3GPP TSG CN Plenary Meeting #18 **NP-020523**
4th - 6th December 2002. New Orleans, USA.

Source: TSG CN WG2

Title: CRs on R99 Work Item CAMEL3, CR Pack 1

Agenda item: 7.1

Document for: APPROVAL

Introduction:

This document contains 3 CRs on R99 WI CAMEL3 and corresponding mirror CRs for Rel-4/Rel-5. These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #18 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.078	478		N2-020931	R99	Correction to QoS reporting and delta timer overflow	F	3.14.0
23.078	479		N2-020939	Rel-4	Correction to QoS reporting and delta timer overflow	A	4.6.1
23.078	480		N2-020940	Rel-5	Correction to QoS reporting and delta timer overflow	A	5.1.0
23.078	468	3	N2-020937	R99	Alignement between 23.078 and 29.002 about RCH	F	3.14.0
23.078	469	2	N2-020938	Rel-4	Alignement between 23.078 and 29.002 about RCH	A	4.6.1
29.078	290	1	N2-021033	R99	Correction to CAP Extension Types	F	3.13.0
29.078	293		N2-021034	Rel-4	Correction to CAP Extension Types	A	4.6.0
29.078	294		N2-021035	Rel-5	Correction to CAP Extension Types	A	5.1.0

3GPP TSG-CN2 Meeting #25 **N2-020931**
Miami, Florida, 23-27th September 2002

CHANGE REQUEST

⌘ **23.078** **CR** **478** ⌘ **rev** ⌘ Current version: **3.14.0** ⌘

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

Title:	⌘	Correction to QoS reporting and delta timer overflow
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	26 September 2002
Category:	⌘	F (essential correction)
Release:	⌘	R99

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

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

Reason for change: ⌘ The reason of the present CR is twofold

Correction to QoS reporting
At a QoS change the SDL flows indicate that the Handle_ACR_GPRS procedure shall be invoked. The QoS change will however not be reported if the SGSN has previously reported ACR GPRS and still waits for corresponding ACH GPRS. Thus QoS changes occorring in such situations won't be reported at all.

As tariffs may be based on the QoS offered, the SCP needs to be informed on the current QoS for that PDP context, regardless the state for charging reporting.

delta timer overflow
It is currently not specified how an SGSN shall behave when it receives an Apply Charging GPRS operation, containing a threshold value that is smaller than or equal to the delta timer or counter in the gprsSSF.

The result may be that when the SCP sends an Apply Charging GPRS operation to the SGSN, with a low threshold value, that the gprsSSF would not generate a charging report. The result may also be that the gprsSSF would sen inconsistent charging reports in these situations.

It shall therefore be specified how an SGSN shall behave in this situation.

Summary of change: ⌘ When a QoS change occurs and the SGSN is waiting for ACH GPRS for that PDP Context, then the SGSN shall defer the sending of the corresponding ACR GPRS until the outstanding ACH GPRS operations for that PDP Context have been received and processed.

		If multiple QoS changes occur, only the last set of QoS parameters is memorised. If the SGSN has memorised QoS parameters, the ACH GPRS will trigger an ACR GPRS immediately. When the SGSN has processed completed the processing of Apply Charging GPRS operation(s), then it shall check whether the newly received threshold values are equal to or larger than the delta timer and counter. If either of the two thresholds has been exceeded, then the SGSn shall trigger an Apply Charging Report GPRS. In figure 6.19a ("Procedure Handle_AC_GPRS"), when the SGSN has completed the processing of the Apply Charging GPRS operation(s), a check is included whether the delta timer or counter have been exceeded. If so, then an internal signal is generated (Tcp or Vc).
Consequences if not approved:	⌘	The SCP will not get information on QoS changes occurring after the SGSN has issued an ACRG, but before the following ACG. Ambiguous and unpredictable behaviour when the received maximum threshold is smaller than the current value of the delta counter(s). Pre-pay systems which rely on AC/ACR/AC-GPRS/ACR-GPRS for the correct billing of users would be unable to charge for the difference between the delta counter and the received maximum threshold. This scenario could occur multiple times in one PDP Context and may result in the user receiving uncharged for time/data.

Clauses affected:	⌘	6.5.3.3, 6.5.3.4, 6.5.3.9, 6.6.1.2			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

**** First Modified Section ****

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.

Sheet ~~2~~3 in procedure Handle_AC_GPRS contains a check for the PDP Context duration (Tcp(PDP Id)) and PDP Context volume (Vc(PDP Id)). If the PDP Context delta timer (Dcp(PDP Id)) is equal to or larger than the duration threshold received in the Apply Charging GPRS operation or the PDP Context delta counter (Dc(PDP Id)) is equal to or larger than the volume threshold received in the Apply Charging GPRS operation, then the gprsSSF shall generate an internal signal to trigger the sending of an Apply Charging Report GPRS.

If a QoS change has occurred prior to receiving Apply Charging GPRS but after the sending Apply Charging Report GPRS, then the gprsSSF shall generate an internal signal to trigger the sending of an Apply Charging Report GPRS, including the negotiated QoS.

**** Next Modified Section ****

6.5.3.4 Procedure Handle_ACR_GPRS

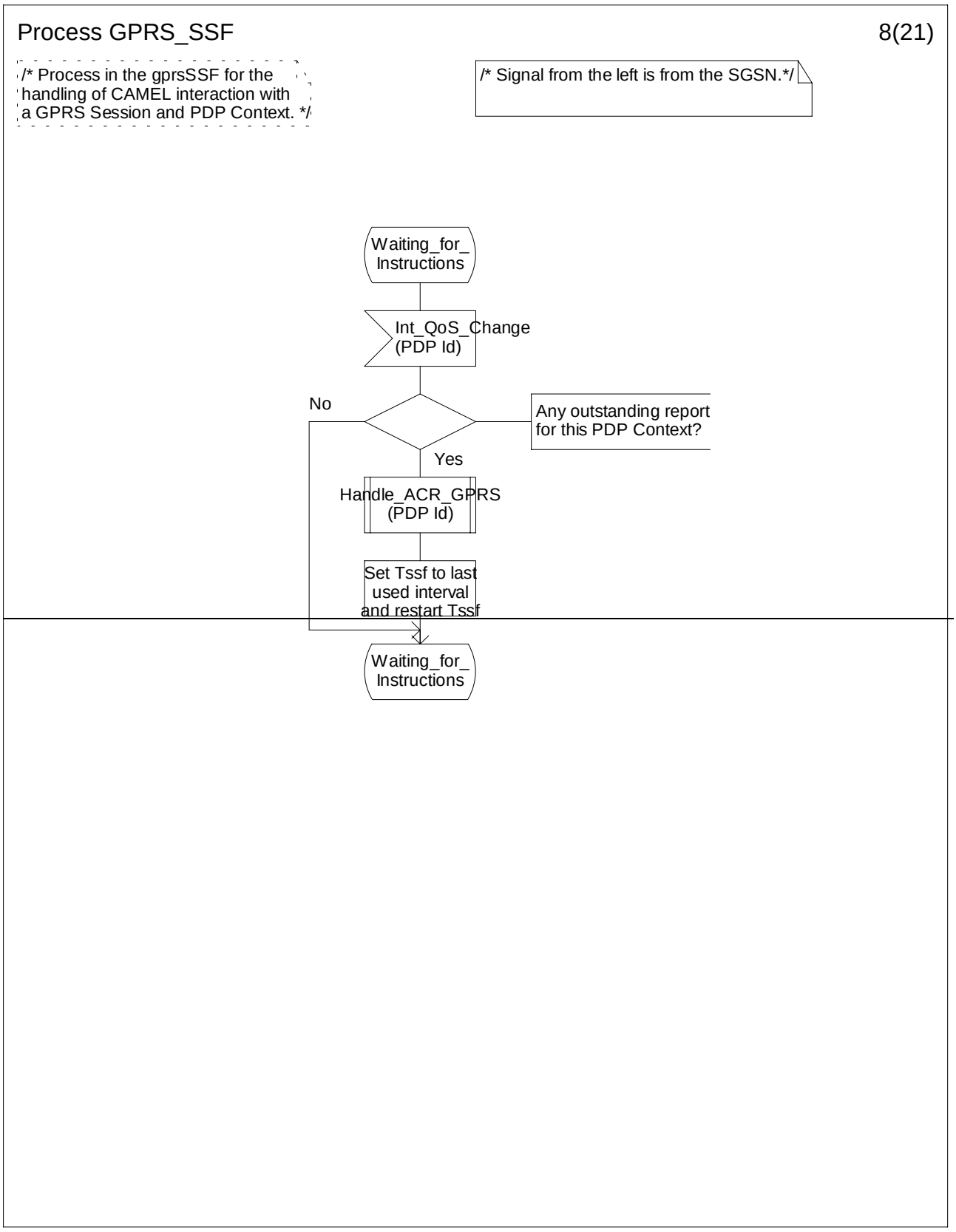
Procedure Handle_ACR_GPRS is called from process gprsSSF with the following input parameters:

- "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 or an Apply Charging GPRS is received when QoS change report is pending, 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.

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

6.5.3.9 SDL diagrams for process GPRS_SSF and procedures



~~Figure 6.17h: Process GPRS_SSF (sheet 8)~~

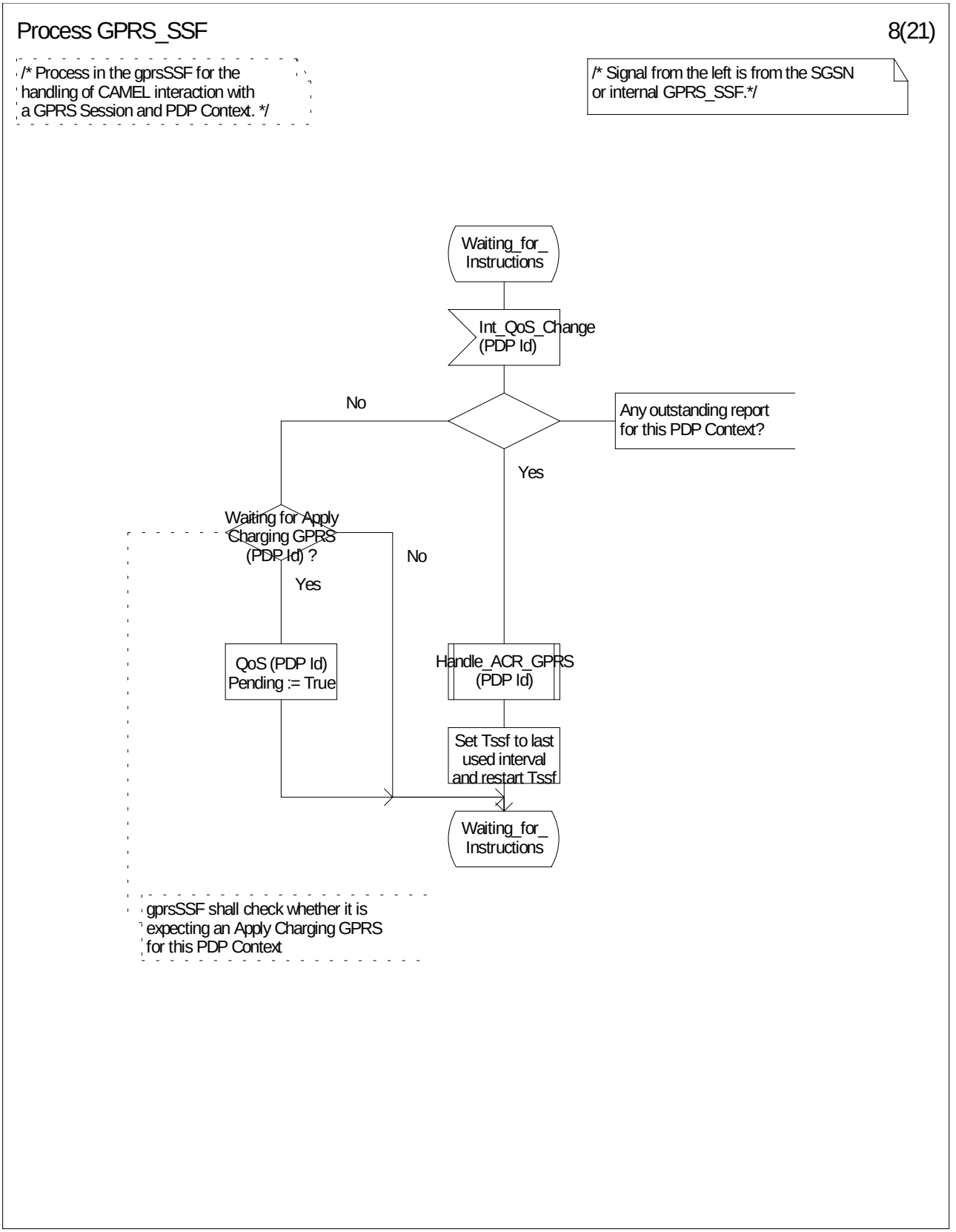
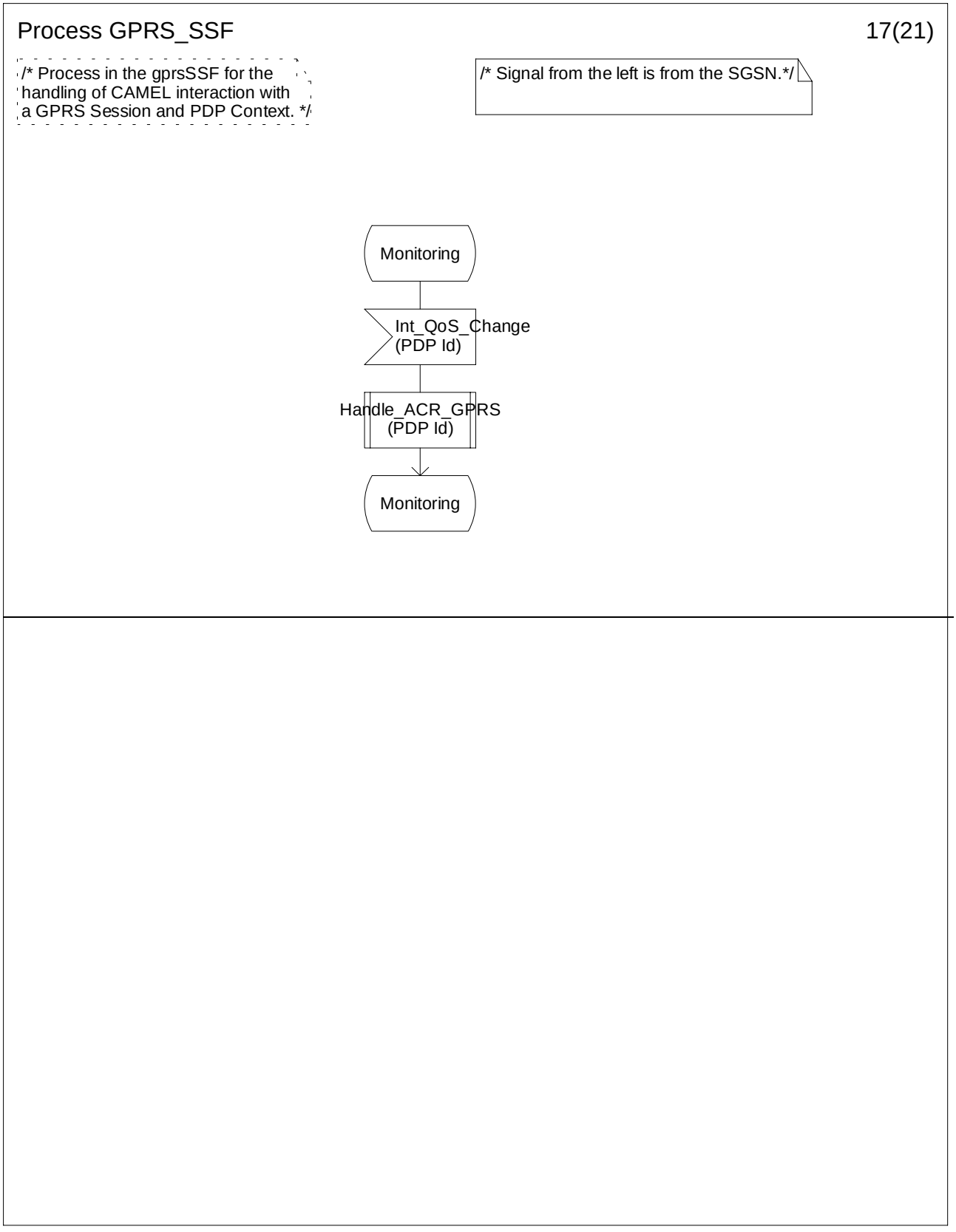


Figure 6.17h: Process GPRS_SSF (sheet 8)



~~Figure 6.17q: Process GPRS_SSF (sheet 17)~~

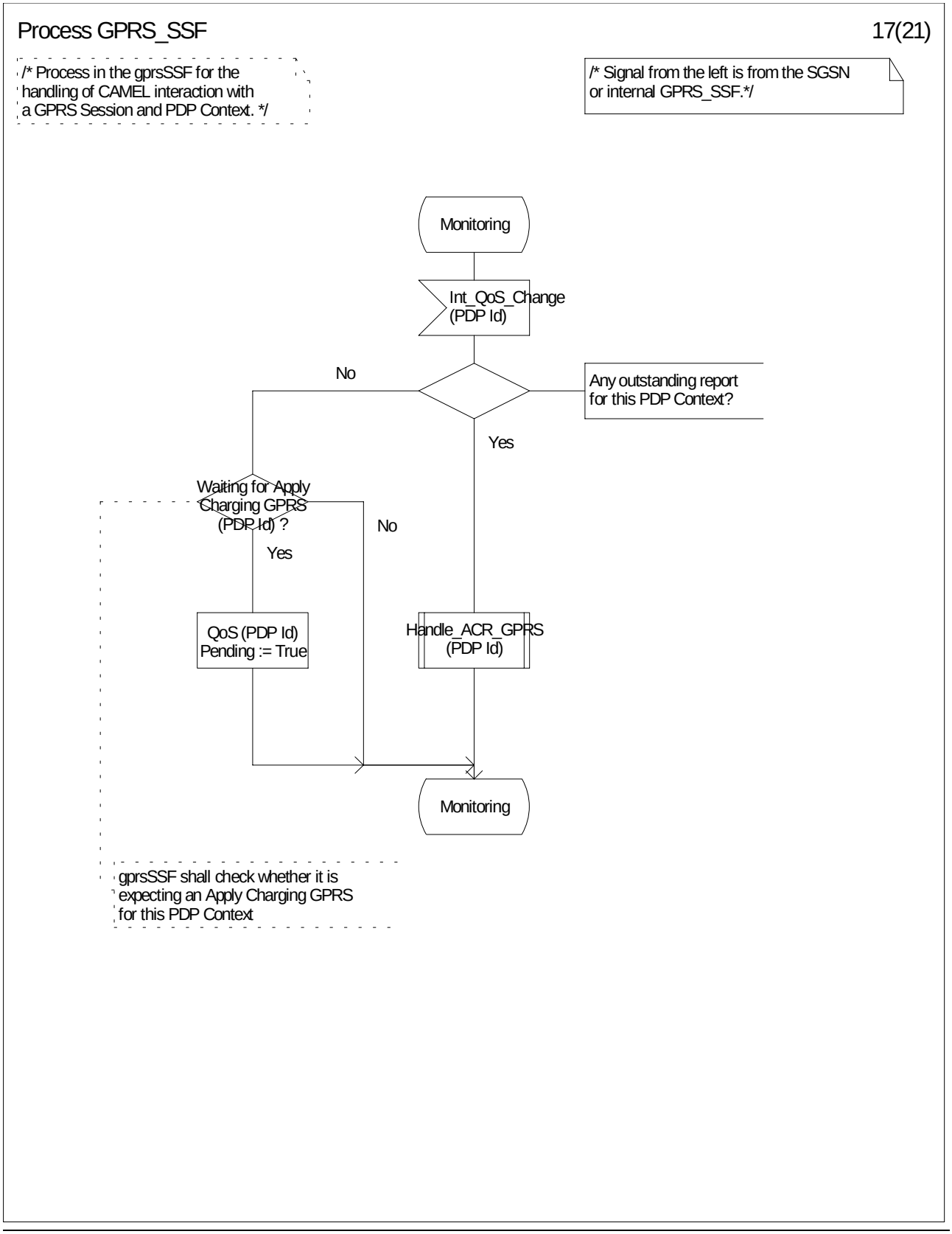
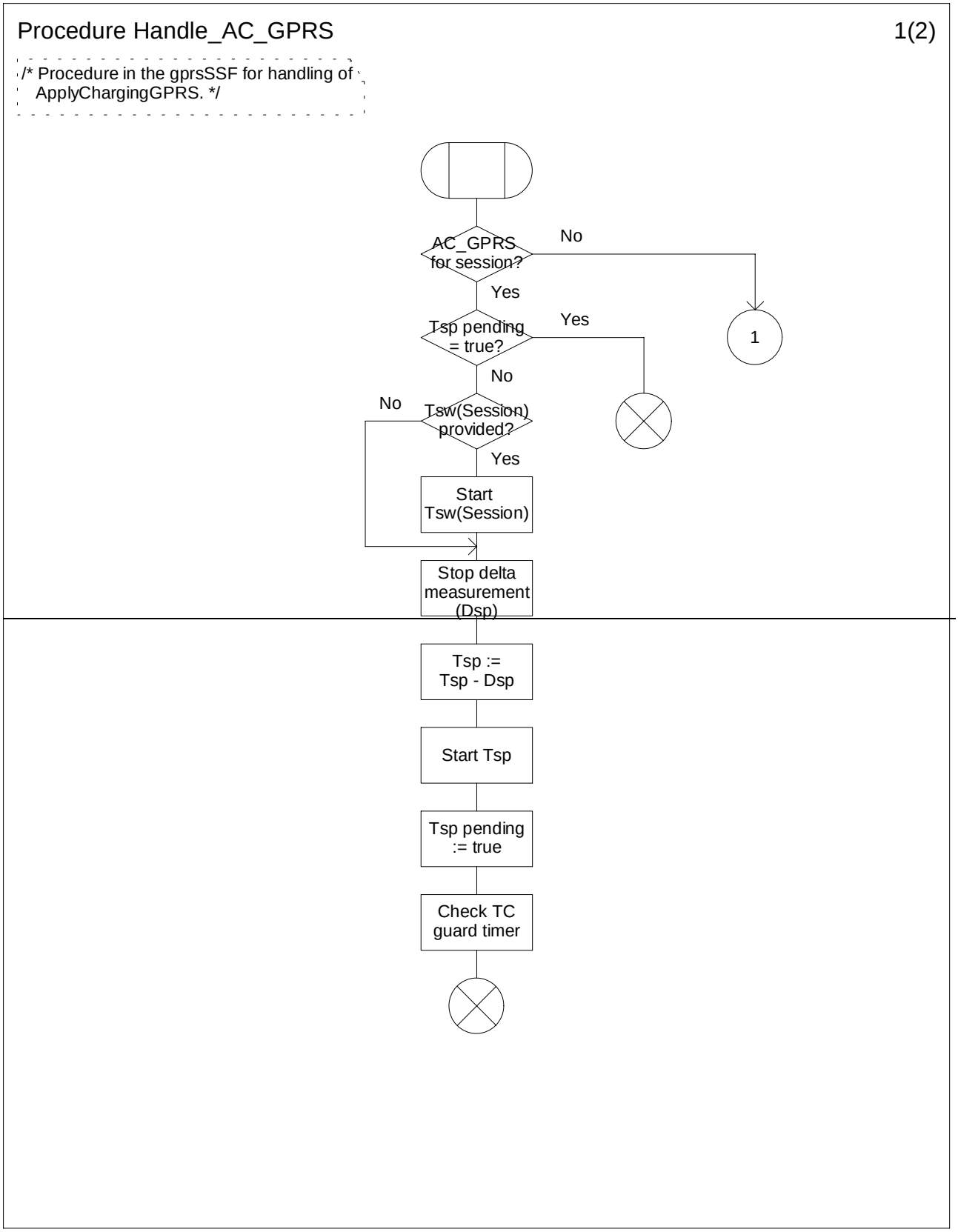
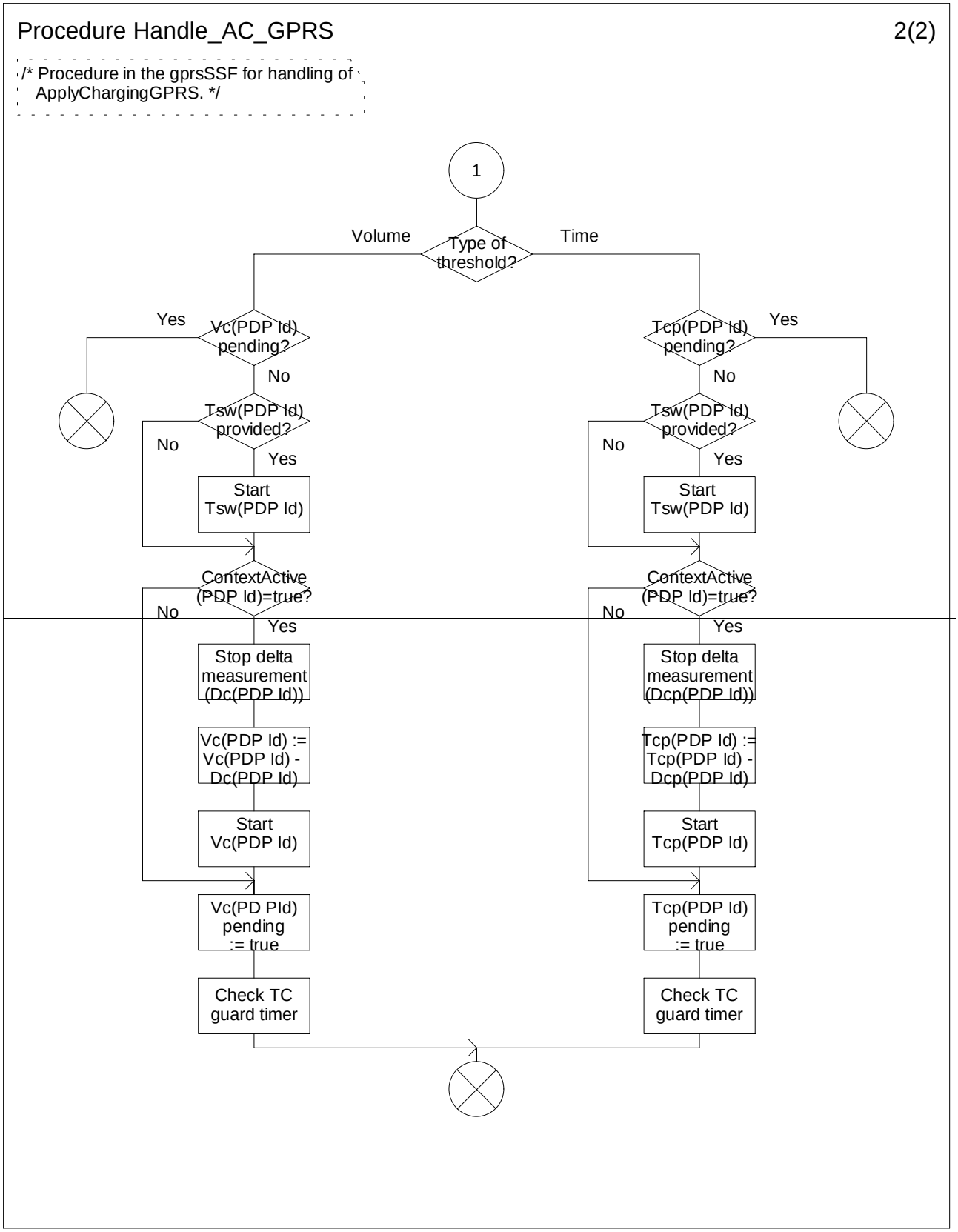


