3GPP TSG CN Plenary Meeting #18 **NP-020527**
4th - 6th December 2002. New Orleans, USA.

Source: TSG CN WG2

Title: CRs on Rel-5 Work Item CAMEL4, CR Pack 2

Agenda item: 8.3

Document for: APPROVAL

Introduction:

This document contains 9 CRs on Rel-5 WI CAMEL4. These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #18 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.078	482		N2-020974	Rel-5	Correction on DP name	F	5.1.0
23.078	494		N2-020994	Rel-5	Inconsistent description "Store destination address"	F	5.1.0
29.078	276		N2-021000	Rel-5	Correction to GPRS dialogue abortion	F	5.1.0
29.078	291		N2-021015	Rel-5	ASN default for Flexible Tone BurstInterval due to MEGACO	F	5.1.0
23.078	500	1	N2-021081	Rel-5	ASN default for Flexible Tone BurstInterval due to MEGACO	F	5.1.0
23.078	504		N2-021021	Rel-5	Removal of redundant information elements from Location Information	F	5.1.0
23.078	485	1	N2-021027	Rel-5	Correction of "Support of partial implementation of CAMEL"	F	5.1.0
23.078	418	4	N2-021043	Rel-5	Playing of Warning Tones	F	5.1.0
23.078	466	1	N2-021045	Rel-5	Correction to VLR Address in Location Information	F	5.1.0

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

Tdoc ⌘N2-020974

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **482** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Correction on DP name
Source:	⌘	Siemens AG
Work item code:	⌘	CAMEL4
Date:	⌘	31/10/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	In Event Report BCSM IF, non-existent DP name is used. This DP should be O_Busy.
Summary of change:	⌘	Change O_Called_Party_Busy to O_Busy
Consequences if not approved:	⌘	Reader can not find the meaning of this DP anywhere in the specification.

Clauses affected:	⌘	4

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

⌘

Other comments: ⌘

4.6.1.6 Event Report BCSM

4.6.1.6.1 Description

This IF is used to notify the gsmSCF of a call-related event (i.e., BCSM events as answer and disconnect) previously requested by the gsmSCF in a Request Report BCSM Event IF.

4.6.1.6.2 Information Elements

Information element name	MO	MF	MT	VT	NC	NP	Description
Event Type BCSM	M	M	M	M	M	M	This IE specifies the type of event that is reported.
Event Specific Information BCSM	C	C	C	C	C	C	This IE indicates the call related information specific to the event.
Leg ID	M	M	M	M	M	M	This IE indicates the party in the call for which the event is reported.
Misc Call Info	M	M	M	M	M	M	This IE indicates the DP type.

If the Event Type BCSM IE contains either O_Answer or T_Answer, then the Event Specific Information BCSM IE contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Destination Address	M	M	M	M	M	M	This IE specifies the destination address for the call leg. The *NatureOfAddress indicator* may contain a national-specific value. For some national-specific *NatureOfAddress indicator* values the length of the digit part of destination address may be zero.
OR	-	C	C	-	-	-	This IE indicates that the call was subject to basic Optimal Routeing as specified in 3GPP TS 23.079 [18].
Forwarded Call	-	M	C	C	-	-	This IE indicates that the call has been subject to a Call Forwarding supplementary service.
Charge Indicator	S	S	S	S	S	S	This IE specifies the value which will be stored in the Call Data Record. See ITU-T Recommendation Q.763 [40].

If the Event Type BCSM IE contains either O_Mid_Call or T_Mid_Call, then the Event Specific Information BCSM IE contains the following information element:

Information element name	MO	MF	MT	VT	NC	NP	Description
Midcall Info	M	-	-	M	-	-	This IE is described in a table below.

MidCall Info contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
DTMF Digits Completed	S,E	-	-	S,E	-	-	This IE contains the detected mid-call digits. This IE shall be present when triggering takes place after the minimum number of digits has been detected.
DTMF Digits Timeout	S,E	-	-	S,E	-	-	This IE contains the detected mid-call digits. This IE shall be present when triggering takes place before the minimum number of digits has been detected.

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

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

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

Information element name	MO	MF	MT	VT	NC	NP	Description
Cause	C	C	C	C	-	-	This IE indicates the cause.
Call forwarded	-	-	C	C	-	-	This IE indicates that the call may be forwarded by the appropriate Call Forwarding supplementary service or Call Deflection supplementary service. If T_Busy is reported from the GMSC, then this IE shall be present in the following cases: - The event is triggered by the reception of an FTN in the 2nd Send Routeing Info ack from the HLR; - The event is triggered by the reception of the Resume Call Handling information flow from the VMSC. If T_Busy is reported from the VMSC, then this IE shall be present in the following cases: - The event is triggered by the invocation of conditional call forwarding (Busy or Not_Reachable); - The event notification is triggered by the invocation of Call Deflection.
Route Not permitted	-	-	S	-	-	-	This IE indicates that the further call setup will not take place in this GMSC due to the rules of basic optimal routeing. See 3GPP TS 23.079 [18].
Forwarding Destination Number	-	-	C	C	-	-	This IE contains the Forwarded-to-Number or the Deflected-to-Number. It shall be present if the Call Forwarded IE is present. Otherwise, it shall be absent.

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

Information element name	MO	MF	MT	VT	NC	NP	Description
Call Forwarded	-	-	C	C	-	-	This IE indicates that the call may be forwarded by the appropriate Call Forwarding supplementary service. If T_No_Answer is reported from the GMSC, then this IE shall be present in the following cases: - The event is triggered by the reception of the Resume Call Handling information flow from the VMSC. If the T_No_Answer is reported from the VMSC, then this IE shall be present in the following cases: - The event is triggered by the invocation of conditional call forwarding (No_Answer).
Forwarding Destination Number	-	-	C	C	-	-	This IE contains the Forwarded-to-Number or the Deflected-to-Number. It shall be present if the Call Forwarded IE is present. Otherwise, it shall be absent.

If the Event Type BCSM IE contains Call_Accepted, O_Term_Seized, O_Change_Of_Position or T_Change_Of_Position, then the Event Specific Information BCSM IE contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Location Information	C	-	-	C	-	-	See subclause 4.6.1.8.

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

Information element name	MO	MF	MT	VT	NC	NP	Description
Route Not Permitted	-	S	-	-	-	-	This IE indicates that the further call setup will not take place in this MSC due to the rules of basic optimal routeing. See 3GPP TS 23.079 [18].

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

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CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **494** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Inconsistent description “Store destination address”
Source:	⌘	Siemens AG
Work item code:	⌘	CAMEL4
Date:	⌘	31/10/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	SDL CAMEL_Store_Destination_Address does not have the internal signal while there is a description in subclause 4.5.2.1.9 about Int_Store_DA. There was a CR 23.078-225r1 (N2-000530) which replaced Int_Store_DA by the task box to store destination address in the SDL. But at that time, the correction in the text was missing.
Summary of change:	⌘	Delete the whole sentense.
Consequences if not approved:	⌘	Inconsistent description. Non-existent internal signal would confuse the readers.

Clauses affected:	⌘	

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

Other comments:	⌘	

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

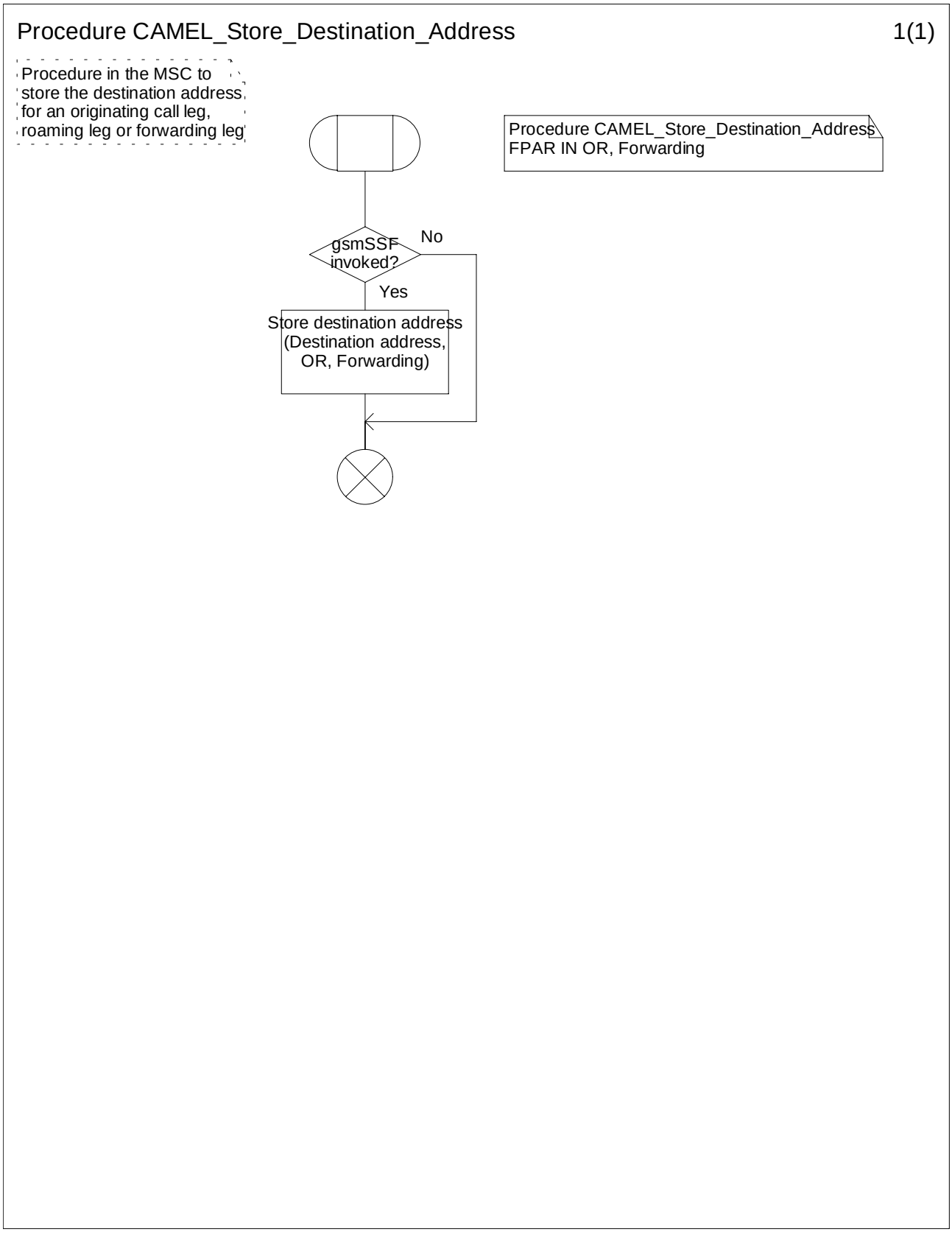

Figure 4.24: Procedure CAMEL_Store_Destination_Address (sheet 1)

***** Modification *****

~~4.5.2.1.9 Action of the MSC in procedure CAMEL_Store_Destination_Address~~

~~The Int_Store_DA message carries the value of the global variable Destination address and the parameters OR and Forwarding received in the procedure call.~~

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CHANGE REQUEST

⌘ **29.078** **CR** **276** ⌘ **rev** ⌘ Current version: **5.1.0** ⌘

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

Title:	⌘	Correction to GPRS dialogue abortion
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4
Date:	⌘	17/09/2002
Category:	⌘	F (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:	⌘	Section 14.1.4.2.1 (gsmSCF-to-gprsSSF messages) specifies how a gsmSCF may terminate a GPRS dialogue between the gsmSCF and the gprsSSF. It is however not specified whether or not the gprsSSF shall terminate the PDP Context or GPRS Session. The gprsSSF shall in that case apply the Default GPRS Handling to the PDP Context or GPRS Session. The Default GPRS Handling shall be obtained from the GPRS-CSI. Section 14.1.4.2.1 also specifies gprsSSF handling in the case that ERROR or REJECT components are received in TC_Continue. In that case, the gprsSSF shall also apply Default GPRS Handling.
Summary of change:	⌘	Specify in section 14.1.4.2.1 that the gprsSSF shall apply the Default GPRS Handling of the valid CSI to the PDP Context or GPRS Session.
Consequences if not approved:	⌘	- gprsSSFs may omit to terminate the PDP Context, resulting in the continuation of the PDP COntext, without SCP control; - gprsSSFs may handle in violation of the Default GPRS Handling, resulting in the forced termination of a PDP Context, whilst the operator had specified in the GPRS-CSI that the PDP Context shall be maintained in the case of a communication failure between the gsmSCF and the gprsSSF. - GprsSSFs may have inconsistent behaviour w.r.t. the handling of ERROR or REJECT components received in TC_Continue.

