

**3GPP TSG CN Plenary Meeting #16**  
**Marco Island, USA, 5<sup>th</sup> – 7<sup>th</sup> June 2002**

**NP-020204**

**Source:** TSG CN WG2  
**Title:** CRs on R99 Work Item CAMEL3, CR Pack 3  
**Agenda item:** 7.1  
**Document for:** APPROVAL

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**Introduction:**

This document contains 4 CR on R99 WI CAMEL3 and corresponding mirror CRs for Rel-4. These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #16 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.078	408	2	N2-020619	R99	Correction on the usage of PDP Id for GPRS Control	F	3.12.0
23.078	410		N2-020620	Rel-4	Correction on the usage of PDP Id for GPRS Control	A	4.4.0
23.078	397	2	N2-020564	R99	Clarifications on ATM-req/ATM-ack	F	3.12.0
23.078	407		N2-020565	Rel-4	Clarifications on ATM-req/ATM-ack	A	4.4.0
23.078	405	1	N2-020567	R99	Corrections to CTR and ETC Procedures	F	3.12.0
23.078	406	1	N2-020568	Rel-4	Corrections to CTR and ETC Procedures	A	4.4.0
29.078	252		N2-020562	R99	Correction of GPRS MS class	F	3.11.0
29.078	253		N2-020586	Rel-4	Correction of GPRS MS class	A	4.4.0

## CHANGE REQUEST

⌘ **29.078 CR 252** ⌘ rev ⌘ Current version: **3.11.0** ⌘

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘	Correction of GPRSMSCClass	
<b>Source:</b>	⌘	Ericsson	
<b>Work item code:</b>	⌘	CAMEL3	<b>Date:</b> ⌘ 13 May 2002
<b>Category:</b>	⌘	<b>F</b>	<b>Release:</b> ⌘ R99
		Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
		<b>F</b> (correction)	2 (GSM Phase 2)
		<b>A</b> (corresponds to a correction in an earlier release)	R96 (Release 1996)
		<b>B</b> (addition of feature),	R97 (Release 1997)
		<b>C</b> (functional modification of feature)	R98 (Release 1998)
		<b>D</b> (editorial modification)	R99 (Release 1999)
			REL-4 (Release 4)
			REL-5 (Release 5)

**Reason for change:** ⌘ Tdoc N2-020493, containing an LS from CN4 to CN2, clarifies that CN4 has decided, during the CN4#13 meeting in Fort Lauderdale, to mark the parameter "MsRadioAccessCapability" in "GPRSMSCClass" OPTIONAL in TS 29.002 for Rel-5. CN4 explains in said LS why this parameter needs to be marked OPTIONAL, rather than mandatory; the MsRadioAccessCapability may not always be available in the SGSN, so it needs to be marked OPTIONAL. MS Radio Access Capability is not available to the SGSN if the MS accesses the network via lu-mode.

Refer to N4-020485, containing CR 29.002-408r2, for the CN4-approved change to TS 29.002.

For CAMEL Phase 3, the data type definition of GPRSMSCClass is specified in TS 29.078. For CAMEL Phase 4, the data type definition of GPRSMSCClass is specified in TS 29.002 and is imported by CAP.

Since CAMEL Phase 3 and CAMEL Phase 4 use the same CAP V3 Application Context for GPRS control (between gsmSCF and gprsSSF), the data type definition of GPRSMSCClass needs to be identical in TS 29.002 Rel-5 and TS 29.078 R99 & Rel-4.

To accomplish equal definitions of GPRSMSCClass in R99 & Rel-4 and Rel-5, MsRadioAccessCapability shall be marked OPTIONAL in TS 29.078 R99 and Rel-4.

**Summary of change:** ⌘ Mark MsRadioAccessCapability in GPRSMSCClass OPTIONAL.

**Consequences if not approved:** ⌘

- misalignment between CAP V3 for GPRS in R99 & Rel-4 and CAP V3 for GPRS in Rel-5;
- an SGSN will not be able to report "mSNetworkCapability" in InitialDPGPRS when "MsRadioAccessCapability" is not available.

<b>Clauses affected:</b>	⌘	5	
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘
<b>Other comments:</b>	⌘	<ul style="list-style-type: none"> <li>- In TS 23.078, the Information Element "GPRS MS Class" is not split up in sub-parameters "mS Network Capability" and "mS Radio Access Capability". Therefore, marking mSRadioAccessCapability OPTIONAL in TS 29.078 and TS 29.002 does not affect TS 23.078.</li> <li>- In CAMEL Phase 3, the parameter "GPRS MS Class" is not included in Initial DP SMS; it is included in Initial DP GPRS only.</li> <li>- In CAMEL Phase 4, the Information Element "GPRS MS Class" is used by various Information Flows, both CAP and MAP. Hence, the OPTIONAL marking of mSRadioAccessCapability will, by inheritance, be applicable to all the Information Flows that include GPRS MS Class.</li> </ul>	

**\*\*\* First Modification \*\*\***

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## 5 Common CAP Types

### 5.1 Data types

-- The **Definition of Common Data Types** follows

```
CAP-datatypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-datatypes(52) version3(2)}
-- This module contains the type definitions for the CAP v.3 data types.
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

...

<unmodified >

...