Figure 6.17q: Process GPRS_SSF (sheet 17)



~~Figure 6.19a: Procedure Handle_AC_GPRS (sheet 1)~~



~~Figure 6.19b: Procedure Handle_AC_GPRS (sheet 2)~~

Procedure Handle_AC_GPRS 1(3)

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

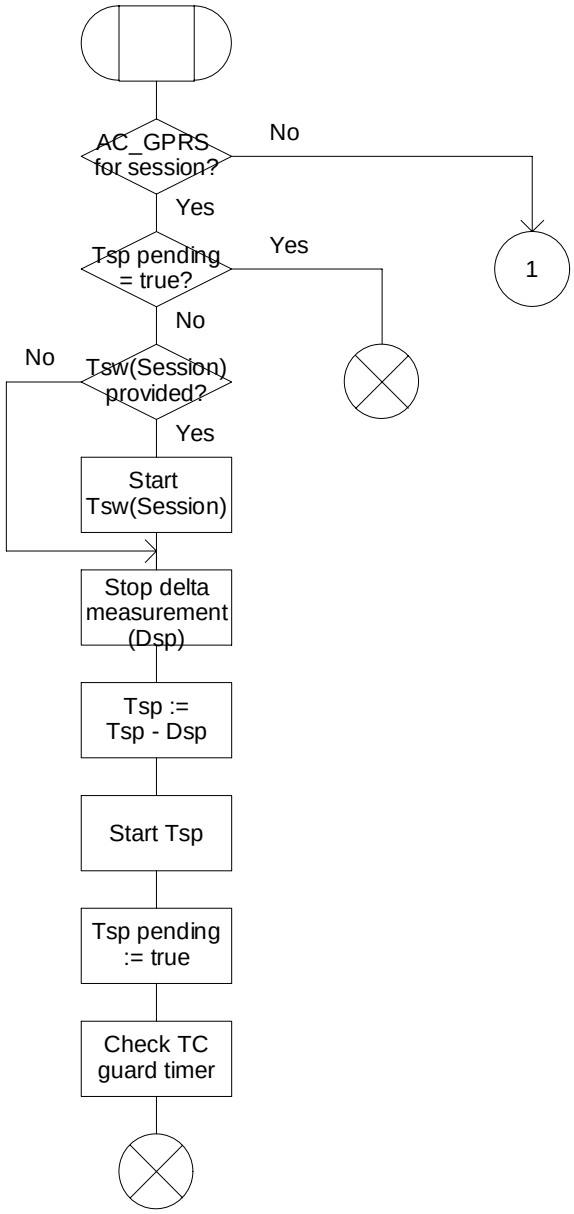


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 1)

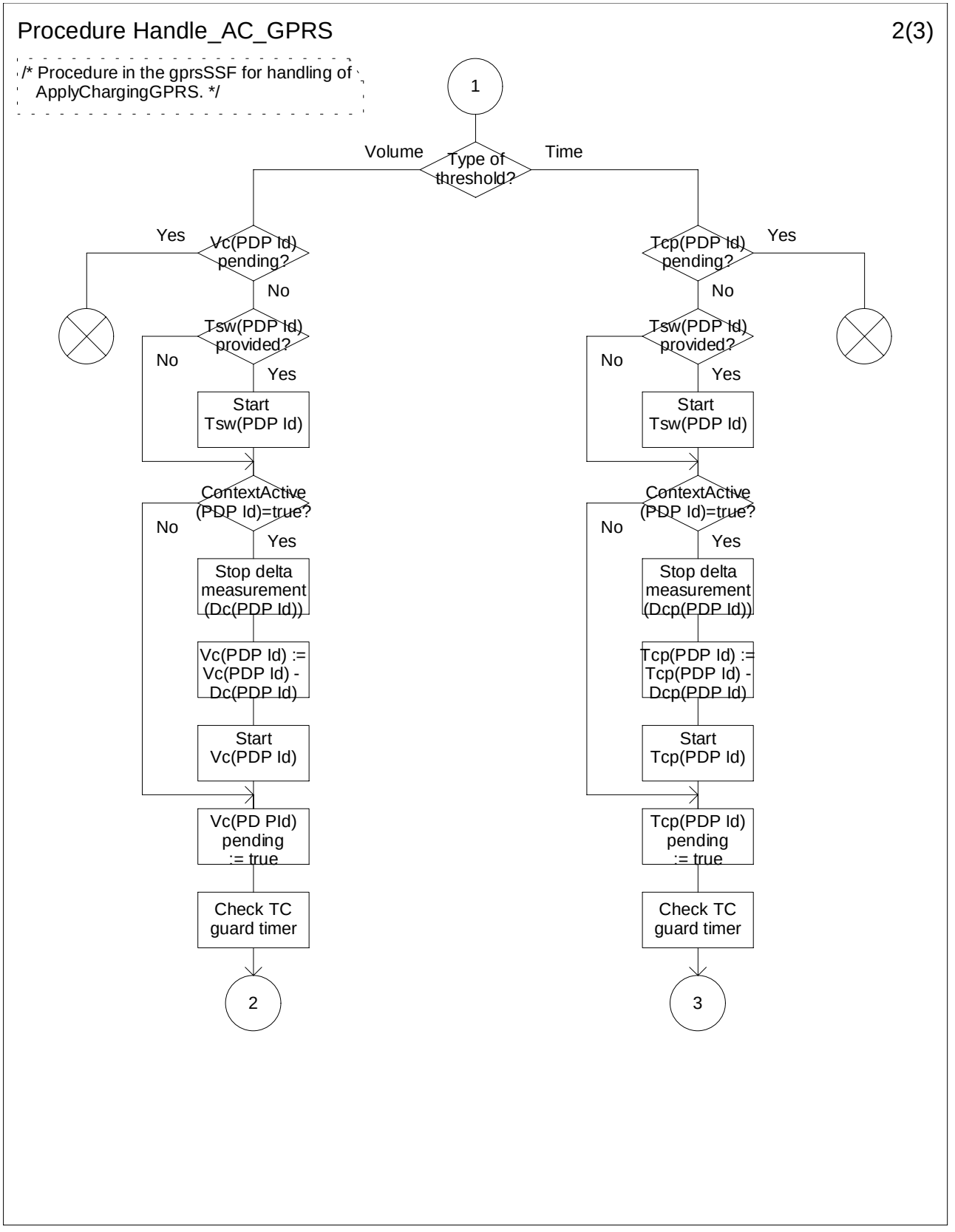


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 2)

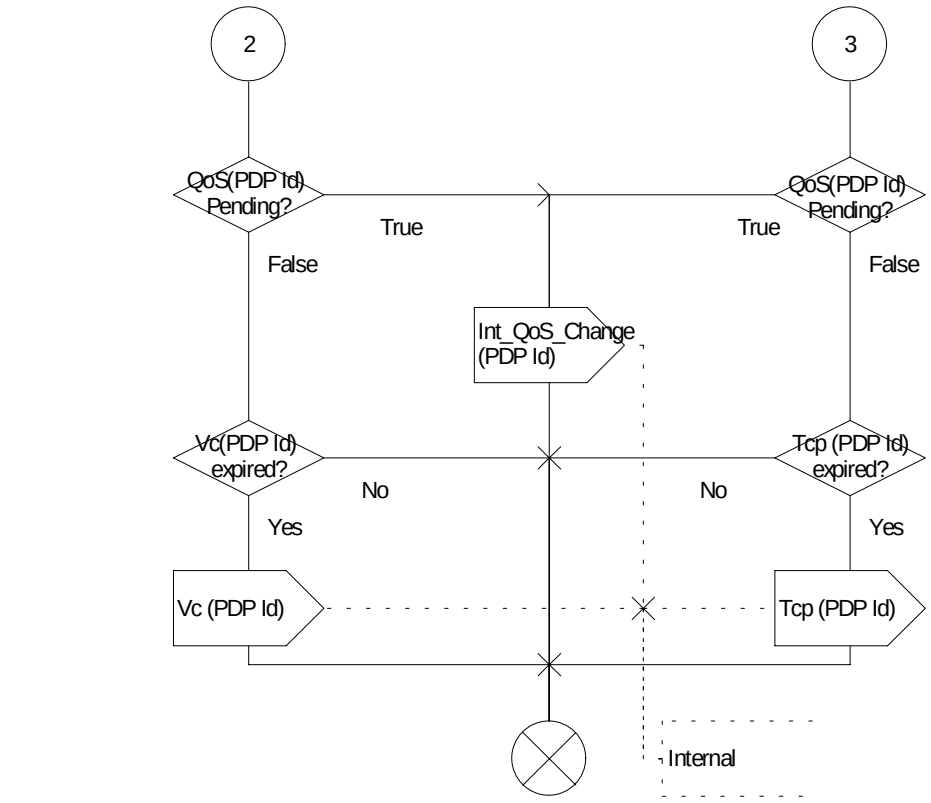
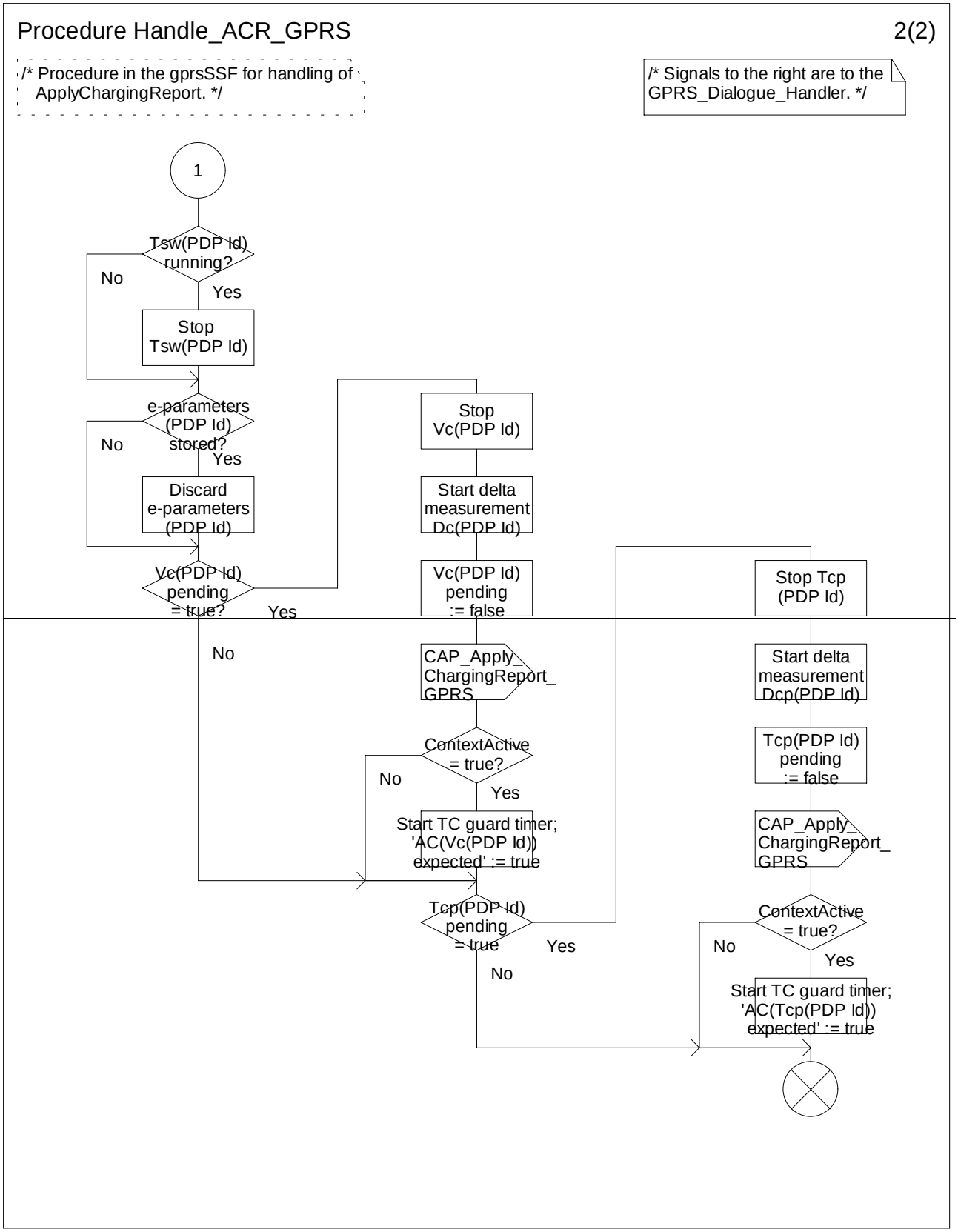


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 3)



~~Figure 6.20b: Procedure Handle_ACR_GPRS (sheet 2)~~

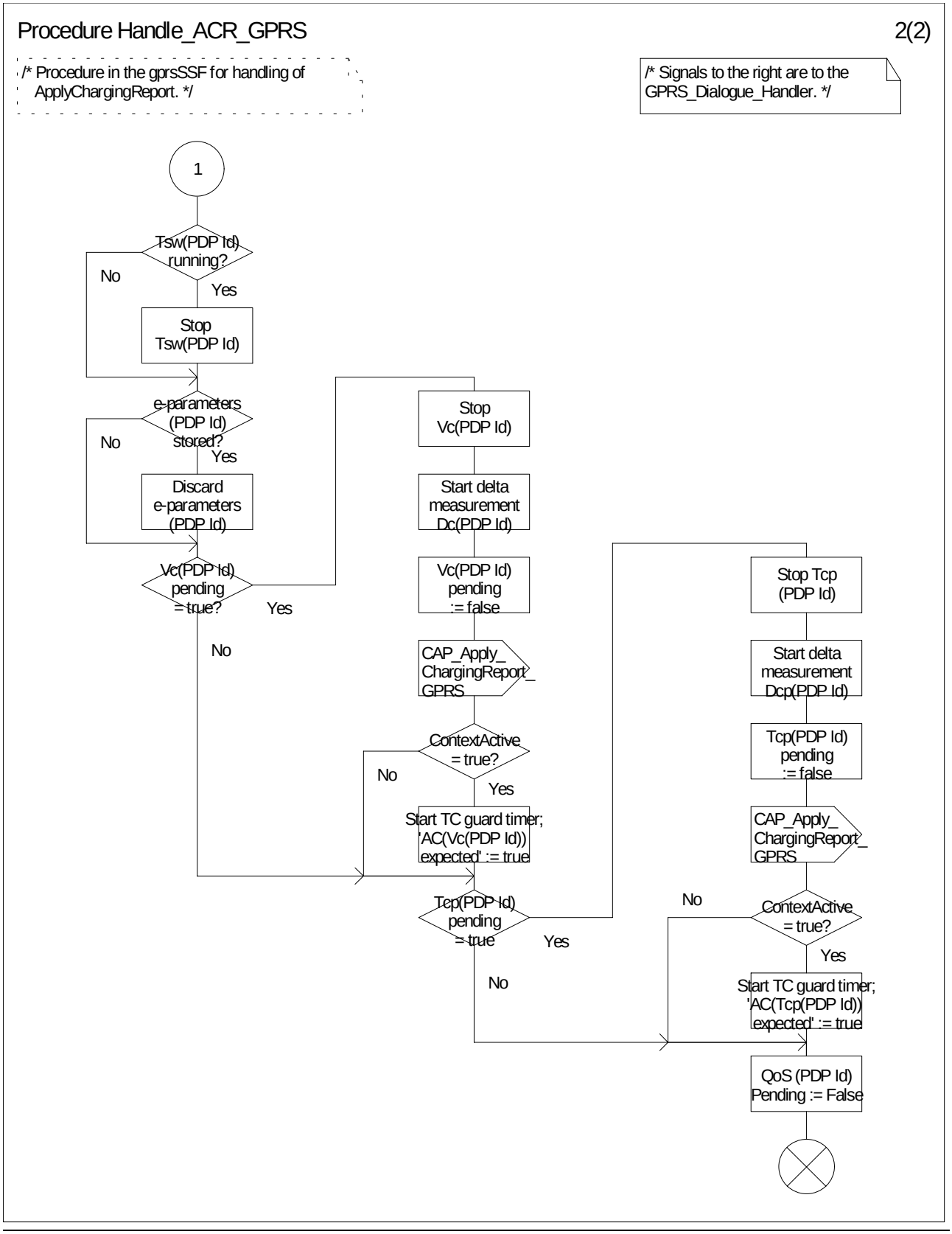


Figure 6.20b: Procedure Handle_ACR_GPRS (sheet 2)

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

6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

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

6.6.1.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
GPRS Reference Number	C	This IE consists of a number assigned by the gprsSSF and a number assigned by the gsmSCF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [5] for the usage of this element.
Charging Result	M	This IE contains the charging information for the PDP provided by the gprsSSF. It is a choice between elapsed time and data volume.
Quality of Service	C	This IE is described in the table below.
Active	M	This IE indicates if the GPRS session or PDP context is still established, or if it has been detached or deactivated.
PDP ID	C	This IE identifies the PDP Context to which the IF applies. Scenario 1: If no PDP Id is present in the IF, then the Apply Charging Report GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Apply Charging Report GPRS applies to the indicated PDP Context. Scenario 2: No PDP Id is used in the IF.
Charging Roll Over	C	This IE indicates which parameter(s) of the *Charging Result* have overflowed. Refer to 3GPP TS 29.078 [5] for the usage of this element. NOTE: It is possible that early implementations of the gprsSSF do not support this information element.
M Mandatory (The IE shall always be sent). C Conditional (The IE shall be sent, if available).		

