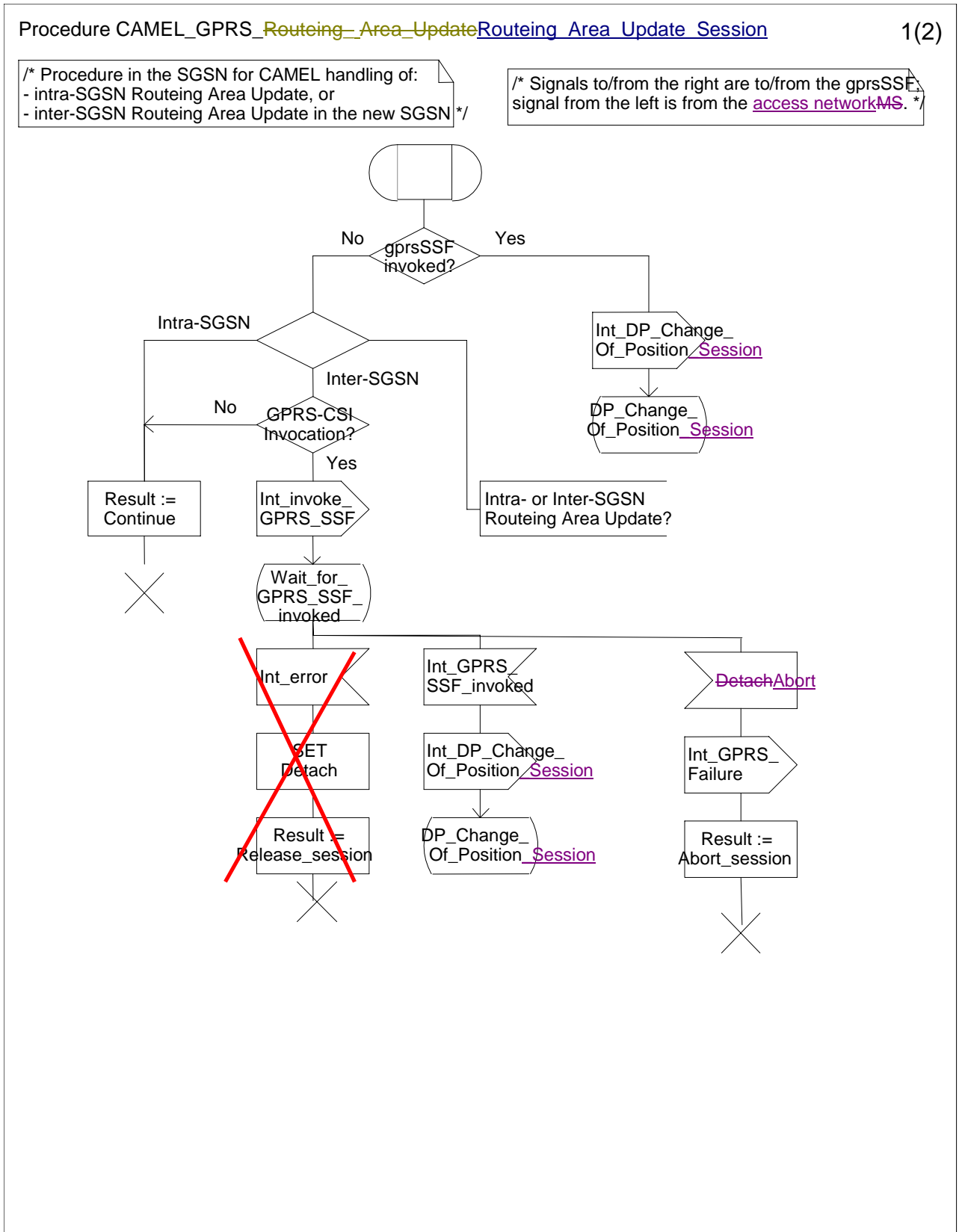


Figure 6.10 a: Procedure CAMEL\_GPRS\_Routeing\_Area\_Update\_Session (sheet 1)

Procedure CAMEL\_GPRS\_Routing\_Area\_Update Routing Area Update Session

2(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routing Area Update, or  
 - inter-SGSN Routing Area Update in the new SGSN \*/

/\* Signals from the right are from the gprsSSF.\*/

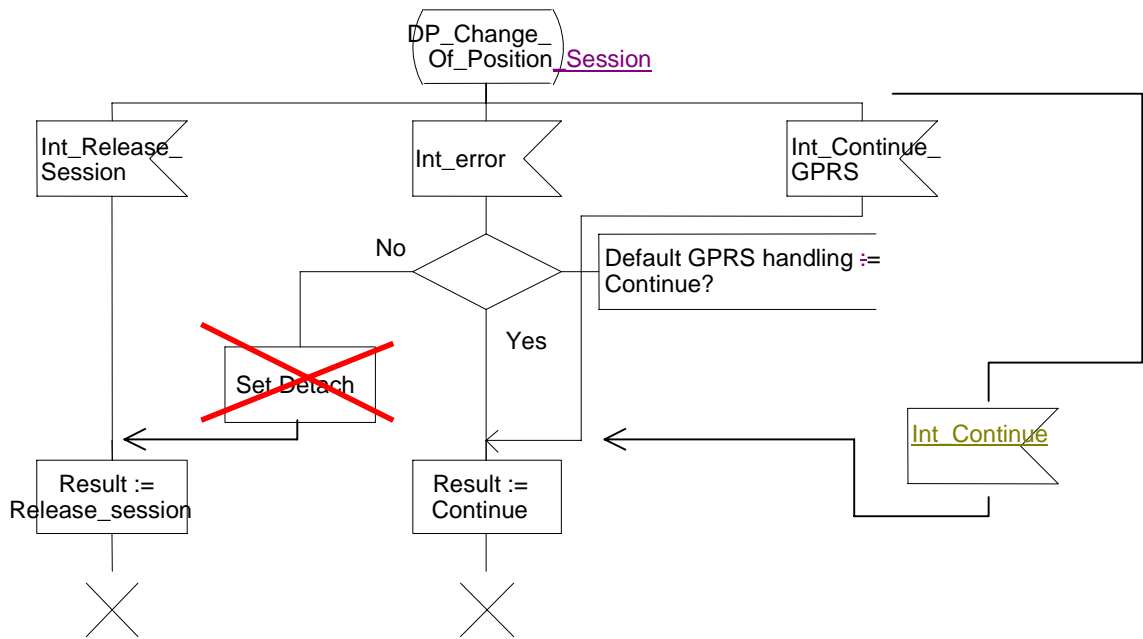


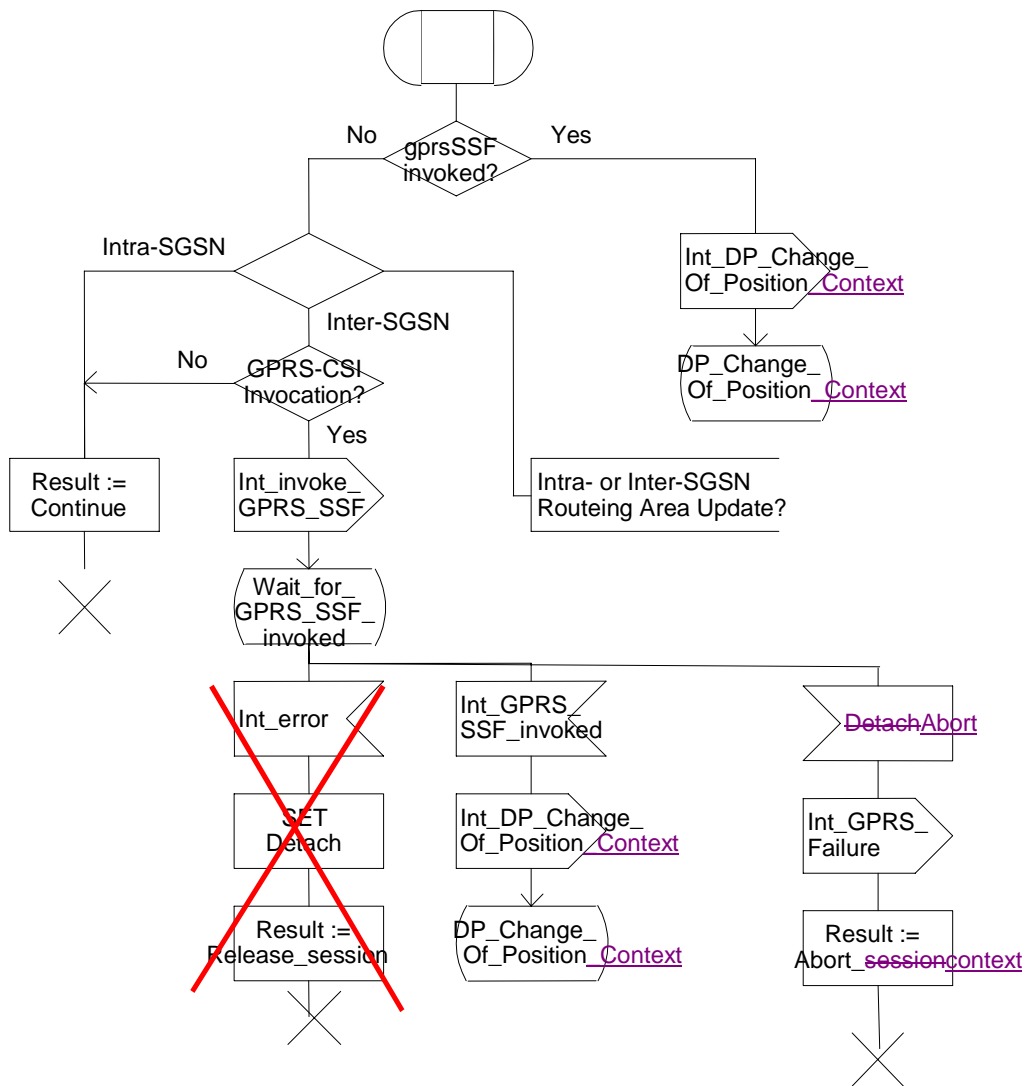
Figure 6.10 b: Procedure CAMEL\_GPRS\_Routing\_Area\_Update Session (sheet 2)

Procedure CAMEL\_GPRS\_Routeing\_Area\_UpdateRouteing Area Update Context

1(2)

/\* Procedure in the SGSN for CAMEL handling of:  
 - intra-SGSN Routeing Area Update, or  
 - inter-SGSN Routeing Area Update in the new SGSN \*/

/\* Signals to/from the right are to/from the gprsSSF,  
 signal from the left is from the access networkMS. \*/



[Figure 6.11a: Procedure CAMEL\\_GPRS\\_Routeing\\_Area\\_Update\\_Context \(sheet 1\)](#)

[\(new sheet\)](#)

Procedure CAMEL\_GPRS\_Routing\_Area\_Update Routing Area Update Context

2(2)

/\* Procedure in the SGSN for CAMEL handling of:  
- intra-SGSN Routing Area Update, or  
- inter-SGSN Routing Area Update in the new SGSN \*/

/\* Signals from the right are from the gprsSSF.\*/

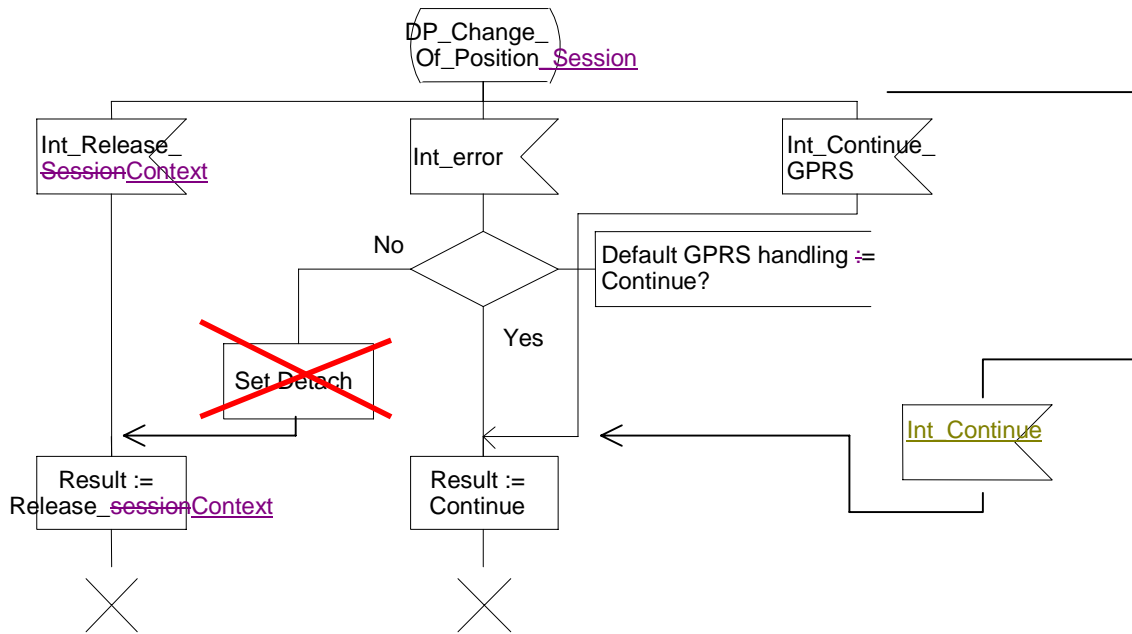


Figure 6.11b: Procedure CAMEL\_GPRS\_Routing\_Area\_Update\_Context (sheet 2)

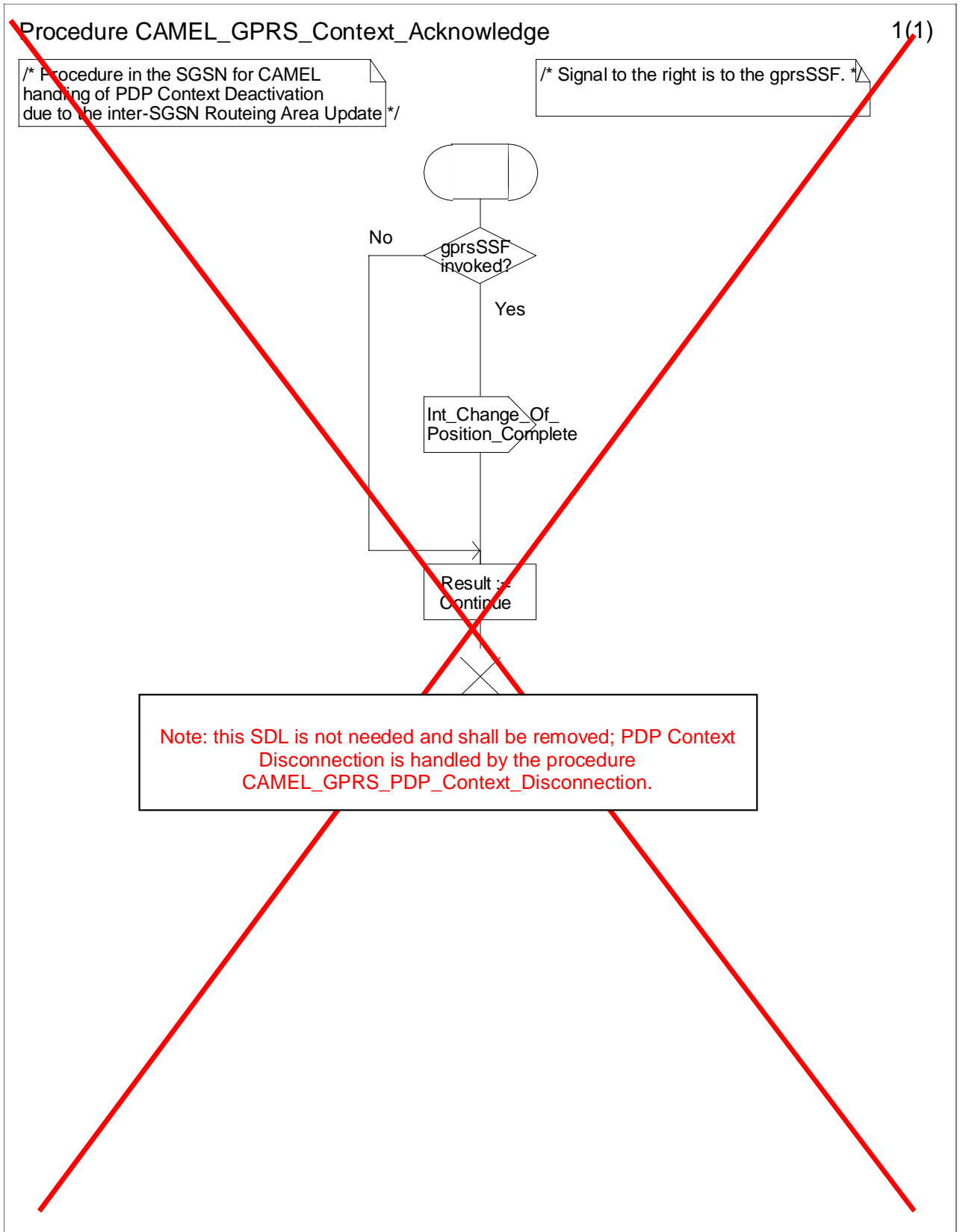


Figure 6.11: Procedure CAMEL\_GPRS\_Context\_Acknowledge (sheet 1)

6.5.2.5 Handling of PDP Context establishment, establishment acknowledgement and deactivation/disconnection

Procedure CAMEL\_GPRS\_Activate\_PDP\_Context PDP Context Establishment 1(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation Establishment \*/

/\* Signals to/from the right are to/from the gprsSSF, signal from the left is from the MS access network. \*/

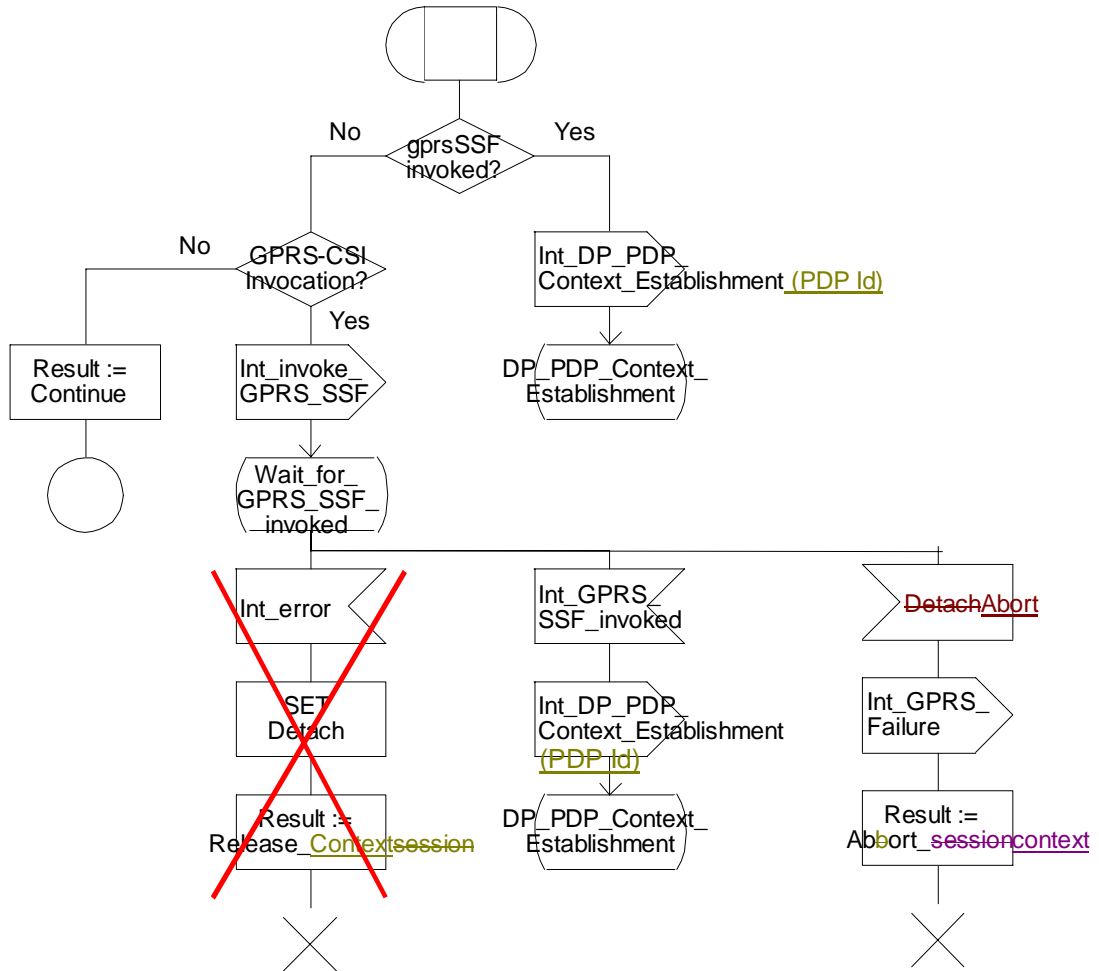


Figure 6.12 a: Procedure CAMEL\_GPRS\_Activate\_PDP\_Context PDP Context Establishment (sheet 1)



Procedure CAMEL\_GPRS\_Activate\_PDP\_Context PDP\_Context Establishment 2(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context ~~Activation~~ Establishment \*/

/\* Signals from the right are from the gprsSSF. \*/

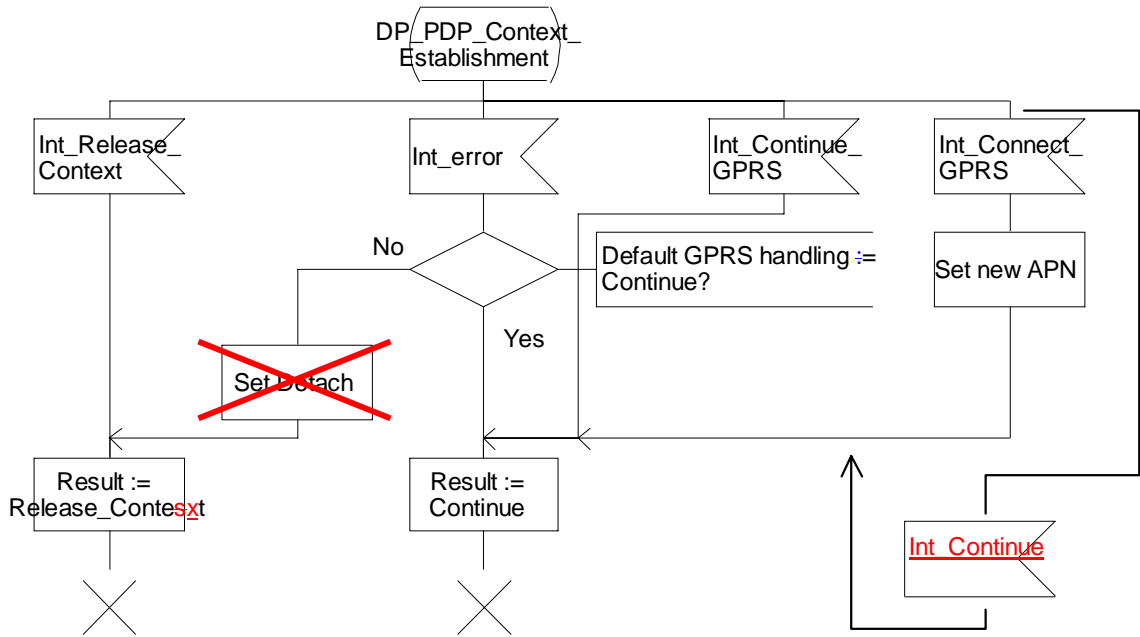


Figure 6.12b: Procedure CAMEL\_GPRS\_Activate\_PDP\_Context PDP\_Context Establishment (sheet 2)

Procedure CAMEL\_GPRS\_Create\_PDP\_Context  
CAMEL\_GPRS\_PDP\_Context\_Establishment\_Acknowledgement

1(2)

/\* Procedure in the SGSN for CAMEL handling of PDP Context Activation-Establishment Acknowledgement \*/

/\* Signals to/from the right are to/from the gprsSSF, signal from the left is from the Msaccess network. \*/  
unless otherwise stated. \*/