Clauses affected:	⌘	14.1.4.2.1

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

*** *First Modification* ***

14.1.4.2 Abnormal procedures

14.1.4.2.1 gsmSCF-to-gprsSSF messages

The present subclause defines the abnormal procedures for TC messages from the gsmSCF to the gprsSSF.

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

- Operation errors and rejection of TC components shall be transmitted to the gprsSSF with a TC-END request primitive, basic end.
- The GPRS dialogue shall be closed.
- The gprsSSF shall apply Default GPRS Handling from the valid CSI to the PDP Context or GPRS Session.

If, in violation of the above procedure, an ERROR or REJECT component is received with a TC-CONTINUE indication primitive, then the gprsSSF shall abort the dialogue with a TC-U-ABORT request primitive and shall apply Default GPRS Handling from the valid CSI to the PDP Context or GPRS Session.

14.1.4.2.2 gprsSSF-to-gsmSCF messages

The present subclause defines the abnormal procedures for TC messages from the gprsSSF to the gsmSCF.

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

- The TC dialogue shall be maintained when the preceding message, which contained the erroneous component, indicated that the dialogue shall be maintained. I.e. the error or reject shall be transmitted with a TC-CONTINUE request primitive.
  On receipt of an ERROR or REJECT component the gsmSCF decides on further processing. It may either continue, explicitly end or abort the TC dialogue. If the TC dialogue is closed due to such error, then the GPRS dialogue shall also be closed.
- on expiration of application timer Tssf, the TC dialogue shall be terminated by means of by TC-U-ABORT primitive with an Abort reason. The GPRS dialogue shall be closed.

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

The gprsSSF can end a TC dialogue with a TC-U-ABORT request primitive in the following case:

- Any entity other than the gsmSCF initiates closure of the GPRS dialogue, and
- The gprsSSF has no pending reports, and
- The gprsSSF has no armed EDP to notify the gsmSCF that the GPRS dialogue has been closed.

For an alternative method, see subclause 14.1.7.1.1.

14.1.4.2.3 Default GPRS Handling

If a TC dialogue is closed due to unrecoverable TC/protocol error (does not apply to the overlapping TC dialogues), or aborted by the gsmSCF, or at the Tssf expiry, then the gprsSSF shall check the applicable Default GPRS Handling parameter of the GPRS-CSI. In this context the applicable Default GPRS Handling is the one that corresponds the TDP that opened the GPRS dialogue. The same default handling shall apply to all state models that are controlled by the particular GPRS dialogue.

*** *End of Document* ***

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CHANGE REQUEST

⌘ **29.078** **CR** **291** ⌘ **rev** **-** ⌘ Current version: 5.1.0 ⌘

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

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

Title:	⌘	ASN default for Flexible Tone BurstInterval due to MEGACO
Source:	⌘	Nokia
Work item code:	⌘	CAMEL4
Date:	⌘	1/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	MECAGO interface between MSC server and Media Gateway (MGW) requires default for all parameters. It would be easier implementation if the SCP – MSC server interface did have the same ASN defaults.
Summary of change:	⌘	Default 2 introduced for BurstInterval
Consequences if not approved:	⌘	A bit more complicated MSC server implementation

Clauses affected:	⌘	5.1

Other specs affected: ⌘	Y	N			
	X		Other core specifications	⌘	23.078-CR500
		X	Test specifications		
		X	O&M Specifications		

Other comments:	⌘	No similar change in 29.278 needed. N2-020926 contains the corresponding 29.232 change.

For your information 29.232 CR:

15.1.8 Flexible Tone Generator Package

PackageID: threegflex (0x00??) Note: **PackageID to be confirmed and registered by IANA**.

Version: 1

Extends: threegxcg version 1

This package extends "3G Expanded Call Progress Tones Generator Package", as defined in chapter 15.1.4 above. This package adds a new tone for call duration control in CAMEL phase 4, supporting variable sequence of tones and burst list.

15.1.8.1 Properties

None

15.1.8.2 Events

None

15.1.8.3 Signals

Signal Name: Flexible Tone

SignalID: ft (0x0050)

Description:

Generate flexible 900Hz tone. The physical characteristics of Flexible Tone is not described in the additional parameters. It shall be available in the Media Gateway..

SignalType: Brief

Duration: Provisioned

Additional Parameters:

Parameter Name: Burst List Direction

Description: Used to indicate the direction the tone is to be sent. External indicates that the tone is sent from the MG to an external point. Internal indicates that the tone is played into the Context to the other terminations. Bothway indicates both internal and external behaviour.

ParameterID: bld (0x0001)

Type: Enumeration

Possible Values:

“Ext” (0x01): External

“Int” (0x02): Internal

“Both” (0x03): Bothway

Default: “Ext” (0x01)

Parameter Name: numberOfBursts

Description: Number of bursts in the burst list.

ParameterID: nob (0x0002)

Type: Integer

Possible values: 1 to 3

Default: 1

Parameter Name: burstInterval

Description: Time interval between two consecutive bursts expressed in amount of 100 millisecond units.

ParameterID: bi (0x0003)

Type: Integer

Possible values: 1 to 20

Default: 2

Parameter Name: numberOfTonesInBurst

Description: Number of tones to be played in each burst.

ParameterID: notib (0x0004)

Type: Integer

Possible values: 1 to 3

Default: 3

Parameter Name: toneDuration

Description: Duration of each tone in a burst expressed in amount of 100 millisecond units.

ParameterID: td (0x0005)

Type: Integer

Possible values: 1 to 20

Default: 2

Parameter Name: toneInterval

Description: Time interval between two consecutive tones in a burst expressed in amount of 100 millisecond units.

ParameterID: ti (0x0006)

Type: Integer

Possible values: 1 to 20

Default: 2

5 Common CAP Types

5.1 Data types

….

```
Burst ::= SEQUENCE {
    numberOfBursts                  [0] INTEGER (1..3)  DEFAULT 1,
    burstInterval                   [1] INTEGER (1..20) DEFAULT 2,
    ~~OPTIONAL,~~
    numberOfTonesInBurst            [2] INTEGER (1..3)  DEFAULT 3,
    toneDuration                    [3] INTEGER (1..20) DEFAULT 2,
    toneInterval                    [4] INTEGER (1..20) DEFAULT 2
    }
-- burstInterval, toneDurartion and toneInterval are measured in 100 millisecond units
```

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CHANGE REQUEST

⌘ **23.078** **CR** **504** ⌘ **rev** **-** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Removal of redundant information elements from Location Information
Source:	⌘	Vodafone
Work item code:	⌘	CAMEL4
Date:	⌘	01/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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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 compound information element Location Information, which is specific to the CS domain, includes two elements (Routeing area ID and SGSN number) which are specific to the PS domain. Routeing area ID and SGSN number are part of Location Information For GPRS. The stage 3 definition in 29.002 does not include these elements as part of LocationInformation; it includes them as part of LocationInformationGPRS.
Summary of change:	⌘	Delete the rows for Routeing area ID and SGSN number from the table for Location Information
Consequences if not approved:	⌘	Misalignment between stage 2 & stage 3; functionally unnecessary elements.

Clauses affected:	⌘	11.3.4.1.2

		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.

11.3.4 HLR to gsmSCF information flows

11.3.4.1 Any Time Interrogation ack

11.3.4.1.1 Description

This IF is used by the HLR to provide the requested subscriber location and/or subscriber state information to the gsmSCF.

11.3.4.1.2 Information Elements

Information element name	Status	Description
Location Information	C, E1	This IE indicates the location of the served subscriber in the MSC/VLR. It shall be present only if requested by the gsmSCF.
Location Information For GPRS	C, E1	This IE indicates the location of the served subscriber in the SGSN. The content is defined in the subclause **Error! Reference source not found.**. It shall be present only if requested by the gsmSCF.
Subscriber State	S, E2	This IE indicates the state of the MS in the CS domain. It shall be present only if requested by the gsmSCF. The possible values of the IE are: - CAMELBusy: The VLR has indicated that the MS is engaged in a transaction for a mobile originating or terminated circuit-switched call. - NetworkDeterminedNotReachable: The VLR has indicated that the network can determine from its internal data that the MS is not reachable. - AssumedIdle: The VLR has indicated that the state of the MS is neither "CAMELBusy" nor "NetworkDeterminedNotReachable". - NotProvidedFromVLR: The VLR did not provide any information on subscriber state even though it was requested.
PS Domain Subscriber State	S, E2	This IE indicates the state of the MS in the PS Domain. It shall be present only if requested by the gsmSCF. The possible values of the IE are: - Detached (see subclause **Error! Reference source not found.**). - CAMEL attached, MS not reachable for paging (see subclause **Error! Reference source not found.**). - CAMEL attached, MS may be reachable for paging (see subclause **Error! Reference source not found.**). - CAMEL PDP active, MS not reachable for paging (see subclause **Error! Reference source not found.**). - CAMEL PDP active, MS may be reachable for paging (see subclause **Error! Reference source not found.**). - Not provided from SGSN: The SGSN did not provide any information on subscriber state even though it was requested.
PDP Context Information List	C	This IE indicates the PDP context information (see the table in subclause **Error! Reference source not found.**) for each PDP context which is active for the MS. It shall be present if the PS domain Subscriber State has the value "CAMEL PDP active, MS not reachable for paging" or "CAMEL PDP active, MS may be reachable for paging"; otherwise it shall be absent.
IMEI (with software version)	C	This IE contains the IMEISV (as defined in 3GPP TS 23.003 [**Error! Reference source not found.**]) of the ME in use by the served subscriber. It shall be present only if requested by the gsmSCF.
MS Classmark 2	C	This IE contains the MS classmark 2, which is returned by the MS when it responds to paging in the CS domain. It shall be present only if requested by the gsmSCF.
GPRS MS Class	C	This IE contains the MS network and radio access capabilities. It shall be present only if requested by the gsmSCF.

Location Information is defined in 3GPP TS 23.018 [**Error! Reference source not found.**]. The following differences apply:

Information element name	Status	Description
Service area ID	C,E	See 3GPP TS 23.018 [**Error! Reference source not found.**].
Cell ID	C,E	See 3GPP TS 23.018 [**Error! Reference source not found.**].
Location area ID	C,E	See 3GPP TS 23.003 [**Error! Reference source not found.**].
Selected LSA Identity	C	This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA

Information element name	Status	Description
		ID of the current cell. In the case of multiple matches the LSA Id with the highest priority it shall be present. See 3GPP TS 23.073 [**Error! Reference source not found.**].
~~Routeing area ID~~	~~C~~	~~See 3GPP TS 23.003 [7].~~
~~SGSN number~~	~~C~~	~~See 3GPP TS 23.060 [15].~~

CR editor's note: when this CR is implemented, please remove the rows from the table, rather than deleting the text and leaving empty rows!

3GPP TSG CN WG2 Meeting #26
Bangkok, Thailand, 11th - 15th November 2002

N2-021027
N2-020942 update

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **485** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Correction of "Support of partial implementation of CAMEL"
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL4
Date:	⌘	11/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	23.078 CR 470 CN2 TDoc N2-020942 is introducing some new text on SGSN specification. The term "VMSC/VLR" in that section has to be replaced by "SGSN". The abbreviation "ISD" should replaced by the full information flow name "Insert Subscriber Data IF".
Summary of change:	⌘	The term "VMSC/VLR" in that section has to be replaced by "SGSN". The abbreviation "ISD" has been replaced by the full information flow name "Insert Subscriber Data IF".
Consequences if not approved:	⌘	Inconsistent CAMEL stage 2 specification.

Clauses affected:	⌘	4.6.8.1, 6.6.4.1

Other specs affected: ⌘	Y	N		⌘	
		X	Other core specifications	⌘	23.078 CR 470
		X	Test specifications		
		X	O&M Specifications		

Other comments:	⌘	23.078 CR 470 (CN2 TDoc: N2-020942) is corrected by this CR.