Quality of Service contains the following information element:

Information element name	Required	Description
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN, as a result of a "Modify PDP Context" request. This IE shall be included only if sending of the Apply Charging Report GPRS was triggered by a change in Quality of Service. This IE shall contain the negotiated QoS as on the time of sending the Apply Charging Report GPRS.
C Conditional (The IE shall be sent, if available).		

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

3GPP TSG CN WG2 Meeting #26 ***N2-020937***
Miami, Florida, USA, 23rd – 27th September 2002

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** 468 ⌘ **rev** **3** ⌘ Current version: **3.14.0** ⌘

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

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

Title:	⌘	Alignment between 23.078 and 29.002 about RCH
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL3
Date:	⌘	27/09/2002
Category:	⌘	**F (essential correction)**
Release:	⌘	R99

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

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

Reason for change:	⌘	In the 29.002, criteria relative to the unsuccessful call establishment TDP (`0-BcsmCamelTDPCriteriaList` parameter) are not forwarded from the VMSC to the GMSC in RCH, but in the 23.078 the RCH description for CAMEL phase 3 indicates that the criteria relative to the unsuccessful call establishment TDP is sent to th GMSC. The 2 standards are not in line.
Summary of change:	⌘	As it is too late to change the ASN-1 structure of the RCH in R99 and Rel-4, it is proposed to add a note in the 23.078 to explain the GMSC handling on receipt of the RCH.
Consequences if not approved:	⌘	As 2 standards (29.002 and 23.078) are not in line , many interpretations may be done by different providers and may leed to unpredictable behaviour.

Clauses affected:	⌘	4.2.1.2.3 ; 4.5.5 and 4.6.11

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

Other comments: ⌘

4.2.1.2.3 Criteria at DP Route_Select_Failure

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

The criteria for a mobile originating call are checked in the originating MSC. The criteria for a mobile forwarded call are checked in the forwarding MSC.

For early forwarded calls in the GMSC, the HLR shall always 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 O-CSI to the GMSC.

For optimally routed late forwarded calls, the MSC ~~shall always~~does not include the trigger criteria in the RCH message 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 O-CSI to the GMSC.~~

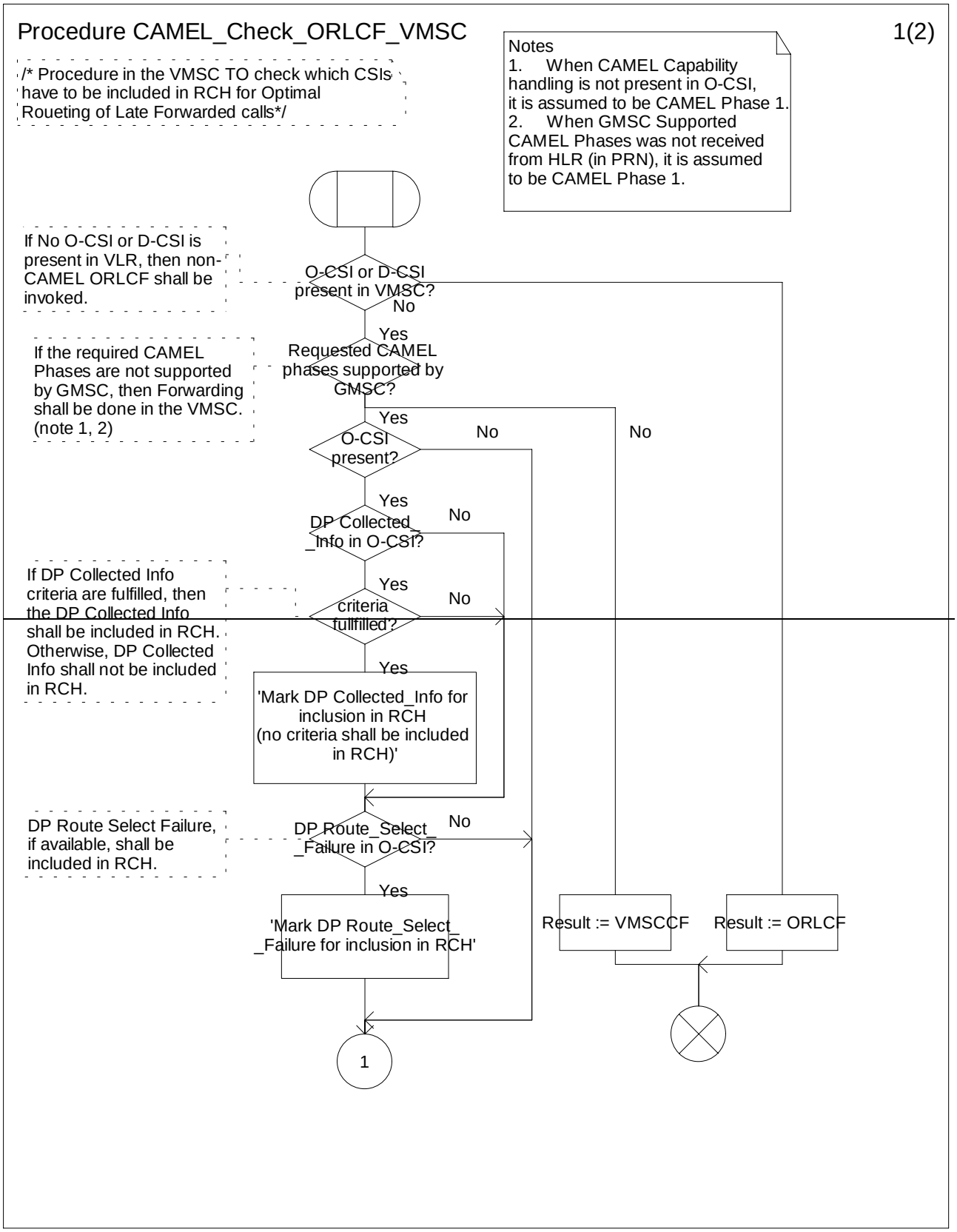
The following criteria are applicable for DP Route_Select_Failure:

- Release cause code.

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

If a O-BCSM was already invoked and there is a relationship with the gsmSCF at that moment, then no additional relationship shall be initiated.

4.5.5 Handling of forwarded calls



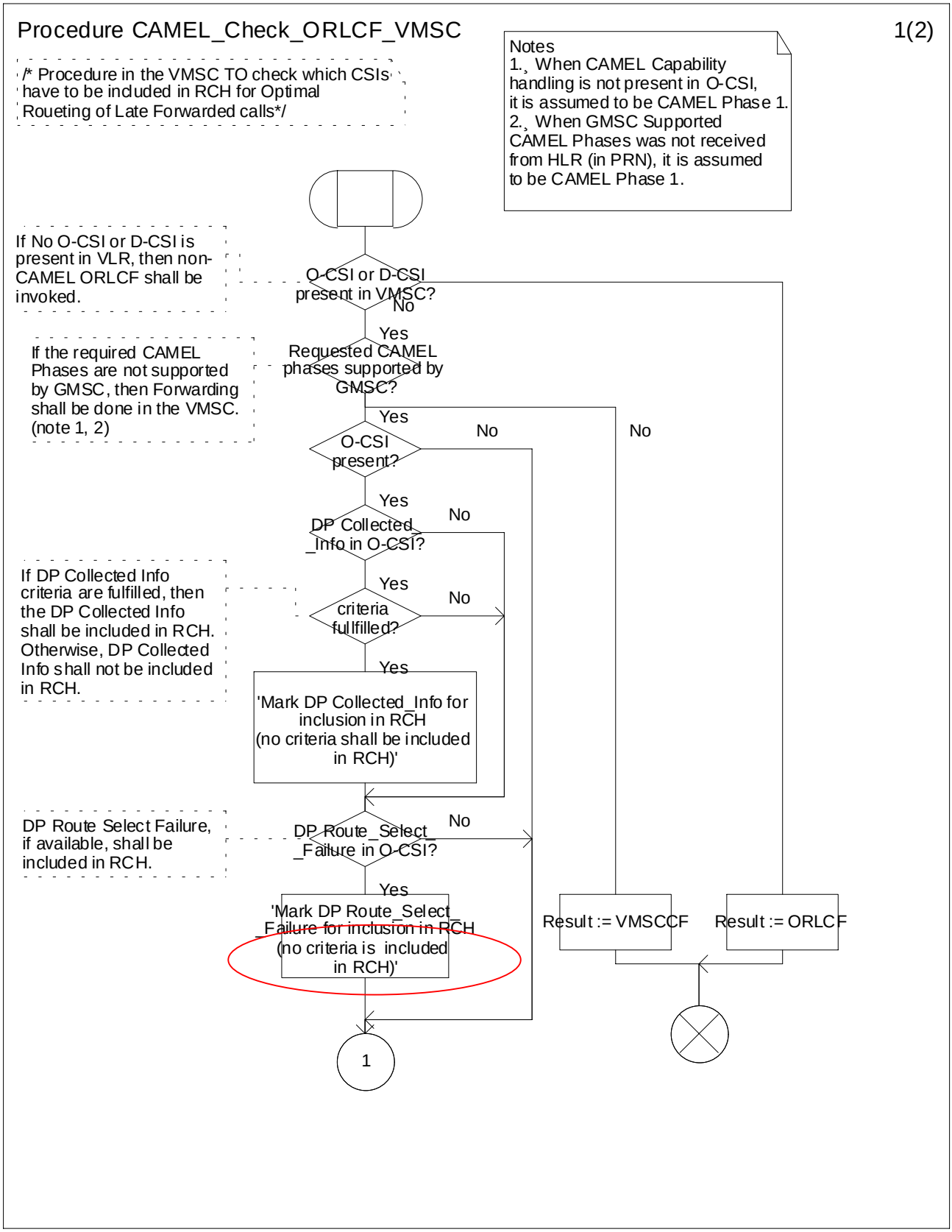


Figure Error! Reference source not found.**.1Error!** Unknown switch argument.**: Procedure CAMEL_Check_ORLCF_VMSC (sheet 1)**

4.6.11 VMSC to GMSC information flows

4.6.11.1 Resume Call Handling

4.6.11.1.1 Description

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

4.6.11.1.2 Information Elements

Resume Call Handling contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	This IE indicates that CAMEL handling applies for an optimally routed late forwarded call. This IE shall be present if CAMEL handling applies; otherwise it shall be absent. Trigger criteria for DP Collected Information, if present, shall be omitted in this IF. Trigger criteria for DP Route Select Failure is not present in this 3GPP release.~~, if present, shall be included in this IF.~~
D-CSI	C	This IE indicates that CAMEL handling applies for an optimally routed late forwarded call. This IE shall be present if CAMEL handling applies; otherwise it shall be absent.
C Conditional (The IE shall be sent if applicable).		

4.6.12 MSC to VLR information flows

4.6.12.1 Send Info For Incoming Call

4.6.12.1.1 Description

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

4.6.12.1.2 Information Elements

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

Information element name	Required	Description
Suppress VT-CSI	C	This IE indicates that VT-CSI shall be suppressed. Shall never be sent in the first interrogation; shall always be sent in the second interrogation.
Call Diversion Treatment Indicator	C	This IE indicates whether or not the call can be forwarded using the Call Forwarding or Call Deflection Supplementary Services. Shall be sent if received within the Forward Service Interaction Indicator in the Service Interaction Indicators Two from the IAM or previous CAMEL processing.
C Conditional (The IE shall be sent if applicable).		

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

Tdoc ⌘N2-020938

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **469** ⌘ **rev** **2** ⌘ Current version: **4.6.1** ⌘

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

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

Title:	⌘	Alignment between 23.078 and 29.002 about RCH
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL3
Date:	⌘	27/09/2002
Category:	⌘	**A**
Release:	⌘	Rel-4

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

Use one of the following releases:

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

Reason for change:	⌘	In the 29.002, criteria relative to the unsuccessful call establishment TDP (`0-BcsmCamelTDPCriteriaList` parameter) are not forwarded from the VMSC to the GMSC in RCH, but in the 23.078 the RCH description for CAMEL phase 3 indicates that the criteria relative to the unsuccessful call establishment TDP is sent to th GMSC. The 2 standards are not in line.
Summary of change:	⌘	As it is too late to change the ASN-1 structure of the RCH in R99 and Rel-4, it is proposed to add a note in the 23.078 to explain the GMSC handling on receipt of the RCH.
Consequences if not approved:	⌘	As 2 standards (29.002 and 23.078) are not in line , many interpretations may be done by different providers and may leed to unpredictable behaviour.

Clauses affected:	⌘	4.2.1.2.3 ; 4.5.5 and 4.6.11

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

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

4.2.1.2.3 Criteria at DP Route_Select_Failure

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

The criteria for a mobile originating call are checked in the originating MSC. The criteria for a mobile forwarded call are checked in the forwarding MSC.

For early forwarded calls in the GMSC, the HLR shall always 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 O-CSI to the GMSC.

For optimally routed late forwarded calls, the MSC ~~shall always~~does not include the trigger criteria in the RCH message 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 O-CSI to the GMSC.~~

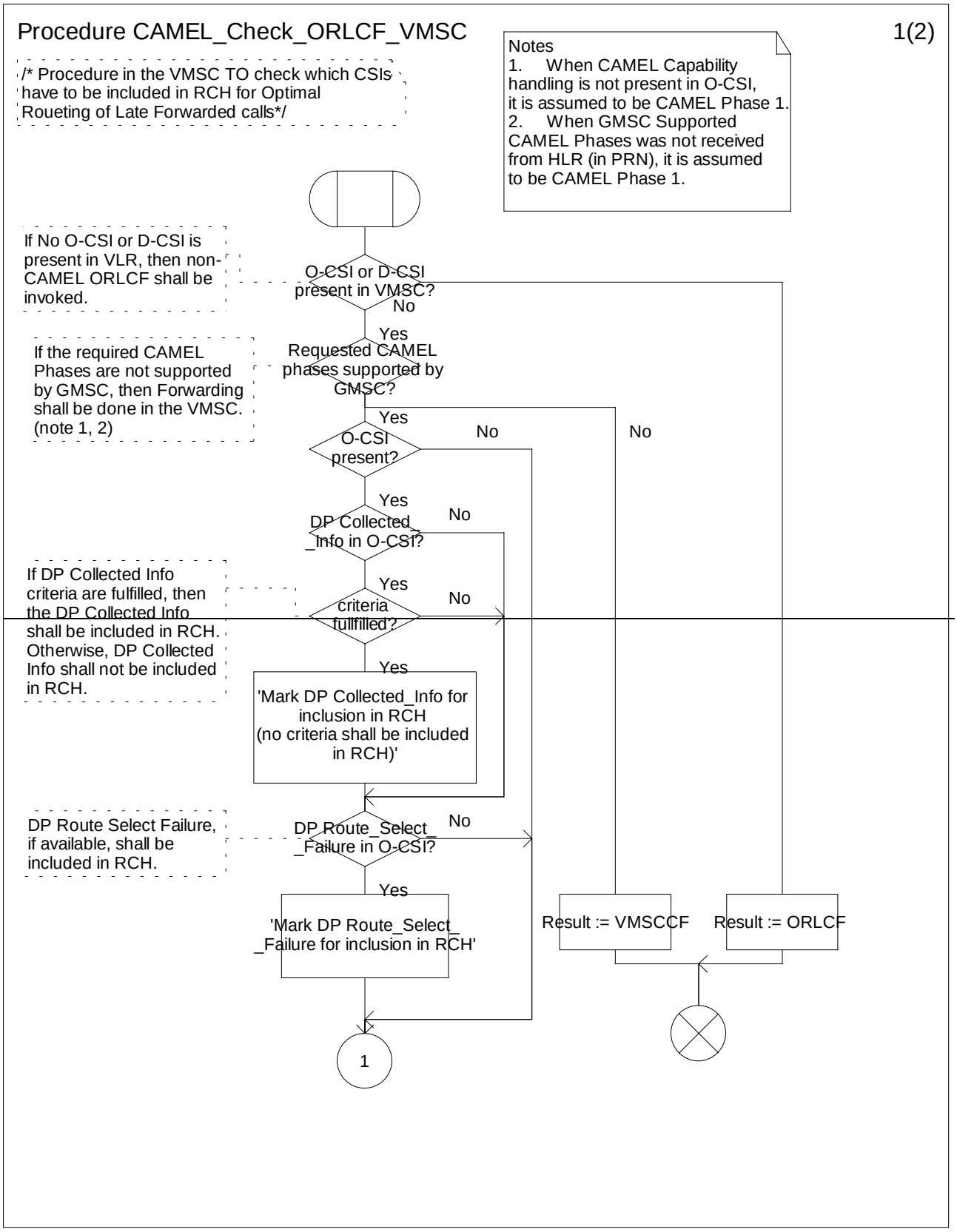
The following criteria are applicable for DP Route_Select_Failure:

- Release cause code.

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

If a O-BCSM was already invoked and there is a relationship with the gsmSCF at that moment, then no additional relationship shall be initiated.

4.5.5 Handling of forwarded calls



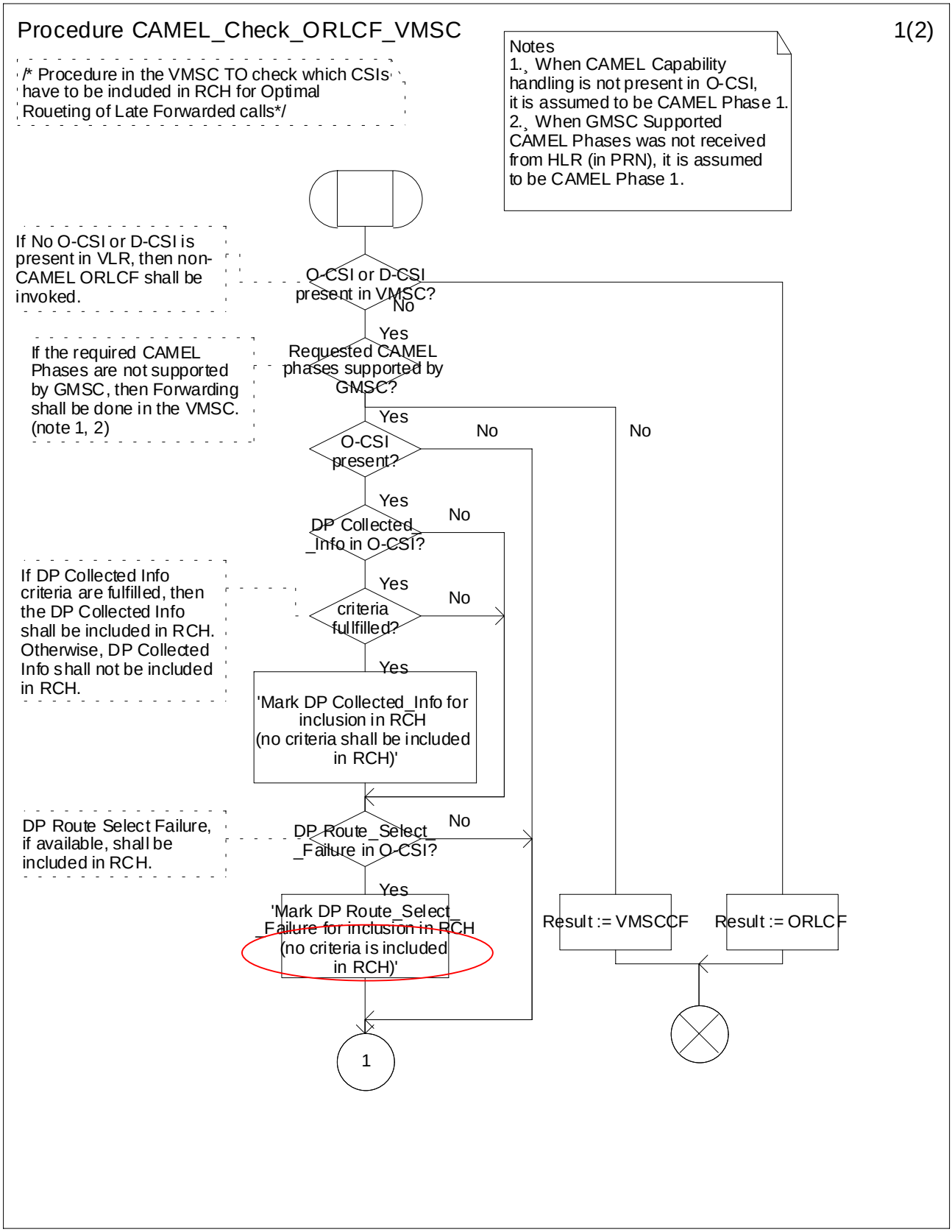


Figure 4.55a: Procedure CAMEL_Check_ORLCF_VMSC (sheet 1)

4.6.11 VMSC to GMSC information flows

4.6.11.1 Resume Call Handling

4.6.11.1.1 Description

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

4.6.11.1.2 Information Elements

Resume Call Handling contains the following CAMEL specific IE:

Information element name	Required	Description
O-CSI	C	This IE indicates that CAMEL handling applies for an optimally routed late forwarded call. This IE shall be present if CAMEL handling applies; otherwise it shall be absent. Trigger criteria for DP Collected Information, if present, shall be omitted in this IF. Trigger criteria for DP Route Select Failure~~,~~ is not present in this 3GPP release.~~if present, shall be included in this IF.~~
D-CSI	C	This IE indicates that CAMEL handling applies for an optimally routed late forwarded call. This IE shall be present if CAMEL handling applies; otherwise it shall be absent.
C Conditional (The IE shall be sent if applicable).		

3GPP TSG-CN2 Meeting #25 **N2-020939**
Miami, Florida, 23-27th September 2002

CHANGE REQUEST

⌘ **23.078** **CR** **479** ⌘ **rev** ⌘ Current version: **4.6.1** ⌘

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

Title:	⌘	Correction to QoS reporting and delta timer overflow
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	26 September 2002
Category:	⌘	A (essential correction)
Release:	⌘	Rel-4

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

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

Reason for change: ⌘ The reason of the present CR is twofold

Correction to QoS reporting
At a QoS change the SDL flows indicate that the Handle_ACR_GPRS procedure shall be invoked. The QoS change will however not be reported if the SGSN has previously reported ACR GPRS and still waits for corresponding ACH GPRS. Thus QoS changes occorring in such situations won't be reported at all.