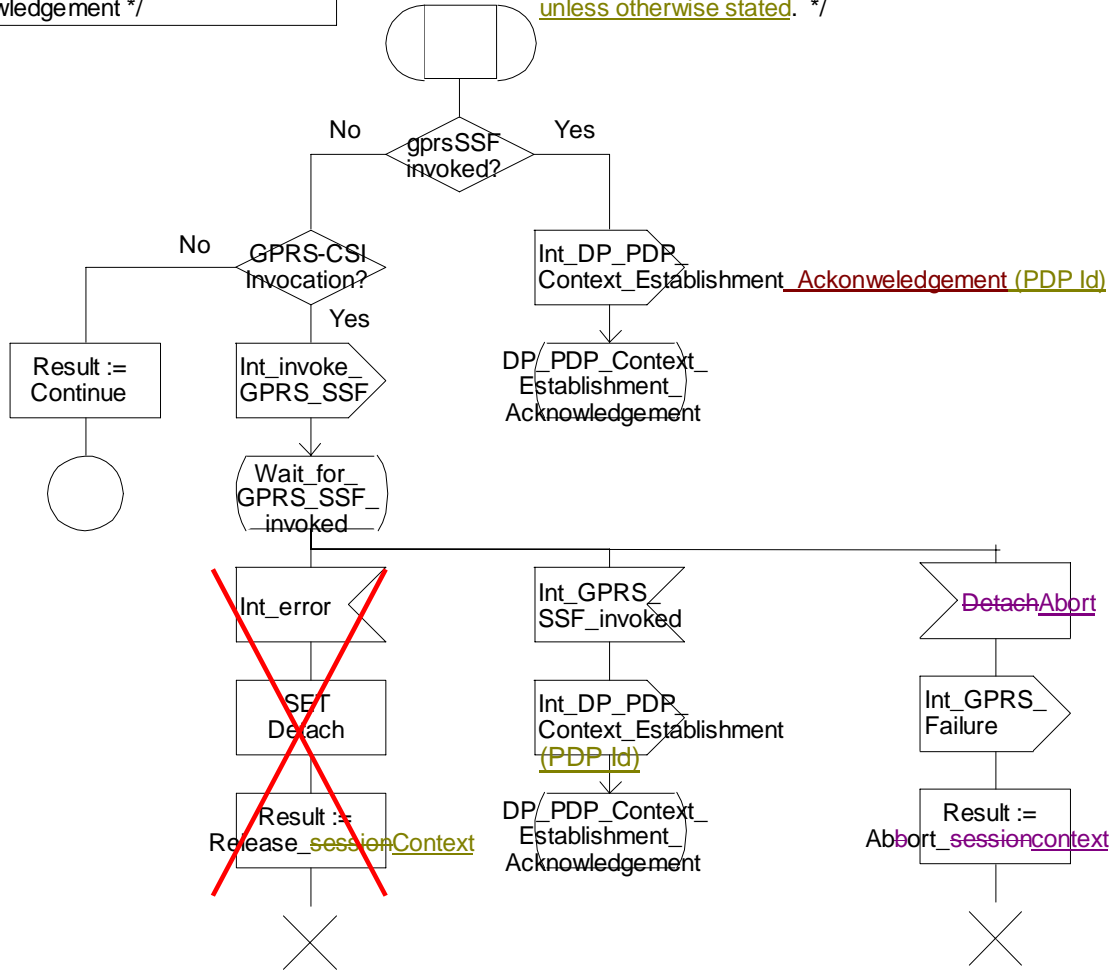


Figure 6.13a: Procedure CAMEL\_GPRS\_Create\_PDP\_ContextPDP\_Context\_Establishment\_Acknowledgement (sheet 1)

Procedure CAMEL\_GPRS\_Create\_PDP\_Context  
CAMEL\_GPRS\_PDP\_Context\_Establishment\_Acknowledgement

2(2)

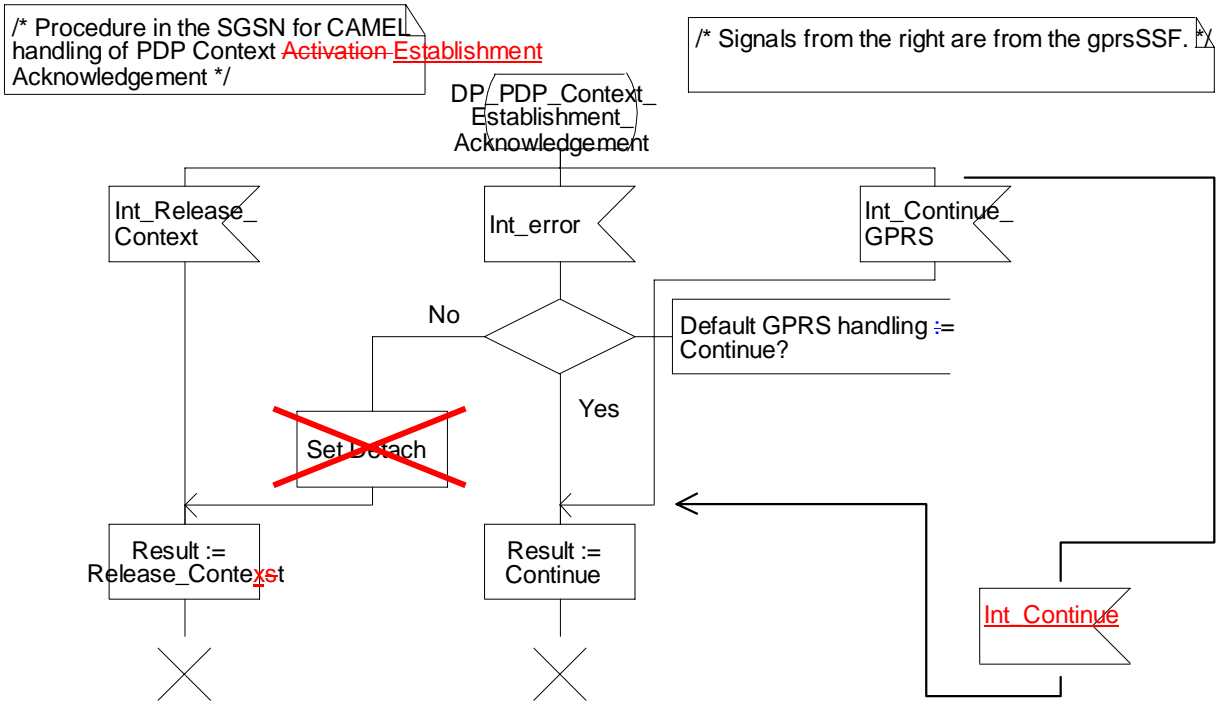


Figure 6.13b: Procedure CAMEL\_GPRS\_Create\_PDP\_ContextPDP\_Context\_Establishment\_Acknowledgement (sheet 2)

Procedure CAMEL\_GPRS\_Modify\_PDP\_ContextChange\_Of\_QoS

1(1)

/\* Procedure in the SGSN for CAMEL  
handling of QoS modification of a PDP Context \*/  
handling a change of QoS for a PDP Context \*/

/\* Signal to the right is to the gprsSSF \*/

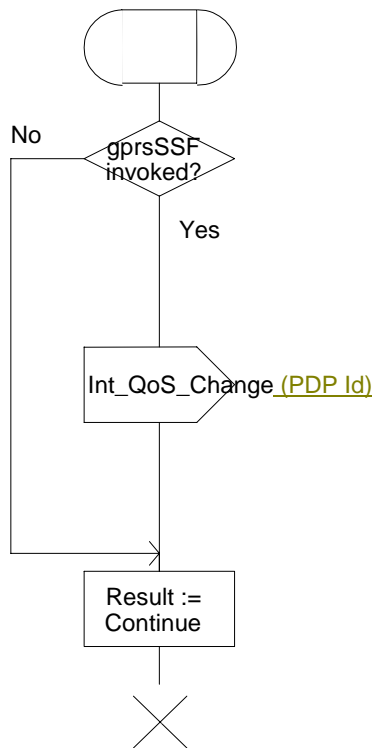


Figure 6.14: Procedure CAMEL\_GPRS\_Modify\_PDP\_ContextChange\_of\_QoS (sheet 1)

Procedure CAMEL\_GPRS\_Deactivate\_PDP\_Context PDP\_Context\_Disconnection

1(1)

/\* Procedure in the SGSN for CAMEL  
handling of MS or network indicated Detach\*/  
handling of MS or network indicated PDP Context  
Disconnection \*/

/\* Signals to/from the right are to/from the gprsSSF \*/

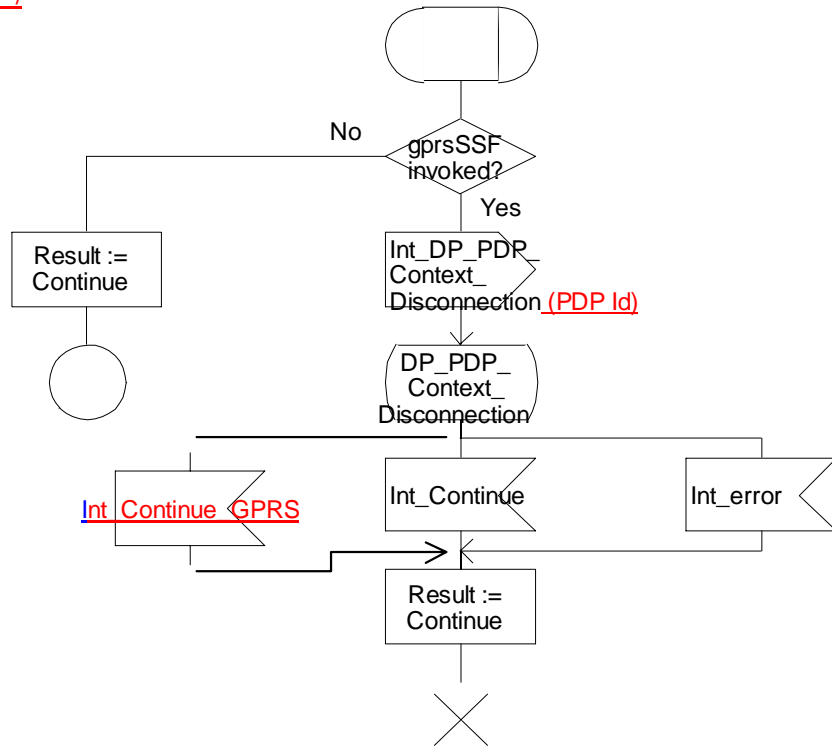


Figure 6.15: Procedure CAMEL\_GPRS\_Deactivate\_PDP\_Context PDP\_Context\_Disconnection (sheet 1)

## 6.5.3 Handling GPRS in the gprsSSF

### 6.5.3.1 Procedure Handle\_SCI\_GPRS

The gsmSCF may send e-parameters to the Session and to individual PDP Contexts.

When e-parameters are sent for the Session, the SGSN ~~may~~ will forward these e-parameters directly to the Mobile Station.

When e-parameters are sent for a PDP Context and that PDP Context is not yet acknowledged (= active), then the SGSN shall retain these parameters (pending parameters). These parameters will ~~shall~~ be sent to the Mobile Station when the PDP Context is acknowledged.

~~The SGSN shall send e-parameters to the Mobile Station in a Connect message or in a Facility message.~~

The gsmSCF may send two sets of e-parameters and a Tariff Switch for the Session or a PDP Context. The first set of e-parameters shall be sent to the SGSN and the second set of e-parameters shall be stored. ~~The~~ This second set of e-parameters shall be sent to the SGSN when the tariff switch expires.

When the Tariff Switch for the Session expires, then the stored e-parameters for the Session shall be sent to the SGSN.

When the Tariff Switch for a PDP Context expires before that PDP Context is Acknowledged, then the pending e-parameters for that PDP Context shall be replaced by the stored e-parameters for that PDP Context. The stored e-parameters for that PDP Context shall be discarded.

When the Tariff Switch for a PDP Context expires after that PDP Context has been Acknowledged, then the stored e-parameters for that PDP Context shall be sent to the SGSN.

#### 6.5.3.1.1 Handling of SCI\_GPRS for a PDP Context

- 1) Precondition: before an ~~answer~~ PDP Context Establishment Acknowledgement event is detected and no Tsw running for this PDP Context:
  - if 1 set of e-parameters received --> send e-parameters to the SGSN;
  - if 2 sets of e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> send 1<sup>st</sup> set of e-parameters to the SGSN/start Tsw (PDP Id)/store 2<sup>nd</sup> set of e-parameters;
- 2) Precondition: before an ~~answer~~ PDP Context Establishment Acknowledgement event is detected and Tsw running for this PDP Context and no e-parameters stored for this PDP Context;
  - if 1 set of e-parameters received --> error; ~~no e-parameters stored~~;
  - if 2 sets of e-parameters received --> send 1<sup>st</sup> set of e-parameters to the SGSN/store 2<sup>nd</sup> set of e-parameters;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.
- 3) Precondition: before an ~~answer~~ PDP Context Establishment Acknowledgement event is detected and Tsw running for this PDP Context and e-parameters stored for this PDP Context:
  - if 1 set of e-parameters received --> error;
  - if 2 sets of e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.
- 4) Precondition: after an ~~answer~~ PDP Context Establishment Acknowledgement event is detected and no Tsw running for this PDP Context:

- if 1 set of e-parameters received --> send e-parameters to the SGSN;
- if 2 sets of e-parameters received --> error;
- if 1 set of e-parameters and Tariff Switch received --> start Tsw (PDP Id)/store ~~set~~e-parameters;
- if 2 sets of e-parameters and Tariff Switch received --> ~~error~~send 1<sup>st</sup> set of e-parameters to the SGSN/start Tsw (PDP Id)/store 2<sup>nd</sup> set of e-parameters;
- 5) Precondition: after an ~~answer~~PDP Context Establishment Acknowledgement event is detected and Tsw running for this PDP Context and no e-parameters stored for this PDP Context;
  - if 1 set of e-parameters received --> store e-parameters;
  - if 2 sets of e-parameters received --> ~~error~~ send 1<sup>st</sup> set of e-parameters to the SGSN/store 2<sup>nd</sup> set of e-parameters;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.
- 6) Precondition: after an ~~answer~~PDP Context Establishment Acknowledgement event is detected and Tsw running for this PDP Context and e-parameters stored for this PDP Context:
  - if 1 set of e-parameters received --> error;
  - if 2 sets of e-parameters received --> error;
  - if 1 set of e-parameters and Tariff Switch received --> error;
  - if 2 sets of e-parameters and Tariff Switch received --> error.

#### 6.5.3.1.2 Handling of SCI GPRS for the Session

##### 1) Precondition: no Tsw running for the Session:

- if 1 set of e-parameters received --> send e-parameters to the SGSN;
- if 2 sets of e-parameters received --> error;
- if 1 set of e-parameters and Tariff Switch received --> error;
- if 2 sets of e-parameters and Tariff Switch received --> send 1<sup>st</sup> set of e-parameters to the SGSN/start Tsw (Session)/store 2<sup>nd</sup> set of e-parameters.

##### 2) Precondition: Tsw running for the Session and no e-parameters stored for the Session:

- if 1 set of e-parameters received --> error;
- if 2 sets of e-parameters received --> send 1<sup>st</sup> set of e-parameters to the SGSN/store 2<sup>nd</sup> set of e-parameters;
- if 1 set of e-parameters and Tariff Switch received --> error;
- if 2 sets of e-parameters and Tariff Switch received --> error.

##### 3) Precondition: Tsw running for the Session and e-parameters stored for the Session:

- if 1 set of e-parameters received --> error;
- if 2 sets of e-parameters received --> error;
- if 1 set of e-parameters and Tariff Switch received --> error;
- if 2 sets of e-parameters and Tariff Switch received --> error.

**NOTE:** ~~The SGSN shall store the received e-parameters to be sent subsequently to the MS. The SGSN shall send these e-parameters to the MS in a Connect message or in a Facility message.~~

### 6.5.3.2 Process GPRS SSF

A relationship exists between the gsmSCF and the Session and between the gsmSCF and every PDP Context. This relationship may be controlling or monitoring. When a ContinueGPRS, ConnectGPRS or RequestReportGPRSEvent operation is received, then the relationship between the gsmSCF and the Session or a PDP Context may be downgraded from controlling to monitoring.

When Tssf expires, the CAMEL procedures that are waiting for an instruction from the gsmSCF shall receive an Int\_Error signal. The Default GPRS Handling parameter determines the subsequent action of those CAMEL procedures.

If the Default GPRS Handling parameter is set to 'Release', then:

- if the GPRS Dialogue is controlling a GPRS Session, then the gprsSSF shall release the entire GPRS Session;
- if the GPRS Dialogue is controlling a single PDP Context, then the gprsSSF shall release the PDP Context.

The task box 'Open GPRS Dialogue' comprises all the tasks that are required for starting a GPRS dialogue. This includes, amongst others, the allocation of a GPRS Reference Number and the allocation of resources. The task box 'Terminate GPRS Dialogue' comprises all the tasks that are required for closing a GPRS dialogue.

### 6.5.3.3 Procedure Handle\_AC\_GPRS

Procedure Handle\_AC\_GPRS is called from process gprsSSF with the following input parameters:

- 'Session'. The Apply Charging GPRS procedure shall be executed for the Session
- 'PDP Id'. The Apply Charging GPRS procedure shall be executed for the indicated PDP Context.

### 6.5.3.4 Procedure Handle\_ACR\_GPRS

Procedure Handle\_ACR\_GPRS is called from process gprsSSF with the following input parameters:

- 'Session'. The Apply Charging Report GPRS procedure shall be executed for the Session. This procedure checks if a Session Period report is pending and if so, sends this report to the gsmSCF.
- 'PDP Id'. The Apply Charging Report GPRS procedure shall be executed for the indicated PDP Context. This procedure checks if a Context Volume report is pending and if so, sends this report to the gsmSCF. The procedure then checks if a Context Period is pending and if so, sends this report to the gsmSCF.
- 'Session + PDPs'. The Apply Charging Report GPRS procedure shall be executed for the Session and all PDP Contexts. The sequence of checking the reports shall be as follows:
  - (1) The procedure checks the pending Volume and Period reports for each PDP Context.
  - (2) The procedure then checks the pending Period report for the Session.

When a PDP Context Volume counter or PDP context Period timer expires, then the procedure Apply Charging Report GPRS procedure is called with the PDP Id as input parameter. The procedure will then check both reports for that PDP Context.

### 6.5.3.5 Procedure Complete\_FCI\_Record\_GPRS

Procedure Complete\_FCI\_Record\_GPRS is called from process gprsSSF with the following input parameters:

- 'Session'. The Complete\_FCI\_Record\_GPRS procedure shall be executed for the Session.
- 'PDP Id'. The Complete\_FCI\_Record\_GPRS procedure shall be executed for the indicated PDP Context.
- 'Session + PDPs'. The Complete\_FCI\_Record\_GPRS procedure shall be executed for the Session and all PDP Contexts.



### 6.5.3.6 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 Operations that the gprsSSF has received from the gsmSCF.
- No Operations remain to be sent from the gprsSSF to the gsmSCF.
- The gprsSSF is not waiting for a Result or Error component for any Operations that the gprsSSF has sent to the gsmSCF.

### 6.5.3.7 Procedure Handle\_PDP\_Acknowledgement

Procedure Handle\_PDP\_Acknowledgement is called when an event occurs that may signal the activation (= Acknowledgement) of a PDP Context. The event signal is passed on to the Handle\_PDP\_Acknowledgement procedure.

6.5.3.2 Process GPRS\_SSF and procedures

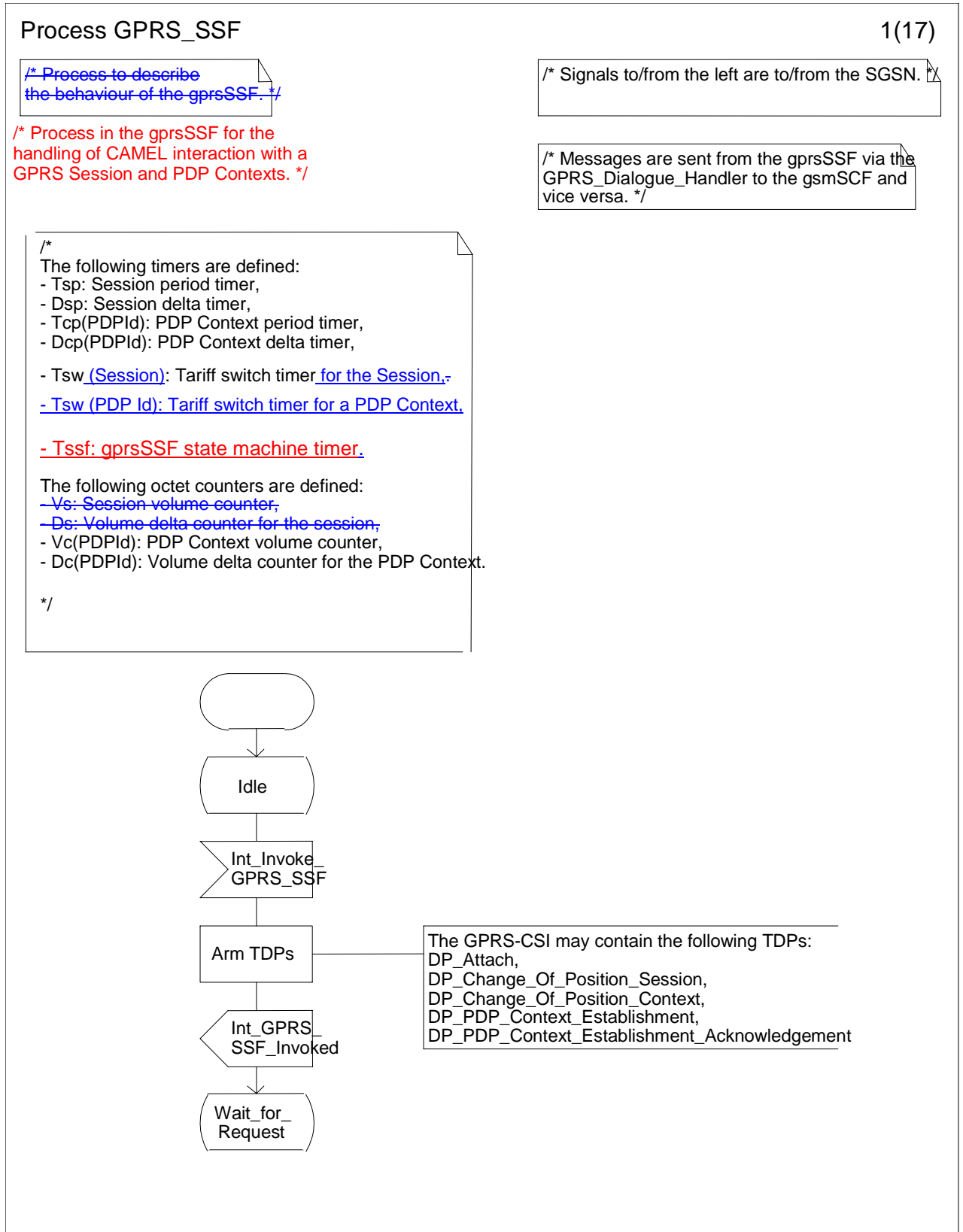


Figure 6.16 a: Process GPRS\_SSF (sheet 1)

Process GPRS\_SSF

2(17)

/\* Process to describe  
 the [See sheet 1 for revised text](#) \*/

/\* Signals from the left are from the SGSN;  
 signal to the right is to the GPRS\_Dialogue\_Handler. \*/