— First modified section —

4.6.8.1 Insert Subscriber Data ack

4.6.8.1.1 Description

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

4.6.8.1.2 Information Elements

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

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

Offered CAMEL4 CSIs contains the following information elements:

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

— Next modified section —

6.6.4 SGSN to HLR Information Flows

6.6.4.1 Insert Subscriber Data ack

~~See subclause 4.6.8.1.~~

6.6.4.1.1 Description

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

6.6.4.1.2 Information Elements

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

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

Offered CAMEL4 CSIs contains the following information elements:

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

CR editors note: The text in yellow was introduced in CN#26 by 23.078 CR 470 CN2 TDoc N2-020942 and is not part of official specification.

— END —

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

N2-021043
N2-020978rev

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **418** ⌘ **rev** **4** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘	Playing of Warning Tones
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL4
Date:	⌘	11/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	At one of the last CN2 meeting it was said that the warning tone shall be played to the party which was indicated in the Apply Charging operation. However it seems to be that this decission was based on a very simple approach and that we may not have taken various service examples into acount.
Summary of change:	⌘	The warning tone shall be played to the served CAMEL subscriber. For a gsmSCF iniated new call the the first party created will receive the tone. If the CAMEL subscriber is already disconnected then no warning tone will be issued. If the MSC is already playing a tone then the MSC shall ignore the new additional request to play a tone.
Consequences if not approved:	⌘	A lot of confusion for users getting no or unexpected warning tones.

Clauses affected:	⌘	4.5.7.4, 4.5.7.6, 4.6.2.2.2

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

Other comments:	⌘	Further editorial change: Tw precised by Tw(pty).

— Discussion section —

Basics

The following items need to be in mind for the current CR:

At the CN2 meeting Newbury, April 2001, the charging concepts for CAMEL Phase 4 were discussed. CN2 came to the conclusion that Apply Charging shall be on a per leg basis. This is, Call/Leg duration control shall be done on a per leg basis. To do AC on a per leg basis CN2 introduced the Leg ID parameter in addition to the Party To Charge parameter into the AC information flow. Delegates did not like to re-use the parameter Party To Charge for this purpose.

Neither the charging concept nor that primary purpose of the Leg ID parameter shall be changed now in CN2.

CN2 noted as well that there is a difference between sending AC to one leg and sending AC to another leg. That difference is meant by "per leg". Mainly the gsmSSF issue is the Call/Leg duration control.

Later on CN2 updated the SDL to reflect those decissions and introduced the LegID reflected by "pty" into the SDL. The SDLs reflect also the case when the Tcp for a leg expired. If it was not the last leg, only this leg is relased. CN2 considered the "Leg" for the User Interaction also.

Service Scenarios

Note: The service examples should be just taken as examples. It is not the purpose of this CR to discuss them in detail but to show just the complexity of the warning tone issue.

CAMEL Phase 3

The Play Tone IE is sent in the Apply Charging IF "if a tone has to be played to the party for whom the BCSM is operating". That is:

MO call: The warning tone applies always to the calling party.

MF call: -- not allowed to use this IE. --

MT call: The warning tone applies always to the called party.

VT call: The warning tone applies always to the called party.

User interaction and follow on calls: User interaction and follow on calls can be charged separately.

Basic Call examples

1. The calling party is a prepaid subscriber, i.e. he is charged for the MO call, the called party has no CAMEL subscription (e.g. the charging of called party is not supervised by gsmSCF) -> warning tone to the calling party.

2. The calling party has no CAMEL subscription but called party is prepaid subscriber and called party is charged for the MT call -> warning tone to called party

3. The calling party has no CAMEL subscription but the called party is a prepaid subscriber, the call is forwarded by the called party to the forwarded to party and the called party is charged for the forwarded leg -> there may be situations where a warning tone to the forwarded to party is not applicable (e.g. the forwarded to party is a mailbox).

4. The calling party and the called party are prepaid subscribers and the called party is charged for the MT call -> warning tone to the calling party related to the ApplyCharging for the "A-leg", warning tone to the called party related to the ApplyCharging for the "B-leg". The warning tone for the A-leg shall be applied in the MO call of the calling party, not in the MT call.

CAMEL Phase 4 specials

For CAMEL phase 4 the gsmSCF can charge the legs individually by sending the Apply Charging operation to the leg concerned. In CAMEL There are also ICA calls (NC call) and new parties (NP case). Furthermore we need to condsider Disconnect Leg, Split Leg, Move Leg and new call segments:

1. If the gsmSCF wants to charge the complete MO call in a single step, it will send AC on the incoming A leg and will receive an Apply Charging Report at latest when the subscriber releases the call.

In CAMEL phase 3 the warning tone applies always to the calling party, i.e. the incoming leg. Same will be for CAMEL phase 4.

2. If the gsmSCF wants to charge the outgoing legs within an MO call individually as in CAMEL phase 3, it will send AC on the individual outgoing legs. It will receive an Apply Charging Report at latest when the individual leg is released.

In CAMEL phase 3 the warrning tone applies allways to the calling party, i.e. the incoming leg. In CAMEL phase 4 the tone would be played to the outgoing leg, i.e. the B-subscriber. This seems not to be desirable.

3. If a call is created newly by the gsmSCF (NC call):
The warning tone shall be played to the called party of the ICA. However it may also be that the gsmSCF calls the charged party (e.g. chef) only if the first ICA call (e.g. worker) is successfull. For simplicity the warning tone shall be played alsways to the first leg created, if a warning tone is requested at all.

4. A new leg may be created (NP case) within all the other scenarios, that is in MO, MF, MT, VT or NC call:
The warning tone should be played to the party to which the call case applies. E.g. for a NC call to the called party of the first ICA. If that party for the tone does not exist any longer or if that party and the leg to which the AC has been send are not in the same call segment then no tone will be played. For simplicity no warning tone shall be played to those parties.

5. If the leg to which the AC has been send does not exist any longer
No tone will be sent.

6. If the leg to which the tone is to be played has been released:
No tone will be sent.

7. If the leg with the AC is no longer in the same call segment as the leg to which the tone is to be played:
a tone should be send to the party in the other call segment.

Remarks

1) If we are starting on a mobile originating two party call (MO call between A and B), and if we now do AC on leg B and in addition a split leg for B and Tw for the B-leg expires then:

it is proposed to play then the tone to the A-party.

Author's Note: this may or may not be shown explicit in the SDL by an explicit Int_Apply_Warning_Tone signal going via the CSA.

2) If we are starting on a mobile originating two party call (MO call between A and B), and if we now do AC on leg B. Then we do a split leg for B. Then we are moving leg B back again into the primary Call Segment and then Tw for the B-leg expires then:

it is proposed to play the tone to the A-party also in this case.

3) If we are starting on a mobile originating two party call (MO call between A and B). Then we are creating party C (ICA NP). Then we move leg C to A and B. Then we do AC for leg C. Then we disconnect leg B.

The resulting configuration is a A-C call similar to a simple two party call in CAMEL Phase 3 call. If now Tw for the C-leg expires then:

it is proposed to play the tone to the A-party also in this case.

4) If we are starting with a ICA call out of the blue and we add additional parties via the ICA NP then we can consider various possibilities to play the warning tone:

- to the leg on which the AC applies,

- to a default leg. This could be the NC leg. Another default leg seems difficult to determine.

- non tone at all for those addional legs.

- to a leg indicated by a new parameter. This was not accepted at CN2.

- other possibilities?

In the case of an ICA call of the blue most probably only one subscriber will be charged for the call. It will be most usefull that that subscriber, as far as involved in the call, will get the warning tone. It seems to be not very usefull to send the tone to the other parties which do not pay for that call. Please note that this principle is valid for CAMEL Phase3, the subscriber gets the tone. It is proposed that we take the most probable way and cover the less often cases by the Play Tone operation as required by the service.

Proposal

As long as there is a CAMEL Phase3 like call, i.e. a call to which no CPH operation has been applied, the warning tone behaviour shall be as in CAMEL Phase 3. In that way we will have the same look and feel on the services as in CAMEL Phase 3.

The above examples are showing various possibilities to which party the warning tome would be most usefull. To standardize for the gsmSSF to which party the warning tone shall be sent seems to be quite complex. Making this dependent on various services is quite impossible.

One further item to be considered is complexity, that is to have a simple solution.

Having this in mind it is more usefull to say that the party to charge will receive the warining tone. It is proposed that the CAMEL subscriber or the first party created in a gsmSCF initiated call receives the warning tone.

— First modified section —

4.5.7.4 Process CS_gsmSSF and procedures

Process CS_gsmSSF 1(56)

/* Invocation of CS_gsmSSF */

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

Tssf: Application timer in the ssf.

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

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

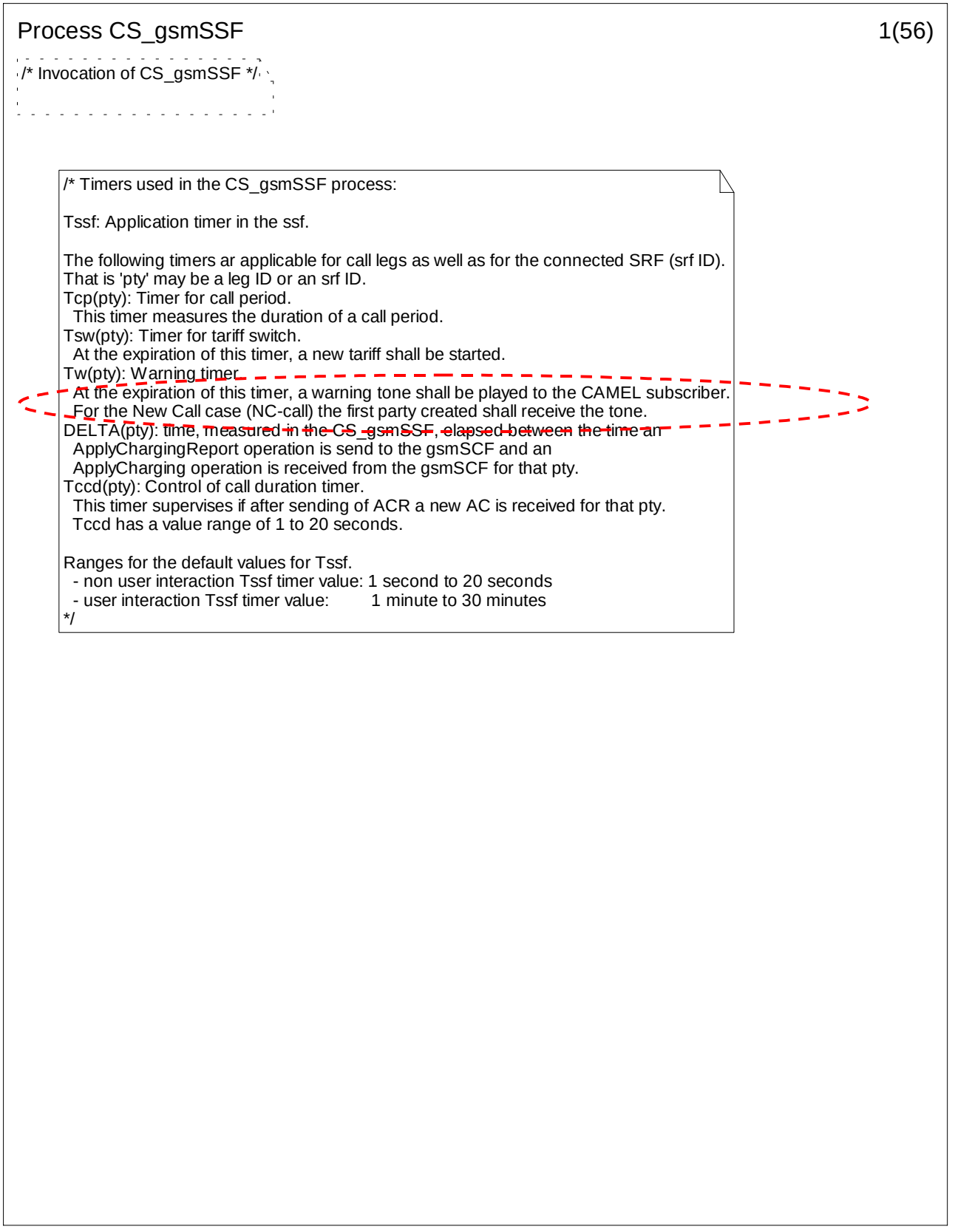
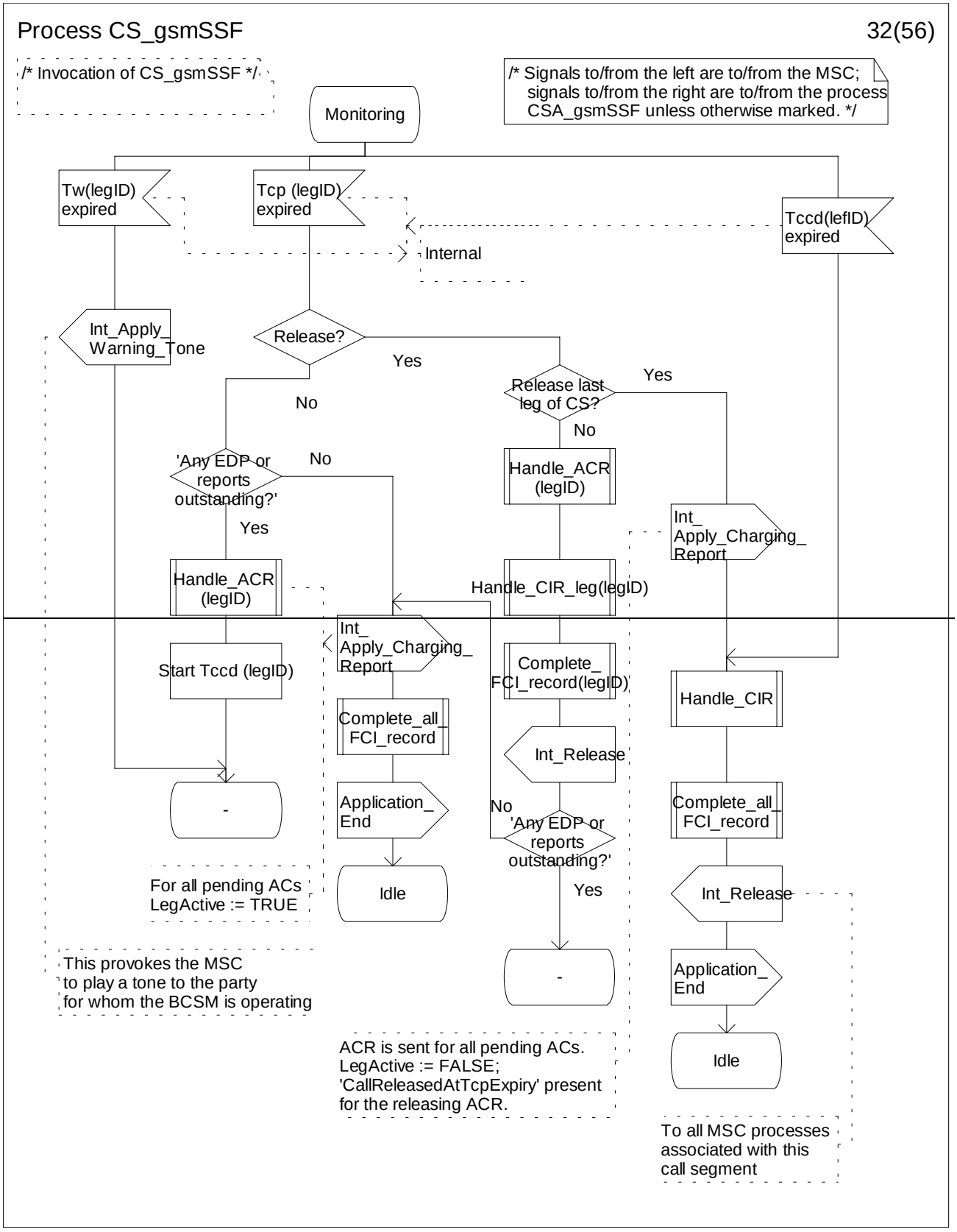