As tariffs may be based on the QoS offered, the SCP needs to be informed on the current QoS for that PDP context, regardless the state for charging reporting.

delta timer overflow
It is currently not specified how an SGSN shall behave when it receives an Apply Charging GPRS operation, containing a threshold value that is smaller than or equal to the delta timer or counter in the gprsSSF.

The result may be that when the SCP sends an Apply Charging GPRS operation to the SGSN, with a low threshold value, that the gprsSSF would not generate a charging report. The result may also be that the gprsSSF would sen inconsistent charging reports in these situations.

It shall therefore be specified how an SGSN shall behave in this situation.

Summary of change: ⌘ When a QoS change occurs and the SGSN is waiting for ACH GPRS for that PDP Context, then the SGSN shall defer the sending of the corresponding ACR GPRS until the outstanding ACH GPRS operations for that PDP Context have been received and processed.

		If multiple QoS changes occur, only the last set of QoS parameters is memorised. If the SGSN has memorised QoS parameters, the ACH GPRS will trigger an ACR GPRS immediately. When the SGSN has processed completed the processing of Apply Charging GPRS operation(s), then it shall check whether the newly received threshold values are equal to or larger than the delta timer and counter. If either of the two thresholds has been exceeded, then the SGSn shall trigger an Apply Charging Report GPRS. In figure 6.19a ("Procedure Handle_AC_GPRS"), when the SGSN has completed the processing of the Apply Charging GPRS operation(s), a check is included whether the delta timer or counter have been exceeded. If so, then an internal signal is generated (Tcp or Vc).
Consequences if not approved:	⌘	The SCP will not get information on QoS changes occurring after the SGSN has issued an ACRG, but before the following ACG. Ambiguous and unpredictable behaviour when the received maximum threshold is smaller than the current value of the delta counter(s). Pre-pay systems which rely on AC/ACR/AC-GPRS/ACR-GPRS for the correct billing of users would be unable to charge for the difference between the delta counter and the received maximum threshold. This scenario could occur multiple times in one PDP Context and may result in the user receiving uncharged for time/data.

Clauses affected:	⌘	6.5.3.3, 6.5.3.4, 6.5.3.9, 6.6.1.2			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

**** First Modified Section ****

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.

Sheet ~~2~~3 in procedure Handle_AC_GPRS contains a check for the PDP Context duration (Tcp(PDP Id)) and PDP Context volume (Vc(PDP Id)). If the PDP Context delta timer (Dcp(PDP Id)) is equal to or larger than the duration threshold received in the Apply Charging GPRS operation or the PDP Context delta counter (Dc(PDP Id)) is equal to or larger than the volume threshold received in the Apply Charging GPRS operation, then the gprsSSF shall generate an internal signal to trigger the sending of an Apply Charging Report GPRS.

If a QoS change has occurred prior to receiving Apply Charging GPRS but after the sending Apply Charging Report GPRS, then the gprsSSF shall generate an internal signal to trigger the sending of an Apply Charging Report GPRS, including the negotiated QoS.

**** Next Modified Section ****

6.5.3.4 Procedure Handle_ACR_GPRS

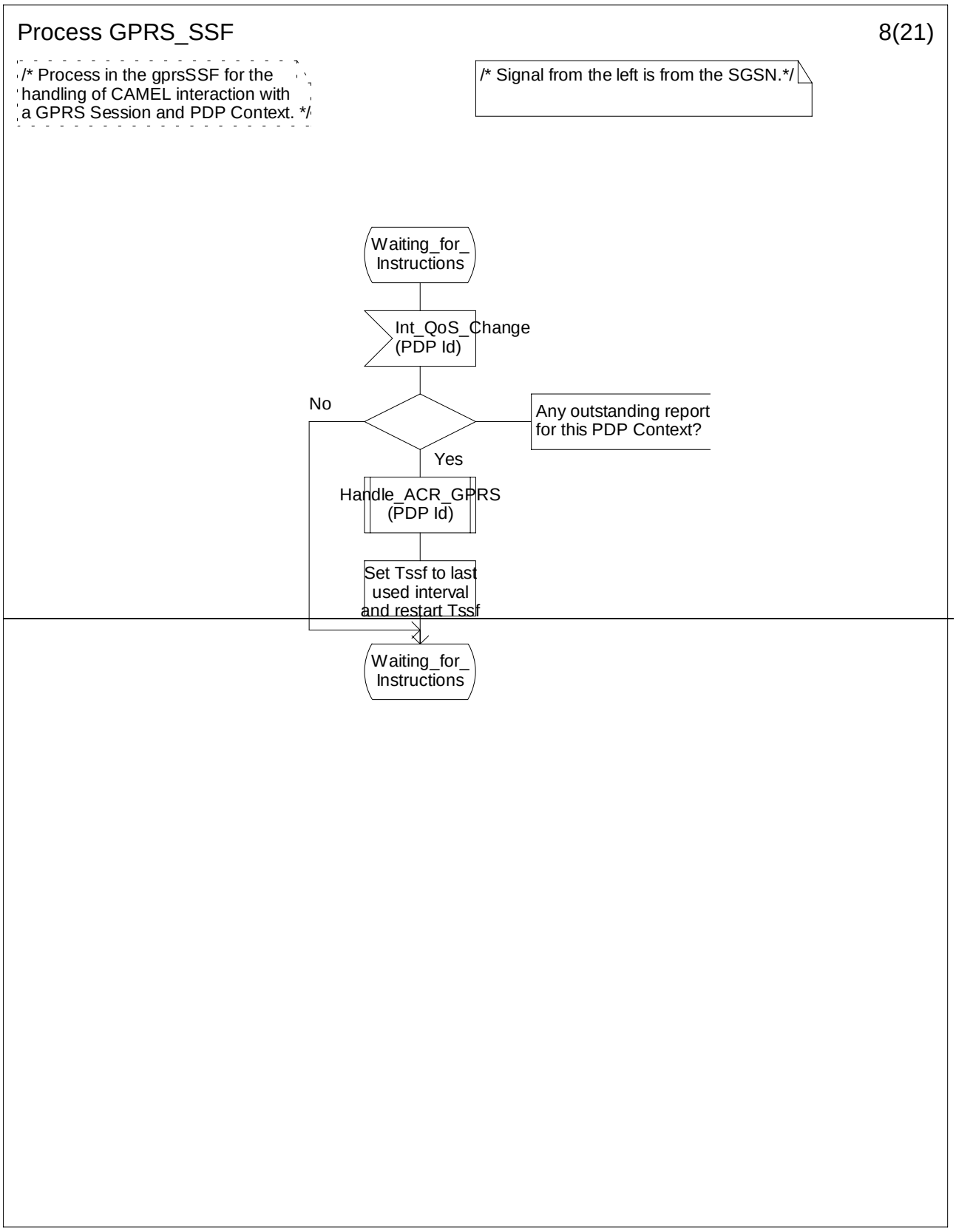
Procedure Handle_ACR_GPRS is called from process gprsSSF with the following input parameters:

- "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 or an Apply Charging GPRS is received when QoS change report is pending, 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.

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

6.5.3.9 SDL diagrams for process GPRS_SSF and procedures



~~Figure 6.17h: Process GPRS_SSF (sheet 8)~~

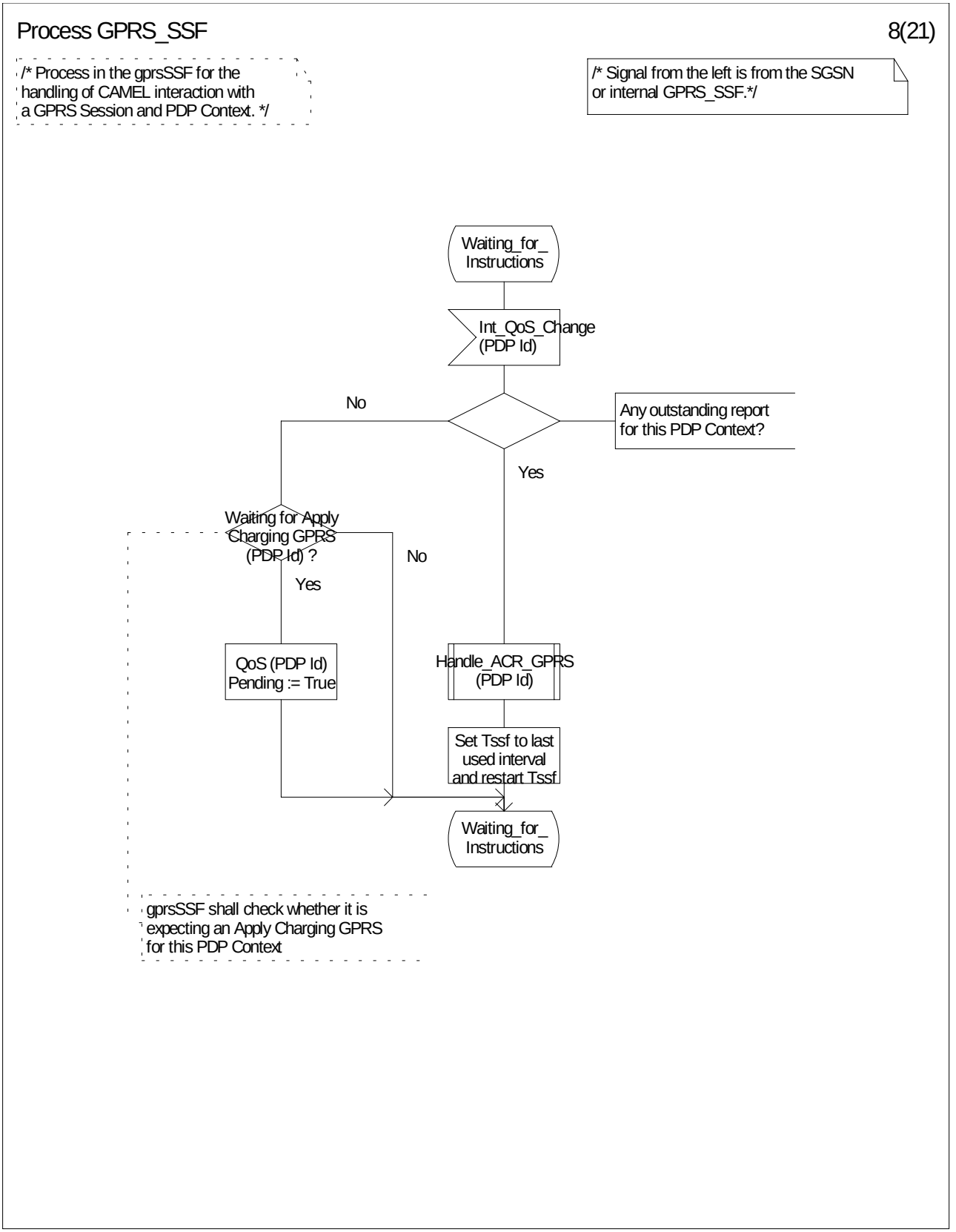
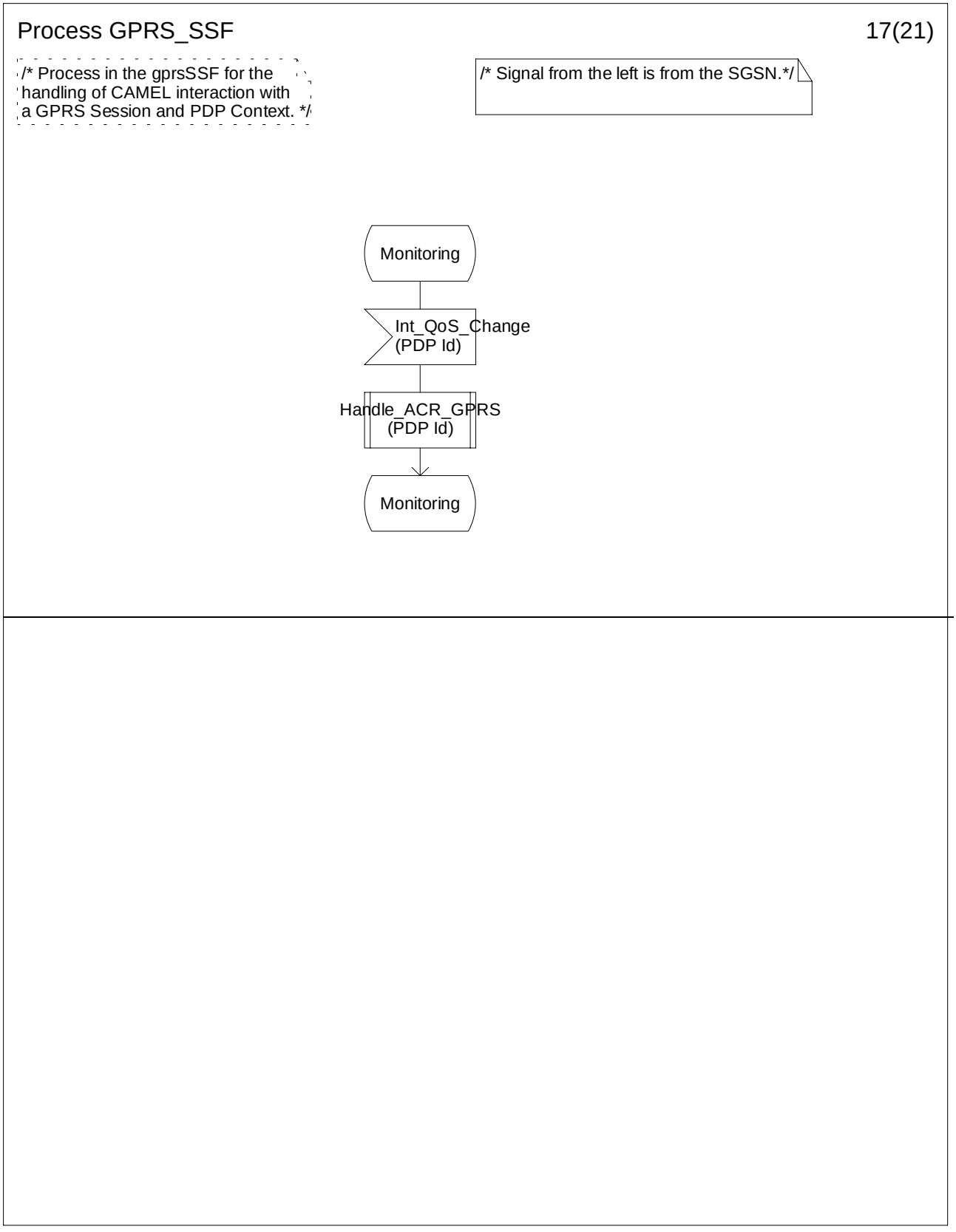


Figure 6.17h: Process GPRS_SSF (sheet 8)



~~Figure 6.17q: Process GPRS_SSF (sheet 17)~~

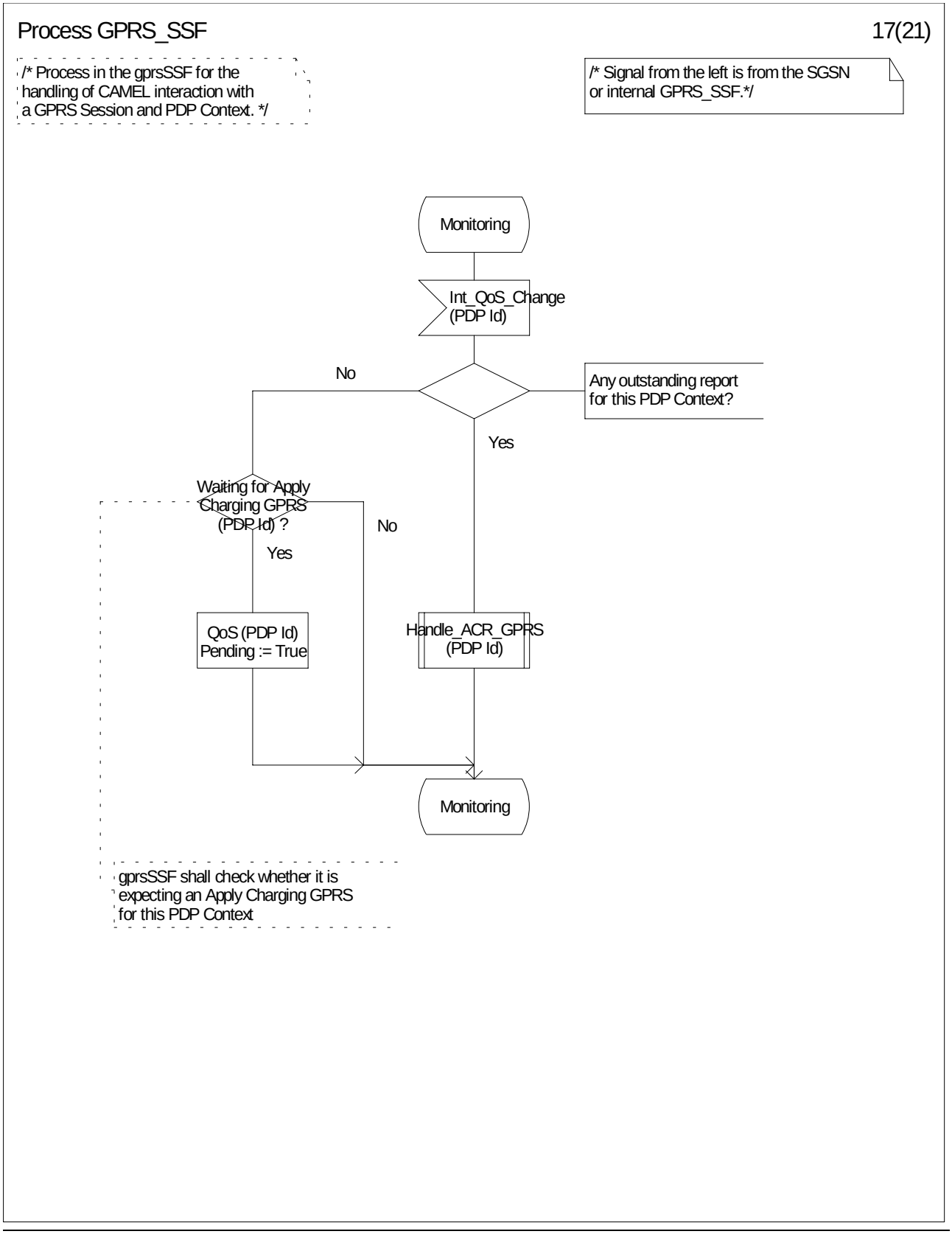
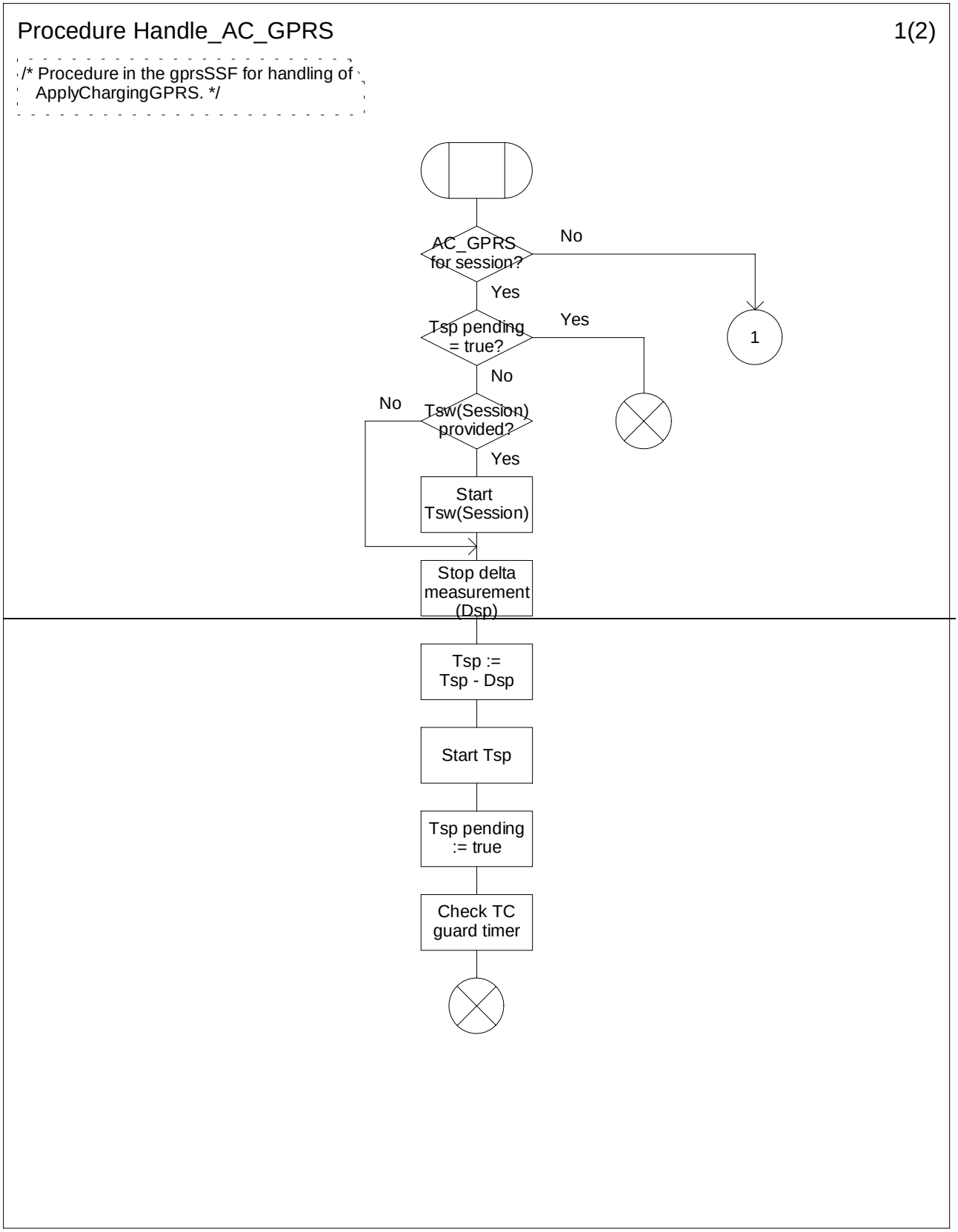
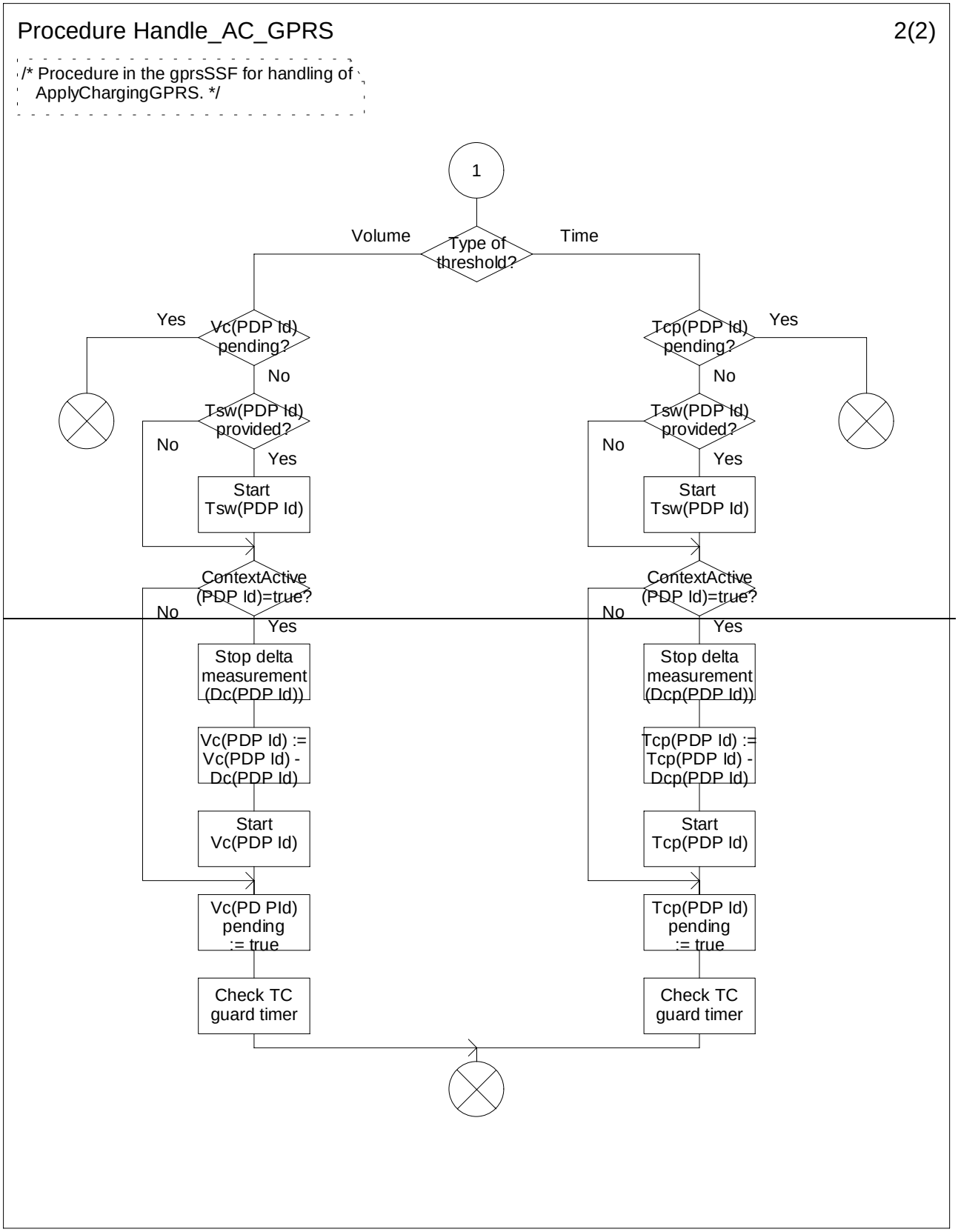