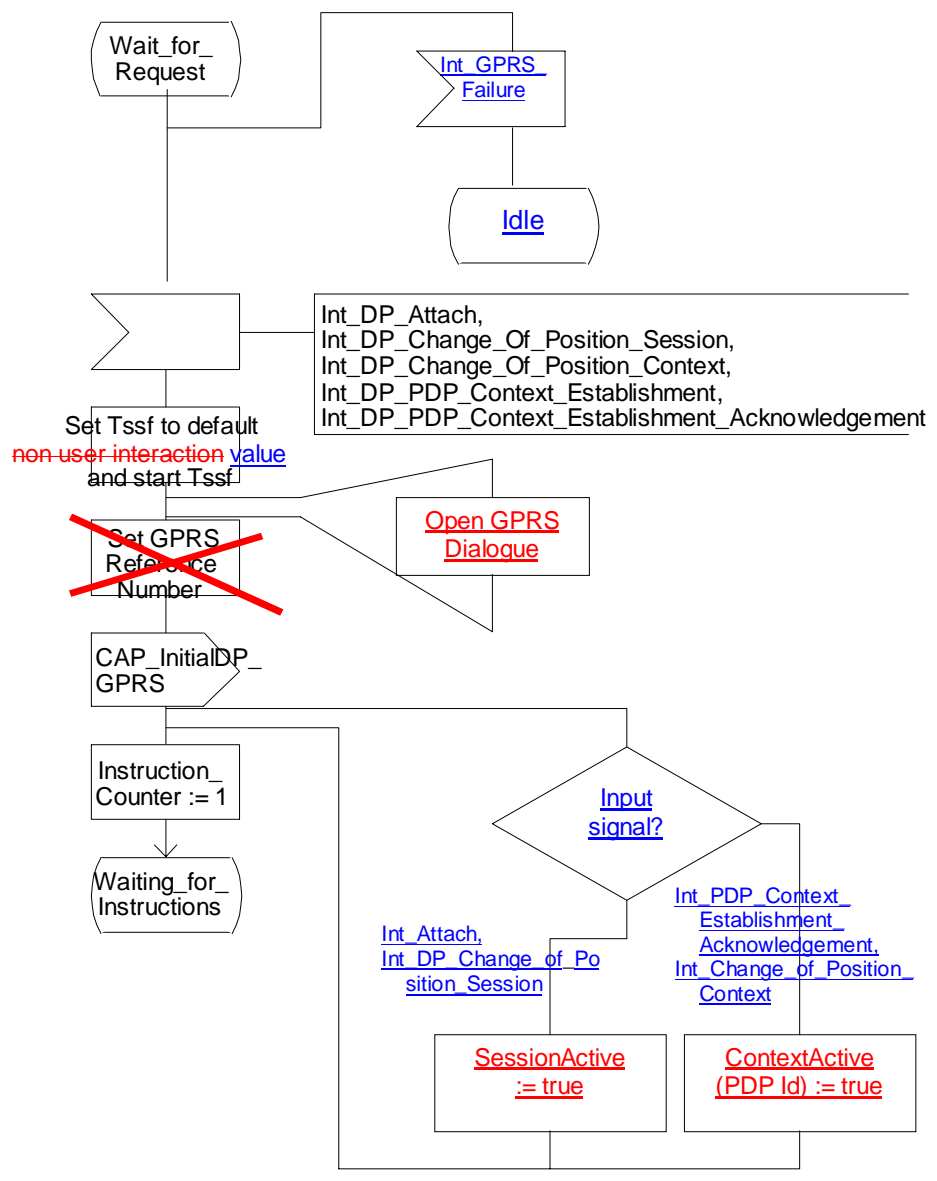


Figure 6.16b: Process GPRS\_SSF (sheet 2)

Process GPRS\_SSF

3(17)

/\* Process to describe  
the [See sheet 1 for revised text](#) \*/

/\* Signals to the left are to the SGSN,  
signals to/from the right are to/from the  
GPRS\_Dialogue\_Handler. \*/

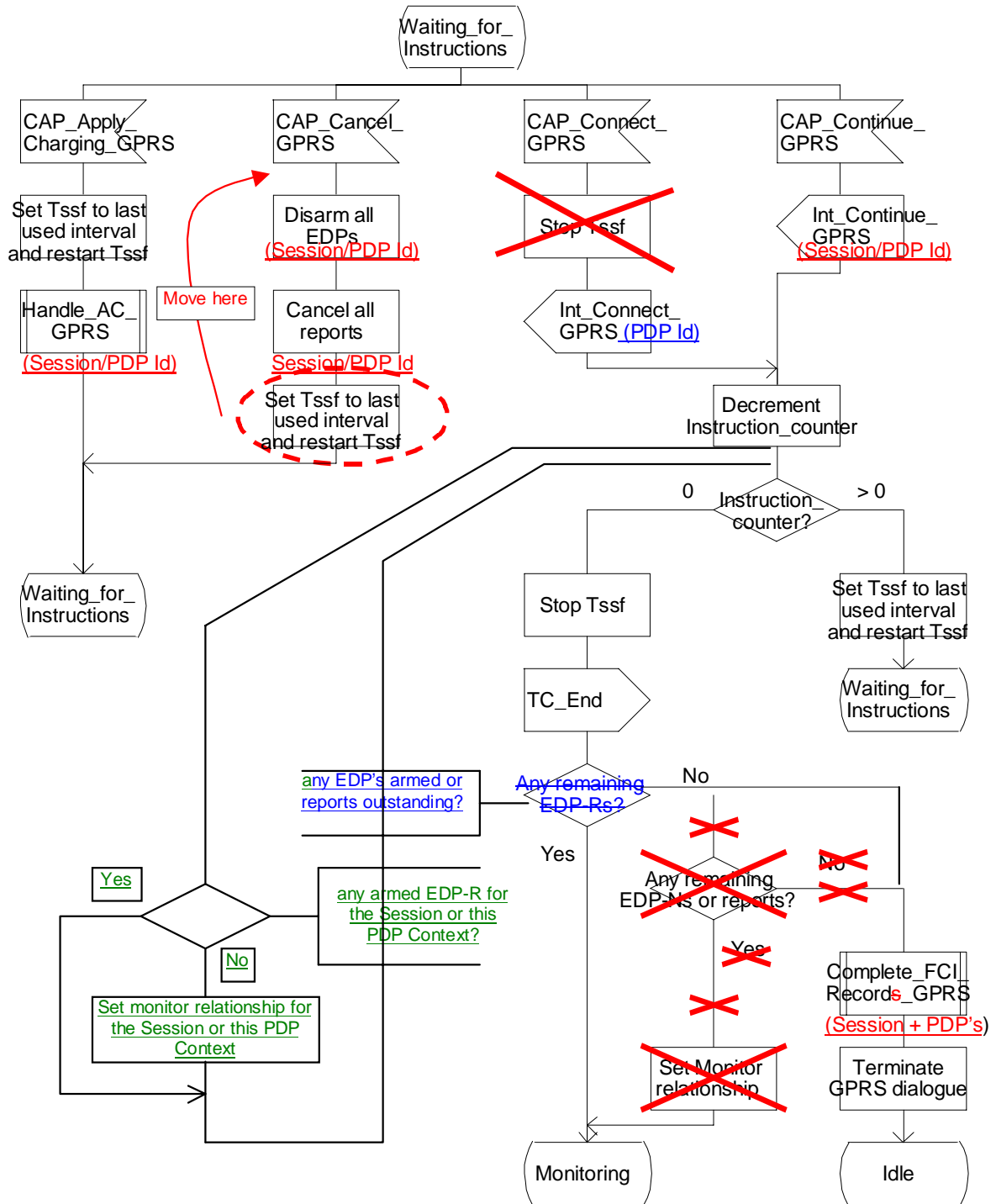


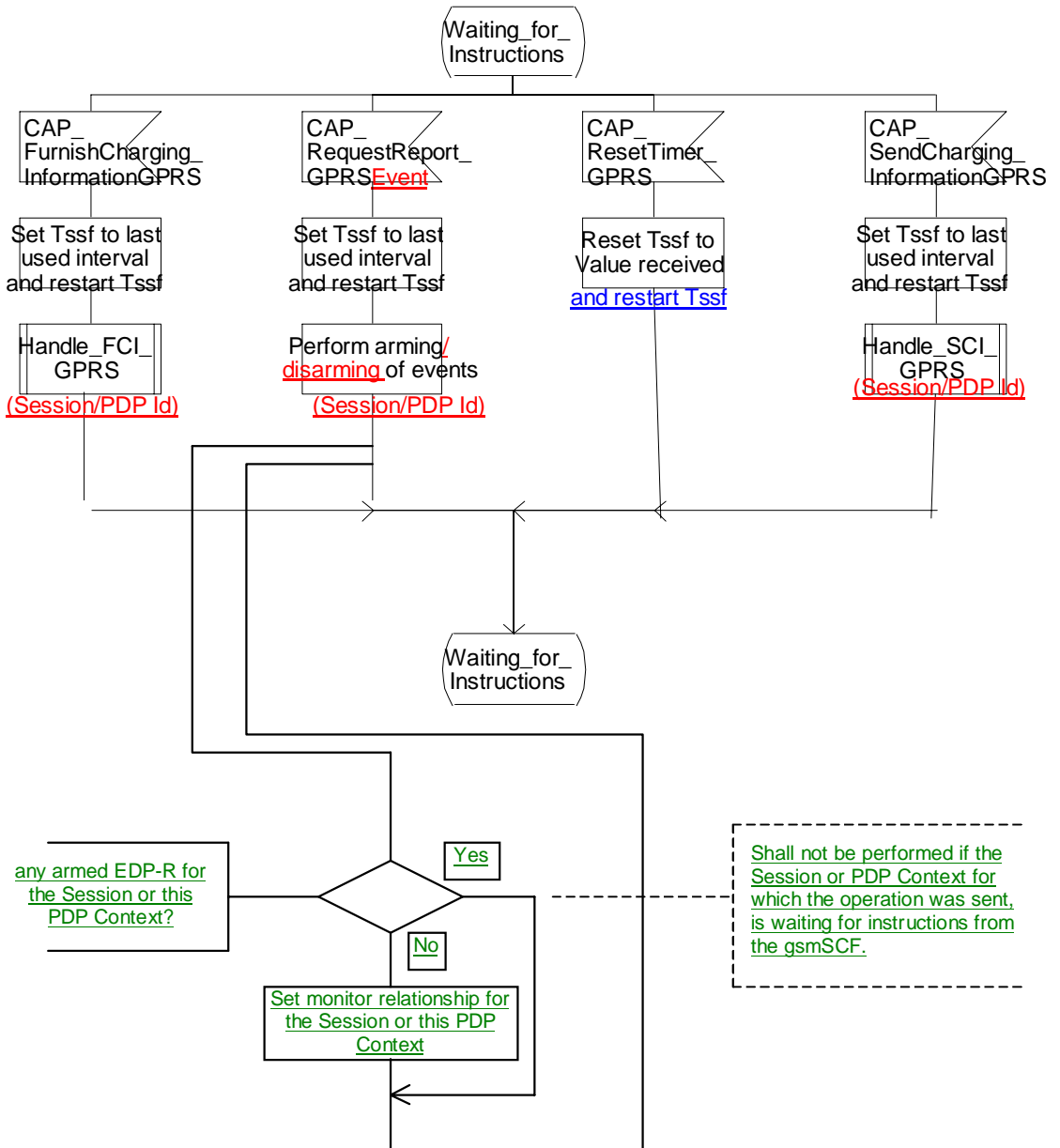
Figure 6.16c: Process GPRS\_SSF (sheet 3)

Process GPRS\_SSF

4(17)

/\* Process to describe  
 the [See sheet 1 for revised text](#). \*/

/\* Signals from the right are from the  
 GPRS\_Dialogue\_Handler. \*/



Shall not be performed if the Session or PDP Context for which the operation was sent, is waiting for instructions from the gsmSCF.

Figure 6.16d: Process GPRS\_SSF (sheet 4)

Process GPRS\_SSF

5(17)

/\* Process to describe  
th [See sheet 1 for revised text](#) .\*/

/\* Signals to the left are to the SGSN;  
signals to/from the right are to/from the  
GPRS\_Dialogue\_Handler. \*/

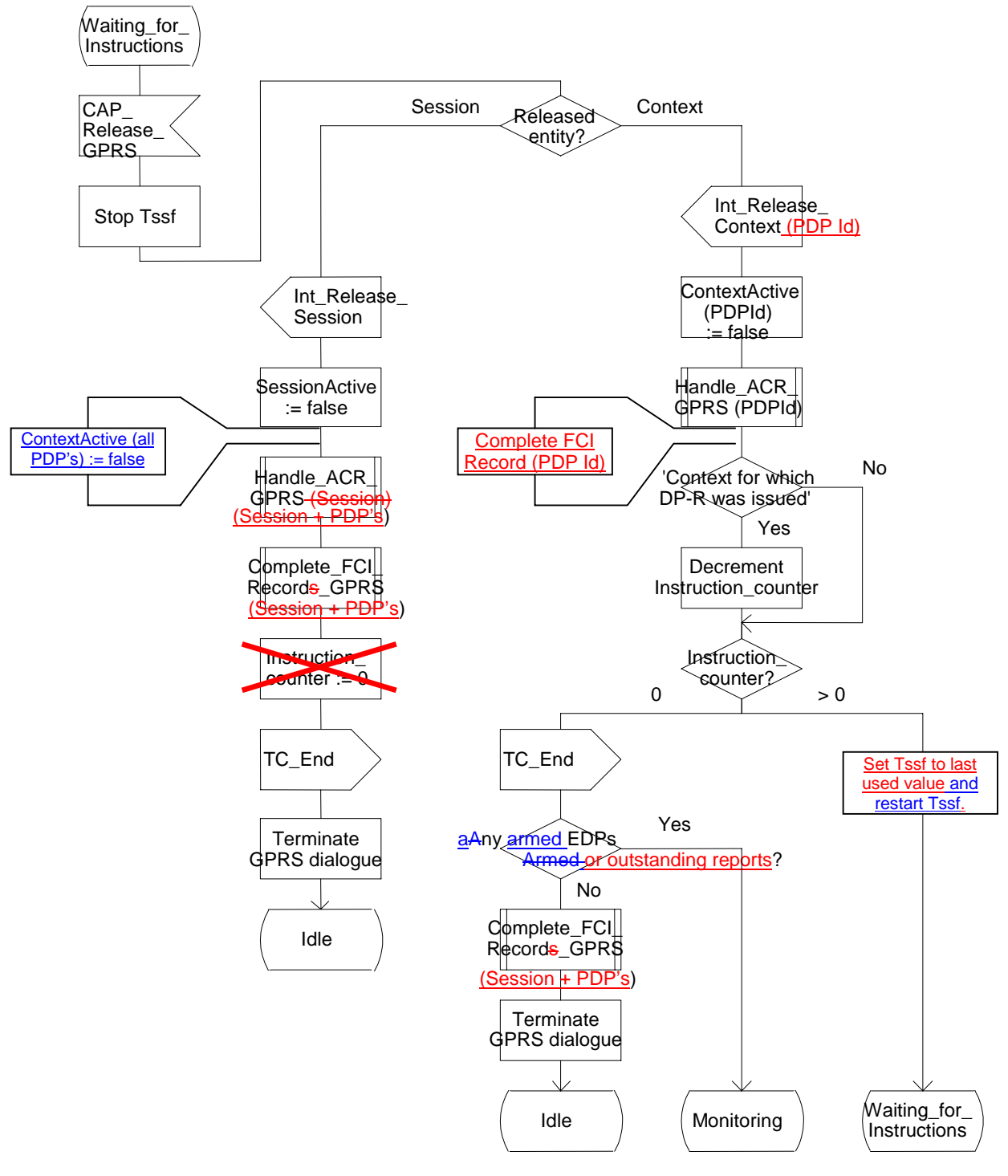


Figure 6.16e: Process GPRS\_SSF (sheet 5)

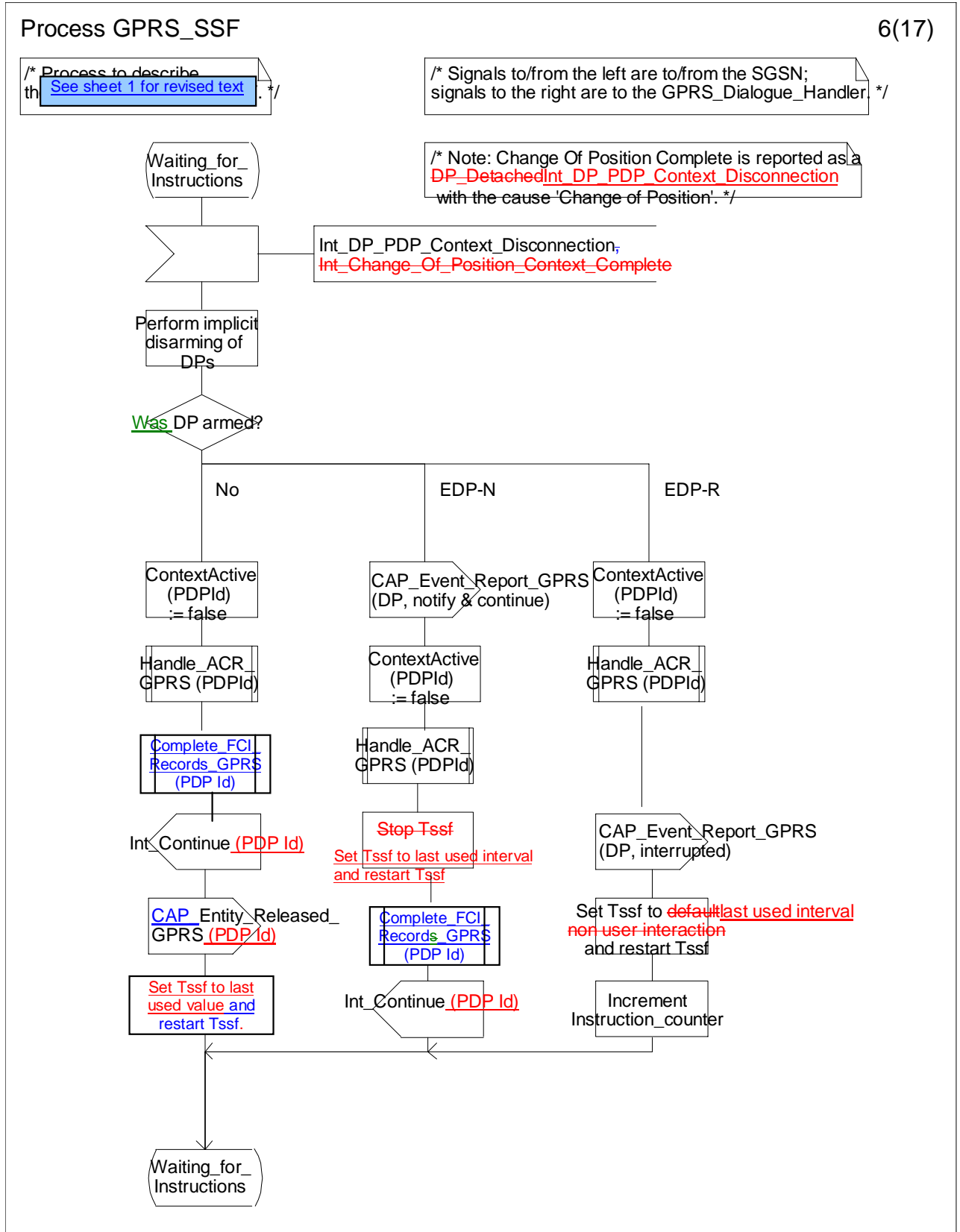


Figure 6.16f: Process GPRS\_SSF (sheet 6)

Process GPRS\_SSF

7(17)

/\* Process to describe  
 th [See sheet 1 for revised text](#) \*/

/\* Notes:  
 - The values reported in ApplyChargingReportGPRS are either elapsed time or transferred volume.  
 - The period timers are received from an entity internal to the gprsSSF when the threshold has been reached.  
 - The volume counters are received from some an entity internal to the gprsSSF when the threshold has been reached.  
 \*/

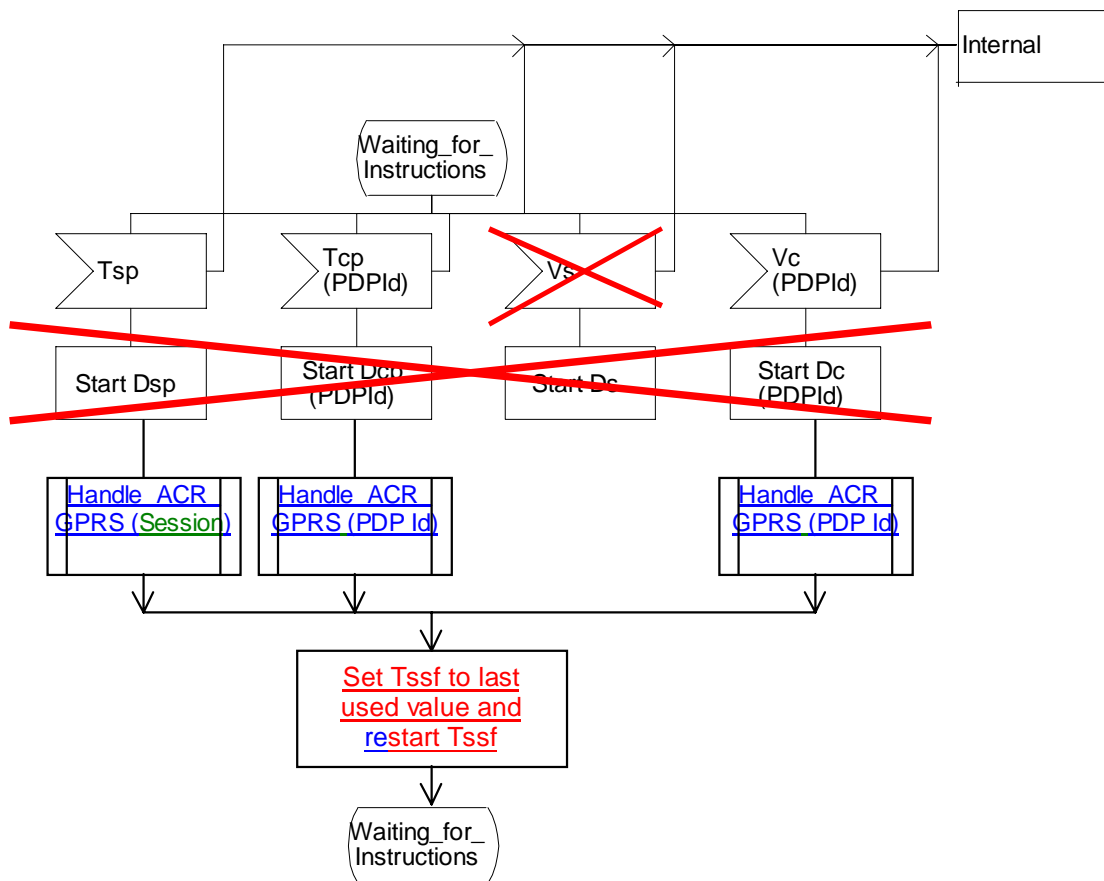


Figure 6.16g: Process GPRS\_SSF (sheet 7)



Process GPRS\_SSF

8(17)

/\* Process to describe  
 the [See sheet 1 for revised text](#) \*/

/\* Signal to the right is to the GPRS\_Dialogue\_Handler.  
 Signals to the left ~~is~~ are to the SGSN. \*/