Figure 4.95a: Process CS_gsmSSF (sheet 1)

—Next modified section —



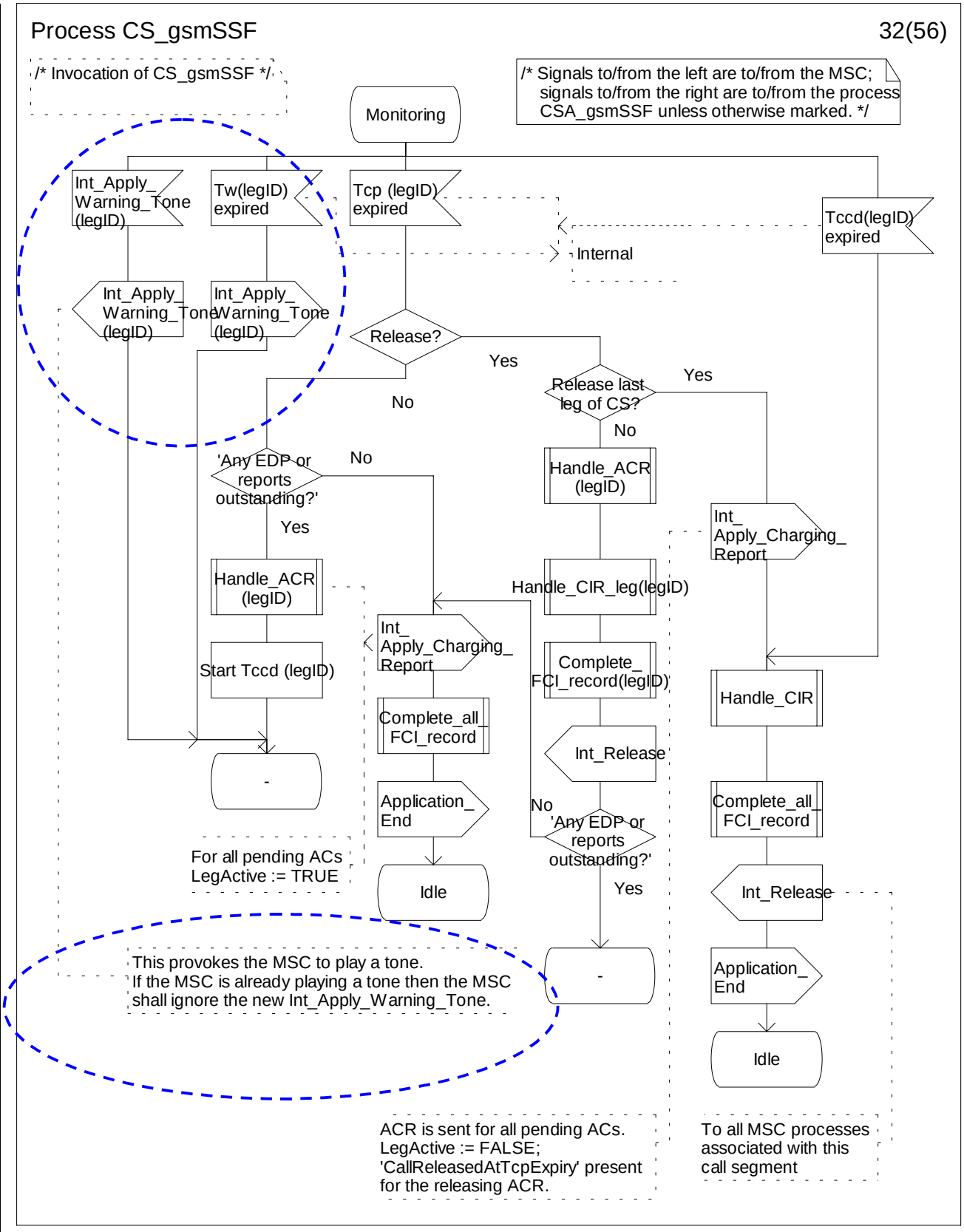
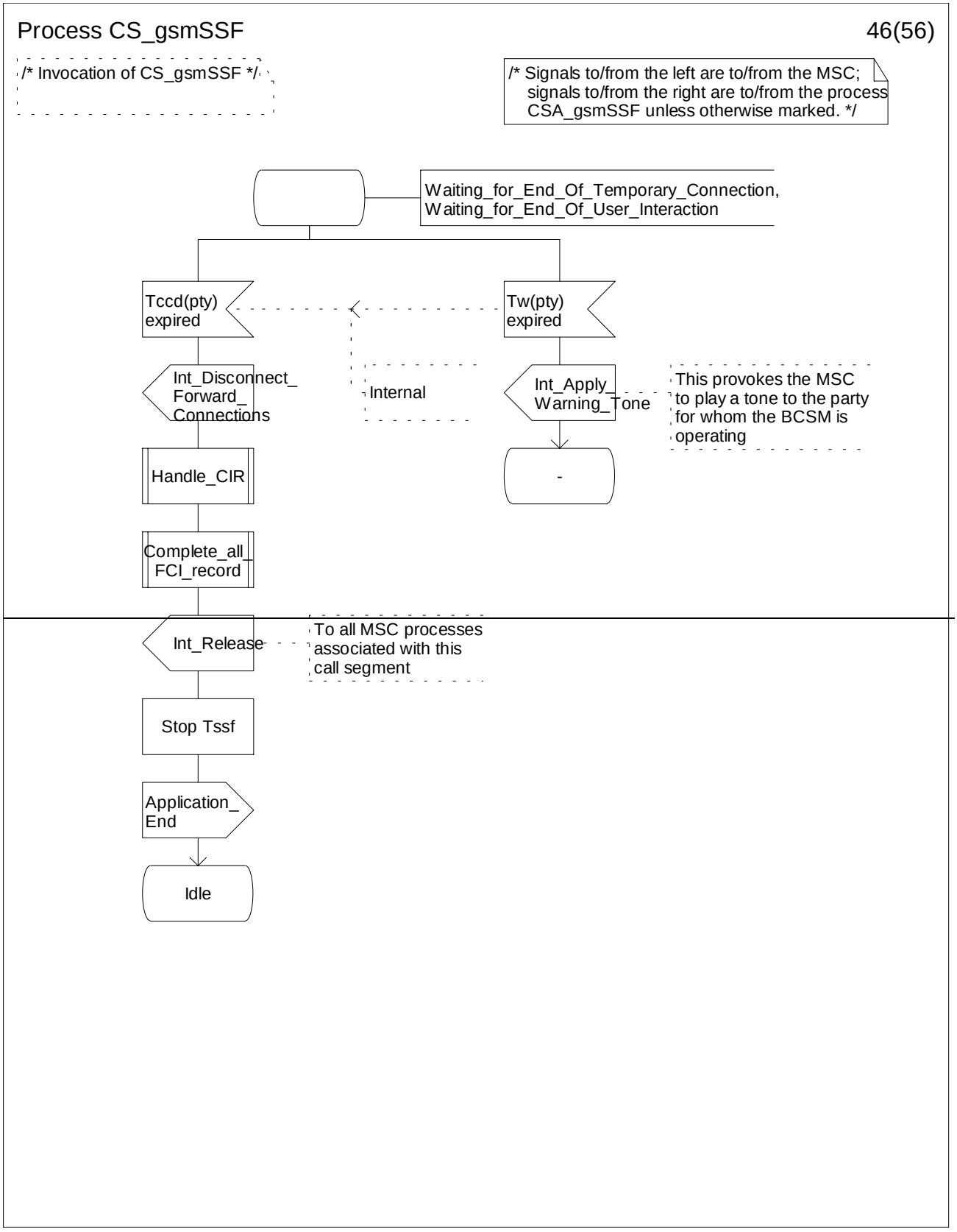


Figure 4.95ff: Process CS_gsmSSF (sheet 32)