Figure 6.17q: Process GPRS_SSF (sheet 17)



~~Figure 6.19a: Procedure Handle_AC_GPRS (sheet 1)~~



~~Figure 6.19b: Procedure Handle_AC_GPRS (sheet 2)~~

Procedure Handle_AC_GPRS 1(3)

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

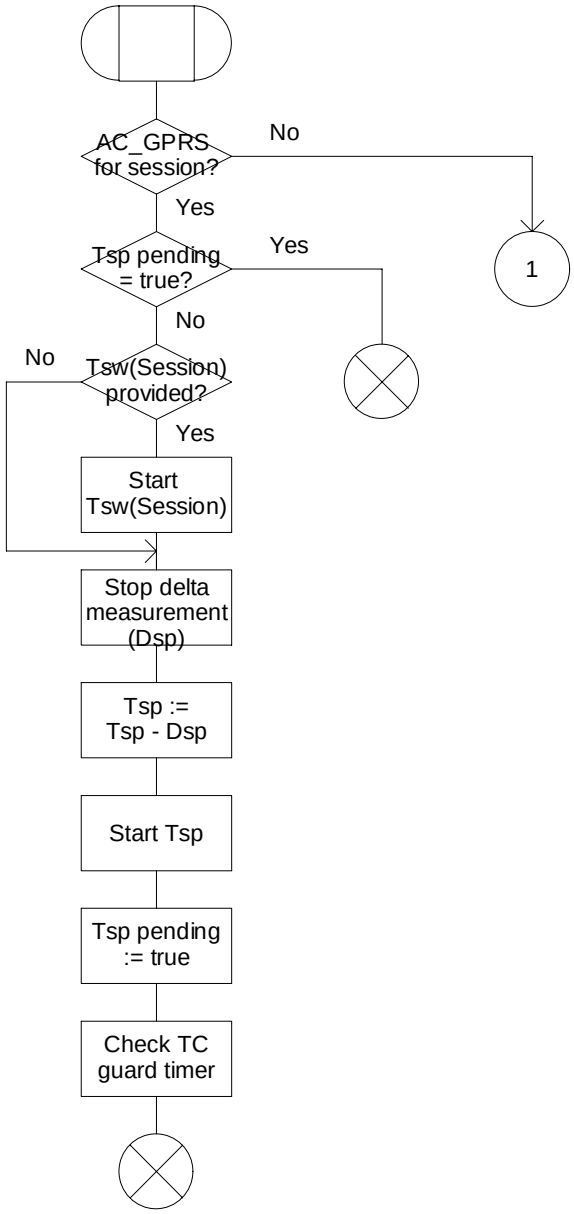


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 1)

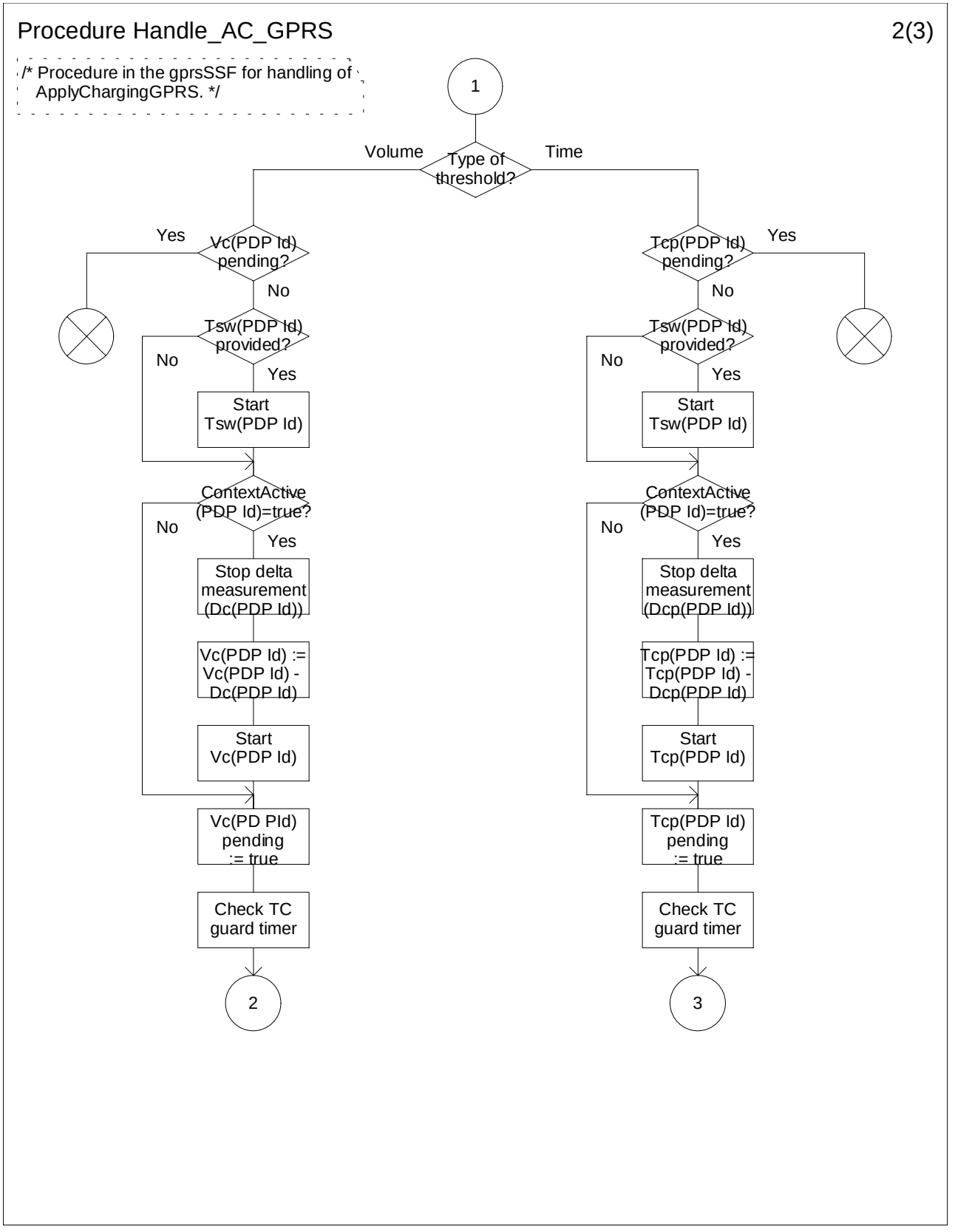


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 2)

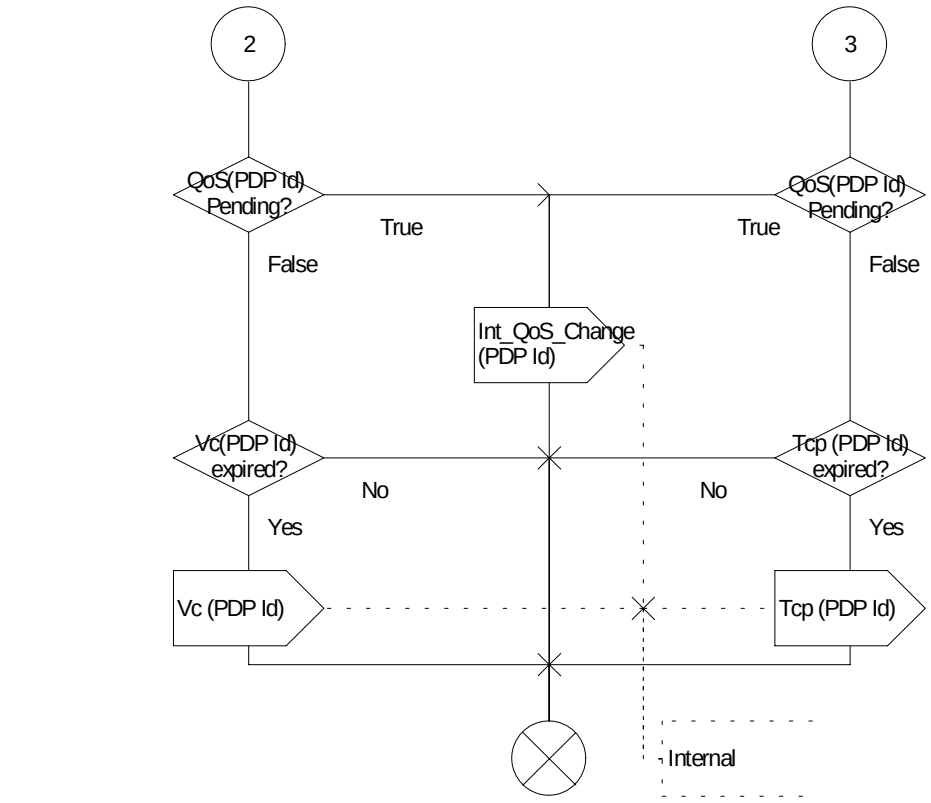
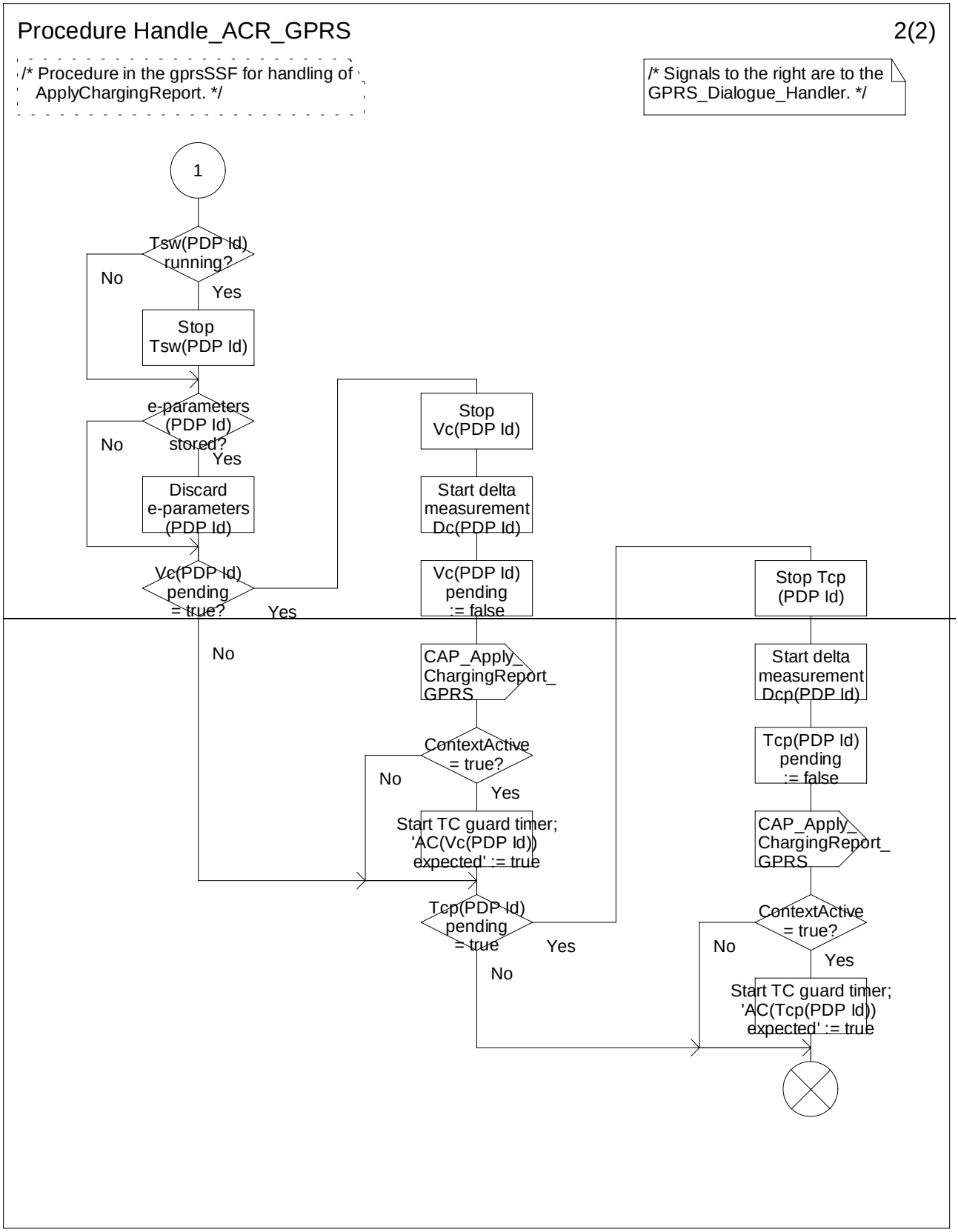


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 3)



~~Figure 6.20b: Procedure Handle_ACR_GPRS (sheet 2)~~

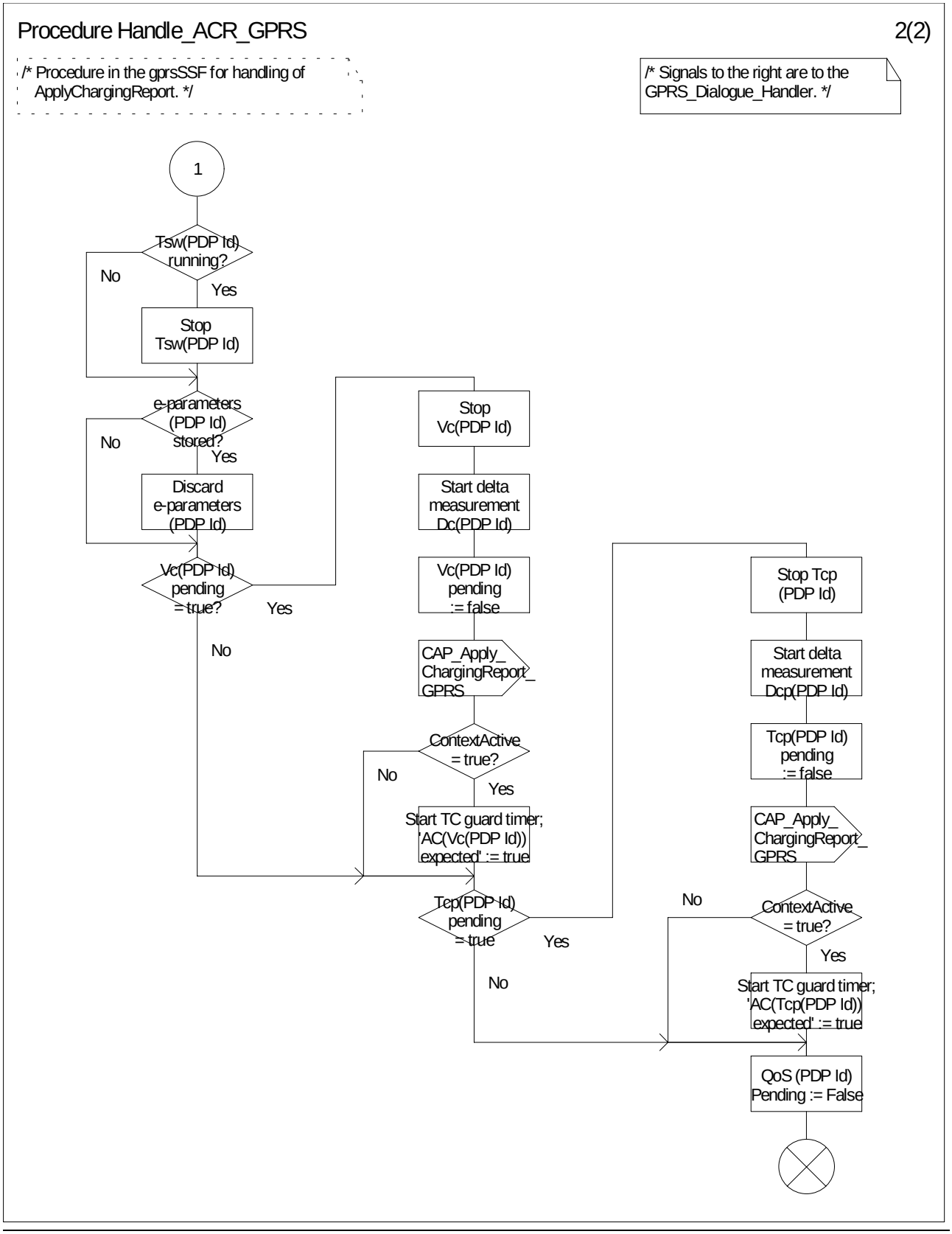


Figure 6.20b: Procedure Handle_ACR_GPRS (sheet 2)

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

6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

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

6.6.1.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
GPRS Reference Number	C	This IE consists of a number assigned by the gprsSSF and a number assigned by the gsmSCF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [5] for the usage of this element.
Charging Result	M	This IE contains the charging information for the PDP provided by the gprsSSF. It is a choice between elapsed time and data volume.
Quality of Service	C	This IE is described in the table below.
Active	M	This IE indicates if the GPRS session or PDP context is still established, or if it has been detached or deactivated.
PDP ID	C	This IE identifies the PDP Context to which the IF applies. Scenario 1: If no PDP Id is present in the IF, then the Apply Charging Report GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Apply Charging Report GPRS applies to the indicated PDP Context. Scenario 2: No PDP Id is used in the IF.
Charging Roll Over	C	This IE indicates which parameter(s) of the *Charging Result* have overflowed. Refer to 3GPP TS 29.078 [5] for the usage of this element. NOTE: It is possible that early implementations of the gprsSSF do not support this information element.
M Mandatory (The IE shall always be sent). C Conditional (The IE shall be sent, if available).		

Quality of Service contains the following information element:

Information element name	Required	Description
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN, as a result of a "Modify PDP Context" request. This IE shall be included only if sending of the Apply Charging Report GPRS was triggered by a change in Quality of Service. This IE shall contain the negotiated QoS as on the time of sending the Apply Charging Report GPRS.
C Conditional (The IE shall be sent, if available).		

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

3GPP TSG-CN2 Meeting #25 **N2-020940**
Miami, Florida, 23-27th September 2002

CHANGE REQUEST

⌘ **23.078** **CR** **480** ⌘ **rev** ⌘ Current version: **5.1.0** ⌘

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

Title:	⌘	Correction to QoS reporting and delta timer overflow
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	26 September 2002
Category:	⌘	A (essential correction)
Release:	⌘	Rel-5

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

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

Reason for change: ⌘ The reason of the present CR is twofold

Correction to QoS reporting
At a QoS change the SDL flows indicate that the Handle_ACR_GPRS procedure shall be invoked. The QoS change will however not be reported if the SGSN has previously reported ACR GPRS and still waits for corresponding ACH GPRS. Thus QoS changes occorring in such situations won't be reported at all.

As tariffs may be based on the QoS offered, the SCP needs to be informed on the current QoS for that PDP context, regardless the state for charging reporting.

delta timer overflow
It is currently not specified how an SGSN shall behave when it receives an Apply Charging GPRS operation, containing a threshold value that is smaller than or equal to the delta timer or counter in the gprsSSF.