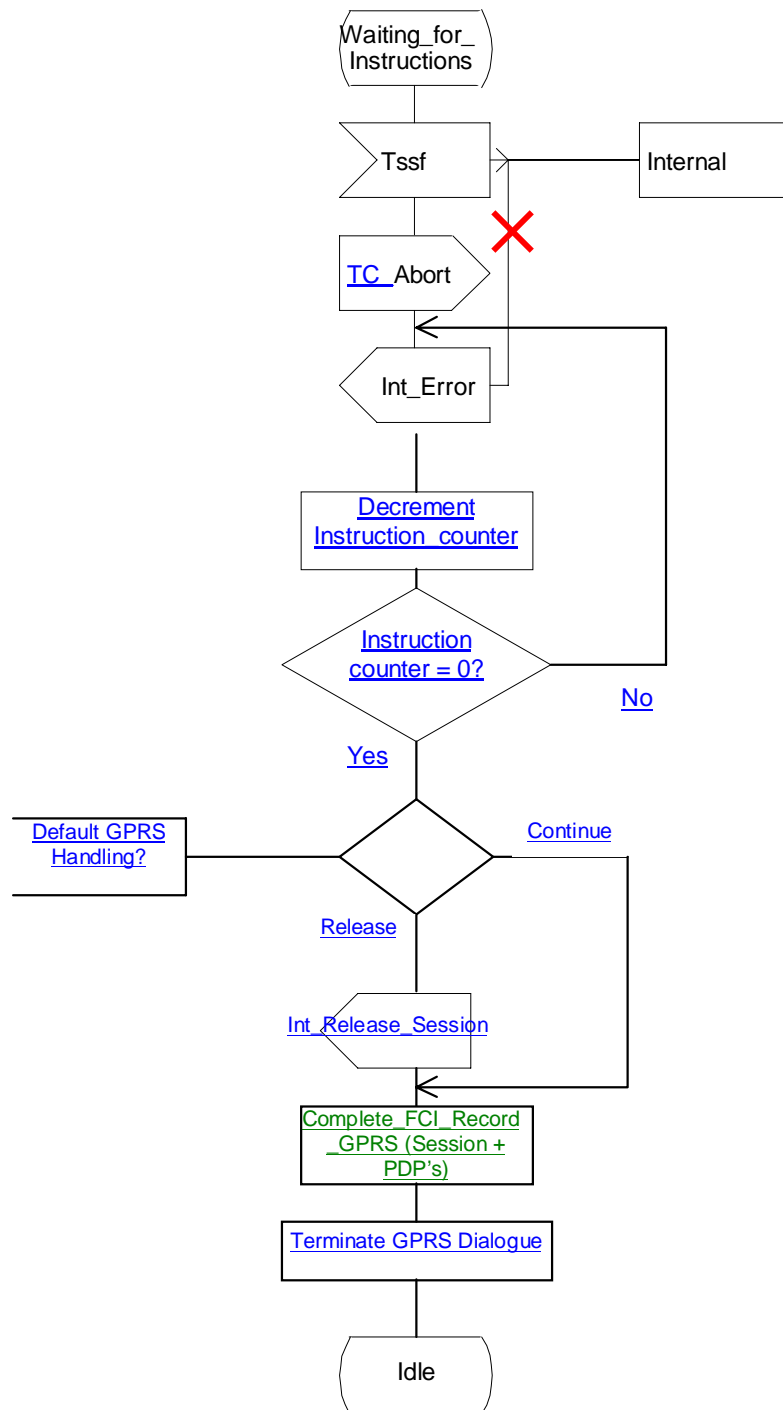


Figure 6.16h: Process GPRS\_SSF (sheet 8)

Process GPRS\_SSF

9(17)

/\* Process to describe  
 the See sheet 1 for revised text \*/

/\* Signals to/from the right are to/from the  
 GPRS\_Dialogue\_Handler. \*/

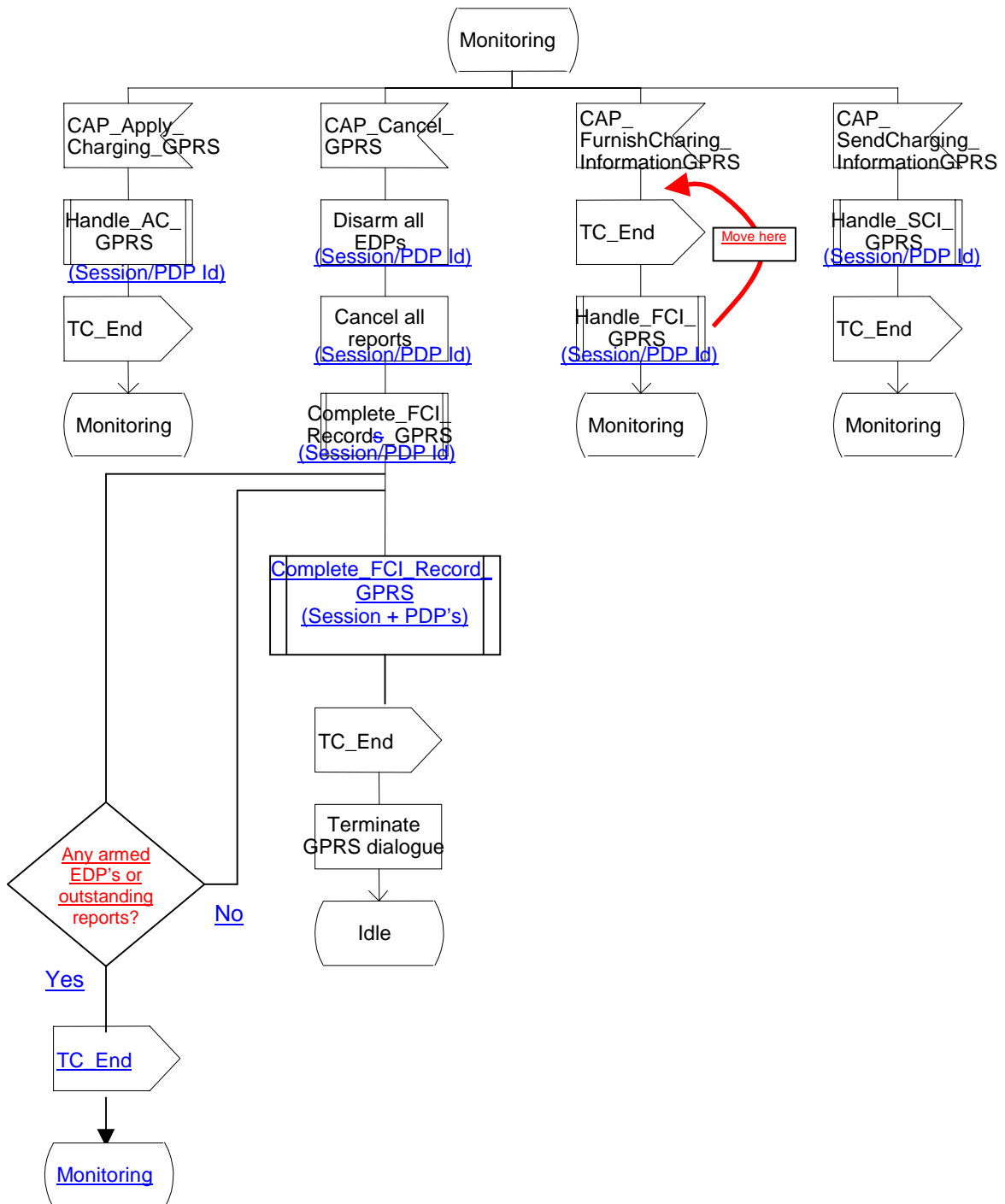


Figure 6.16i: Process GPRS\_SSF (sheet 9)

Process GPRS\_SSF

10(17)

/\* Process to describe  
th [See sheet 1 for revised text](#) \*/

/\* Signals to the left are to the SGSN,  
signals to/from the right are to/from the  
GPRS\_Dialogue\_Handler. \*/

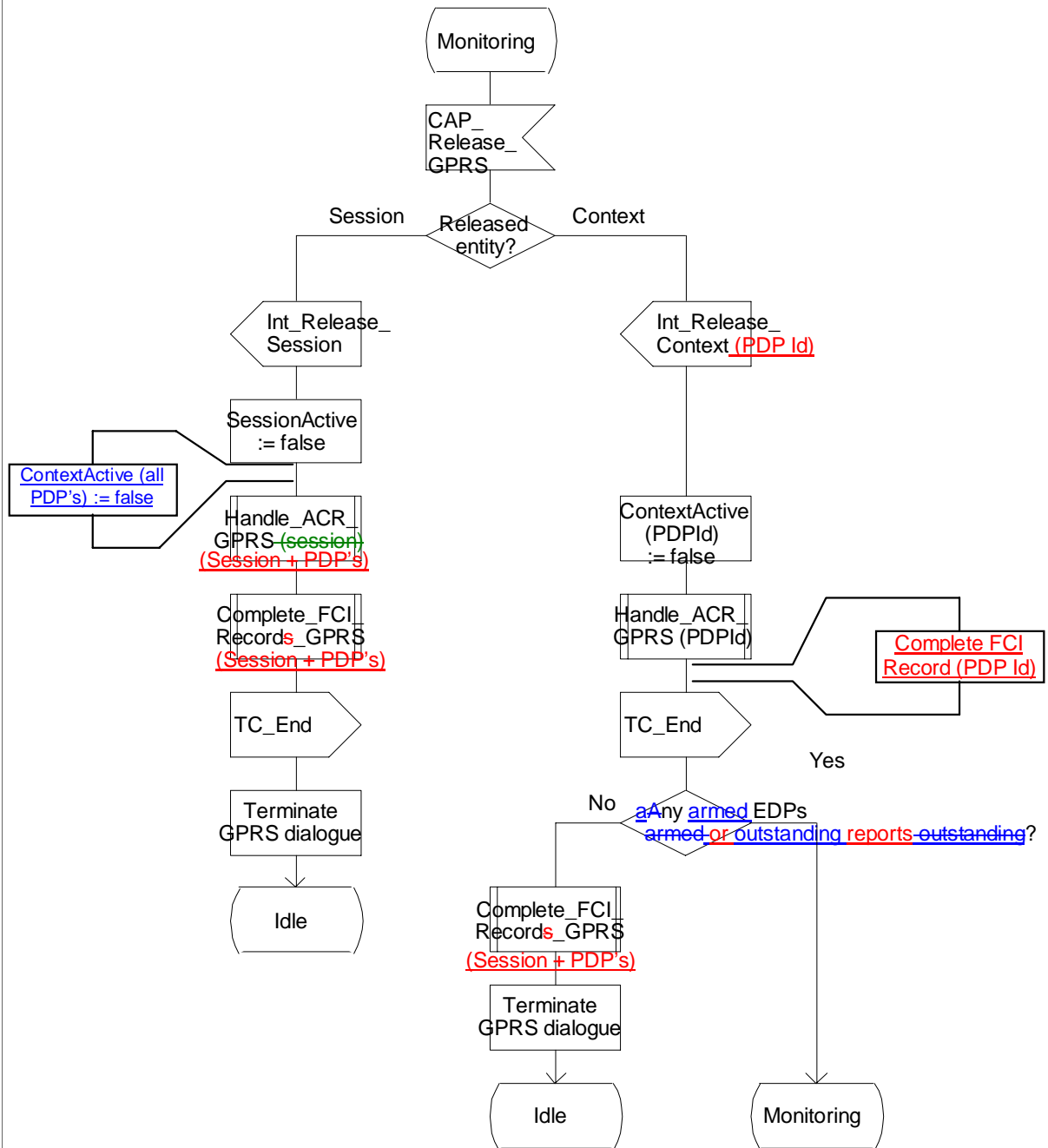


Figure 6.16j: Process GPRS\_SSF (sheet 10)

Process GPRS\_SSF

11(17)

/\* Process to describe  
 the [See sheet 1 for revised text](#) \*/

/\* Signals to/from the right are to/from the  
 GPRS\_Dialogue\_Handler. \*/

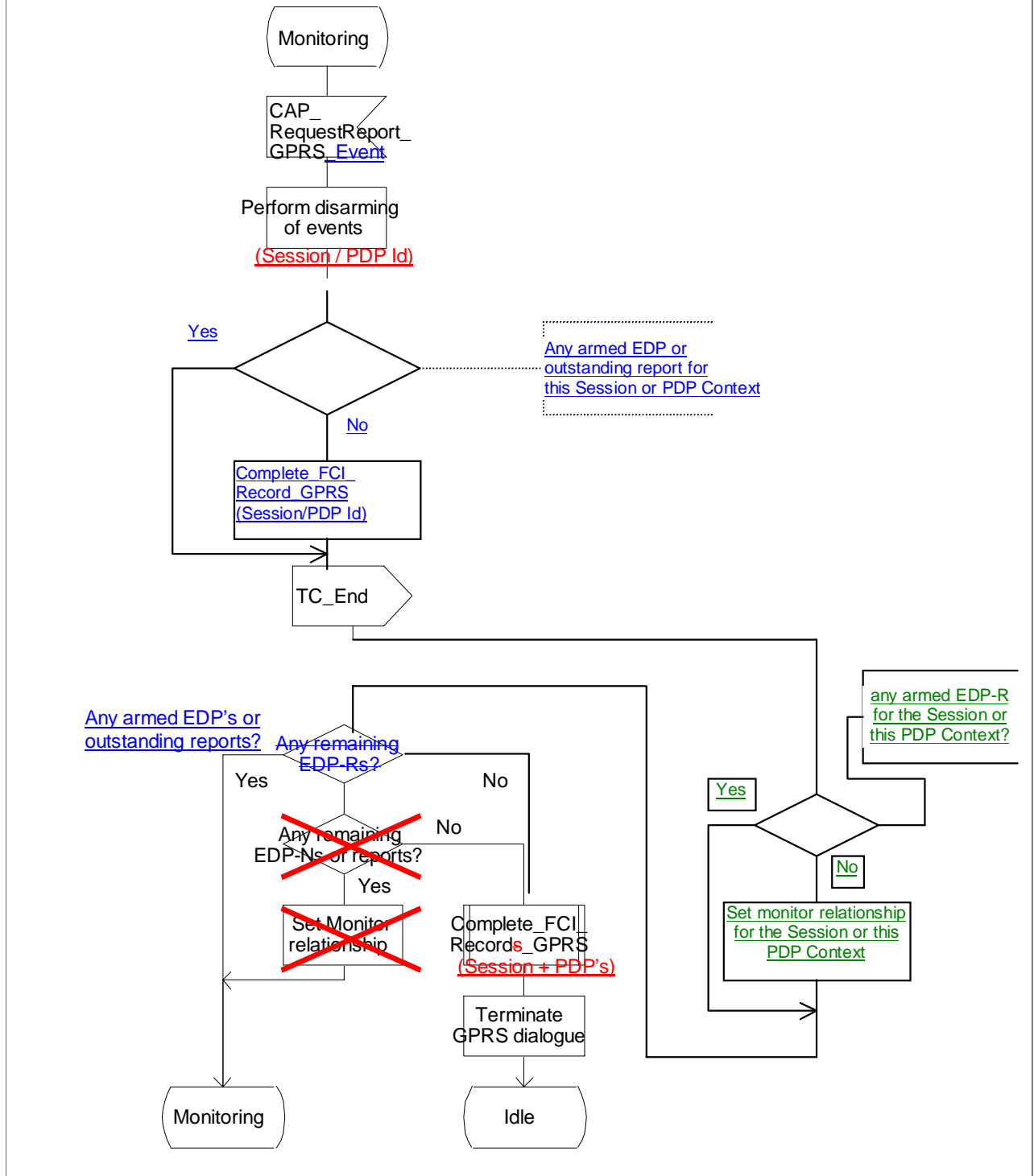


Figure 6.16k: Process GPRS\_SSF (sheet 11)



Process GPRS\_SSF

13(17)

/\* Process to describe  
th [See sheet 1 for revised text](#) \*/

/\* Signals to/from the left are to/from the SGSN;  
signals to the right are to the GPRS\_Dialogue\_Handler \*/

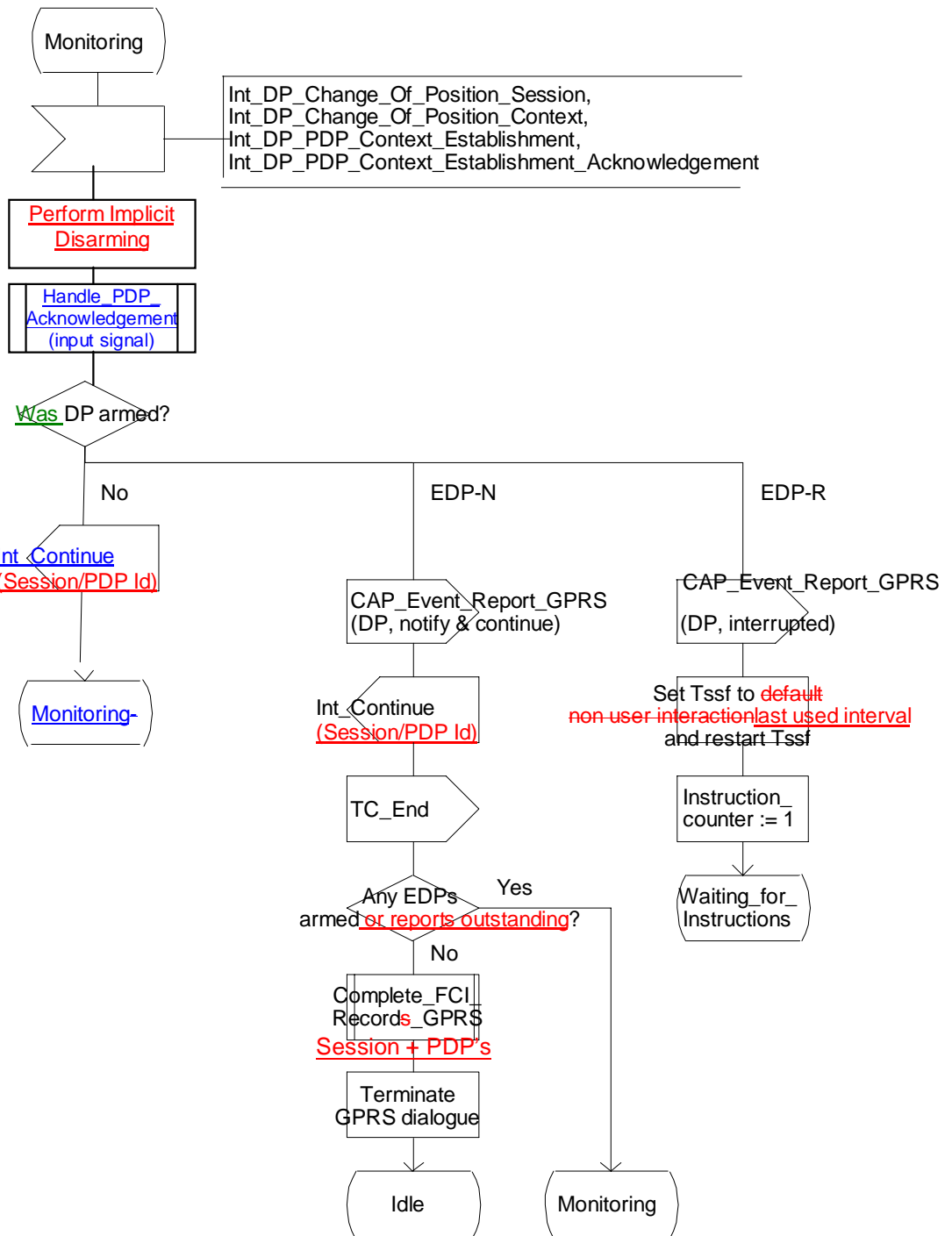


Figure 6.16m: Process GPRS\_SSF (sheet 13)

Process GPRS\_SSF

14(18)

/\* Process to describe  
 the See sheet 1 for revised text \*/

/\* Signals to/from the left are to/from the SGSN;  
 signals to the right are to the GPRS\_Dialogue\_Handler. \*/

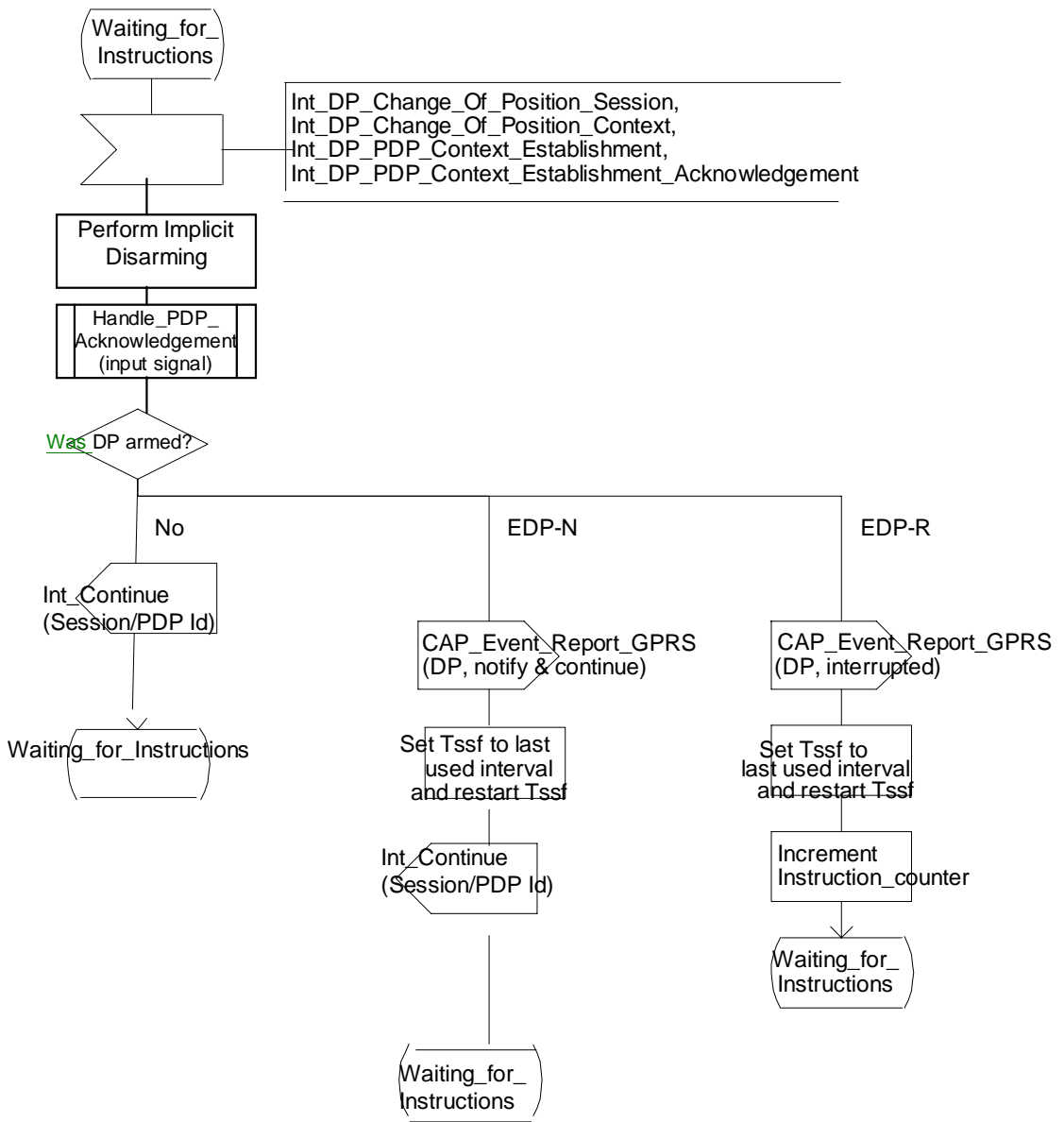


Figure 6.16x: Process GPRS\_SSF (sheet 13b)

(new figure)

Process GPRS\_SSF

14(17)

/\* Process to describe  
 th [See sheet 1 for revised text](#) .\*/

/\* Notes:  
 - The values reported in ApplyChargingReportGPRS are either elapsed time or transferred volume.  
 - The period timers are received from an entity internal to the gprsSSF when the threshold has been reached.  
 - The volume counters are received from some entity internal to the gprsSSF when the threshold has been reached.