—Next modified section —



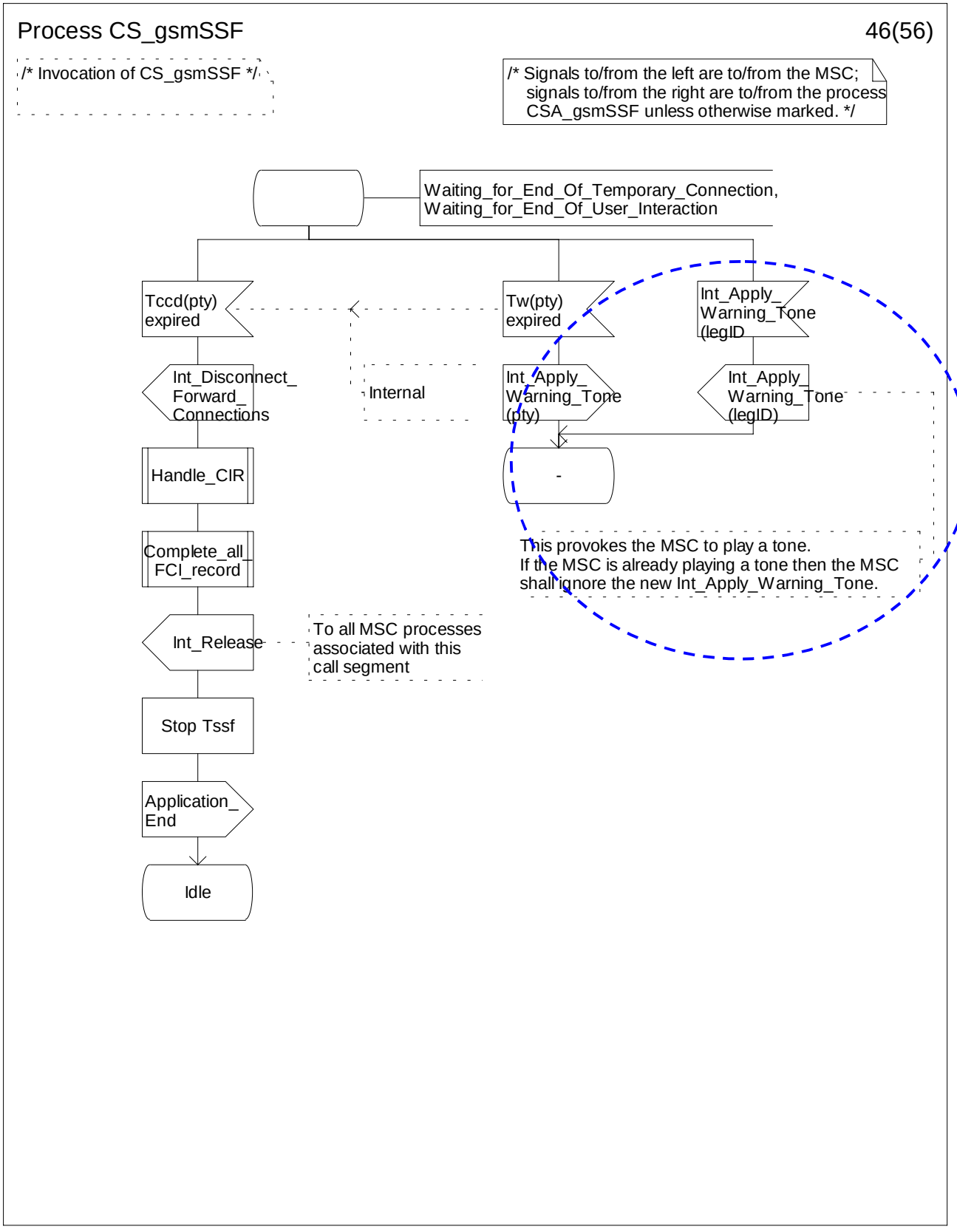
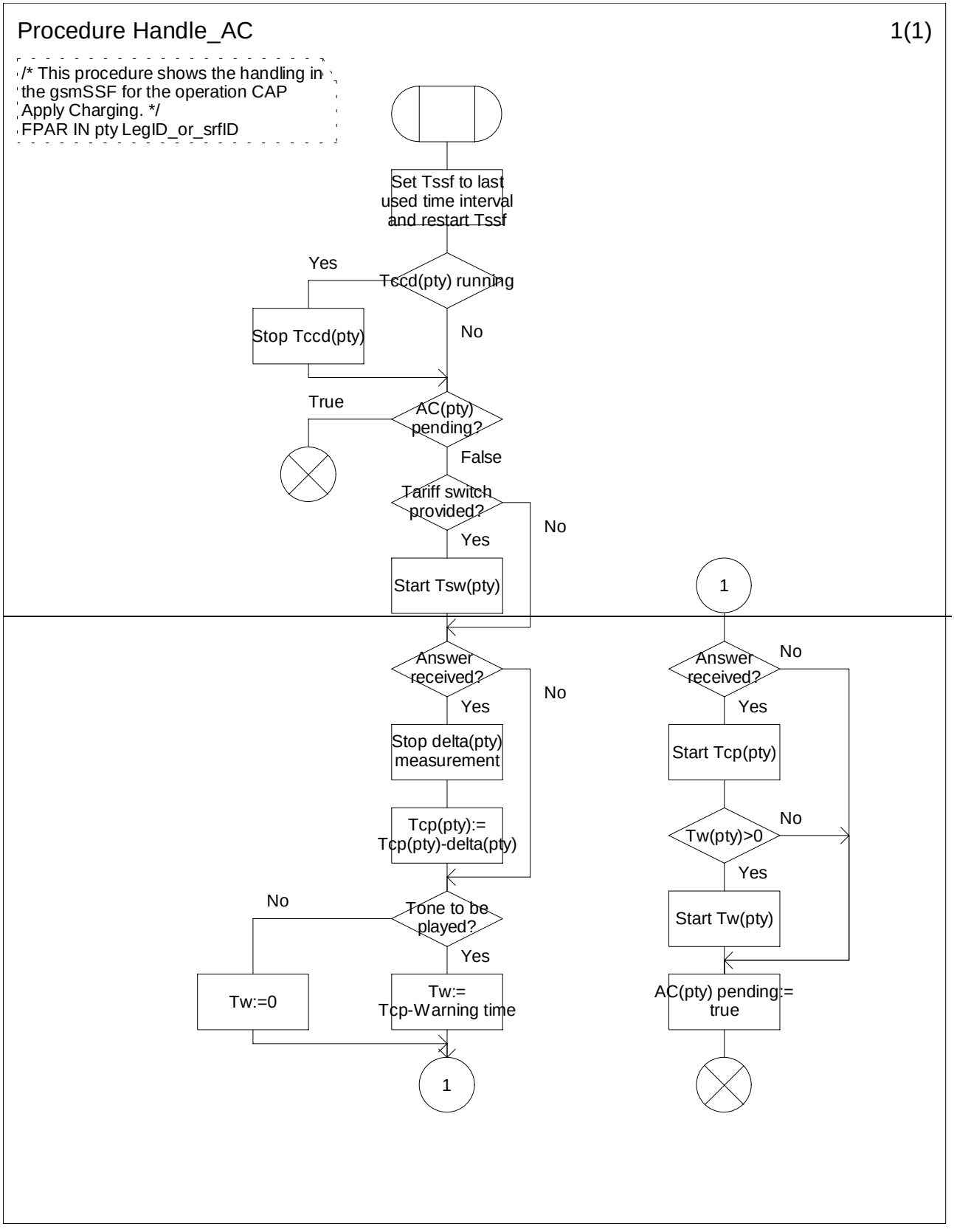


Figure 4.95tt: Process CS_gsmSSF (sheet 46)

— Next modified section —



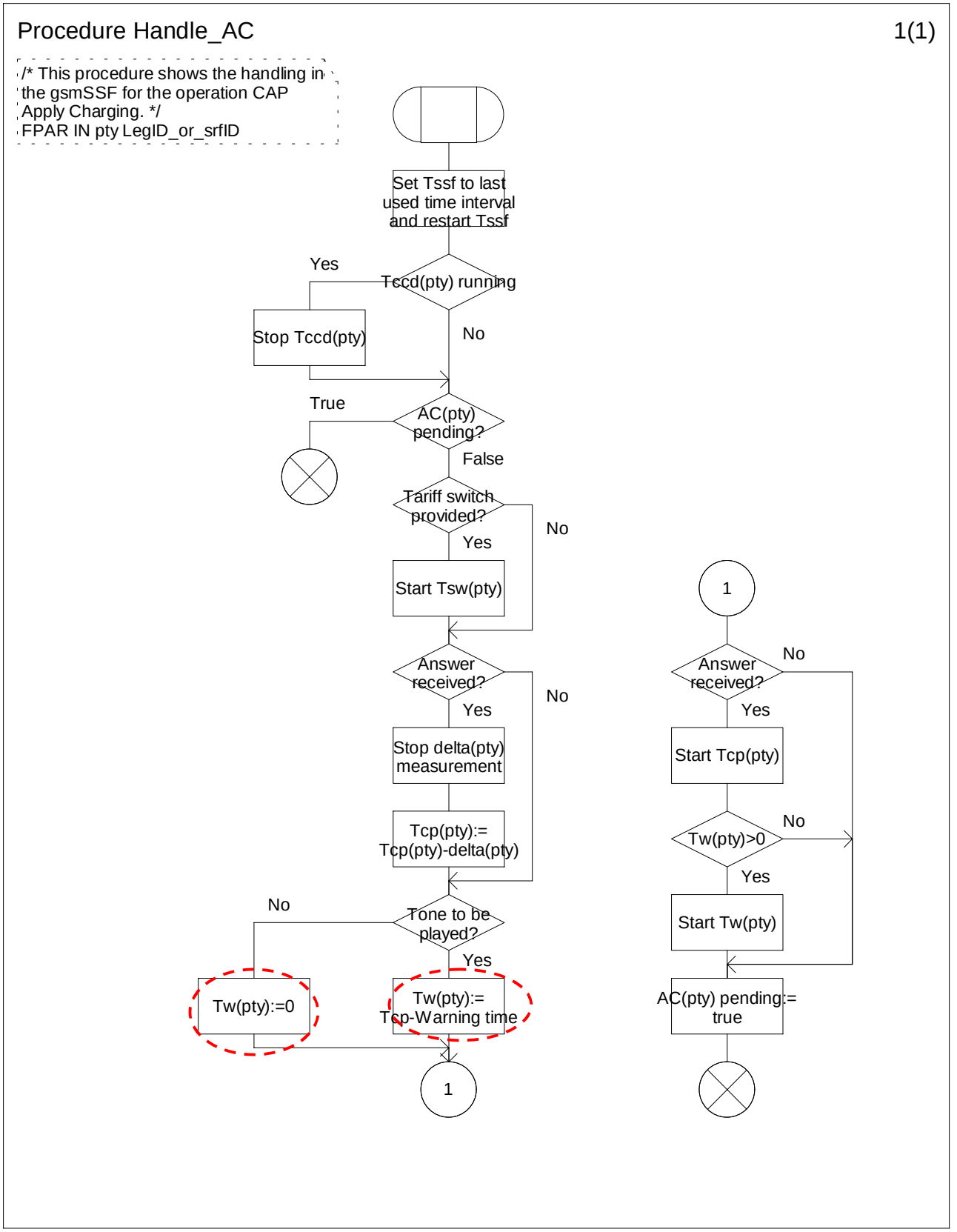


Figure 4.100a: Procedure Handle_AC (sheet 1)

—Next modified section —

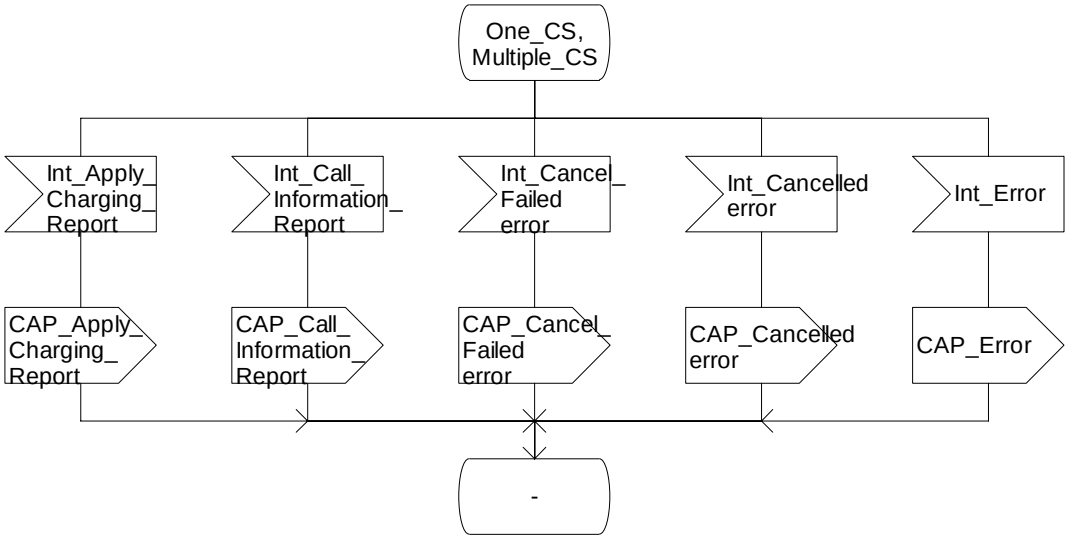
4.5.7.6 Process CSA_gsmSSF and procedures