The result may be that when the SCP sends an Apply Charging GPRS operation to the SGSN, with a low threshold value, that the gprsSSF would not generate a charging report. The result may also be that the gprsSSF would sen inconsistent charging reports in these situations.

It shall therefore be specified how an SGSN shall behave in this situation.

Summary of change: ⌘ When a QoS change occurs and the SGSN is waiting for ACH GPRS for that PDP Context, then the SGSN shall defer the sending of the corresponding ACR GPRS until the outstanding ACH GPRS operations for that PDP Context have been received and processed.

		If multiple QoS changes occur, only the last set of QoS parameters is memorised. If the SGSN has memorised QoS parameters, the ACH GPRS will trigger an ACR GPRS immediately. When the SGSN has processed completed the processing of Apply Charging GPRS operation(s), then it shall check whether the newly received threshold values are equal to or larger than the delta timer and counter. If either of the two thresholds has been exceeded, then the SGSn shall trigger an Apply Charging Report GPRS. In figure 6.19a ("Procedure Handle_AC_GPRS"), when the SGSN has completed the processing of the Apply Charging GPRS operation(s), a check is included whether the delta timer or counter have been exceeded. If so, then an internal signal is generated (Tcp or Vc).
Consequences if not approved:	⌘	The SCP will not get information on QoS changes occurring after the SGSN has issued an ACRG, but before the following ACG. Ambiguous and unpredictable behaviour when the received maximum threshold is smaller than the current value of the delta counter(s). Pre-pay systems which rely on AC/ACR/AC-GPRS/ACR-GPRS for the correct billing of users would be unable to charge for the difference between the delta counter and the received maximum threshold. This scenario could occur multiple times in one PDP Context and may result in the user receiving uncharged for time/data.

Clauses affected:	⌘	6.5.3.3, 6.5.3.4, 6.5.3.9, 6.6.1.2			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

**** First Modified Section ****

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.

Sheet ~~2~~3 in procedure Handle_AC_GPRS contains a check for the PDP Context duration (Tcp(PDP Id)) and PDP Context volume (Vc(PDP Id)). If the PDP Context delta timer (Dcp(PDP Id)) is equal to or larger than the duration threshold received in the Apply Charging GPRS operation or the PDP Context delta counter (Dc(PDP Id)) is equal to or larger than the volume threshold received in the Apply Charging GPRS operation, then the gprsSSF shall generate an internal signal to trigger the sending of an Apply Charging Report GPRS.

If a QoS change has occurred prior to receiving Apply Charging GPRS but after the sending Apply Charging Report GPRS, then the gprsSSF shall generate an internal signal to trigger the sending of an Apply Charging Report GPRS, including the negotiated QoS.

**** Next Modified Section ****

6.5.3.4 Procedure Handle_ACR_GPRS

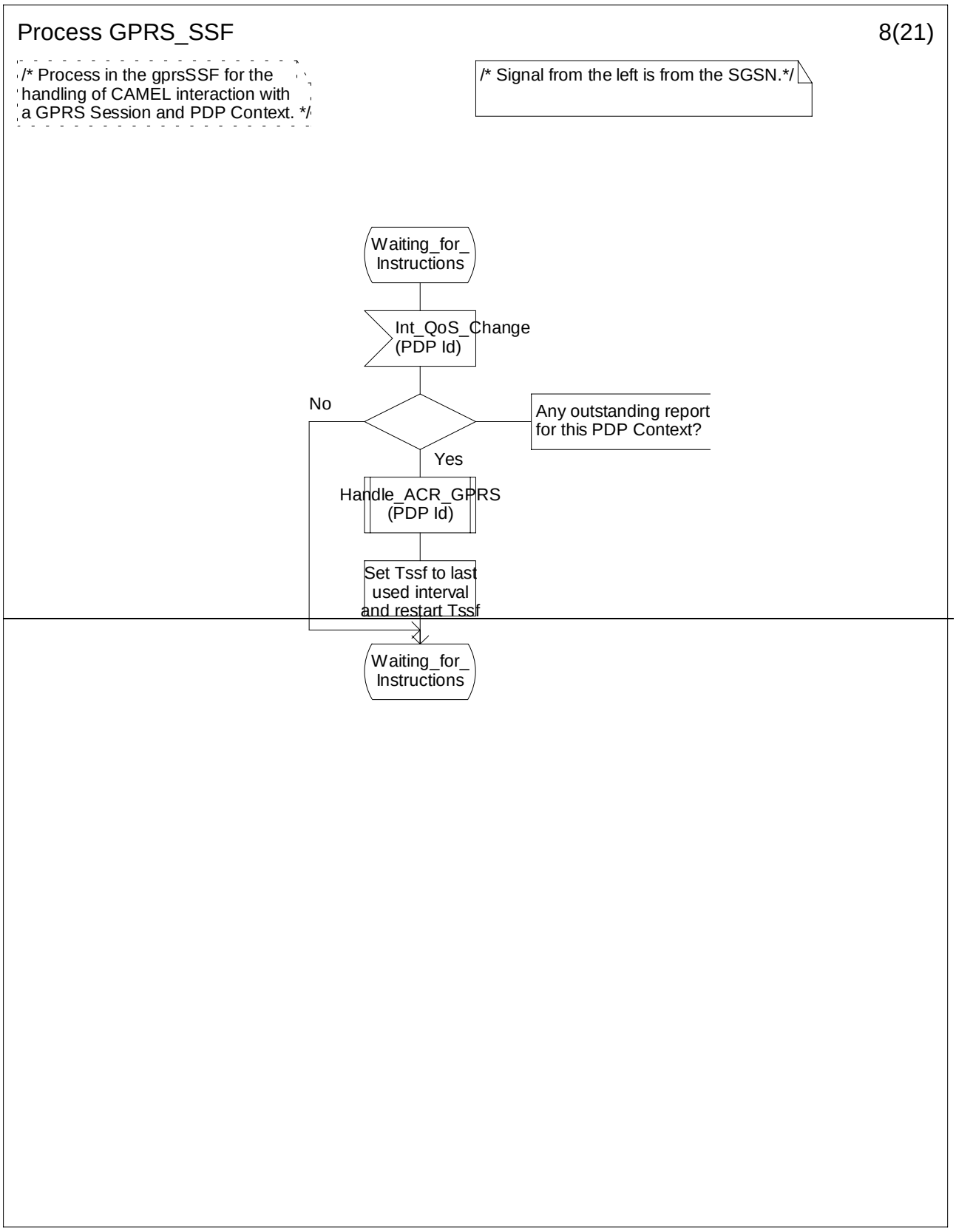
Procedure Handle_ACR_GPRS is called from process gprsSSF with the following input parameters:

- "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 or an Apply Charging GPRS is received when QoS change report is pending, 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.

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

6.5.3.9 SDL diagrams for process GPRS_SSF and procedures



~~Figure 6.17h: Process GPRS_SSF (sheet 8)~~

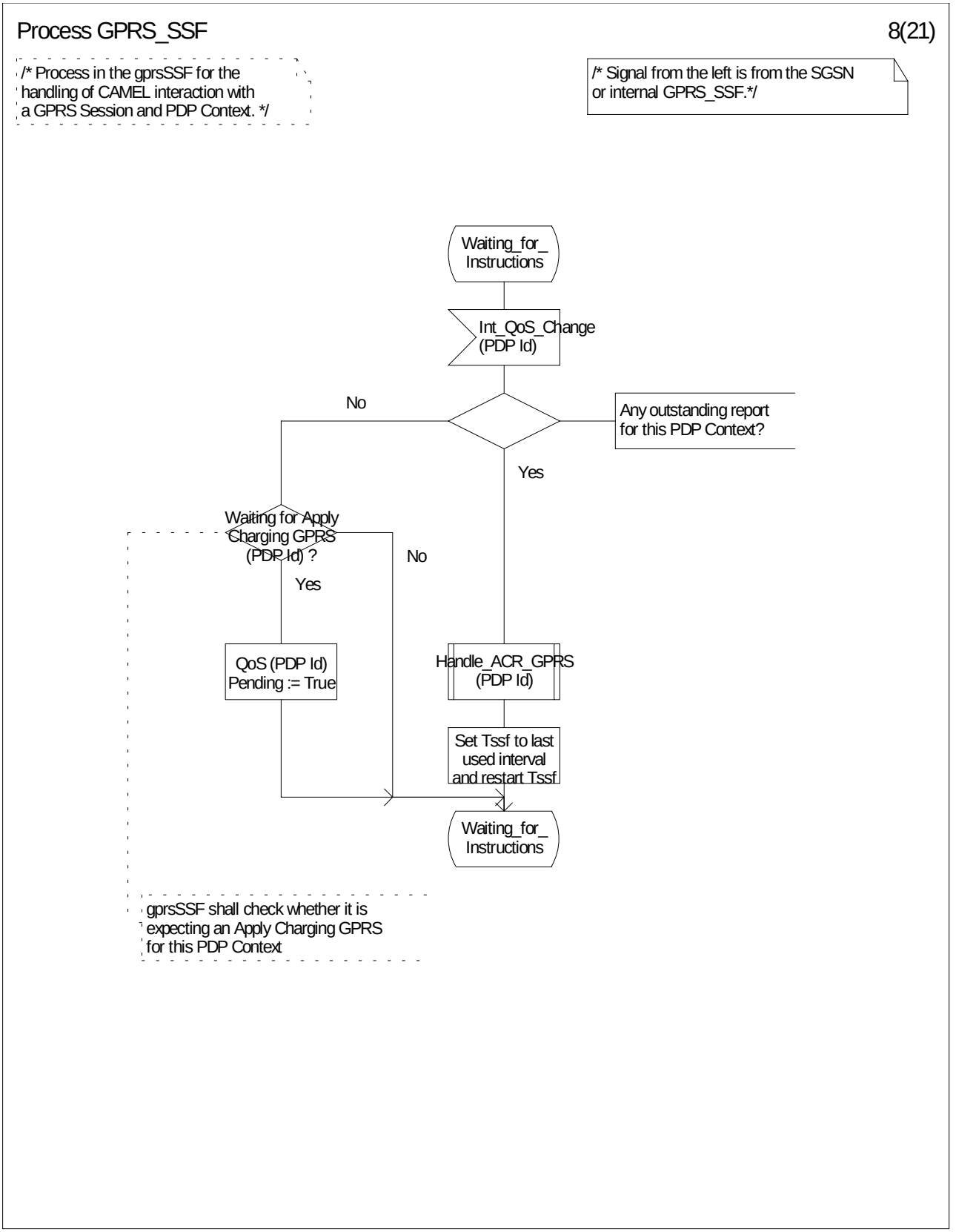
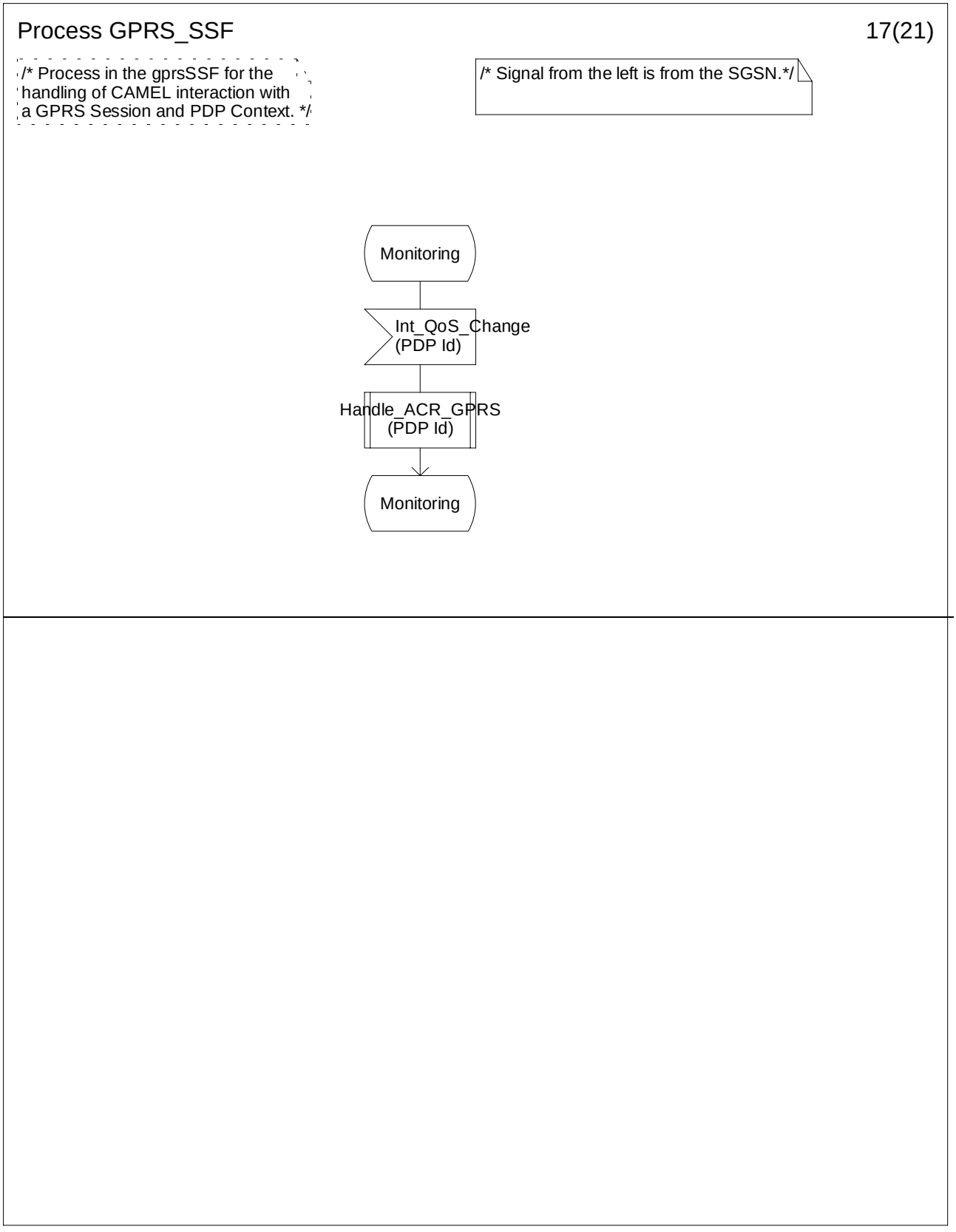


Figure 6.17h: Process GPRS_SSF (sheet 8)



~~Figure 6.17q: Process GPRS_SSF (sheet 17)~~

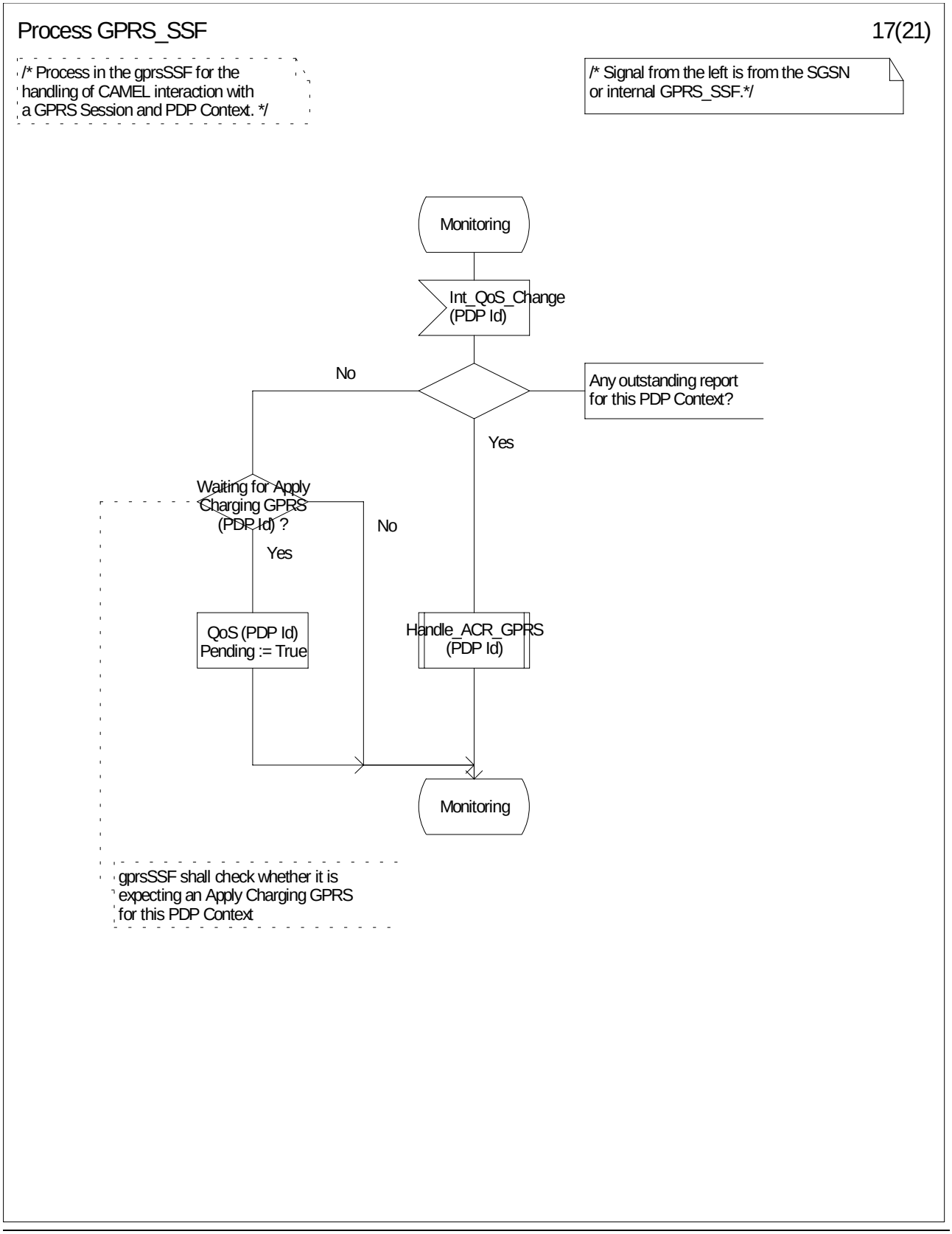
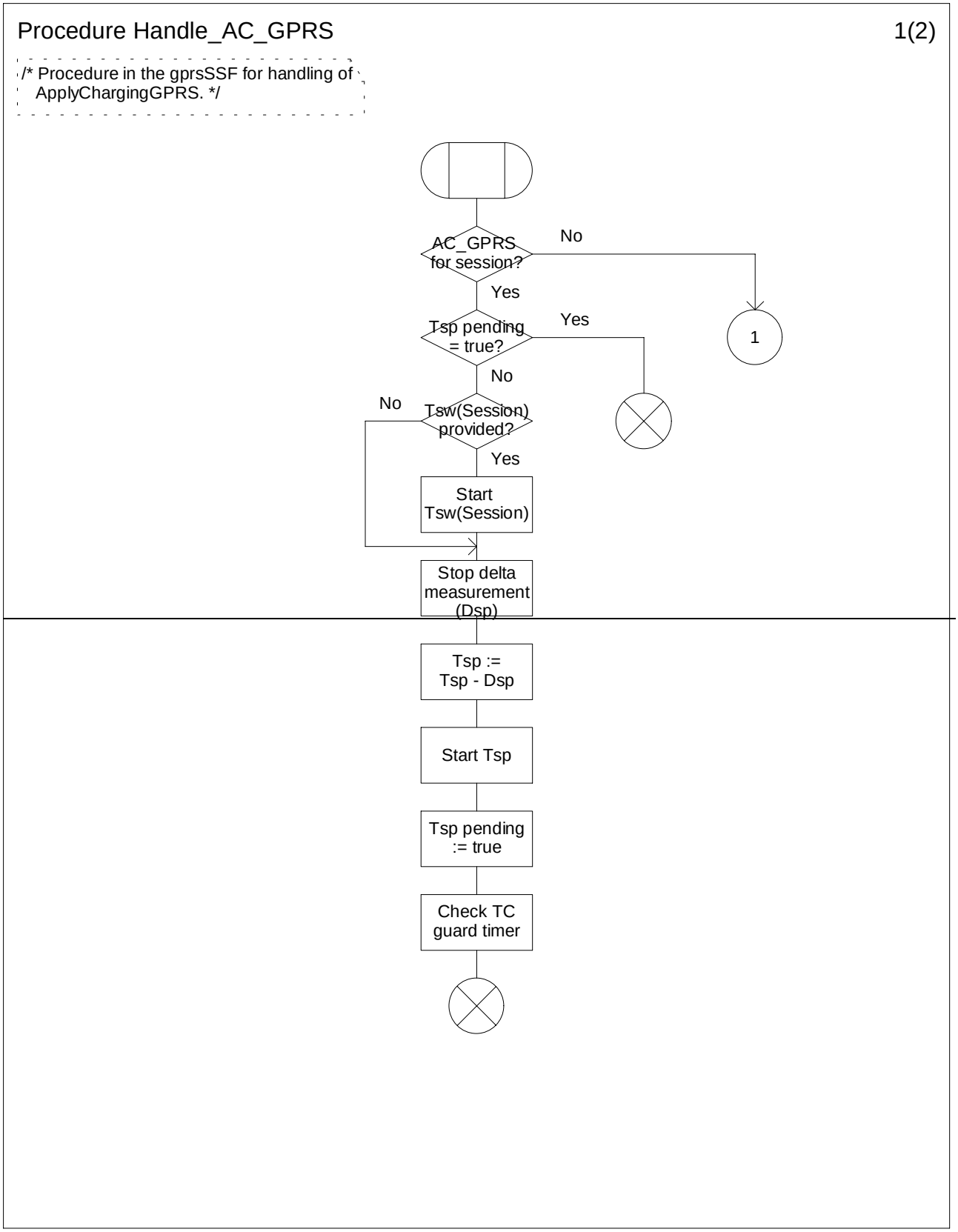
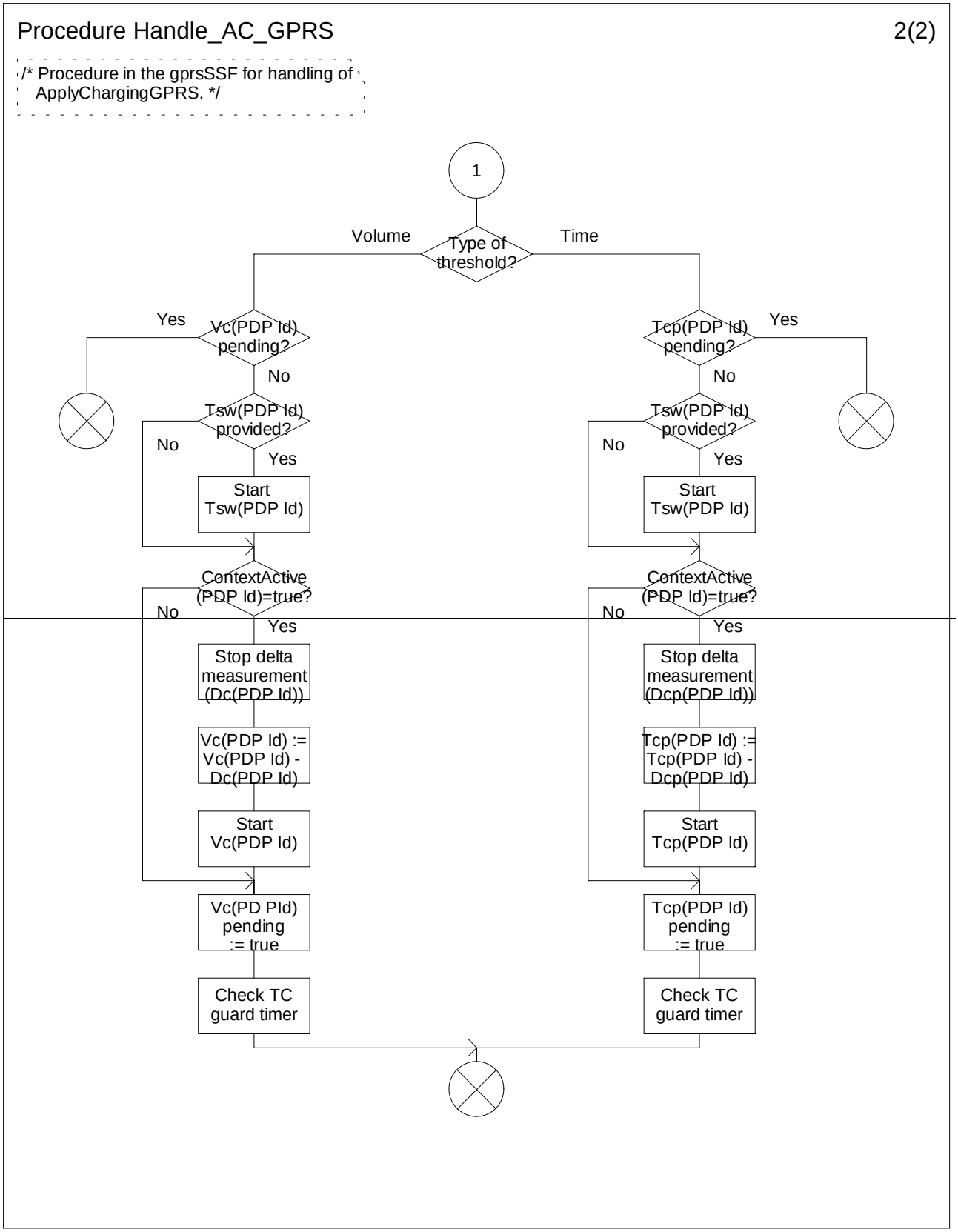