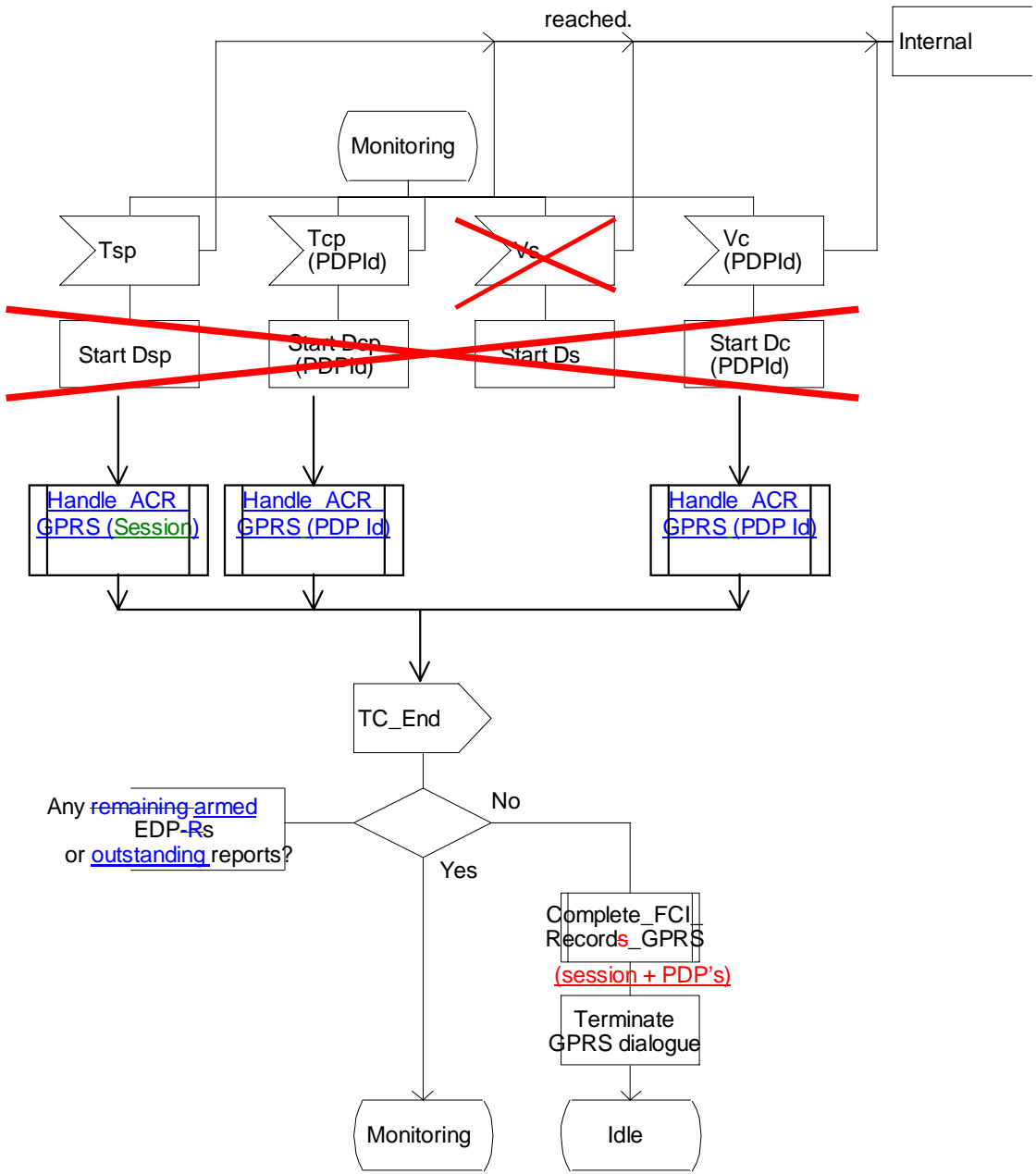


Figure 6.16n: Process GPRS\_SSF (sheet 14)



### Process GPRS\_SSF

15(17)

/\* Process to describe  
th [See sheet 1 for revised text](#) \*/

/\* Signal from the left is from the SGSN.\*/

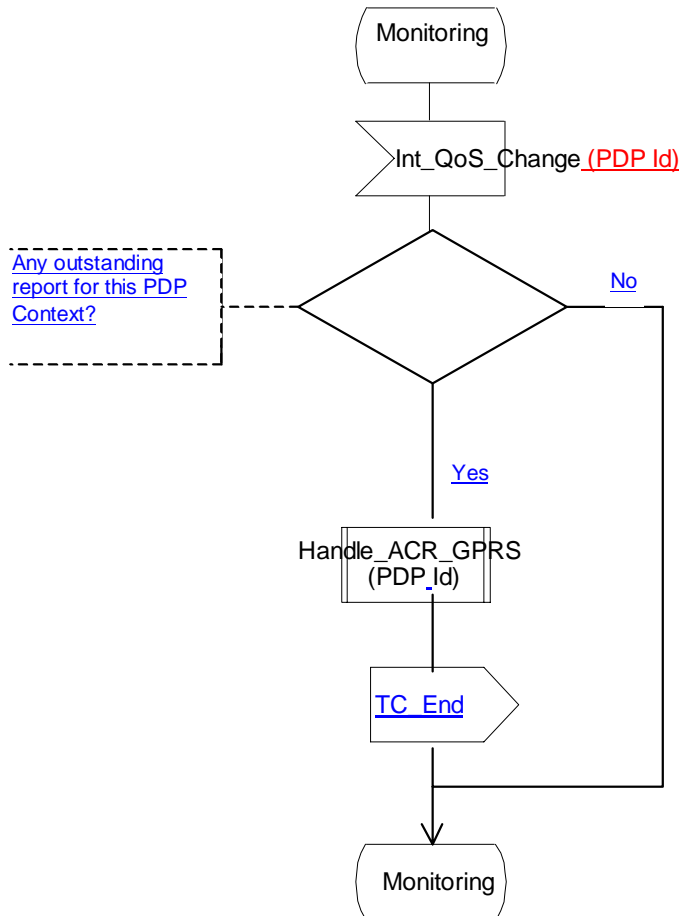


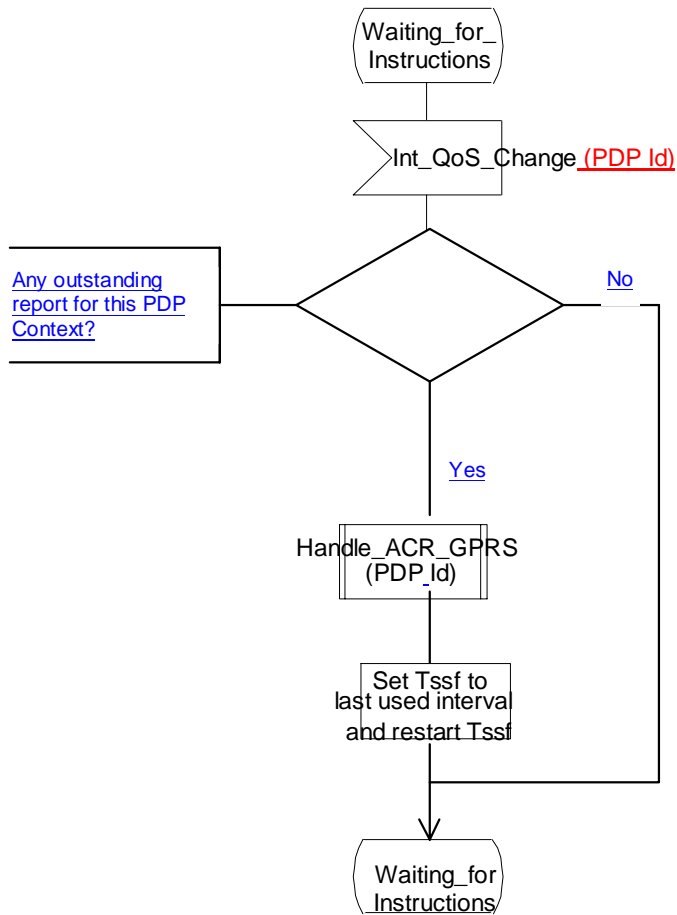
Figure 6.16o: Process GPRS\_SSF (sheet 15)

### Process GPRS\_SSF

16(19)

/\* Process to describe  
th [See sheet 1 for revised text](#) \*/

/\* Signal from the left is from the SGSN. \*/



[Figure 6.16x: Process GPRS\\_SSF \(sheet 15-b\)](#)

[New figure](#)

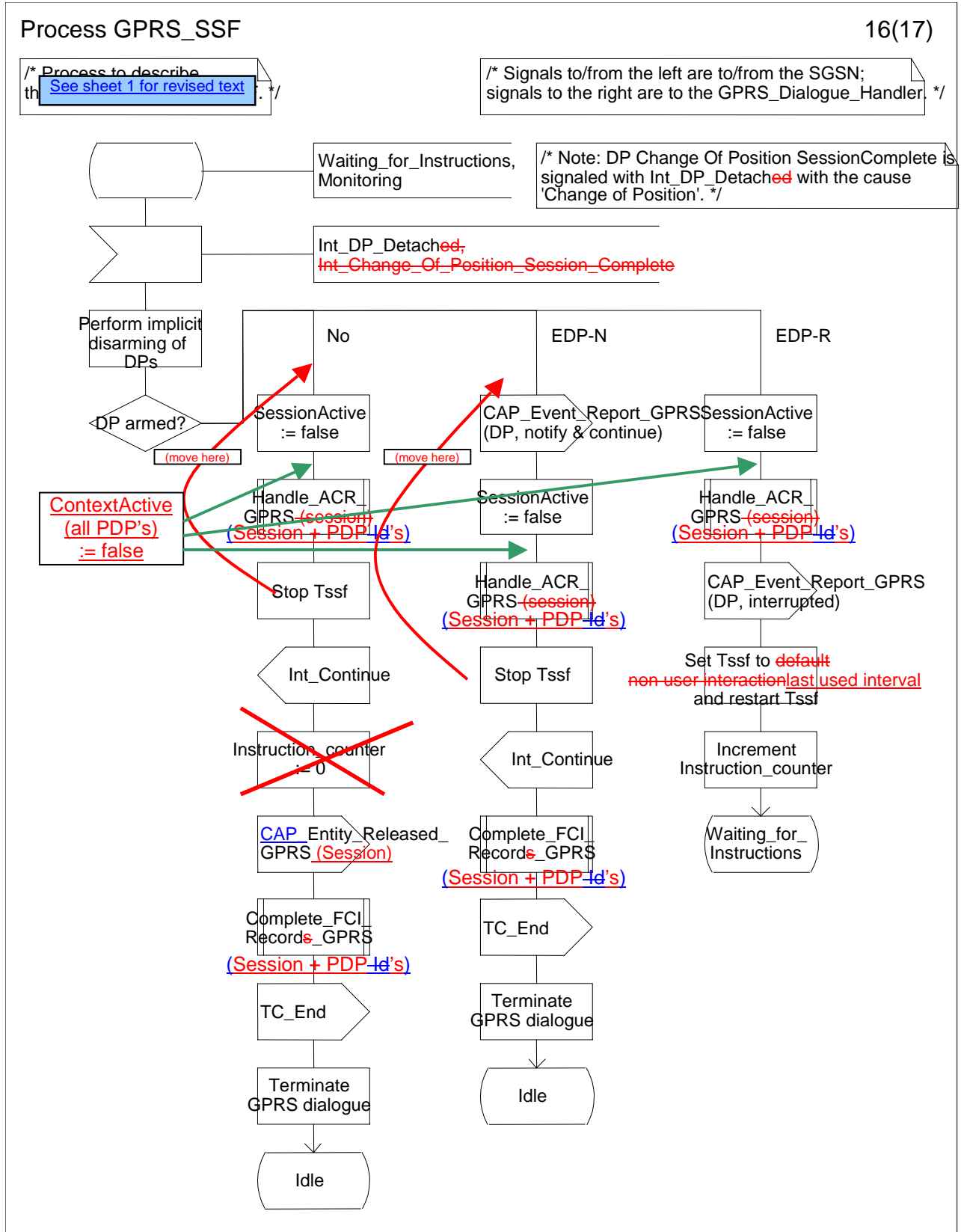


Figure 6.16p: Process GPRS\_SSF (sheet 16)

Process GPRS\_SSF

17(17)

/\* Process to describe  
th [See sheet 1 for revised text](#) \*/

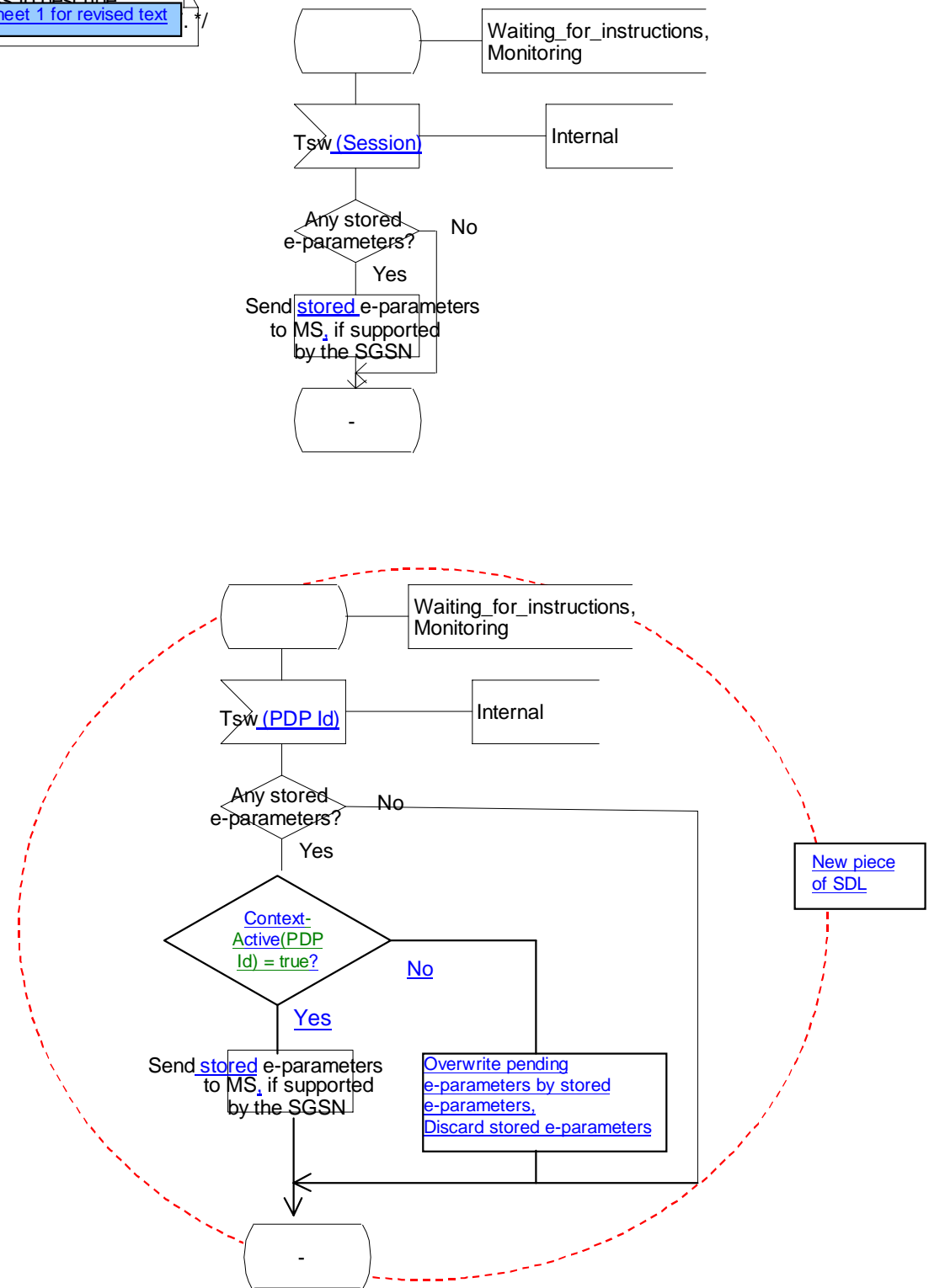


Figure 6.16q: Process GPRS\_SSF (sheet 17)



# Procedure Handle\_AC\_GPRS

1(2)

/\* Procedure in the gprsSSF for handling of  
ApplyChargingGPRS. \*/

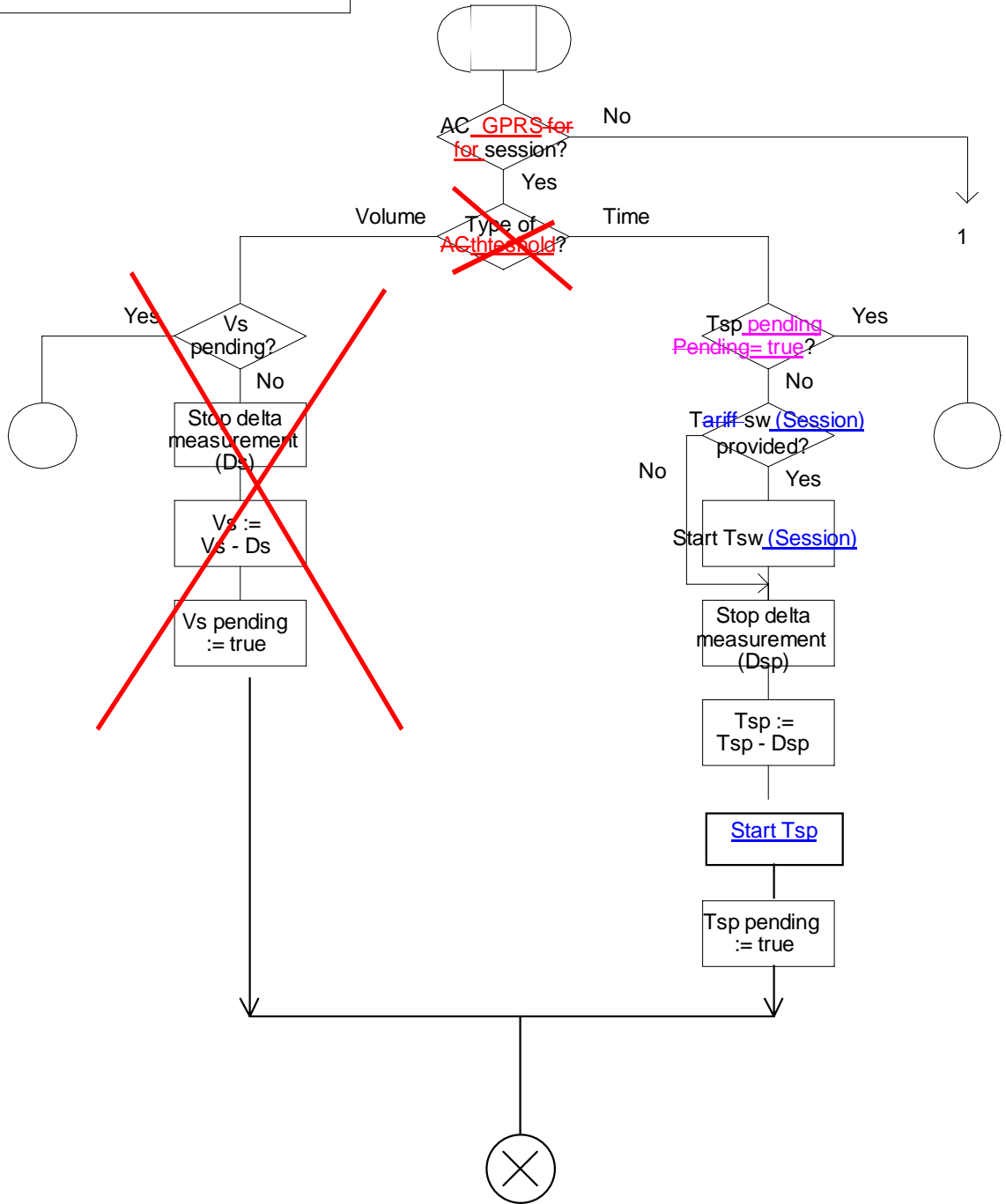


Figure 6.18 a: Procedure Handle\_AC\_GPRS (sheet 1)

Procedure Handle\_AC\_GPRS

2(2)

/\* Procedure in the gprsSSF for handling of  
 ApplyChargingGPRS. \*/

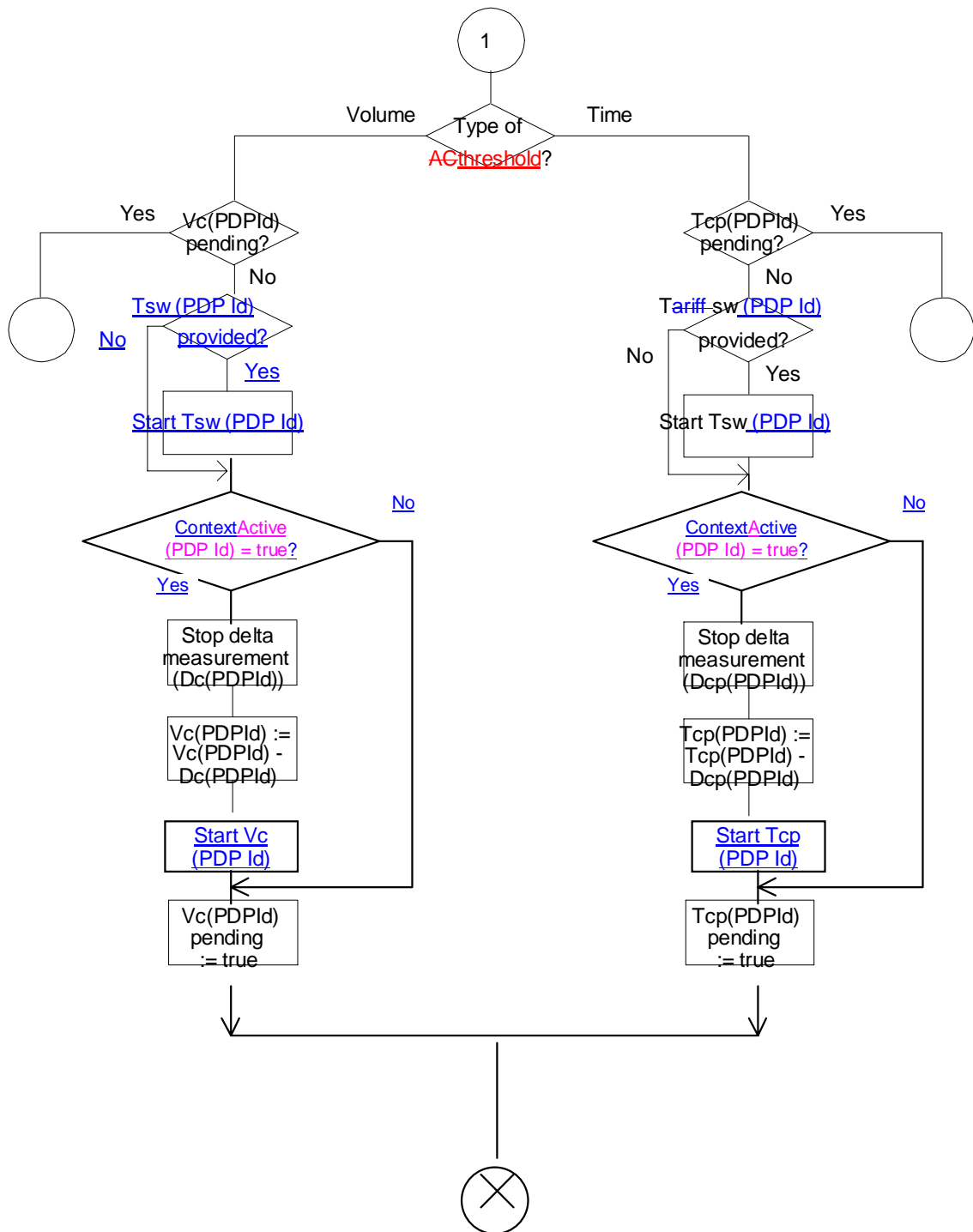


Figure 6.18 b: Procedure Handle\_AC\_GPRS (sheet 2)

Procedure Handle\_ACR\_GPRS

1(2)