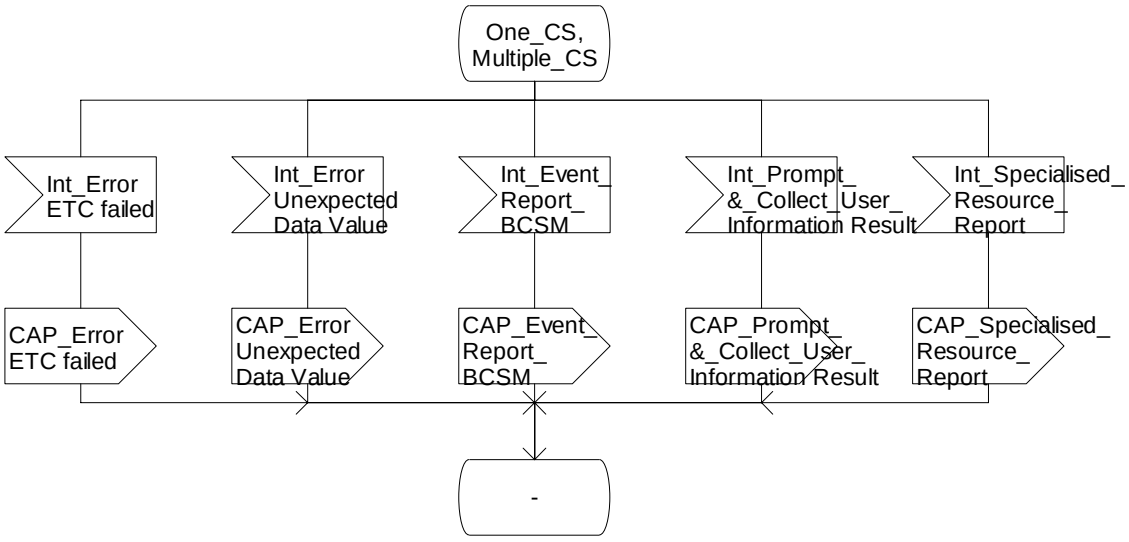
The call gap information flow can only be received for an opened transaction between the CSA_gsmSSF and the gsmSCF.

Process CSA_gsmSSF 4(21)

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

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





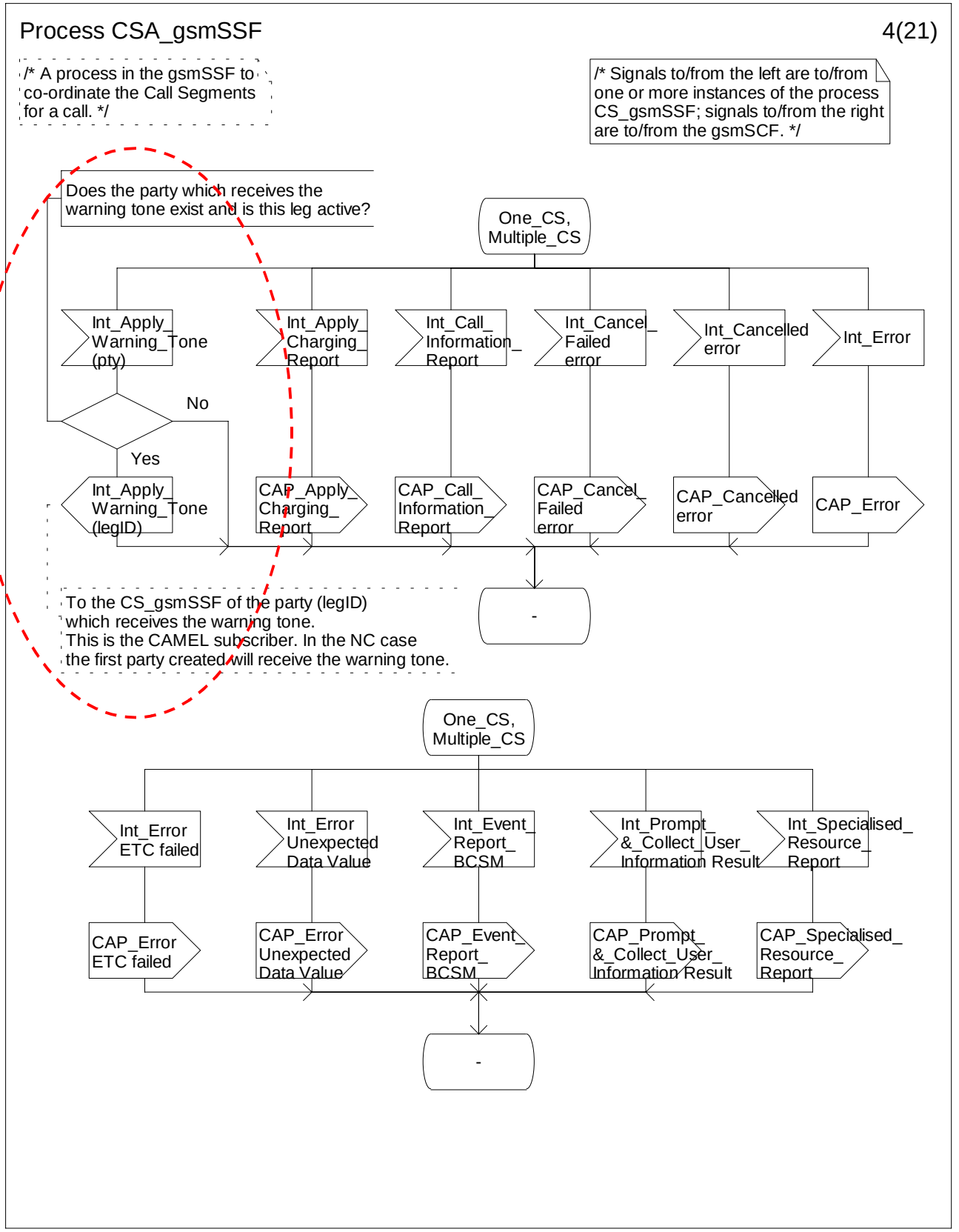


Figure 4.112d: Process CSA_gsmSSF (sheet 4)

—Next modified section —

4.6.2 gsmSCF to gsmSSF information flows

...

4.6.2.2 Apply Charging

4.6.2.2.1 Description

This IF is used to instruct the gsmSSF to apply charging mechanisms to control the call duration.

4.6.2.2.2 Information Elements

Information element name	MO	MF	MT	VT	NC	NP	Description
ACh Billing Charging Characteristics	M	M	M	M	M	M	This IE specifies the charging related information to be provided by the gsmSSF and the conditions on which this information has to be provided back to the gsmSCF.
Party To Charge	M	M	M	M	M	M	This IE shall be reflected in the corresponding IE of the Apply Charging Report IF. This IE has no effect on the charging procedures in the MSC.
Leg ID	M	M	M	M	M	M	This IE identifies the call party concerned by the Apply Charging IF.

ACh Billing Charging Characteristics contains the following information element:

Information element name	MO	MF	MT	VT	NC	NP	Description
Time Duration Charging	M	M	M	M	M	M	This IE is described in a table below.

Time Duration Charging contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Max Call Period Duration	M	M	M	M	M	M	This IE indicates the maximum call period duration timer.
Tariff Switch Interval	O	O	O	O	O	O	This IE indicates the tariff switch time until the next tariff switch applies for this call leg.
Release If Duration Exceeded	O	O	O	O	O	O	This IE indicates that the call leg shall be released when the Max call Period Duration expires. The cause used in the Release IF shall be "normal unspecified". The default handling is to continue the call.
Audible Indicator	O	-	O	O	O	O	This IE is described in a table below.

Audible Indicator IE shall contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Play Tone	E	-	E	E	E	E	This IE indicates that a fixed sequence of tones shall be played to the CAMEL subscriber~~party for whom the BCSM is operating~~. In the NC case the first party created will receive the warning tone. If present, this IE indicates that 30 seconds before the Max Call Period Duration timer expires, a fixed sequence of tones consisting of 3 tones of 900 Hz, with a 200 milliseconds tone duration and a 200 milliseconds intertone duration shall be played.
Play Burstlist	E	-	E	E	E	E	This IE is described in the table below. This IE indicates a variable sequence of bursts that shall be played during the call period to the CAMEL subscriber ~~party for whom the BCSM is operating~~. In the NC case the first party created will receive the warning tone.

Play Burstlist IE consists of the following information elements:

Information element name	Status	Description
Warning Period	M	This IE indicates the time, before the Max Call Period Duration timer expires, when the Play Burst List IE shall start.
Number Of Bursts	M	This IE indicates the number of bursts to be played. There may be up to three bursts.
Burst Interval	O	This IE indicates the time interval between successive bursts.
Number Of Tones In Burst	M	This IE indicates the number of tones to be played in each burst. There may be up to three tones per burst. The tone is fixed to 900 Hz.
Tone Duration	M	This IE indicates the duration of a tone in a burst.
Tone Interval	O	This IE indicates the time interval between successive tones in a burst.

Service logic designers should note that the total duration of the Burst List should not exceed the WarningPeriod IE, otherwise an incomplete Burst List will be played to the served party.

— END —

3GPP TSG-CN WG2 Meeting #27 **Tdoc N2-021045**
Bangkok, Thailand, 11th - 15th November 2002 (revision of N2-020953)

CHANGE REQUEST

⌘ **23.078** **CR** **466** ⌘ **rev** **1** ⌘ Current version: **5.1.0** ⌘

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

Title:	⌘	Correction to VLR Address in Location Information
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4
Date:	⌘	12/11/2002
Category:	⌘	F
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change: ⌘ Various information flows in CAP and MAP contain the "VLR Number" Information Element (IE). For the usage and the conditions for presence of this IE, Ts 23.078 often refers to TS 23.018.

In TS 23.018, however the VLR Number is marked as "Optional" in the Location Information. It is also stated that the HLR shall ignore the VLR Number, when received from the VLR. Refer to the "*** For Information ***" section of the present CR.

This has lead to confusion for and misinterpretation by systen designers and service desginers.

The HLR will always have the VLR Number of a subscriber, even when that subscriber is implicitly detached from the VLR. The only case when the HLR does not have a VLR Number of a subscriber is the case whereby a subscriber has never performed a Location Update procedure.

Summary of change: ⌘ The following corrections are therefore needed:

(1) [section 4.6.9.1] In SRI-Ack, from HLR to GMSC, VLR Number shall be Condtional.
Rationale: The condition is that if the HLR has the VLR Number available, it shall send it to the GMSC.
Note: this section applies also the sending of SRI-Ack from HLR to gsmSCF.

(2) [section 9.4.1.1] In Mobility Management event Notification, from VLR to gsmSCF, VLR Number shall be Mandatory.

		Rationale: a VLR always has the VLR Number available. (3) [section 11.3.4.1] In ATI-ack, from HLR to gsmSCF, VLR Number shall be Conditional. Rationale: The condition is that if the HLR has the VLR Number available, it shall send it to thegsmSCF. (4) [section 11.3.6.1] Provide Subscriber Info ack in this section deals with information between the SGSN and the HLR. The table for Location Information deals with MSC-based Location Information and shall therefore be removed from that section.
Consequences if not approved:	⌘	- Unclear specification; - Ambiguity for system designers; - Service Logic designers may be under the impression that the VLR Number is Optional in Location Information and may unnecessarily design their Service Logic accordingly.

Clauses affected:	⌘	4.6.9.1, 9.4.1.1, 11.3.4.1, 11.3.6.1			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

****** For Information ******

8.3.5.1 Location information

The compound information element Location information consists of the following subordinate information elements:

Information element name	Required	Description
Location number	C	For a definition of this information element, see ITU-T Q.763 [35]. Shall be present if the VLR can derive it from the stored service area identity (for UMTS) or cell global identity (for GSM) or location area identity; otherwise shall be absent. The mapping from service area identity or cell ID and location area to location number is network-specific and outside the scope of the UMTS and GSM standards.
Service area ID	C	Service area identity of the cell in which the MS is currently in radio contact or in which the MS was last in radio contact. Shall be present if the MS uses UMTS radio access and the subscriber record is marked as confirmed by radio contact; otherwise shall be absent.
Cell ID	C	Cell global identity of the cell in which the MS is currently in radio contact or in which the MS was last in radio contact. Shall be present if the MS uses GSM radio access and the subscriber record is marked as confirmed by radio contact; otherwise shall be absent.
Geographical information	C	For a definition of this information element, see 3GPP TS 23.032 [7] . Shall be present if the VLR can derive it from the stored service area identity, cell global identity or location area identity; otherwise shall be absent.
Geodetic information	C	This information element corresponds to the Calling Geodetic Location defined in ITU-T Q.763 [35]. Shall be present if the VLR can derive it from the stored service area identity, cell global identity or location area identity; otherwise shall be absent.
VLR number	**O**	**E.164 number which identifies the VLR (see 3GPP TS 23.003 [5]). If the HLR receives it from the VLR it shall ignore it.**
Age of location information	C	Measured in minutes. Shall be present if available in the MSC/VLR; otherwise shall be absent.
Current Location Retrieved	C	Shall be present when location information was obtained after a successful paging procedure for Active Location Retrieval.