Figure 6.17q: Process GPRS_SSF (sheet 17)



~~Figure 6.19a: Procedure Handle_AC_GPRS (sheet 1)~~



~~Figure 6.19b: Procedure Handle_AC_GPRS (sheet 2)~~

Procedure Handle_AC_GPRS 1(3)

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

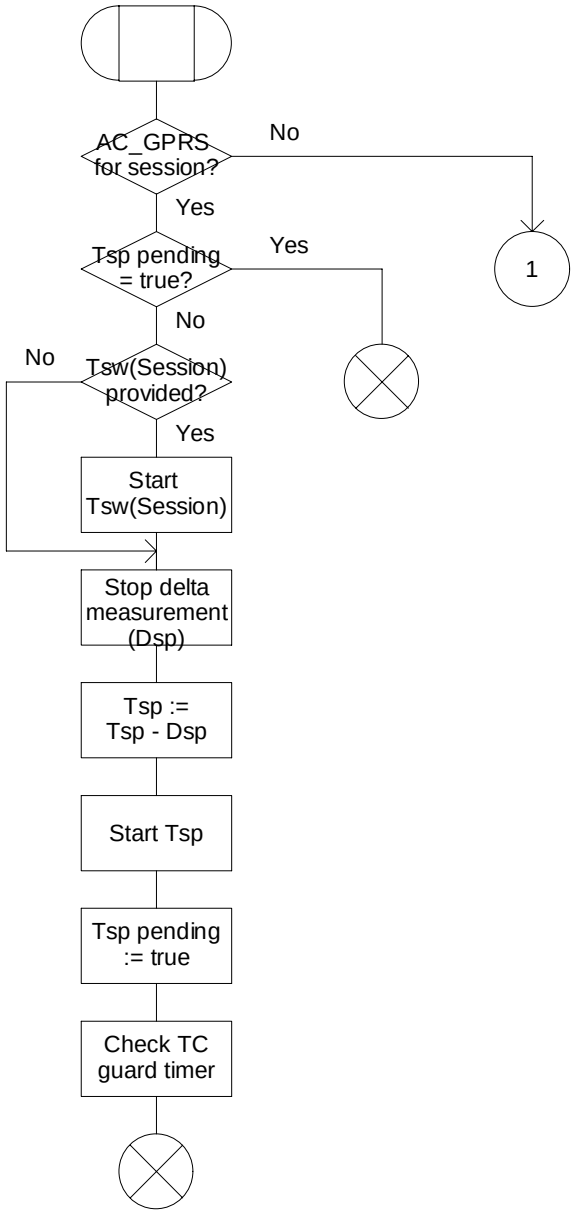


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 1)

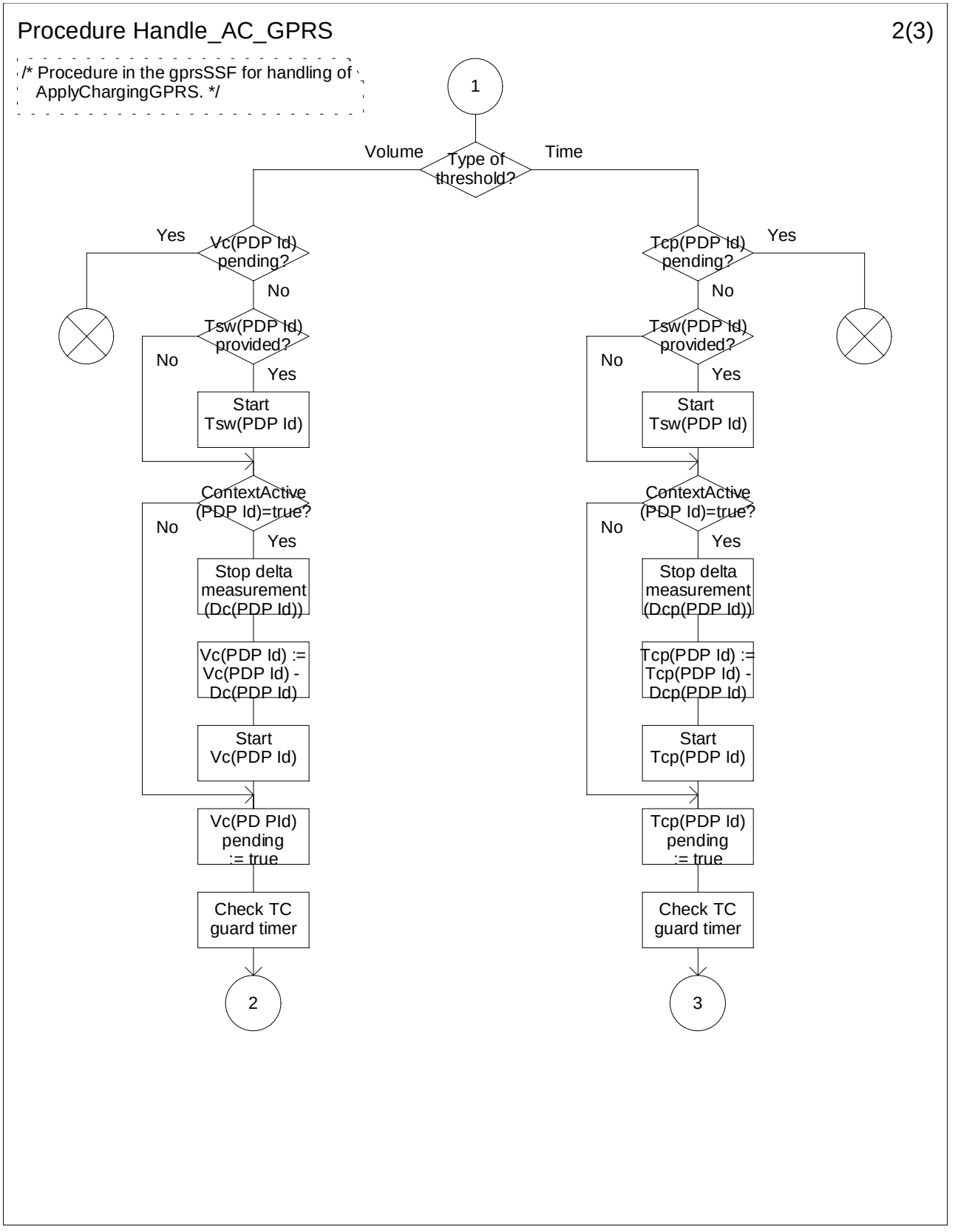


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 2)

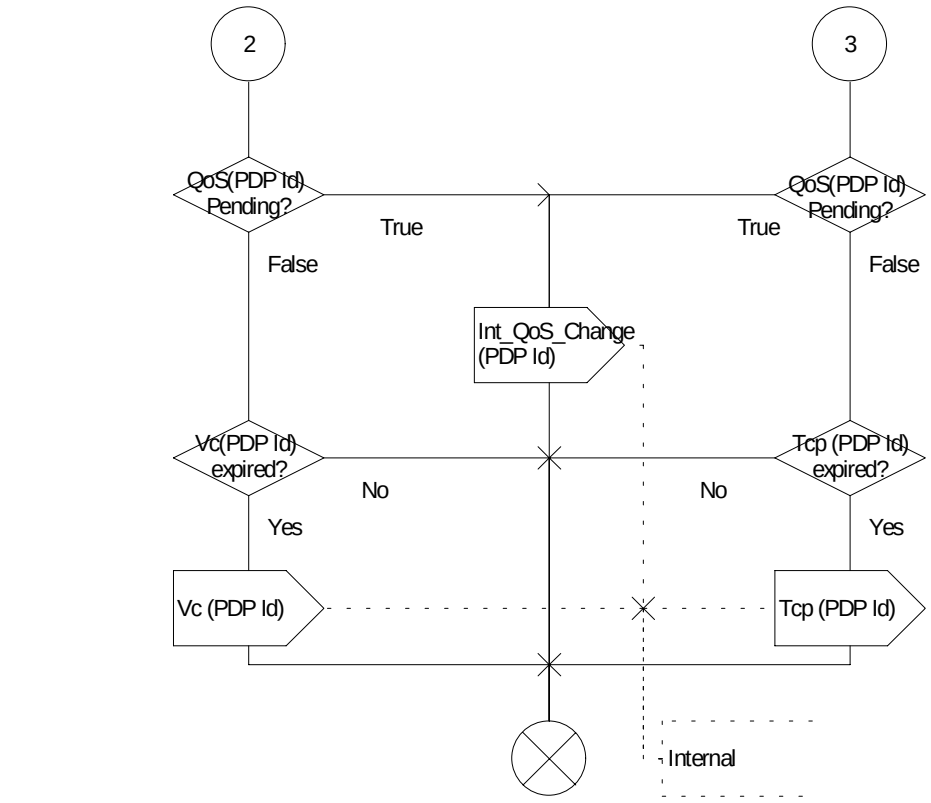
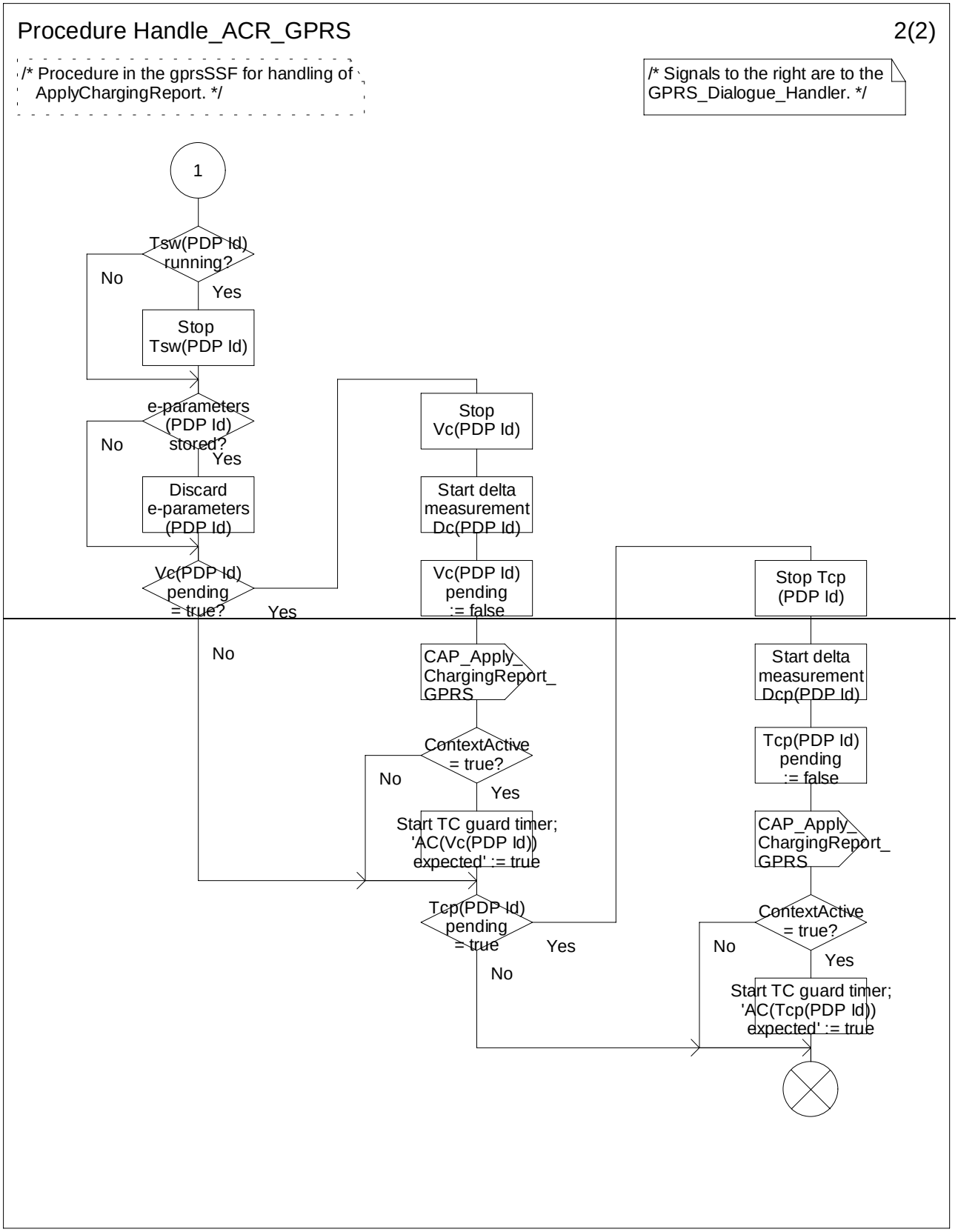


Figure 6.19a: Procedure Handle_AC_GPRS (sheet 3)



~~Figure 6.20b: Procedure Handle_ACR_GPRS (sheet 2)~~

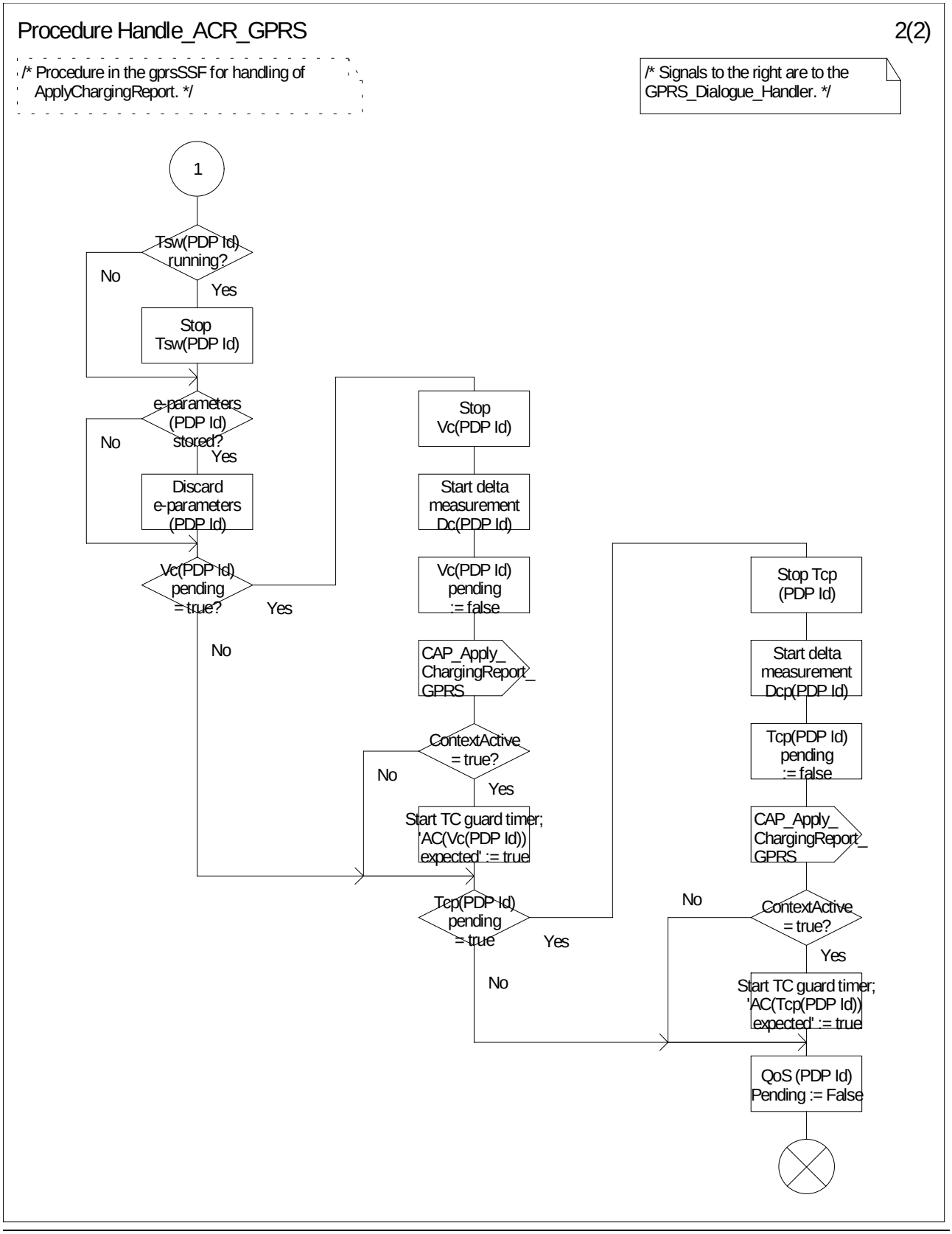


Figure 6.20b: Procedure Handle_ACR_GPRS (sheet 2)

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

6.6.1.2 Apply Charging Report GPRS

6.6.1.2.1 Description

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

6.6.1.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
GPRS Reference Number	C	This IE consists of a number assigned by the gprsSSF and a number assigned by the gsmSCF. It is used for TCAP dialogue segmentation. Refer to 3GPP TS 29.078 [5] for the usage of this element.
Charging Result	M	This IE contains the charging information for the PDP provided by the gprsSSF. It is a choice between elapsed time and data volume.
Quality of Service	C	This IE is described in the table below.
Active	M	This IE indicates if the GPRS session or PDP context is still established, or if it has been detached or deactivated.
PDP ID	C	This IE identifies the PDP Context to which the IF applies. Scenario 1: If no PDP Id is present in the IF, then the Apply Charging Report GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Apply Charging Report GPRS applies to the indicated PDP Context. Scenario 2: No PDP Id is used in the IF.
Charging Roll Over	C	This IE indicates which parameter(s) of the *Charging Result* have overflowed. Refer to 3GPP TS 29.078 [5] for the usage of this element. NOTE: It is possible that early implementations of the gprsSSF do not support this information element.
M Mandatory (The IE shall always be sent). C Conditional (The IE shall be sent, if available).		

Quality of Service contains the following information element:

Information element name	Required	Description
Negotiated QoS	C	This IE identifies the QoS which was negotiated between the user, the SGSN and the GGSN, as a result of a "Modify PDP Context" request. This IE shall be included only if sending of the Apply Charging Report GPRS was triggered by a change in Quality of Service. This IE shall contain the negotiated QoS as on the time of sending the Apply Charging Report GPRS.
C Conditional (The IE shall be sent, if available).		

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

3GPP TSG-CN WG2 Meeting #27 **N2-021033**
Bangkok, Thailand, 11th - 15th November 2002 (revision of N2-021010)

CHANGE REQUEST

⌘ **29.078** **CR** **290** ⌘ **rev** **1** ⌘ Current version: 3.13.0 ⌘

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

Title:	⌘	Correction to CAP Extension Types
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	11/11/2002
Category:	⌘	F (essential correction)
Release:	⌘	R99

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

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

Reason for change: ⌘ The "***For Information***" section of the present CR outlines the reason for change.

Summary of change: ⌘
(1) Specify in section 5 that only value Global OBJECT IDENTIFIER is used for &id for the Extension Class.

(2) Specify in section 5 that only the value ignore (0) is used for &criticality for the Extension Class.

Consequences if not approved: ⌘
a) A gsmSSF or gsmSCF may reject a CAP Operation if an extension parameter is received with local identifier. The same applies to other CAP V3 entities, such as the smsSSF, gprsSSF etc.

b) A new mechanism would be needed in the gsmSSF and the gsmSCF (and other CAP V3 entities) for identifying extension parameters received with local identifiers (something similar to CS1 handling).

c) CAP V3 Operation handling blocks would have to check the criticality of every extension parameter to see if it is "ignore" or "abort", even if no particular extension parameter is specified for that CAP Operation, and act accordingly. In CAP V1 and CAP V2 that was not necessary as criticality was always supposed to be set to "ignore".