/\* Procedure in the gprsSSF for handling of  
 ApplyChargingReport GPRS. \*/

/\* Signals to the right are to the  
 GPRS\_Dialogue\_Handler. \*/

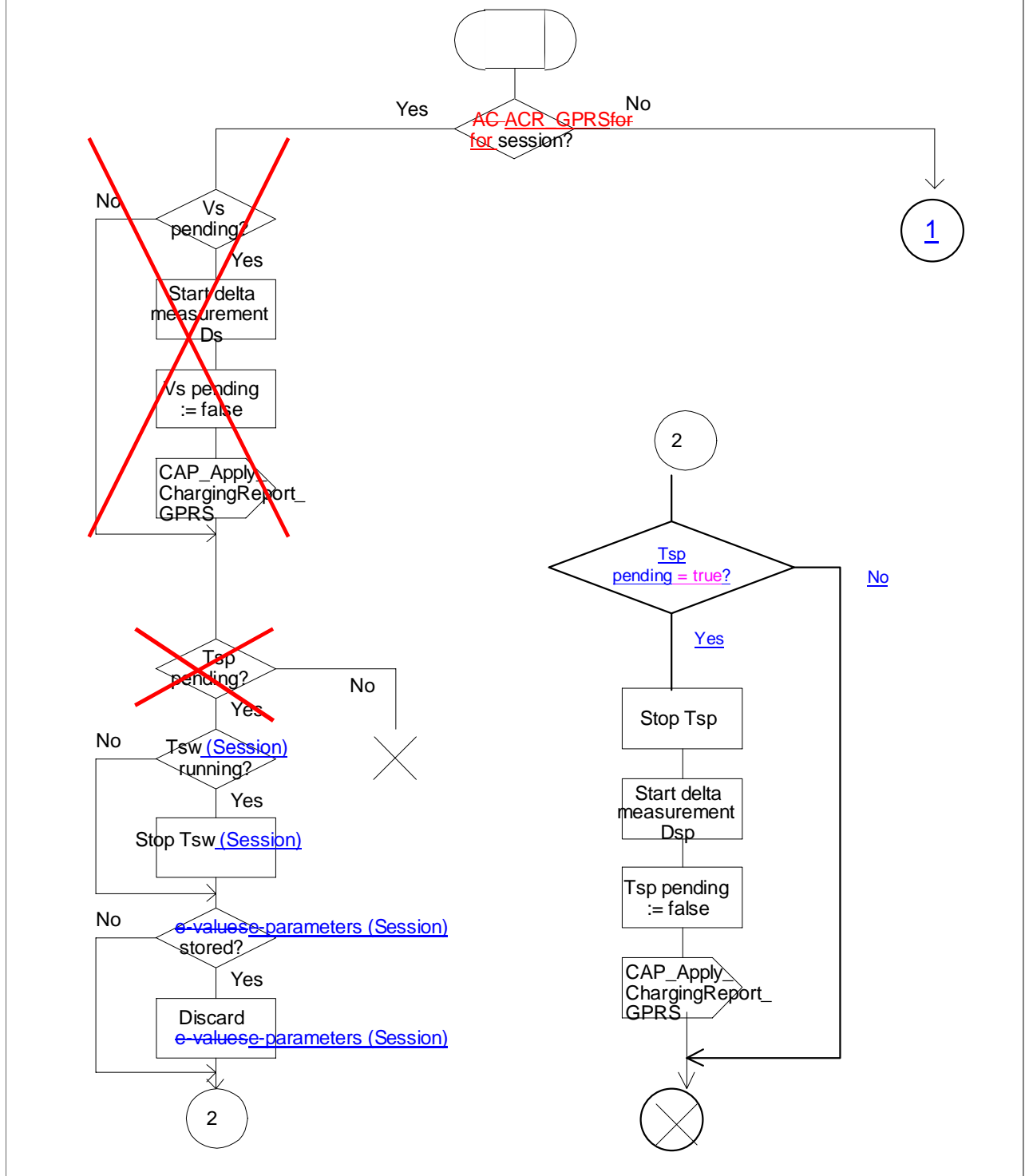


Figure 6.19 a: Procedure Handle\_ACR\_GPRS (sheet 1)



Procedure Handle\_ACR\_GPRS

2(2)

/\* Procedure in the gprsSSF for handling of ApplyChargingReport. \*/

/\* Signals to the right are to the GPRS\_Dialogue\_Handler. \*/

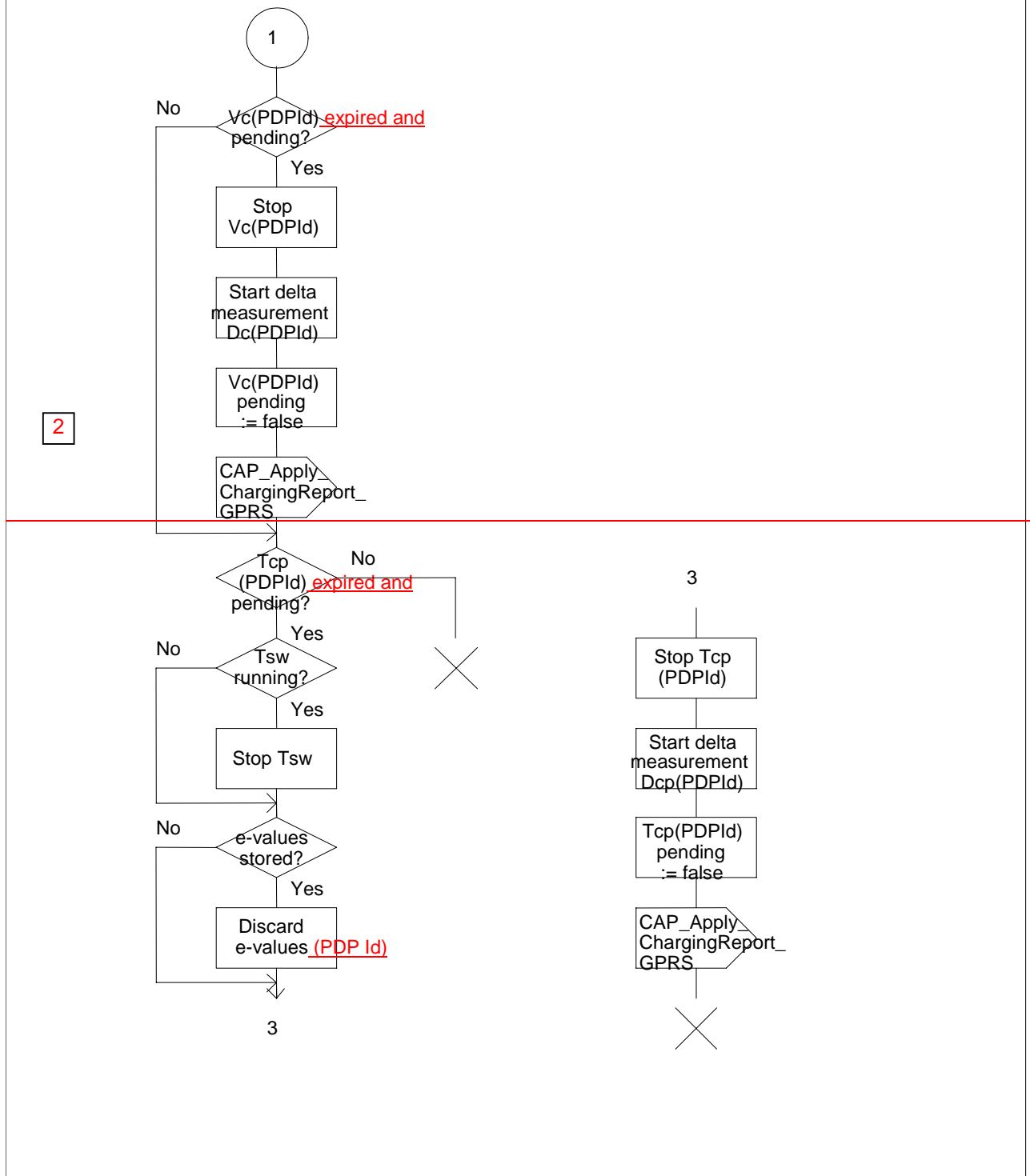


Figure 6.19 b: Procedure Handle\_ACR\_GPRS (sheet 2)

(old figure)

Procedure Handle\_ACR\_GPRS

2(2)

/\* Procedure in the gprsSSF for handling of ApplyChargingReport. \*/

/\* Signals to the right are to the GPRS\_Dialogue\_Handler. \*/

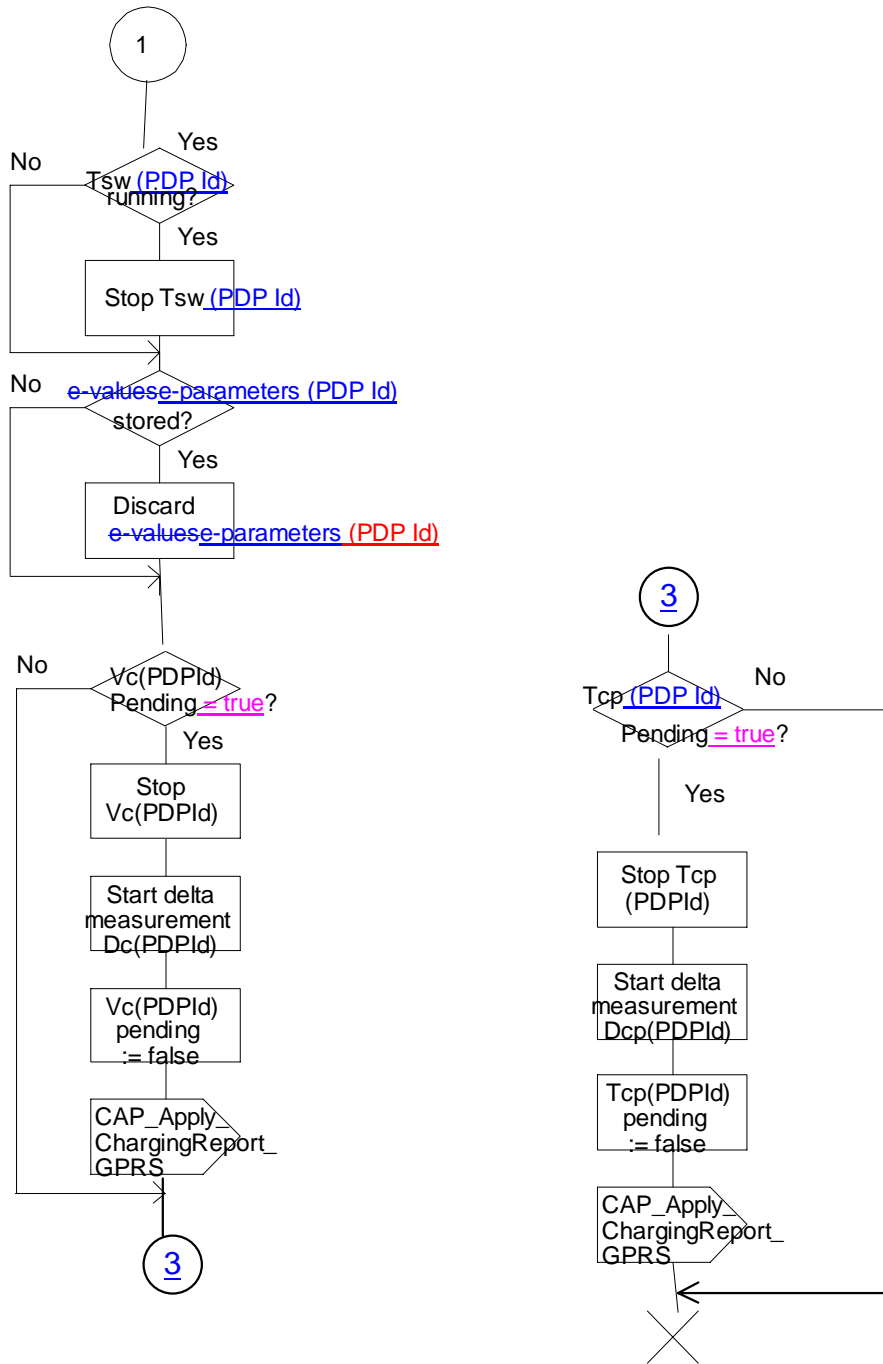


Figure 6.19 c: Procedure Handle\_ACR\_GPRS (sheet 2)

(new figure)

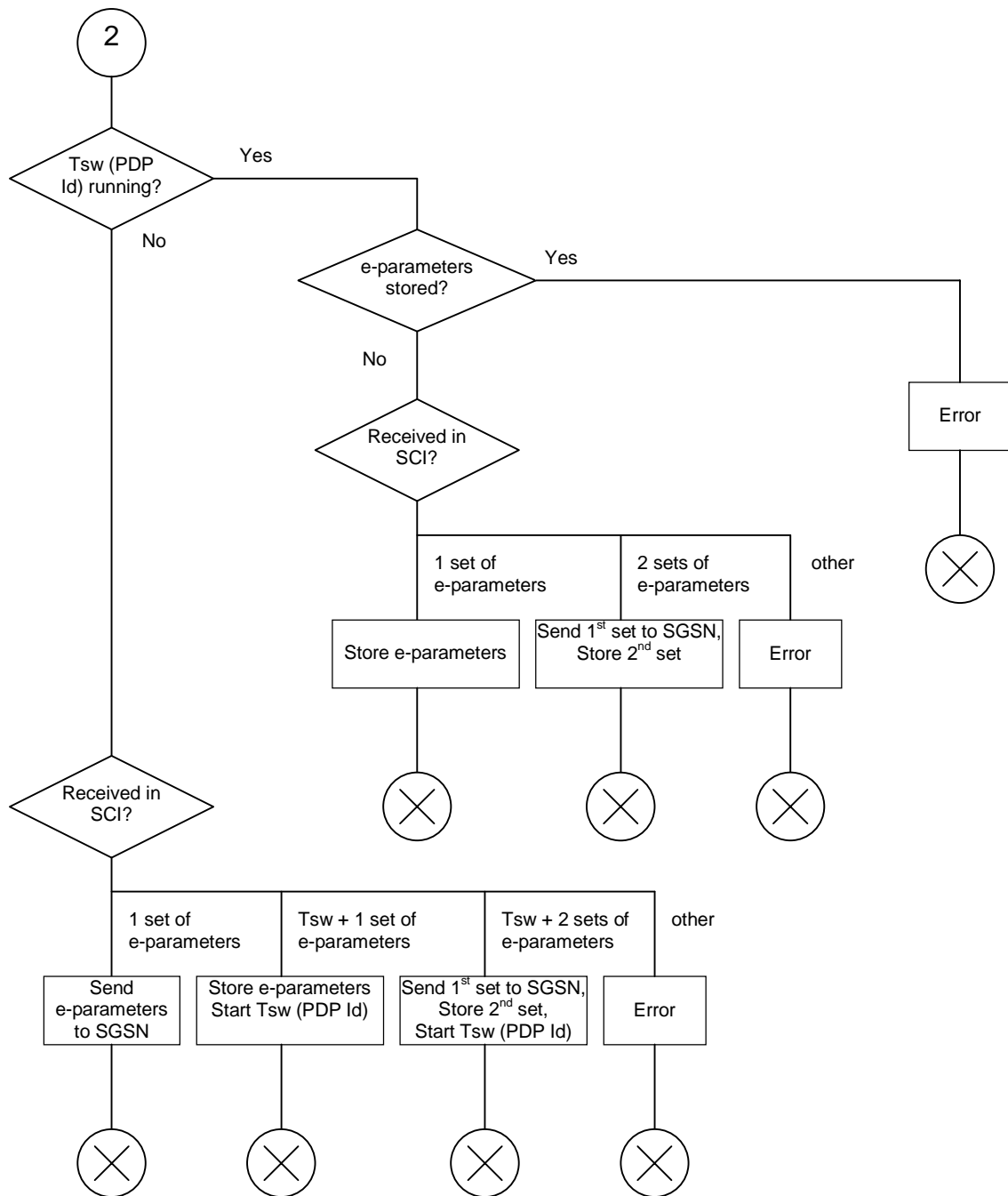




Procedure Handle\_SCI\_GPRS

3(3)

/\* Procedure in the gprsSSF for handling of  
 SendChargingInformationGPRS. \*/



[Figure 6.20c: Procedure Handle\\_SCI\\_GPRS \(sheet 3\)](#)

[\(new figure\)](#)

### Procedure Complete\_FCI\_Record\_GPRS

1(1)

/\* Procedure in the gprsSSF to  
write Furnish Charging Information  
data to a PDP context for the specified  
PDPID, or session. \*/

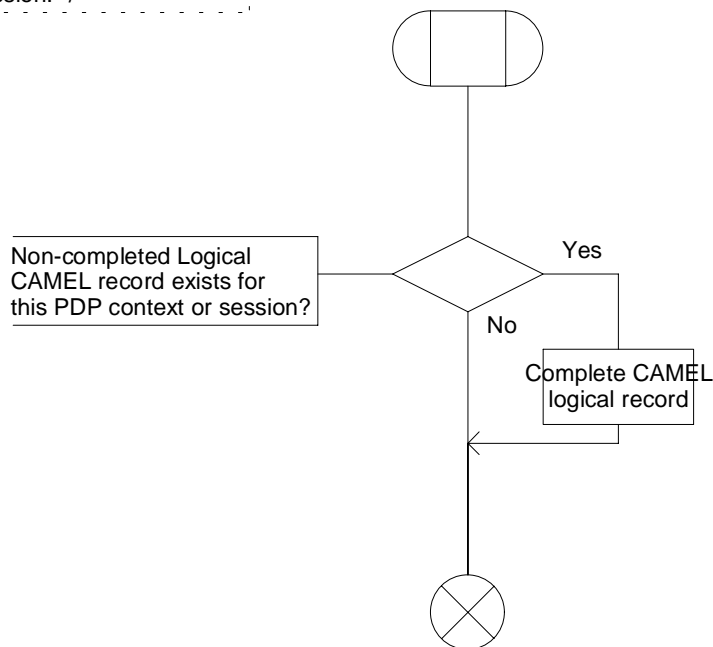


Figure 6.2120 a: Procedure Complete\_FCI\_Record\_GPRS (sheet 1)

Procedure Handle\_PDP\_Acknowledgement

1(1)

/\* Procedure in the gprsSSF for  
the handling of PDP Context  
Acknowledgement. \*/

Int\_DP\_PDP\_Context\_  
Establishment\_  
Acknowledgement,  
Int\_DP\_Change\_of\_Position\_  
Context

Int\_DP\_PDP\_Context\_  
Establishment\_  
Acknowledgement

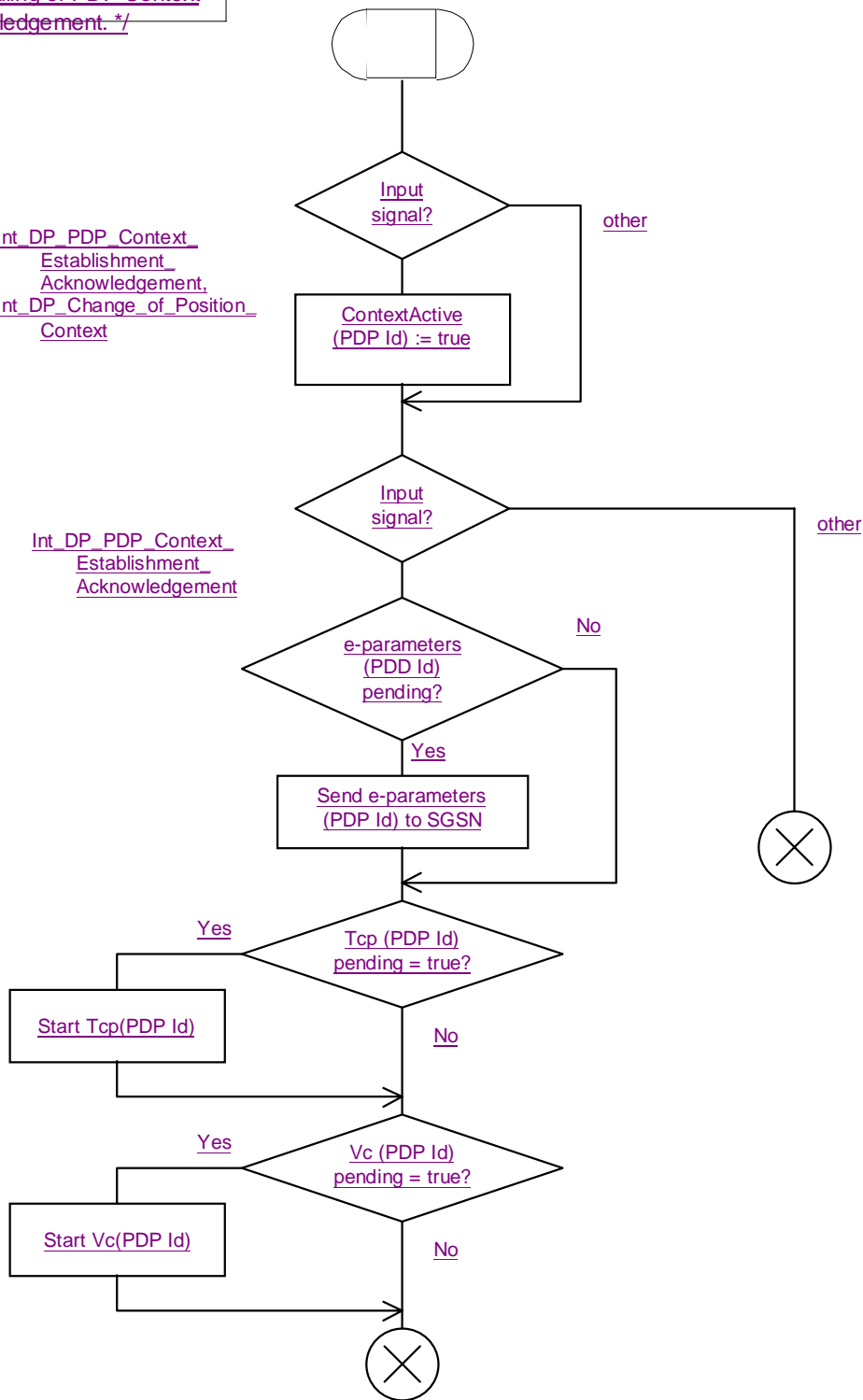


Figure 6.22: Procedure Handle\_PDP\_Acknowledgement (sheet 1)

(new figure)

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

## CHANGE REQUEST

**23.078 CR 198r3**

Current Version: 3.5.0

For submission to: CN#09

for approval   
 for information

strategic   
 non-strategic

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

**Source:** N2 **Date:** 23/08/2000

**Subject:** Correction of definition of location info GPRS

**Work item:** Camel phase 3

<b>Category:</b>	F Correction	<input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
<i>(only one category shall be marked with an X)</i>	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>
				Release 00	<input type="checkbox"/>

**Reason for change:** Correction of location information for GPRS with 23.018 differences.

**Clauses affected:** 7.6.1.2.2

<b>Other specs affected:</b>	Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	29.078-106r2
	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:** The age of the location for RA is not applicable at IDP.



### 7.6.1.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Destination Subscriber Number	M	This IE contains a number to identify the Destination short message entity. The Destination Subscriber Number shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
Calling Party Number	M	This IE carries the MSISDN of the subscriber who sent the short message.
Event Type	M	This IE indicates the armed event (i.e., <i>SMS_Collected_Info</i> ) resulting in the Initial DP SMS IF.
IMSI	M	This IE identifies the mobile subscriber.
Location Information in MSC	C	This IE is described in the next table.
Location Information in SGSN	C	This IE is described in the table below.
Service Key	M	This IE indicates to the gsmSCF the requested application/SMP within the gsmSCF.
Time And Timezone	M	This IE contains the time that the gsmSSF/gprsSSF was triggered, and the time zone the gsmSSF/gprsSSF resides in.
TP Short Message Submission Specific Information	M	This IE contains the 1 <sup>st</sup> octet of the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21]. The 1 <sup>st</sup> octet includes the following information: - Message Type Indicator - Reject Duplicates - Validity Period Format - Status Report Request - User Data Header Indicator - Reply Path
TP Protocol Identifier	M	This IE indicates the protocol used above SM-Transfer Layer. The TP Protocol Identifier shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
TP Data Coding Scheme	M	This IE indicates the data coding scheme of the TP-User Data field, and may indicate a message class. The message class may indicate e.g. the originator of Short Message. The TP Data Coding Scheme shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
TP Validity Period	C	This IE indicates the length of the validity period or the absolute time of the validity period termination. The TP Validity Period shall be retrieved from the SMS-SUBMIT TPDU which is specified in 3G TS 23.040 [21].
SMSC Address	M	This I.E defines the address of the SMSC to which the MO short message is intended to be submitted.

M Mandatory (The IE shall always be sent).

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

Location Information in MSC contains the following information:

Information element name	Required	Description
CellGlobalIDOrServiceAreaIdOrLAI	M	See 3G TS 23.018 [3].
Geographical Information	C	See 3G TS 23.018 [3].
Geodetic Information	C	See 3G TS 23.018 [3].
VLR number	M	See 3G TS 23.018 [3].
Selected LSA Identity	C1	This IE indicates the LSA identity associated with the current position of the MS. Send if the LSA ID of subscription and LSA ID of the used cell matches. In the case of multiple matches the one with the highest priority is sent. See 3GPP TS 23.073[23]

M Mandatory (The IE shall always be sent).

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

C1 Conditional (The IE shall be sent, if available and SoLSA is supported).