*** *First Modification* ***

4.6.9 HLR to GMSC information flows

4.6.9.1 Send Routeing Info ack

4.6.9.1.1 Description

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

4.6.9.1.2 Information Elements

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

Information element name	Status	Description
Location Information	C	This IE indicates the location of the served subscriber.
O—CSI	S	O-CSI is defined in subclause 4.3.1. This IE identifies the subscriber as having originating CAMEL services. It shall be present if O-CSI is active, and CFU or CFNRc has been invoked, or if both O-CSI and T-CSI are active.
D—CSI	S	D-CSI is defined in subclause 4.3.2. This IE identifies the subscriber as having originating CAMEL dialled services. It shall be present if D-CSI is active, and CFU or CFNRc has been invoked, or if both D-CSI and T-CSI are active.
Subscriber State	C	This IE indicates the status of the MS. The possible values of the IE are: - CAMEL Busy: The VLR has indicated that the MS is engaged in a transaction for a mobile originating or terminated circuit-switched call. - Network Determined Not Reachable: The VLR has indicated that the network can determine from its internal data that the MS is not reachable. - Assumed Idle: The VLR has indicated that the state of the MS is neither "CAMEL Busy" nor "Network Determined Not Reachable". - Not Provided From VLR: The VLR did not provide any information on subscriber state even though it was requested.
T—CSI	S	This IE is described in a table below. This IE identifies the subscriber as having terminating CAMEL services. It shall be present if T-CSI is active and no Suppress T-CSI indicator is present in the Send Routeing Info IF.
Basic Service Code	C	This IE indicates the type of basic service i.e., teleservice or bearer service.
CUG Subscription Flag	S	This IE indicates if the called party has a CUG subscription. It shall be present only if the T-CSI is active and included in the Send Routing Information ack IF.
Supported CAMEL Phases In VMSC	S	This IE indicates the supported CAMEL phases of the VLR. It shall be present if known by the HLR, otherwise it shall be absent.
Offered CAMEL4 CSIs In VMSC	S	This IE indicates the CAMEL phase 4 CSIs offered in the VMSC. It shall be present if known by the HLR, otherwise it shall be absent.
VMSC Address	M	This IE indicates the E.164 address of the VMSC in whose area the B subscriber is currently registered.

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

Information element name	Status	Description
VLR Number	C	~~E.164 number which identifies the VLR~~ See 3GPP TS 23.018 [12]. The HLR shall ~~ignore a VLR Number received in PSI Res and shall~~ include the internally stored VLR Number.
Service area ID	C,E	See 3GPP TS 23.018 [12].
Cell ID	C,E	See 3GPP TS 23.018 [12].
Current Location Retrieved	-	Not applicable
Location area ID	C,E	See 3GPP TS 23.003 [7].
Selected LSA Identity	S	This IE indicates the LSA identity associated with the current position of the MS. Shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. If there are multiple matches the LSA ID with the highest priority shall be sent. See 3GPP TS 23.073 [17].

T-CSI contains the following information elements:

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

Offered CAMEL4 CSIs In VMSC contains the following information elements:

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

****** Next Modification ******

9.4.1 VLR or SGSN to gsmSCF information flows

9.4.1.1 Mobility Management event Notification

9.4.1.1.1 Description

This IF is generated by the VLR or SGSN to notify the gsmSCF of a Mobility Management event.

9.4.1.1.2 Information Elements

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

Information element name	VLR	SGSN	Description
			It indicates the CAMEL phase 4 functionalities offered by the VMSC/VLR.

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

Information element name	Status	Description
VLR Number	M	~~E.164 number which identifies the VLR~~See 3GPP TS 23.018 [12].
Service area ID	C,E	See 3GPP TS 23.018 [12].
Cell ID	C,E	See 3GPP TS 23.018 [12].
Current Location Retrieved	-	Not applicable
Location area ID	C,E	See 3GPP TS 23.003 [7].
Selected LSA Identity	S	This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. In the case of multiple matches the LSA ID with the highest priority it shall be present. See 3GPP TS 23.073 [17].

Note: the following table is for further study.

Offered CAMEL4 CSIs contains the following information elements:

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

****** Next Modification ******

11.3.4 HLR to gsmSCF information flows

11.3.4.1 Any Time Interrogation ack

11.3.4.1.1 Description

This IF is used by the HLR to provide the requested subscriber location and/or subscriber state information to the gsmSCF.

11.3.4.1.2 Information Elements

Information element name	Status	Description
Location Information	C, E1	This IE indicates the location of the served subscriber in the MSC/VLR. It shall be present only if requested by the gsmSCF.
Location Information For GPRS	C, E1	This IE indicates the location of the served subscriber in the SGSN. The content is defined in the subclause 11.3.6.1.2. It shall be present only if requested by the gsmSCF.
Subscriber State	S, E2	This IE indicates the state of the MS in the CS domain. It shall be present only if requested by the gsmSCF. The possible values of the IE are: - CAMELBusy: The VLR has indicated that the MS is engaged in a transaction for a mobile originating or terminated circuit-switched call. - NetworkDeterminedNotReachable: The VLR has indicated that the network can determine from its internal data that the MS is not reachable. - AssumedIdle: The VLR has indicated that the state of the MS is neither "CAMELBusy" nor "NetworkDeterminedNotReachable".

Information element name	Status	Description
		- NotProvidedFromVLR: The VLR did not provide any information on subscriber state even though it was requested.
PS Domain Subscriber State	S, E2	This IE indicates the state of the MS in the PS Domain. It shall be present only if requested by the gsmSCF. The possible values of the IE are: - Detached (see subclause 11.3.5.1). - CAMEL attached, MS not reachable for paging (see subclause 11.3.5.1). - CAMEL attached, MS may be reachable for paging (see subclause 11.3.5.1). - CAMEL PDP active, MS not reachable for paging (see subclause 11.3.5.1). - CAMEL PDP active, MS may be reachable for paging (see subclause 11.3.5.1). - Not provided from SGSN: The SGSN did not provide any information on subscriber state even though it was requested.
PDP Context Information List	C	This IE indicates the PDP context information (see the table in subclause 11.3.5.1) for each PDP context which is active for the MS. It shall be present if the PS domain Subscriber State has the value "CAMEL PDP active, MS not reachable for paging" or "CAMEL PDP active, MS may be reachable for paging"; otherwise it shall be absent.
IMEI (with software version)	C	This IE contains the IMEISV (as defined in 3GPP TS 23.003 [7]) of the ME in use by the served subscriber. It shall be present only if requested by the gsmSCF.
MS Classmark 2	C	This IE contains the MS classmark 2, which is returned by the MS when it responds to paging in the CS domain. It shall be present only if requested by the gsmSCF.
GPRS MS Class	C	This IE contains the MS network and radio access capabilities. It shall be present only if requested by the gsmSCF.

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

Information element name	Status	Description
VLR Number	C	~~E.164 number which identifies the VLR~~See 3GPP TS 23.018 [12]. The HLR shall ~~ignore a VLR Number received in PSI-Res and shall~~ include the internally stored VLR Number.
Service area ID	C,E	See 3GPP TS 23.018 [12].
Cell ID	C,E	See 3GPP TS 23.018 [12].
Location area ID	C,E	See 3GPP TS 23.003 [12].
Selected LSA Identity	C	This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. In the case of multiple matches the LSA Id with the highest priority it shall be present. See 3GPP TS 23.073 [17].
Routeing area ID	C	See 3GPP TS 23.003 [7].
SGSN number	C	See 3GPP TS 23.060 [15].

****** Next Modification ******

11.3.6 SGSN to HLR information flows

11.3.6.1 Provide Subscriber Info ack

11.3.6.1.1 Description

This IF is used by the SGSN to provide the requested subscriber location and/or subscriber state information to the HLR.

11.3.6.1.2 Information Elements

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

Information element name	Status	Description
Subscriber State	-	Not applicable.
PS domain Subscriber State	C	This IE indicates the status of the MS in the PS Domain. It shall be present only if requested by the HLR. The possible values of the IE are: - Detached: The SGSN has determined from its internal data that the MS is not attached to the network. - CAMEL attached, MS not reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network, but there is no PDP Context active, and the MS is not reachable for paging. - CAMEL attached, MS may be reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network, but there is no PDP Context active; the SGSN has not determined from its internal data that the MS is not reachable for paging. - CAMEL PDP active, MS not reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network there is at least on PDP context active, and the MS not reachable for paging. - CAMEL PDP active, MS may be reachable for paging: The SGSN has determined from its internal data that the MS is attached to the network and there is at least one PDP context active; the SGSN has not determined from its internal data that the MS is not reachable for paging.
PDP Context Information List	S	This IE is described in a table below. This IE indicates the PDP context information for each PDP context which is active for the MS. It shall be present if the PS domain Subscriber State has the value "CAMEL PDP active, MS not reachable for paging" or "CAMEL PDP active MS may be reachable for paging"; otherwise it shall be absent.
Location Information For GPRS	C	This IE is described in a table below. It indicates the location of the MS. It shall be present only if requested by the HLR.
IMEI (with software version)	C	This IE contains the IMEI & software version of the ME in use by the served subscriber. It shall be present only if requested by the HLR.
GPRS MS Class	C	This IE contains the MS network and radio access capabilities. It shall be present only if requested by the HLR.

PDP Context Information includes the following information elements:

Information element name	Status	Description
PDP Context Identifier	M	Index of the PDP context.
PDP State	C	Packet data protocol state, INACTIVE or ACTIVE.
PDP Type	C	PDP type, e.g., PPP or IP.
PDP Address	C	PDP address, e.g., an IP address.
APN Subscribed	C	The APN received from the HLR.
APN in Use	C	The APN currently used.
NSAPI	C	Network layer Service Access Point Identifier.
TI	C	Transaction Identifier.
TEID for Gn/Gp	C	Tunnel Endpoint Identifier for the Gn and Gp interfaces.
TEID for Iu	C	Tunnel Endpoint Identifier for the Iu interface.
GGSN Address in Use	C	The IP address of the GGSN currently used.
Subscribed QoS	C	The quality of service profile subscribed.
Requested QoS	C	The quality of service profile requested.
Negotiated QoS	C	The quality of service profile negotiated.
Charging ID	C	Charging identifier, identifies charging records generated by SGSN and GGSN.
PDP Context Charging Characteristics	C	The charging characteristics of this PDP context, e.g., normal, prepaid, flat-rate, and/or hot billing.
RNC Address In Use	C	The IP address of the RNC currently used.

Location Information For GPRS includes the following information elements:

Information element name	Status	Description
Service area ID	C,E	See 3GPP TS 23.018 [12].
Cell ID	C,E	See 3GPP TS 23.018 [12].
Location area ID	C,E	See 3GPP TS 23.018 [12].
Routeing area ID	C	See 3GPP TS 23.003 [7].