Clauses affected: ⌘ 5.5

Other specs affected: ⌘	Y	N	
		X	Other core specifications
		X	Test specifications

⌘

	X	O&M Specifications

Other comments: ⌘

*** For Information ***

In CAP V1 and CAP V2, the EXTENSION class is defined in the following way:

```
EXTENSION               ::= CLASS {
    &ExtensionType,
    &criticality    CriticalityType DEFAULT ignore,
    &id Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType,
    CRITICALITY &criticality,
    IDENTIFIED BY   &id
    }

CriticalityType     ::= ENUMERATED {
    ignore          (0),
    abort           (1)
    }
-- Only value Global OBJECT IDENTIFIER is used for &id
-- Only the value ignore (0) is used for &criticality.
```

In CAP V3, the last two comments are omitted from the definition (in addition, the 'CriticalityType' is imported from CS2 but that is not relevant for the current issue) so it now looks like:

```
EXTENSION ::= CLASS {

&ExtensionType,
    &criticality        CriticalityType DEFAULT ignore,
    &id Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType
    CRITICALITY         &criticality
    IDENTIFIED BY       &id
    }

-- Example of addition of an extension named 'Some Network Specific Indicator' of type
-- BOOLEAN, with criticality 'abort' and to be identified as extension number 1
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator EXTENSION ::= {
--  EXTENSION-SYNTAX    BOOLEAN
--  CRITICALITY         abort
--  IDENTIFIED BY       local: 1
--  }
```

Even the example used in CAP V3 is with local identifier while the example in CAP1 and CAP2 is with object ID.

This implies that now CAP V3 allows both 'ignore' and 'abort' in the 'criticality' parameter of the ExtensionField and both local (INTEGER) and global (OBJECT IDENTIFIER) identifiers in the parameter 'type' of the ExtensionField. This was not intentional for CAP V3.

In CAP V3, some syntax definitions have been imported from CS2. With the importing from CS2, the restriction to the values of criticality and Extension Type was unintentionally removed from CAP. In CS2, this restriction on the values of criticality and Extension Type does not exist. This stems most likely from the fact that CS2 is normally operated within a single network operator's domain; hence, the operator has control over the use and values of these parameters.

In CAMEL, the Extension Fields may be conveyed between different network operators' domains. That means that a receiving entity can not easily interpret a ***local*** Extension Type. In addition, it would not be desirable when the value ***abort*** would be used in cases where an Extension Type would not be recognised by a receiving entity.

Supporting the "abort" value for the criticality requires extensive system implementation. The same applies for supporting the "local" Extension Type. The impact applies to all entities that support CAP V3, i.e. gsmSSF, assisting gsmSSF, IP/gsmSRF, smsSSF, gprsSSF and gsmSCF.

Since the removal of above referred restriction to the values of criticality and Extension Type was unintentional, coupled with the considerable impact it has on the implementation of CAP V3, the present CR proposes that the restriction be re-instated.

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

5.5 Classes

```
CAP-classes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-classes(54) version3(2)}

DEFINITIONS ::= BEGIN

IMPORTS

    ROS-OBJECT-CLASS,
    Code
FROM Remote-Operations-Information-Objects ros-InformationObjects

    id-rosObject-gsmSRF,
    id-rosObject-gsmSSF,
    ros-InformationObjects,
    gsmSSF-gsmSCF-Protocol,
    gsmSCF-gsmSRF-Protocol
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}

    capSsfToScfGeneric,
    capAssistHandoffssfToScf
FROM CAP-gsmSSF-gsmSCF-pkgs-contracts-acs gsmSSF-gsmSCF-Protocol

    gsmSRF-gsmSCF-contract
FROM CAP-gsmSCF-gsmSRF-pkgs-contracts-acs gsmSCF-gsmSRF-Protocol

    CriticalityType
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1) cs2(20)
modules(0) in-cs2-datatypes(0) version1(0)}

;

gsmSSF ROS-OBJECT-CLASS ::= {
    INITIATES   {capSsfToScfGeneric|
                 capAssistHandoffssfToScf}
    RESPONDS    {capSsfToScfGeneric}
    ID          id-rosObject-gsmSSF
    }

gsmSRF ROS-OBJECT-CLASS ::= {
    INITIATES   {gsmSRF-gsmSCF-contract}
    ID          id-rosObject-gsmSRF
    }

EXTENSION ::= CLASS {
    &ExtensionType,
    &criticality    CriticalityType DEFAULT ignore,
    &id             Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType
    CRITICALITY         &criticality
    IDENTIFIED BY       &id
    }
-- Only value Global OBJECT IDENTIFIER is used for &id;
-- Only the value ignore (0) is used for &criticality.

-- Example of addition of an extension named 'Some Network Specific Indicator' of type
-- BOOLEAN, with criticality 'abort' and to be identified as extension number 1
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator EXTENSION ::= {
--   EXTENSION-SYNTAX    BOOLEAN
--   CRITICALITY         abort
--   IDENTIFIED BY       local: 1
--   }
-- Example of addition of an extension named "Some Network Specific Indicator" of type
-- BOOLEAN, with criticality "ignore" and identified by global Object Identifier.
--
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator  EXTENSION ::= {
--  EXTENSION-SYNTAX    BOOLEAN
--  CRITICALITY         ignore
--  IDENTIFIED BY       global : {itu-t(0) identified-organization(4) organisation(0) gsm(1)
--                               capextension(2)}
--  }

-- Example of transfer syntax, using the ExtensionField datatype as specified in subclause 5.
```

```
-- Assuming the value of the extension is set to TRUE, the extensions parameter
-- becomes a Sequence of type INTEGER ::= 1, criticality ENUMERATED ::= 10 and value [1]
-- EXPLICIT BOOLEAN ::= TRUE.
-- Assuming the value of the extension is set to TRUE, the extensions parameter becomes
-- a Sequence of type {itu-t(0) identified-organization(4) organisation(0) gsm(1)
-- capextension(2)}, criticality ENUMERATED ::= ignore(0) and value [1] EXPLICIT BOOLEAN
-- ::= TRUE.
--
-- Use of Q.1400 [28] defined Extension is for further study.
-- In addition the extension mechanism marker is used to identify the future minor additions
-- to CAP.

firstExtension EXTENSION ::= {
    EXTENSION-SYNTAX    NULL
    CRITICALITY         ignore
    IDENTIFIED BY       local: 1global : {itu-t(0) identified-organization(4) organisation(0) gsm(1)
                        capextension(2)}
    }
-- firstExtension is just an example.

SupportedExtensions  EXTENSION ::= {firstExtension, ...
-- full set of network operator extensions --
}
-- SupportedExtension is the full set of the network operator extensions.


...
< unmodified ASN.1 >
...
```

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

3GPP TSG-CN WG2 Meeting #27 **N2-021034**
Bangkok, Thailand, 11th - 15th November 2002

CHANGE REQUEST

⌘ **29.078** **CR** **293** ⌘ **rev** ⌘ Current version: 4.6.0 ⌘

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

Title:	⌘	Correction to CAP Extension Types
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	11/11/2002
Category:	⌘	A
Release:	⌘	Rel-4

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

Use one of the following releases:

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

Reason for change:	⌘	The "***For Information***" section of the present CR outlines the reason for change.
Summary of change:	⌘	(1) Specify in section 5 that only value Global OBJECT IDENTIFIER is used for &id for the Extension Class. (2) Specify in section 5 that only the value ignore (0) is used for &criticality for the Extension Class.
Consequences if not approved:	⌘	a) A gsmSSF or gsmSCF may reject a CAP Operation if an extension parameter is received with local identifier. The same applies to other CAP V3 entities, such as the smsSSF, gprsSSF etc. b) A new mechanism would be needed in the gsmSSF and the gsmSCF (and other CAP V3 entities) for identifying extension parameters received with local identifiers (something similar to CS1 handling). c) CAP V3 Operation handling blocks would have to check the criticality of every extension parameter to see if it is "ignore" or "abort", even if no particular extension parameter is specified for that CAP Operation, and act accordingly. In CAP V1 and CAP V2 that was not necessary as criticality was always supposed to be set to "ignore".

Clauses affected:	⌘	5

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	

	X	O&M Specifications

Other comments: ⌘

*** For Information ***

In CAP V1 and CAP V2, the EXTENSION class is defined in the following way:

```
EXTENSION               ::= CLASS {
    &ExtensionType,
    &criticality    CriticalityType DEFAULT ignore,
    &id Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType,
    CRITICALITY &criticality,
    IDENTIFIED BY   &id
    }

CriticalityType     ::= ENUMERATED {
    ignore          (0),
    abort           (1)
    }
-- Only value Global OBJECT IDENTIFIER is used for &id
-- Only the value ignore (0) is used for &criticality.
```

In CAP V3, the last two comments are omitted from the definition (in addition, the 'CriticalityType' is imported from CS2 but that is not relevant for the current issue) so it now looks like:

```
EXTENSION ::= CLASS {

&ExtensionType,
    &criticality        CriticalityType DEFAULT ignore,
    &id Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType
    CRITICALITY         &criticality
    IDENTIFIED BY       &id
    }

-- Example of addition of an extension named 'Some Network Specific Indicator' of type
-- BOOLEAN, with criticality 'abort' and to be identified as extension number 1
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator EXTENSION ::= {
--  EXTENSION-SYNTAX    BOOLEAN
--  CRITICALITY         abort
--  IDENTIFIED BY       local: 1
--  }
```

Even the example used in CAP V3 is with local identifier while the example in CAP1 and CAP2 is with object ID.

This implies that now CAP V3 allows both 'ignore' and 'abort' in the 'criticality' parameter of the ExtensionField and both local (INTEGER) and global (OBJECT IDENTIFIER) identifiers in the parameter 'type' of the ExtensionField. This was not intentional for CAP V3.

In CAP V3, some syntax definitions have been imported from CS2. With the importing from CS2, the restriction to the values of criticality and Extension Type was unintentionally removed from CAP. In CS2, this restriction on the values of criticality and Extension Type does not exist. This stems most likely from the fact that CS2 is normally operated within a single network operator's domain; hence, the operator has control over the use and values of these parameters.

In CAMEL, the Extension Fields may be conveyed between different network operators' domains. That means that a receiving entity can not easily interpret a ***local*** Extension Type. In addition, it would not be desirable when the value ***abort*** would be used in cases where an Extension Type would not be recognised by a receiving entity.

Supporting the "abort" value for the criticality requires extensive system implementation. The same applies for supporting the "local" Extension Type. The impact applies to all entities that support CAP V3, i.e. gsmSSF, assisting gsmSSF, IP/gsmSRF, smsSSF, gprsSSF and gsmSCF.

Since the removal of above referred restriction to the values of criticality and Extension Type was unintentional, coupled with the considerable impact it has on the implementation of CAP V3, the present CR proposes that the restriction be re-instated.

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

5.5 Classes

```
CAP-classes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-classes(54) version3(2)}

DEFINITIONS ::= BEGIN

IMPORTS

    ROS-OBJECT-CLASS,
    Code
FROM Remote-Operations-Information-Objects ros-InformationObjects

    id-rosObject-gsmSRF,
    id-rosObject-gsmSSF,
    ros-InformationObjects,
    gsmSSF-gsmSCF-Protocol,
    gsmSCF-gsmSRF-Protocol
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}

    capSsfToScfGeneric,
    capAssistHandoffssfToScf
FROM CAP-gsmSSF-gsmSCF-pkgs-contracts-acs gsmSSF-gsmSCF-Protocol

    gsmSRF-gsmSCF-contract
FROM CAP-gsmSCF-gsmSRF-pkgs-contracts-acs gsmSCF-gsmSRF-Protocol

    CriticalityType
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1) cs2(20)
modules(0) in-cs2-datatypes(0) version1(0)}

;

gsmSSF ROS-OBJECT-CLASS ::= {
    INITIATES   {capSsfToScfGeneric|
                 capAssistHandoffssfToScf}
    RESPONDS    {capSsfToScfGeneric}
    ID          id-rosObject-gsmSSF
    }

gsmSRF ROS-OBJECT-CLASS ::= {
    INITIATES   {gsmSRF-gsmSCF-contract}
    ID          id-rosObject-gsmSRF
    }

EXTENSION ::= CLASS {
    &ExtensionType,
    &criticality    CriticalityType DEFAULT ignore,
    &id             Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType
    CRITICALITY         &criticality
    IDENTIFIED BY       &id
    }
-- Only value Global OBJECT IDENTIFIER is used for &id;
-- Only the value ignore (0) is used for &criticality.

-- Example of addition of an extension named 'Some Network Specific Indicator' of type
-- BOOLEAN, with criticality 'abort' and to be identified as extension number 1
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator EXTENSION ::= {
--   EXTENSION-SYNTAX    BOOLEAN
--   CRITICALITY         abort
--   IDENTIFIED BY       local: 1
--   }
-- Example of addition of an extension named "Some Network Specific Indicator" of type
-- BOOLEAN, with criticality "ignore" and identified by global Object Identifier.
--
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator  EXTENSION ::= {
--  EXTENSION-SYNTAX    BOOLEAN
--  CRITICALITY         ignore
--  IDENTIFIED BY       global : {itu-t(0) identified-organization(4) organisation(0) gsm(1)
--                               capextension(2)}
--  }

-- Example of transfer syntax, using the ExtensionField datatype as specified in subclause 5.
```

```
-- Assuming the value of the extension is set to TRUE, the extensions parameter
-- becomes a Sequence of type INTEGER ::= 1, criticality ENUMERATED ::= 10 and value [1]
-- EXPLICIT BOOLEAN ::= TRUE.
-- Assuming the value of the extension is set to TRUE, the extensions parameter becomes
-- a Sequence of type {itu-t(0) identified-organization(4) organisation(0) gsm(1)
-- capextension(2)}, criticality ENUMERATED ::= ignore(0) and value [1] EXPLICIT BOOLEAN
-- ::= TRUE.
--
-- Use of Q.1400 [28] defined Extension is for further study.
-- In addition the extension mechanism marker is used to identify the future minor additions
-- to CAP.

firstExtension EXTENSION ::= {
    EXTENSION-SYNTAX    NULL
    CRITICALITY         ignore
    IDENTIFIED BY       local: 1global : {itu-t(0) identified-organization(4) organisation(0) gsm(1)
                        capextension(2)}
    }
-- firstExtension is just an example.

SupportedExtensions  EXTENSION ::= {firstExtension, ...
-- full set of network operator extensions --
}
-- SupportedExtension is the full set of the network operator extensions.


...
< unmodified ASN.1 >
...
```

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

3GPP TSG-CN WG2 Meeting #27 **N2-021035**
Bangkok, Thailand, 11th - 15th November 2002

CHANGE REQUEST

⌘ **29.078** **CR** **294** ⌘ **rev** ⌘ Current version: **5.1.0** ⌘

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

Title:	⌘	Correction to CAP Extension Types
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL3
Date:	⌘	11/11/2002
Category:	⌘	A
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	The "***For Information***" section of the present CR outlines the reason for change.
Summary of change:	⌘	(1) Specify in section 5 that only value Global OBJECT IDENTIFIER is used for &id for the Extension Class. (2) Specify in section 5 that only the value ignore (0) is used for &criticality for the Extension Class.
Consequences if not approved:	⌘	a) A gsmSSF or gsmSCF may reject a CAP Operation if an extension parameter is received with local identifier. The same applies to other CAP V3 entities, such as the smsSSF, gprsSSF etc. b) A new mechanism would be needed in the gsmSSF and the gsmSCF (and other CAP V3 entities) for identifying extension parameters received with local identifiers (something similar to CS1 handling). c) CAP V3 Operation handling blocks would have to check the criticality of every extension parameter to see if it is "ignore" or "abort", even if no particular extension parameter is specified for that CAP Operation, and act accordingly. In CAP V1 and CAP V2 that was not necessary as criticality was always supposed to be set to "ignore".

Clauses affected:	⌘	5

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	

	X	O&M Specifications

Other comments: ⌘

*** For Information ***

In CAP V1 and CAP V2, the EXTENSION class is defined in the following way:

```
EXTENSION               ::= CLASS {
    &ExtensionType,
    &criticality    CriticalityType DEFAULT ignore,
    &id Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType,
    CRITICALITY &criticality,
    IDENTIFIED BY   &id
    }

CriticalityType     ::= ENUMERATED {
    ignore          (0),
    abort           (1)
    }
-- Only value Global OBJECT IDENTIFIER is used for &id
-- Only the value ignore (0) is used for &criticality.
```

In CAP V3, the last two comments are omitted from the definition (in addition, the 'CriticalityType' is imported from CS2 but that is not relevant for the current issue) so it now looks like:

```
EXTENSION ::= CLASS {

&ExtensionType,
    &criticality        CriticalityType DEFAULT ignore,
    &id Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType
    CRITICALITY         &criticality
    IDENTIFIED BY       &id
    }

-- Example of addition of an extension named 'Some Network Specific Indicator' of type
-- BOOLEAN, with criticality 'abort' and to be identified as extension number 1
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator EXTENSION ::= {
--  EXTENSION-SYNTAX    BOOLEAN
--  CRITICALITY         abort
--  IDENTIFIED BY       local: 1
--  }
```

Even the example used in CAP V3 is with local identifier while the example in CAP1 and CAP2 is with object ID.

This implies that now CAP V3 allows both 'ignore' and 'abort' in the 'criticality' parameter of the ExtensionField and both local (INTEGER) and global (OBJECT IDENTIFIER) identifiers in the parameter 'type' of the ExtensionField. This was not intentional for CAP V3.

In CAP V3, some syntax definitions have been imported from CS2. With the importing from CS2, the restriction to the values of criticality and Extension Type was unintentionally removed from CAP. In CS2, this restriction on the values of criticality and Extension Type does not exist. This stems most likely from the fact that CS2 is normally operated within a single network operator's domain; hence, the operator has control over the use and values of these parameters.

In CAMEL, the Extension Fields may be conveyed between different network operators' domains. That means that a receiving entity can not easily interpret a ***local*** Extension Type. In addition, it would not be desirable when the value ***abort*** would be used in cases where an Extension Type would not be recognised by a receiving entity.

Supporting the "abort" value for the criticality requires extensive system implementation. The same applies for supporting the "local" Extension Type. The impact applies to all entities that support CAP V3, i.e. gsmSSF, assisting gsmSSF, IP/gsmSRF, smsSSF, gprsSSF and gsmSCF.

Since the removal of above referred restriction to the values of criticality and Extension Type was unintentional, coupled with the considerable impact it has on the implementation of CAP V3, the present CR proposes that the restriction be re-instated.

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

5.5 Classes

```
CAP-classes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-classes(54) version3(2)}

DEFINITIONS ::= BEGIN

IMPORTS

    ROS-OBJECT-CLASS,
    Code
FROM Remote-Operations-Information-Objects ros-InformationObjects

    id-rosObject-gsmSRF,
    id-rosObject-gsmSSF,
    ros-InformationObjects,
    gsmSSF-gsmSCF-Protocol,
    gsmSCF-gsmSRF-Protocol
FROM CAP-object-identifiers {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}

    capSsfToScfGeneric,
    capAssistHandoffssfToScf
FROM CAP-gsmSSF-gsmSCF-pkgs-contracts-acs gsmSSF-gsmSCF-Protocol

    gsmSRF-gsmSCF-contract
FROM CAP-gsmSCF-gsmSRF-pkgs-contracts-acs gsmSCF-gsmSRF-Protocol

    CriticalityType
FROM CS2-datatypes {ccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1) cs2(20)
modules(0) in-cs2-datatypes(0) version1(0)}

;

gsmSSF ROS-OBJECT-CLASS ::= {
    INITIATES   {capSsfToScfGeneric|
                 capAssistHandoffssfToScf}
    RESPONDS    {capSsfToScfGeneric}
    ID          id-rosObject-gsmSSF
    }

gsmSRF ROS-OBJECT-CLASS ::= {
    INITIATES   {gsmSRF-gsmSCF-contract}
    ID          id-rosObject-gsmSRF
    }

EXTENSION ::= CLASS {
    &ExtensionType,
    &criticality    CriticalityType DEFAULT ignore,
    &id             Code
    }

WITH SYNTAX {
    EXTENSION-SYNTAX    &ExtensionType
    CRITICALITY         &criticality
    IDENTIFIED BY       &id
    }
-- Only value Global OBJECT IDENTIFIER is used for &id;
-- Only the value ignore (0) is used for &criticality.

-- Example of addition of an extension named 'Some Network Specific Indicator' of type
-- BOOLEAN, with criticality 'abort' and to be identified as extension number 1
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator EXTENSION ::= {
--   EXTENSION-SYNTAX    BOOLEAN
--   CRITICALITY         abort
--   IDENTIFIED BY       local: 1
--   }
-- Example of addition of an extension named "Some Network Specific Indicator" of type
-- BOOLEAN, with criticality "ignore" and identified by global Object Identifier.
--
-- Example of definition using the above information object class:
--
-- SomeNetworkSpecificIndicator  EXTENSION ::= {
--  EXTENSION-SYNTAX    BOOLEAN
--  CRITICALITY         ignore
--  IDENTIFIED BY       global : {itu-t(0) identified-organization(4) organisation(0) gsm(1)
--                               capextension(2)}
--  }
```

```
-- Example of transfer syntax, using the ExtensionField datatype as specified in subclause 5.
-- Assuming the value of the extension is set to TRUE, the extensions parameter
-- becomes a Sequence of type INTEGER ::= 1, criticality ENUMERATED ::= 10 and value [1]
-- EXPLICIT BOOLEAN ::= TRUE.
-- Assuming the value of the extension is set to TRUE, the extensions parameter becomes
-- a Sequence of type {itu-t(0) identified-organization(4) organisation(0) gsm(1)
-- capextension(2)}, criticality ENUMERATED ::= ignore(0) and value [1] EXPLICIT BOOLEAN
-- ::= TRUE.
--
-- Use of Q.1400 [28] defined Extension is for further study.
-- In addition the extension mechanism marker is used to identify the future minor additions
-- to CAP.

firstExtension EXTENSION ::= {
    EXTENSION-SYNTAX    NULL
    CRITICALITY         ignore
    IDENTIFIED BY       local: 1global : {itu-t(0) identified-organization(4) organisation(0) gsm(1)
                        capextension(2)}
    }
-- firstExtension is just an example.

SupportedExtensions  EXTENSION ::= {firstExtension, ...
-- full set of network operator extensions --
}
-- SupportedExtension is the full set of the network operator extensions.


...
< unmodified ASN.1 >
...
```

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