Location Information in ~~the GPRS case contains the following information~~SGSN is based on the Location Information IE defined in 3G TS 23.018 [3]. The following differences apply:

Information element name	Required	Description
<del>CellGlobalIDOrServiceAreaIdOrRAI</del>	<del>M</del>	<del>See 3G TS 23.018 [3] and 3G TS 23.060 [11].</del>
<u>Routeing area ID</u>	<u>C</u>	<u>See 3G TS 23.003 [37].</u> <u>Only one of the following conditional IEs shall be sent:</u> <u>- <u>Cell ID</u></u> <u>- <u>Service area ID</u></u> <u>- <u>Routeing area ID</u></u>
<del>Geographical Information</del>	<del>C</del>	<del>See 3G TS 23.018 [3].</del>
SGSN number	M	Global Title of the Serving GPRS Service Node. See 3G TS 23.060 [11].
<u>Age of location information</u>	<u>-</u>	<u>Not applicable</u>
<u>Selected LSA Identity</u>	<u>C1</u>	<u>This IE indicates the LSA identity associated with the current position of the MS. Shall be sent 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 sent. See 3GPP TS 23.073[23]</u>

M Mandatory (The IE shall always be sent).

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

C1 Conditional (The IE shall be sent, if available and SoLSA is supported).



**Other  
comments:**



help.doc

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

— First Modified section in paragraph 6.5.3 —

### 6.5.3 Handling GPRS in the gprsSSF

#### 6.5.3.A GPRS duration control, Procedure Handle\_AC\_GPRS and Handle\_ACR\_GPRS

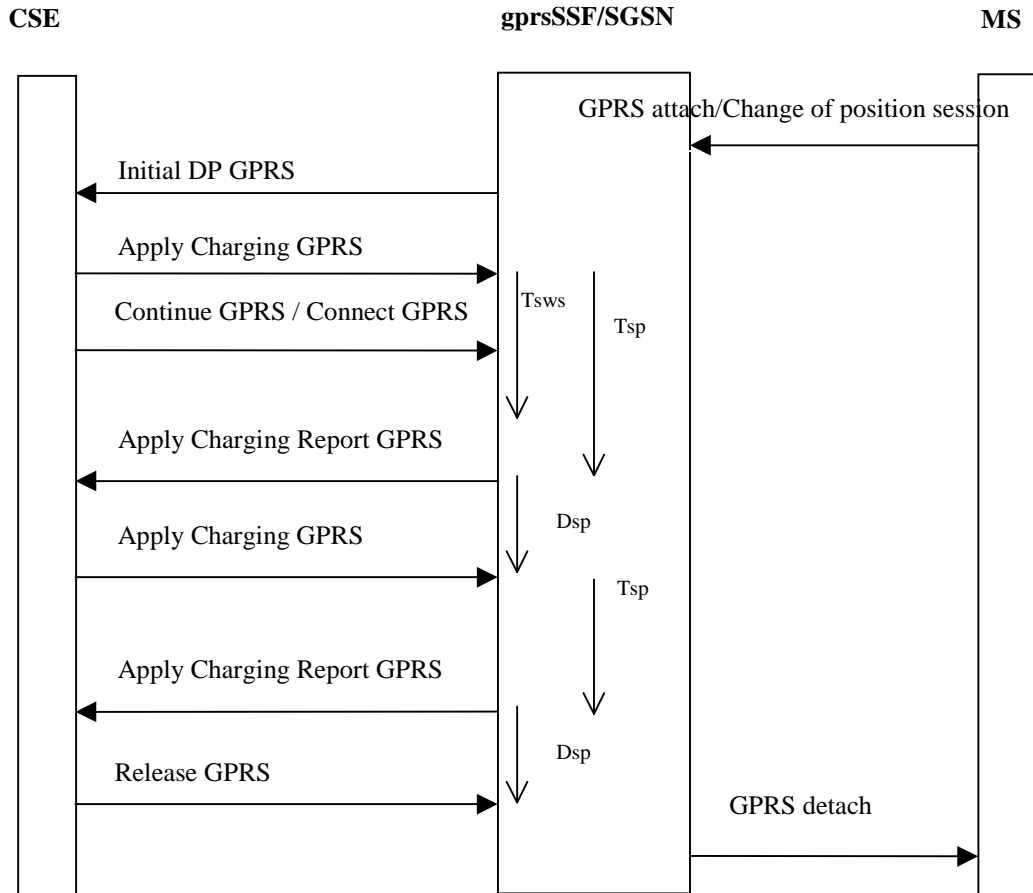
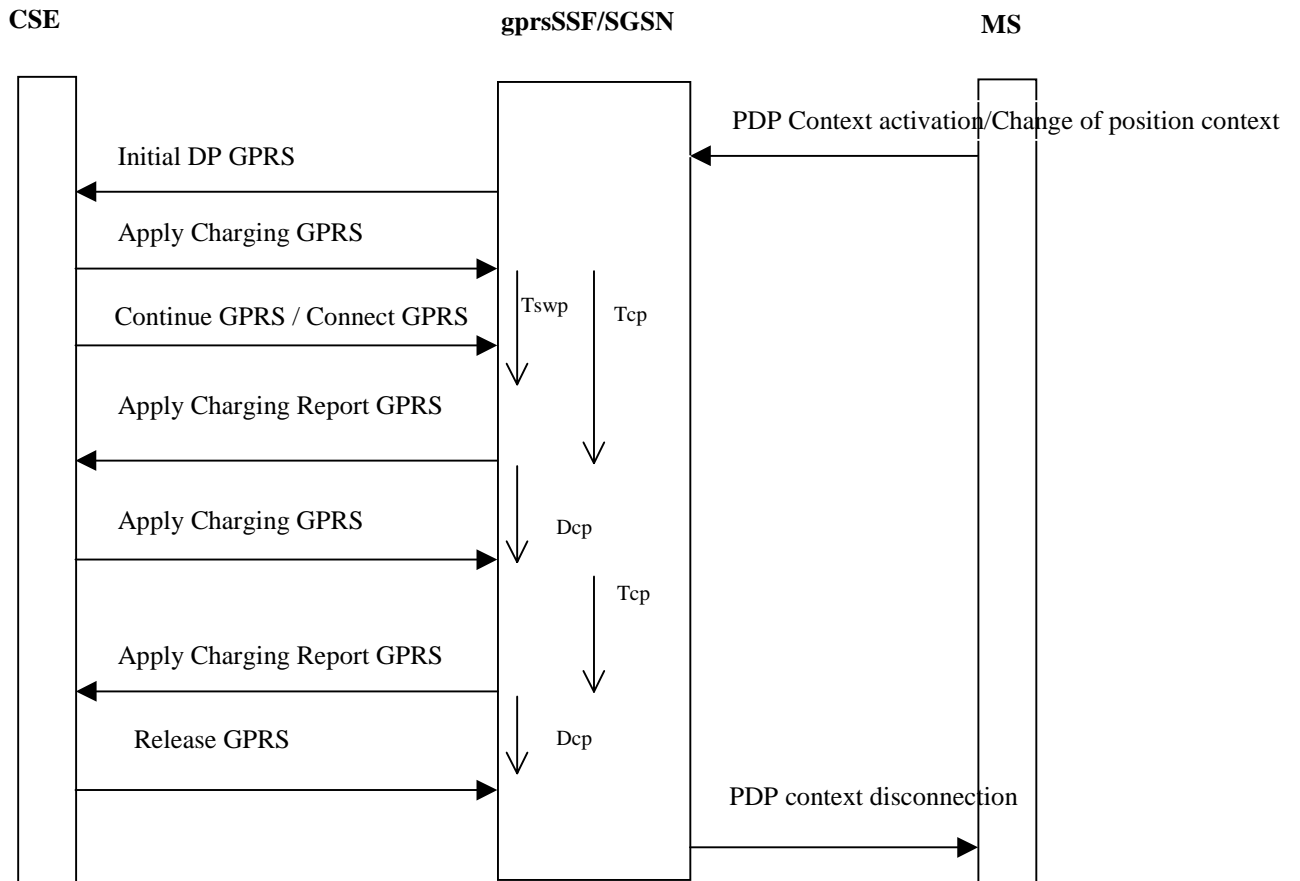


Figure 6.5.3.A1: Example of Information flow for GPRS session duration at GPRS attach and change of position session



The PDP context timers are per PDP context.

**Figure 6.5.3.A2: Example of Information flow for PDP context duration control at context activation and change of position context**

These figures 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 ( $T_{sp}$  for the GPRS session and one  $T_{cp}$  for each PDP context) are used if the charging is on duration of the GPRS session or a PDP context.

Tariff Switch Timers ( $T_{sws}$  for the GPRS session and one  $T_{swp}$  for each PDP context) define the start point of a new Tariff.  $T_{sws}$  is used for charging on duration.  $T_{swp}$  is used for both methods of charging: duration charging and volume charging. If a PDP context is charged on duration and volume, only one  $T_{swp}$  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 operation:

- $D_{sp}$  for the GPRS session; this delta timer is used for GPRS session period timing
- $D_{cp}$  for each PDP context; these delta timers are used for PDP context period timing
- $D_c$  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 :

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

Note: There may be Guard timer(s) in gprsSSF to supervise the response from the gsmSCF on the Apply Charging Report GPRS operation.

— Second Modified section in paragraph 6.5.3.2 —

### Process GPRS\_SSF

1(17)

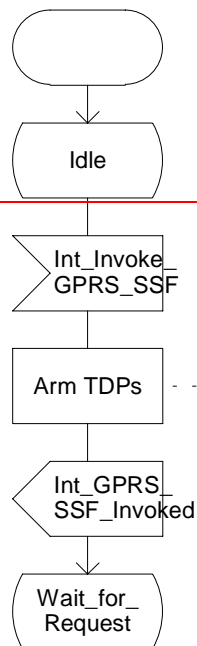
```
/* Process to describe
the behaviour of the gprsSSF. */
```

```
/* Signals to/from the left are to/from the SGSN. */
```

```
/*
The following timers are defined:
- Tsp: Session period timer,
- Dsp: Session delta timer,
- Tcp(PDPId): PDP Context period timer,
- Dcp(PDPId): PDP Context delta timer,
- Tsw: Tariff switch timer.

The following octet counters are defined:
- Vs: Session volume counter,
- Ds: Volume delta counter for the session,
- Vc(PDPId): PDP Context volume counter,
- Dc(PDPId): Volume delta counter for the PDP Context.
*/
```

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



```
/* The GPRS-CSI may contain the following TDPs:
DP_Attach,
DP_Change_Of_Position_Session,
DP_Change_Of_Position_Context,
DP_PDP_Context_Establishment,
DP_PDP_Context_Establishment_Acknowledgement
*/
```



## Process GPRS\_SSF

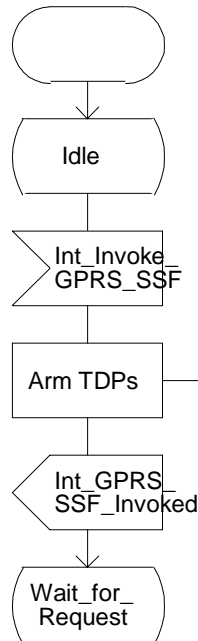
1(17)

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

/\* Signals to/from the left are to/from the SGSN. \*/

/\* The following timers are defined :  
-Tsp= GPRS session period timer,  
-Tcp(PDPId)= PDP context period timer,  
-Tsws = GPRS session Tariff Switch timer  
-Tswp(PDPId) = PDP context Tariff Switch timer  
-Tcsd =guard timer for the GPRS session  
-Tccd(PDPId) =guard timer for the PDP context  
-Dsp = Session delta timer  
-Dcp(PDPId) = PDP context delta timer  
-Delta = change of position delta timer  
 The following octets counters are defined :  
 - Vs : Session volume counter  
 - Ds : Volume delta counter for the session,  
 - Vc(PDPId) : PDP Context volume counter  
 - Dc(PDPId) : Volume delta counter for the PDP Context \*/

/\* Messages are sent from the gprsSSF via the GPRS\_Dialogue\_Handler to the gsmSCF and vice versa. \*/



The GPRS-CSI may contain the following TDPs:  
 DP\_Attach,  
 DP\_Change\_Of\_Position\_Session,  
 DP\_Change\_Of\_Position\_Context,  
 DP\_PDP\_Context\_Establishment,  
 DP\_PDP\_Context\_Establishment\_Acknowledgement

Figure Error! Reference source not found..1 A: Process GPRS\_SSF (sheet 1)

Procedure Handle\_AC\_GPRS

1(2)

/\* Procedure in the gprsSSF for handling of ApplyCharging. \*/

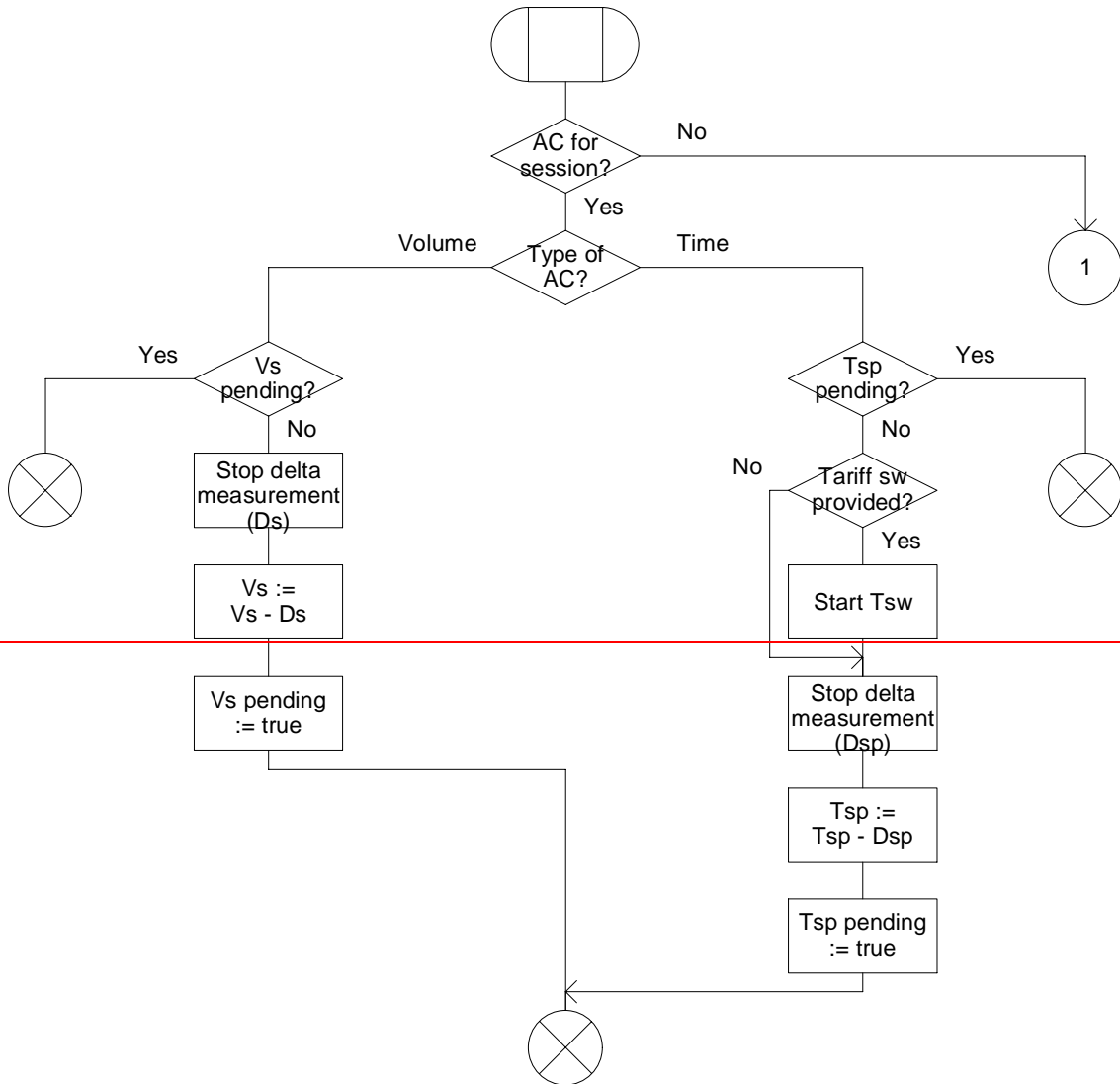


Figure Error! Reference source not found..2 A: Procedure Handle\_AC\_GPRS (sheet 1)

Procedure Handle\_AC\_GPRS

2(2)

/\* Procedure in the gprsSSF for handling of ApplyCharging. \*/

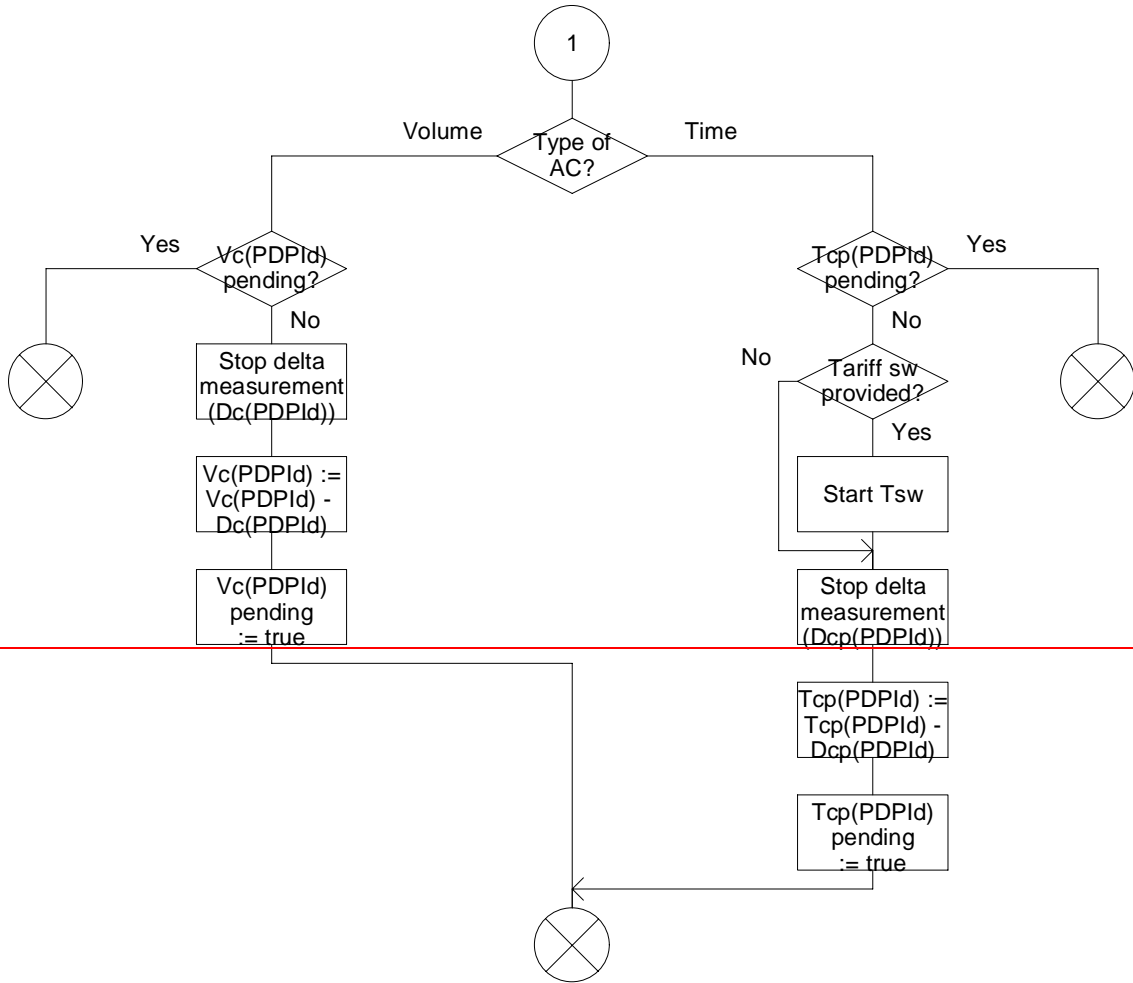


Figure Error! Reference source not found. B: Procedure Handle\_AC\_GPRS (sheet 2)

### Procedure Handle\_AC\_GPRS

1(2)

/\* Procedure in the gprsSSF for handling of ApplyCharging. \*/

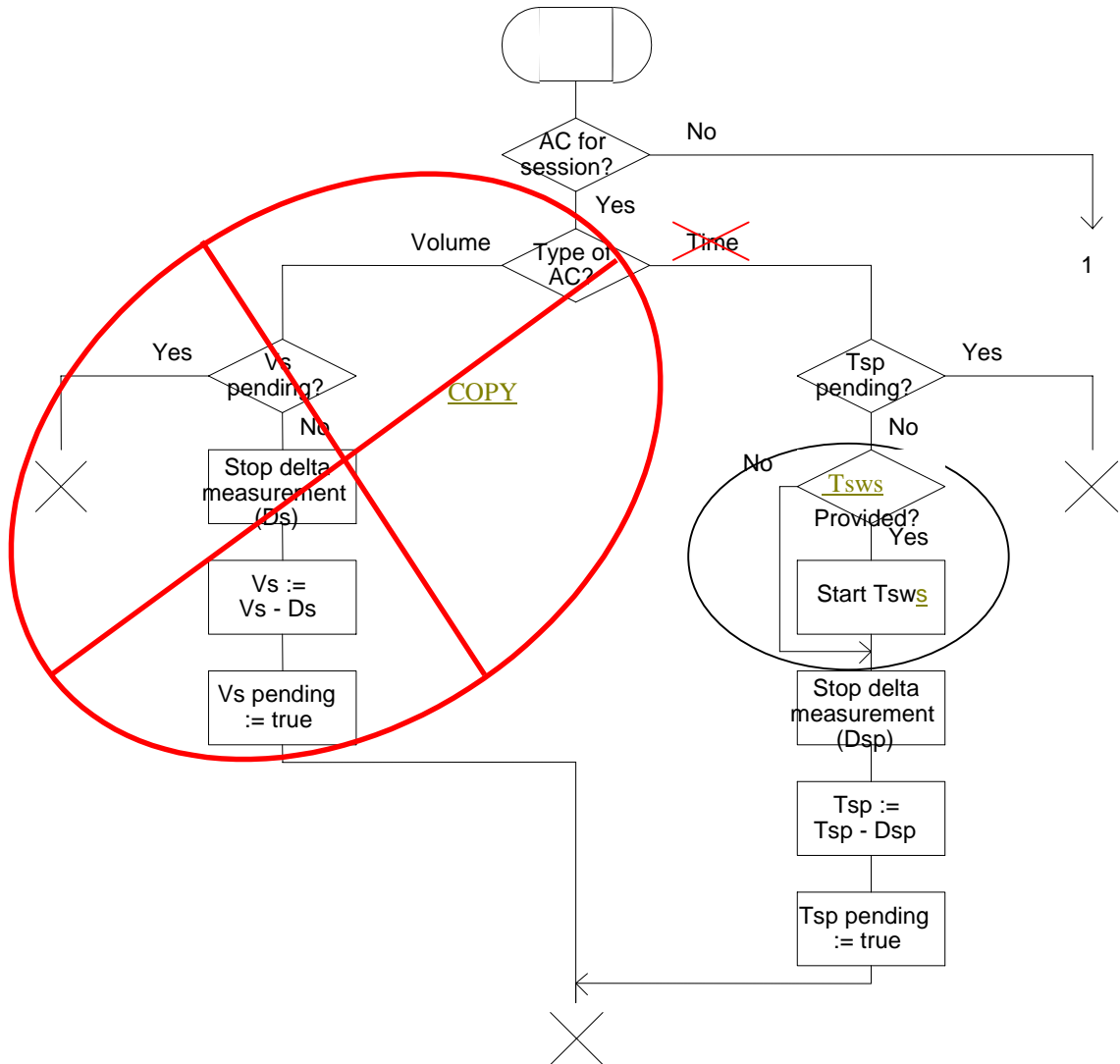


Figure Error! Reference source not found..3 A: Procedure Handle\_AC\_GPRS (sheet 1)

Procedure Handle\_AC\_GPRS

2(2)