Information element name	Status	Description
Geographical information	C	See 3GPP TS 23.032 [13].
Geodetic information	C	See ITU-T Q.763 [40].
Age of location information	C	See 3GPP TS 23.018 [12].
Current Location Retrieved	C	See 3GPP TS 23.018 [12].
SGSN number	M	Global Title of the SGSN. See 3GPP TS 23.060 [15].
Selected LSA Identity	C	This IE is applicable only if SoLSA is supported by the SGSN. This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. In the case of multiple matches the LSA ID with the highest priority it shall be present. See 3GPP TS 23.073 [17]

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

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

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

3GPP TSG CN WG2 Meeting #26 ***N2-021081***
Bankok, Thailand, 11th – 15th November 2002

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **500** ⌘ **rev** **1** ⌘ Current version: 5.1.0 ⌘

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

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

Title:	⌘	ASN default for Flexible Tone BurstInterval due to MEGACO
Source:	⌘	Nokia
Work item code:	⌘	CAMEL4
Date:	⌘	14/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	MECAGO interface between MSC server and Media Gateway (MGW) requires default values for all parameters. Default value is used by the receiving entity when the parameter is not populated by the sending entity. It would be easier implementation if the SCP – MSC server interface did have the same ASN defaults.
Summary of change:	⌘	1. Default 2 introduced for BurstInterval in ASN 2. Since there is a ASN default, it shall be marked as Mandatory in Stage 2 (The value is always provided to application layer). 3. Tone Interval has ASN default 2 already. It shall therefore be marked as mandatory in Stage 2. 4. A reference to figure was missing. This editorial correction is also introduced.
Consequences if not approved:	⌘	A bit more complicated MSC server implementation

Clauses affected:	⌘	4.5.7.1.2, 4.6.2.2.2, 4.6.4.17.2

	Y	N			
Other specs affected: ⌘	X		Other core specifications	⌘	29.078-CR291
		X	Test specifications		
		X	O&M Specifications		

Other comments:	⌘	No similar change in 29.278 needed. N2-020926 contains the corresponding 29.232 change.

For your information 29.232 CR:

15.1.8 Flexible Tone Generator Package

PackageID: threegflex (0x00??) Note: **PackageID to be confirmed and registered by IANA**.

Version: 1

Extends: threegxcg version 1

This package extends "3G Expanded Call Progress Tones Generator Package", as defined in chapter 15.1.4 above. This package adds a new tone for call duration control in CAMEL phase 4, supporting variable sequence of tones and burst list.

15.1.8.1 Properties

None

15.1.8.2 Events

None

15.1.8.3 Signals

Signal Name: Flexible Tone

SignalID: ft (0x0050)

Description:

Generate flexible 900Hz tone. The physical characteristics of Flexible Tone is not described in the additional parameters. It shall be available in the Media Gateway..

SignalType: Brief

Duration: Provisioned

Additional Parameters:

Parameter Name: Burst List Direction

Description: Used to indicate the direction the tone is to be sent. External indicates that the tone is sent from the MG to an external point. Internal indicates that the tone is played into the Context to the other terminations. Bothway indicates both internal and external behaviour.

ParameterID: bld (0x0001)

Type: Enumeration

Possible Values:

“Ext” (0x01): External

“Int” (0x02): Internal

“Both” (0x03): Bothway

Default: “Ext” (0x01)

Parameter Name: numberOfBursts

Description: Number of bursts in the burst list.

ParameterID: nob (0x0002)

Type: Integer

Possible values: 1 to 3

Default: 1

Parameter Name: burstInterval

Description: Time interval between two consecutive bursts expressed in amount of 100 millisecond units.

ParameterID: bi (0x0003)

Type: Integer

Possible values: 1 to 20

Default: 2

Parameter Name: numberOfTonesInBurst

Description: Number of tones to be played in each burst.

ParameterID: notib (0x0004)

Type: Integer

Possible values: 1 to 3

Default: 3

Parameter Name: toneDuration

Description: Duration of each tone in a burst expressed in amount of 100 millisecond units.

ParameterID: td (0x0005)

Type: Integer

Possible values: 1 to 20

Default: 2

Parameter Name: toneInterval

Description: Time interval between two consecutive tones in a burst expressed in amount of 100 millisecond units.

ParameterID: ti (0x0006)

Type: Integer

Possible values: 1 to 20

Default: 2

First modified section:

4.5.7.1 Call duration control

4.5.7.1.1 Information flow for call duration control

The following diagram shows the handling of the different timers that are used in the process CS_gsmSSF and in the procedures Handle_AC, Handle_ACR, Handle_CIR. Timers Tssf, Tcp, Tsw, Tw and DELTA are defined in the process CS_gsmSSF.

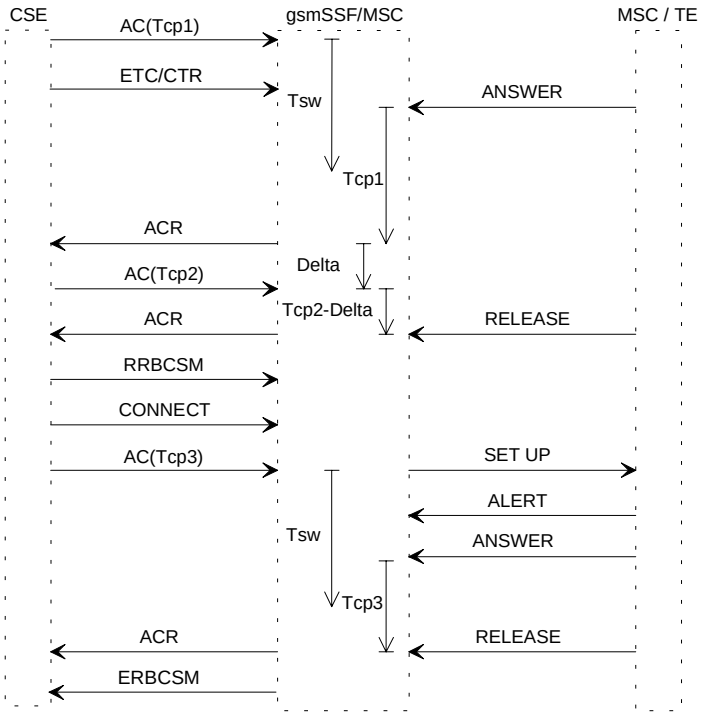


Figure 4.92: Information flow for call control duration

4.5.7.1.2 Audible indicators for call duration control

The gsmSCF may instruct the gsmSSF to play either a fixed sequence of tones or a variable sequence of tones with the Apply Charging information flow. The gsmSCF may also instruct the gsmSSF to play a variable sequence of tones with the Play Tone information flow.

For the case of the fixed sequence of tones, the gsmSSF shall play a single sequence of three tones. The duration of each of the tones shall be 200 milliseconds with an intertone interval of 200 milliseconds. This shall be played 30 seconds before the end of a call period. For the case of a variable sequence of tones, or a burst list, the gsmSCF shall indicate the number of tones per burst, the number of bursts to be played, the tone duration, interval between the tones and the interval between the bursts. In addition, the gsmSCF shall indicate in the Apply Charging information flow, the warning time before call period expiry at which the playing of the burst list shall start. Figure **Error! Reference source not found.**~~**Error! Reference source not found.**~~ provides a graphical representation of the variable burst list in the case where there are three tones per burst and three bursts in the burst list. The Warning Period in figure ~~xx~~ 4.93 applies to the Apply Charging information flow only.

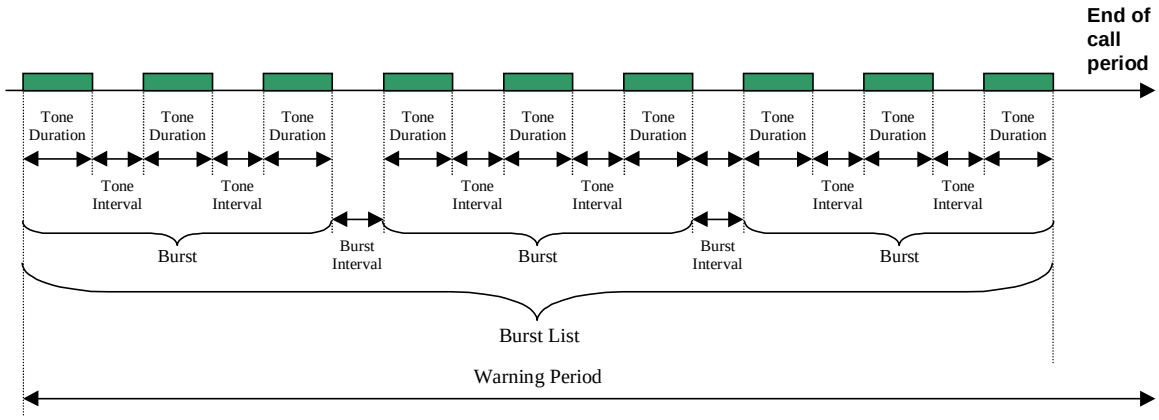


Figure 4.93: Representation of burst list

Next modified section:

4.6.2.2 Apply Charging

4.6.2.2.1 Description

This IF is used to instruct the gsmSSF to apply charging mechanisms to control the call duration.

4.6.2.2.2 Information Elements

Information element name	MO	MF	MT	VT	NC	NP	Description
ACh Billing Charging Characteristics	M	M	M	M	M	M	This IE specifies the charging related information to be provided by the gsmSSF and the conditions on which this information has to be provided back to the gsmSCF.
Party To Charge	M	M	M	M	M	M	This IE shall be reflected in the corresponding IE of the Apply Charging Report IF. This IE has no effect on the charging procedures in the MSC.
Leg ID	M	M	M	M	M	M	This IE identifies the call party concerned by the Apply Charging IF.

ACh Billing Charging Characteristics contains the following information element:

Information element name	MO	MF	MT	VT	NC	NP	Description
Time Duration Charging	M	M	M	M	M	M	This IE is described in a table below.

Time Duration Charging contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Max Call Period Duration	M	M	M	M	M	M	This IE indicates the maximum call period duration timer.
Tariff Switch Interval	O	O	O	O	O	O	This IE indicates the tariff switch time until the next tariff switch applies for this call leg.
Release If Duration Exceeded	O	O	O	O	O	O	This IE indicates that the call leg shall be released when the Max call Period Duration expires. The cause used in the Release IF shall be "normal unspecified". The default handling is to continue the call.
Audible Indicator	O	-	O	O	O	O	This IE is described in a table below.

Audible Indicator IE shall contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Play Tone	E	-	E	E	E	E	This IE indicates that a fixed sequence of tones shall be played to the party for whom the BCSM is operating. If present, this IE indicates that 30 seconds before the Max Call Period Duration timer expires, a fixed sequence of tones consisting of 3 tones of 900 Hz, with a 200 milliseconds tone duration and a 200 milliseconds intertone duration shall be played.
Play Burstlist	E	-	E	E	E	E	This IE is described in the table below. This IE indicates a variable sequence of bursts that shall be played during the call period to the party for whom the BCSM is operating.

Play Burstlist IE consists of the following information elements:

Information element name	Status	Description
Warning Period	M	This IE indicates the time, before the Max Call Period Duration timer expires, when the Play Burst List IE shall start.
Number Of Bursts	M	This IE indicates the number of bursts to be played. There may be up to three bursts.
Burst Interval	~~O~~M	This IE indicates the time interval between successive bursts.
Number Of Tones In Burst	M	This IE indicates the number of tones to be played in each burst. There may be up to three tones per burst. The tone is fixed to 900 Hz.
Tone Duration	M	This IE indicates the duration of a tone in a burst.
Tone Interval	~~O~~M	This IE indicates the time interval between successive tones in a burst.

Service logic designers should note that the total duration of the Burst List should not exceed the WarningPeriod IE, otherwise an incomplete Burst List will be played to the served party.

Next modified section:

4.6.2.17 Play Tone

4.6.2.17.1 Description

This IF is used to play a variable sequence of tones to a particular leg or call segment using the MSC's tone generator. Refer to subclause 4.5.7.1.2~~4.5.7.1.2~~ for a graphical representation of the variable sequence of tones.

In order to avoid tone bursts being played in close succession to the same party or group of parties, the gsmSCF is responsible for careful use of this IF especially when warning tones have been scheduled using the Apply Charging IF.

4.6.4.17.2 Information Elements

Information element name	Status	Description
Leg or Call Segment	M	This IE is described in a table below. This IE indicates the leg or call segment.
Burst List	M	This IE is described in a table below. This IE indicates a variable sequence of bursts.

Leg or Call Segment contains the following information elements:

Information element name	Status	Description
Call Segment ID	E	This IE indicates the call segment to which tones shall be played.
Leg ID	E	This IE indicates the leg to which tones shall be played.

Burst List contains the following information elements:

Information element name	Status	Description
Number of bursts	M	This IE indicates the number of bursts to be played. There may be up to three bursts.
Burst interval	~~O~~M	This IE indicates the time interval between successive bursts.
Number of tones in burst	M	This IE indicates the number of tones to be played in each burst. There may be up to three tones per burst. The tone is fixed to 900 Hz.
Tone Duration	M	This IE indicates the duration of each tone in a burst.
Tone Interval	~~O~~M	This IE indicates the time interval between successive tones in a burst.