/\* Procedure in the gprsSSF for handling of ApplyCharging. \*/

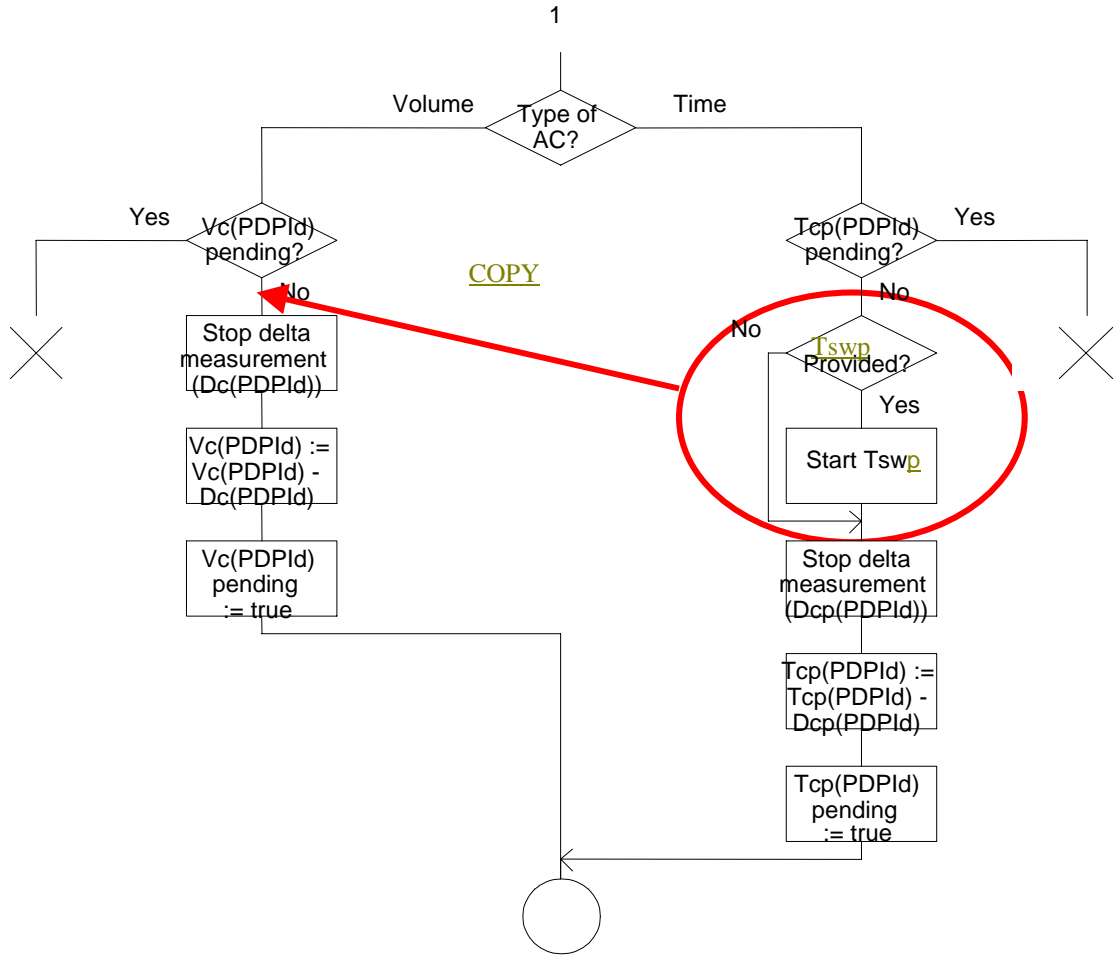


Figure Error! Reference source not found. B: Procedure Handle\_AC\_GPRS (sheet 2)

Procedure Handle\_ACR\_GPRS

1(2)

/\* Procedure in the gprsSSF for handling of ApplyChargingReport. \*/

/\* Signals to the right are to the GPRS\_Dialogue\_Handler. \*/

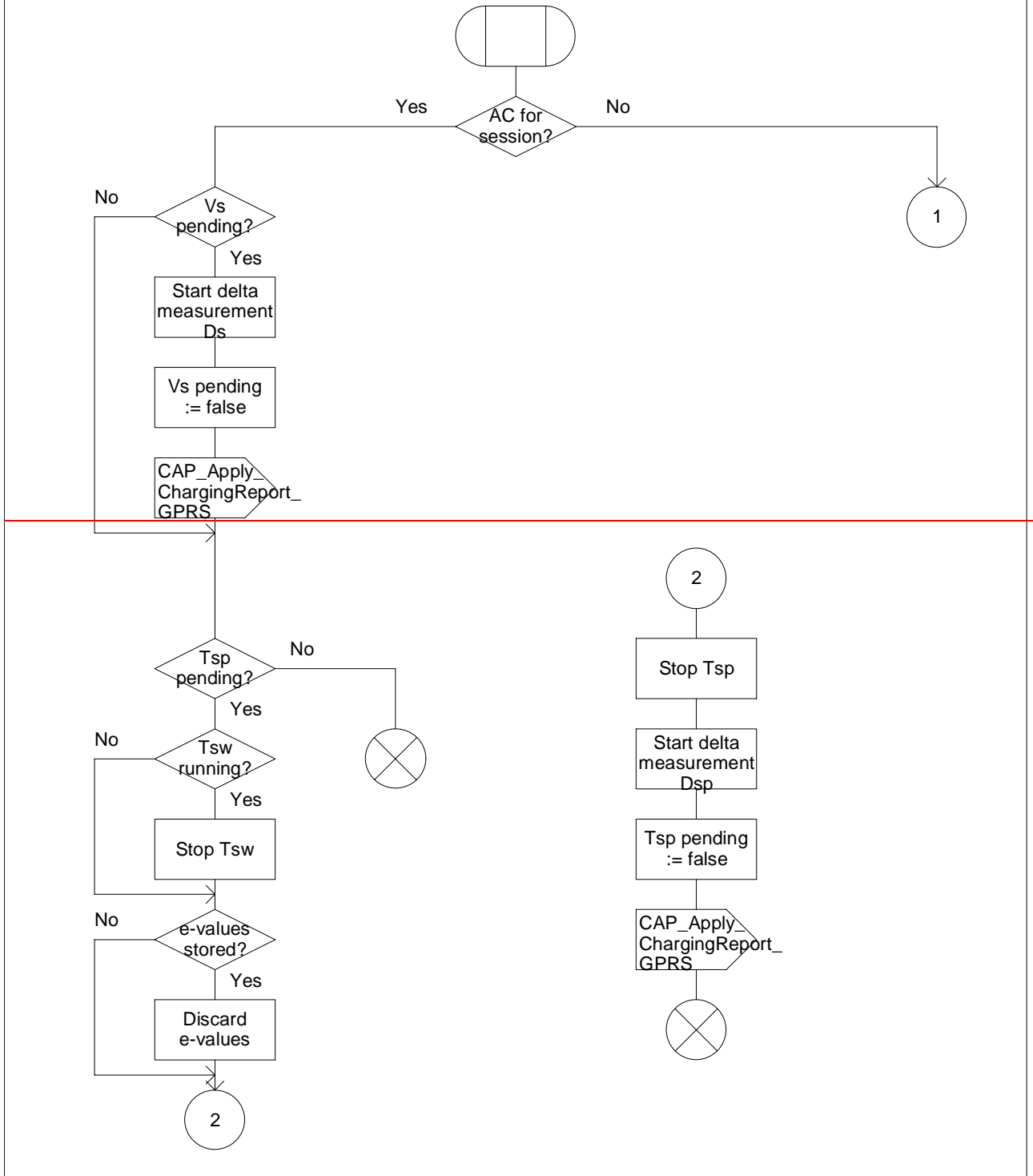


Figure Error! Reference source not found..4 A: Procedure Handle\_ACR\_GPRS (sheet 1)

Procedure Handle\_ACR\_GPRS

2(2)

/\* Procedure in the gprsSSF for handling of ApplyChargingReport. \*/

/\* Signals to the right are to the GPRS\_Dialogue\_Handler. \*/

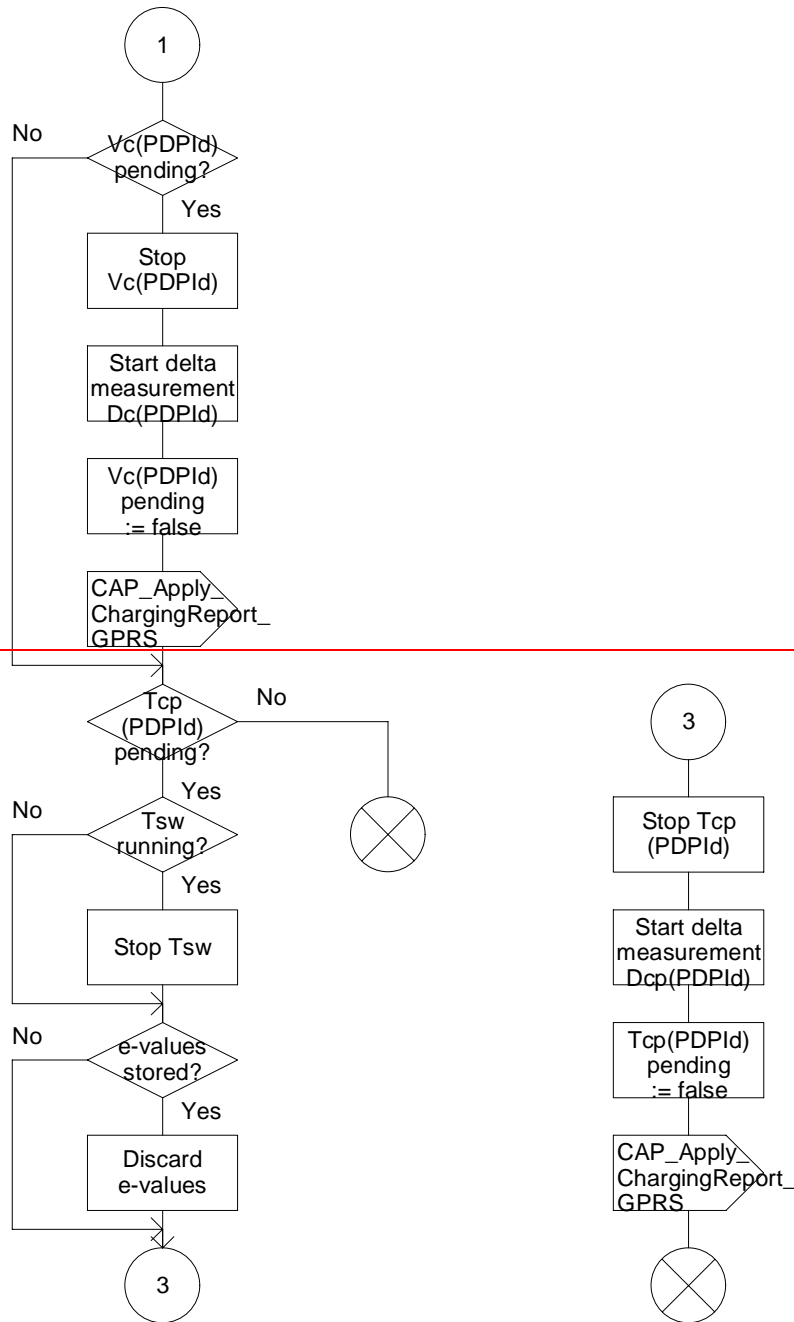


Figure Error! Reference source not found..5 B: Procedure Handle\_ACR\_GPRS (sheet 2)

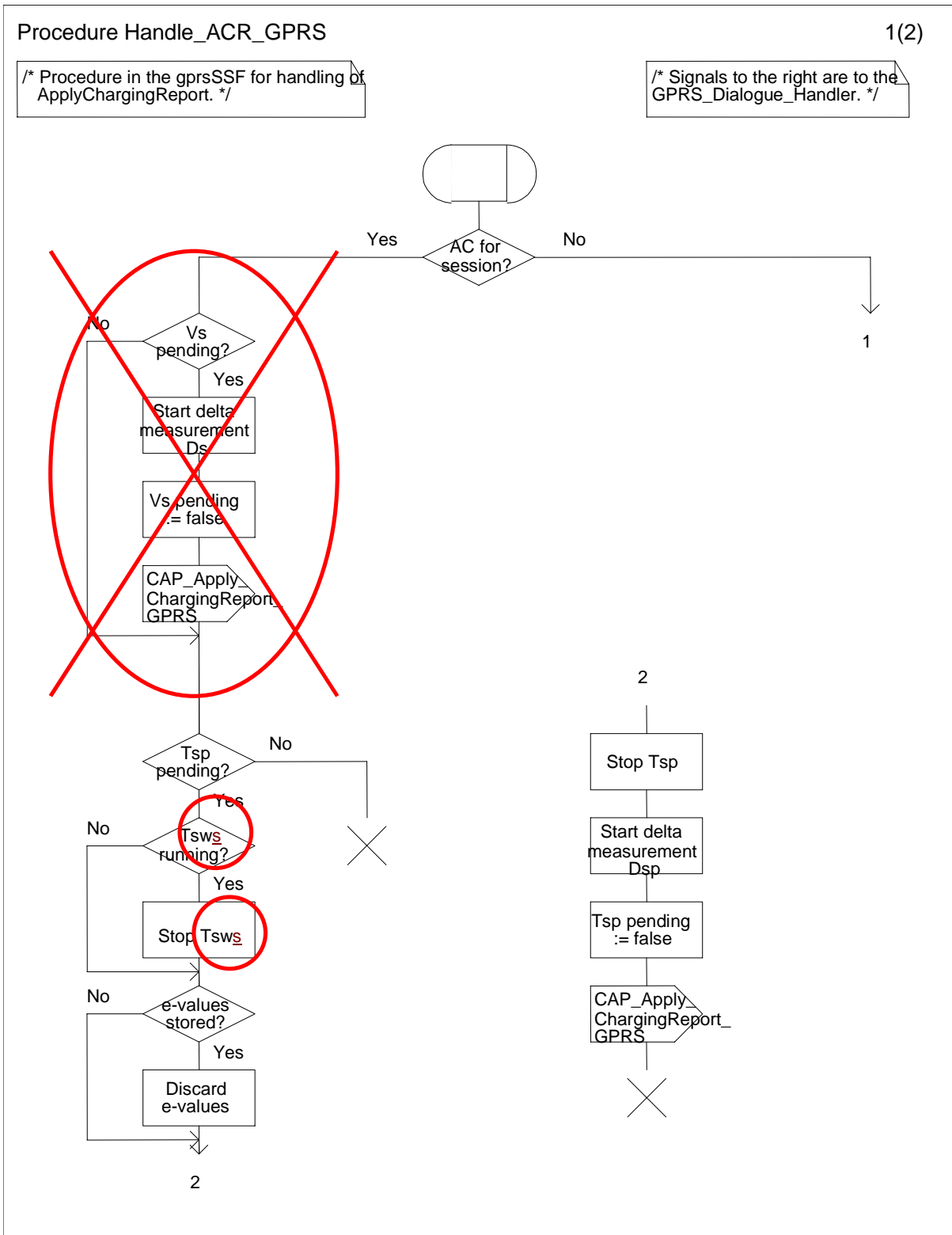


Figure Error! Reference source not found..5 A: Procedure Handle\_ACR\_GPRS (sheet 1)



Procedure Handle\_ACR\_GPRS

2(2)

/\* Procedure in the gprsSSF for handling of ApplyChargingReport. \*/

/\* Signals to the right are to the GPRS\_Dialogue\_Handler. \*/

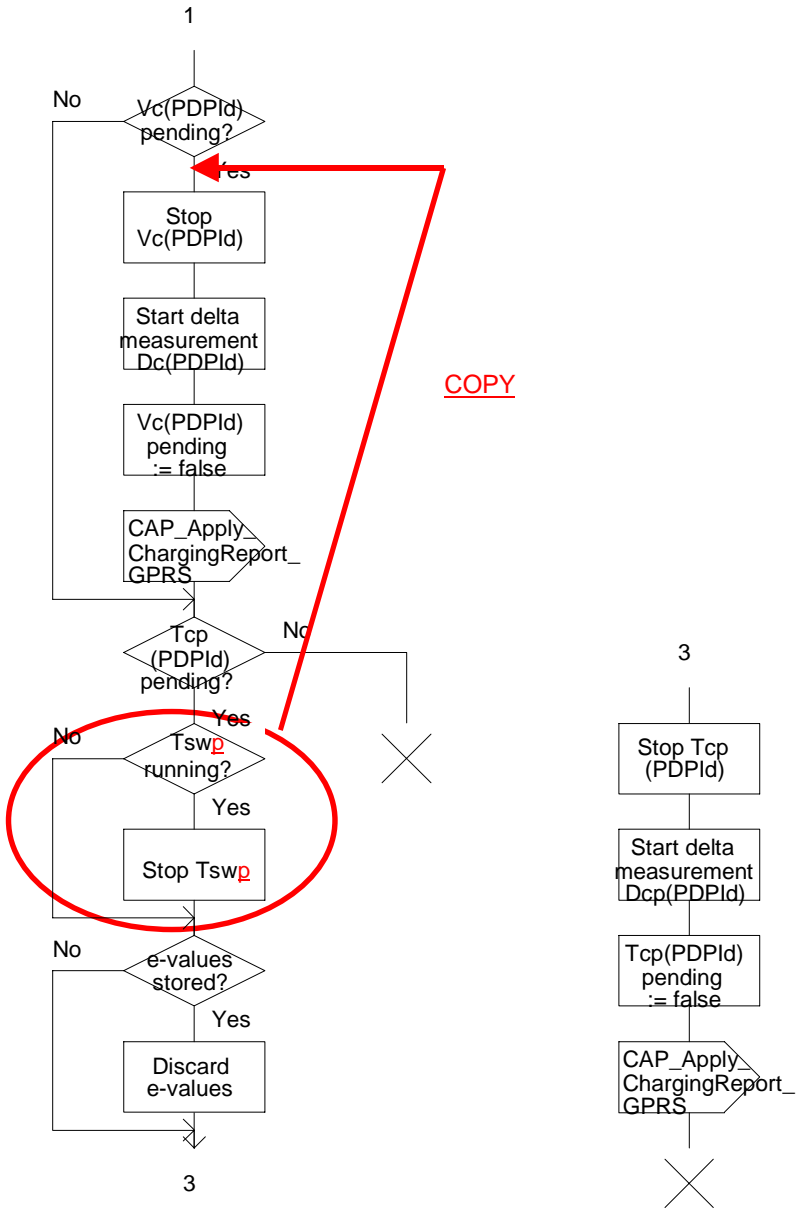


Figure Error! Reference source not found..5 B: Procedure Handle\_ACR\_GPRS (sheet 2)

## CHANGE REQUEST

**23.078 CR 201r1**

Current Version: 3.5.0

For submission to: TSG-N #9 for approval  for information  strategic  non-strategic

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

**Source:** N2 **Date:** 19<sup>th</sup> July 2000

**Subject:** Correction to Procedure CAMEL\_Modify\_CUG\_Info

**Work item:** CAMEL Phase 3

<b>Category:</b>	F Correction	<input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2	<input type="checkbox"/>
	A Corresponds to a correction in an earlier release	<input type="checkbox"/>		Release 96	<input type="checkbox"/>
	B Addition of feature	<input type="checkbox"/>		Release 97	<input type="checkbox"/>
	C Functional modification of feature	<input type="checkbox"/>		Release 98	<input type="checkbox"/>
	D Editorial modification	<input type="checkbox"/>		Release 99	<input checked="" type="checkbox"/>
				Release 00	<input type="checkbox"/>

**Reason for change:** The procedure CAMEL\_Modify\_CUG\_Info needs updating as the "CUG Control" parameter is no longer used. This needs replacing with the "Non-CUG call" parameter within the Service Interaction Indicators Two parameter.

**Clauses affected:** 4.5.2.1

<b>Other specs affected:</b>	Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	
	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

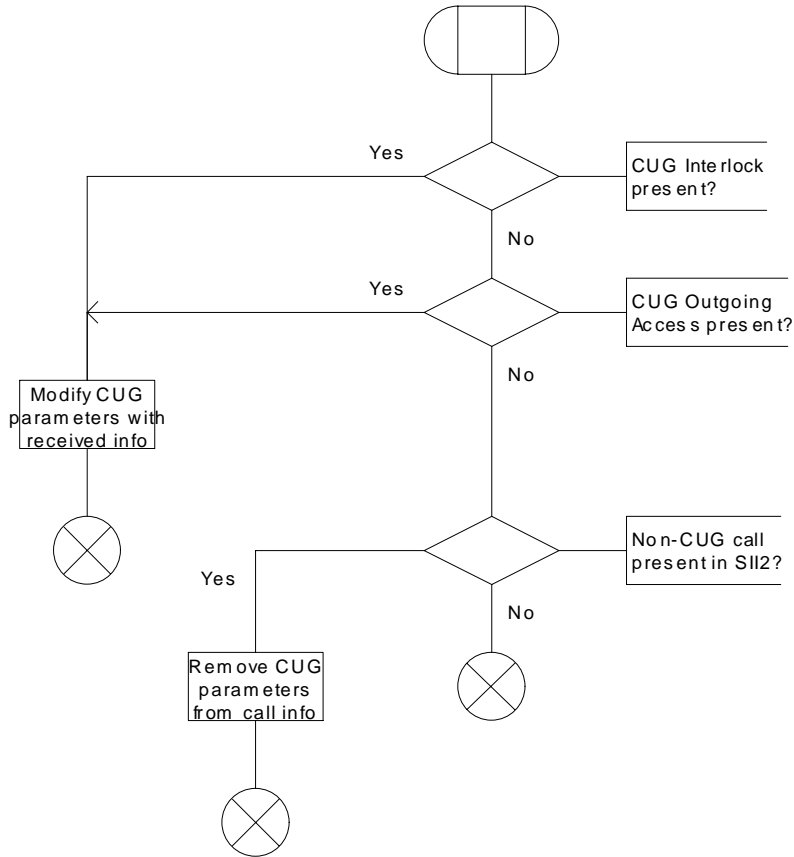
**Other comments:**

### 4.5.2.1 Handling of mobile originated calls in the originating MSC

#### Procedure CAMEL\_Modify\_CUG\_Info

1(1)

/\* Procedure in the MSC to modify CUG information for the call as instructed by the gsmSCF via the gsmSSF \*/



### Procedure CAMEL\_Modify\_CUG\_Info

1(1)

/\* Procedure in the MSC to modify CUG information for the call as instructed by the gsmSCF via the gsmSSF. \*/

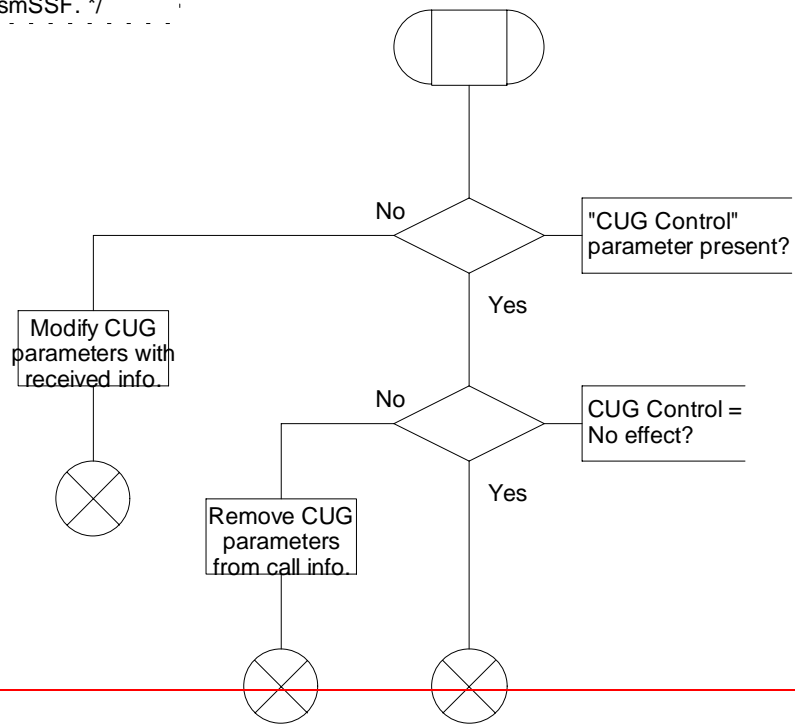


Figure 4.25: Procedure CAMEL\_Modify\_CUG\_Info (sheet 1)