```
GPRSMSClass ::= SEQUENCE {
  mSNetworkCapability [0] MSNetworkCapability,
  mSRadioAccessCapability [1] MSRadioAccessCapability_____OPTIONAL
}
```

```
-- GPRS MS class mark describes the terminal capabilities.
-- Refer to 3GPP TS 24.008 [12] for an explanation of these elements.
```

...

<unmodified >

...

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

## CHANGE REQUEST

⌘ **23.078 CR 397** ⌘ rev **2** ⌘ Current version: **3.12.0** ⌘

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

**Title:** ⌘ Clarifications on ATM-req/ATM-ack

**Source:** ⌘ Nokia

**Work item code:** ⌘ CAMEL3

**Date:** ⌘ 28.3.2002

**Category:** ⌘ F (essential correction)

**Release:** ⌘ R99

Use one of the following categories:

Use one of the following releases:

**F** (correction)

**2** (GSM Phase 2)

**A** (corresponds to a correction in an earlier release)

**R96** (Release 1996)

**B** (addition of feature),

**R97** (Release 1997)

**C** (functional modification of feature)

**R98** (Release 1998)

**D** (editorial modification)

**R99** (Release 1999)

**REL-4** (Release 4)

**REL-5** (Release 5)

**Reason for change:** ⌘ The present CR corrects ambiguity related the handling of Any Time Modification (ATM) in the HLR.

### Correction 1

When the gsmSCF send ATM-req, containing data pertaining to a particular supplementary service, then the HLR shall return in ATM-ack only the modified subscription data. This behaviour is currently not properly specified.

**Example1:** If CFNRc is modified as a result of ATM-req, then no CFU, CFB or CFNRy data shall be returned to the gsmSCF.

**Example2:** If CFB is modified as a result of ATM-req for one Basic Service group, then only the CFB data for that Basic Service group shall be returned in ATM-ack; the ATM-ack shall in that case not contain the CFB data for the other Basic Services.

### Correction 2

When the gsmSCF sends ATM-req to the HLR, then it may occur that the HLR accepts the ATM-req only partially.

I.e. some of the data contained in ATM-req is used by the HLR to modify subscription data, but other data contained in ATM-req is not used to modify subscription data.

It is not clearly specified how the HLR shall behave in such case.

**Example:** ATM-req contains a request to activate CF for a several Basic Services. However, CF activation is successful for one Basic Service, but fails for another one. In that case, the HLR shall return in ATM-ack only the CF data for the Basic Service for which the modification was successfully executed.

**Correction 3**

Only the modified CSI is returned to the SCP.

**Summary of change:** ⌘

1. It is clarified that ATM-ack shall contain only the modified part of HLR data.
2. It is clarified that if ATM partially succeeds, then the operation is “partially accepted” by the HLR. The accepted changes are done in the HLR and the modified data is returned in the ATM-ack. This is in line with 3GPP TS 23.011, which specifies the HLR behaviour in the case that a modification requested by the mobile user succeeds partially.

**Consequences if not approved:** ⌘

Unclear specification. Different implementations may exist, and thus interoperability problems.

**Clauses affected:** ⌘

**Other specs affected:**

- ⌘  Other core specifications ⌘
- Test specifications
- O&M Specifications

**Other comments:** ⌘

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

## 10.2.2 Any Time Modification

Handling of Any Time Modification involves the following process:

- CAMEL\_ATM\_HLR.

The following procedures are involved:

- ATM\_Modify\_Data  
This procedure checks which data shall be modified and calls the appropriate data modification procedure.
- ATM\_Modify\_CSI\_Data  
If the CSI indicated in the ATM request is not available in the HLR, then an error is returned. Otherwise, the CSI state and/or Notification-to-CSE flag are set as instructed with the ATM request.
- ATM\_Modify\_CF\_Data  
When only the SS-code and (optionally) a Basic Service code are present in the ATM request, then all Call Forwarding data belonging to this SS code and basic service code is erased, the associated notificationToCSE flag is unchanged and the SS-Status is amended according to the state transition model defined in 3GPP TS 23.082 [27].  
Otherwise, the behaviour is as follows:
  - If a valid SS state is present in the ATM request, then an SS state transition is performed.
  - If a valid FTN, FTN sub address or No Reply Condition Time is present in the ATM request, then the indicated variable is modified.
  - Before modification of CF data (SS state changed to "registered", insert or change of FTN), the interaction checks between CF and ODB and between CF and CB shall be performed as described in 3GPP TS 23.015 [40] and 3GPP TS 23.082 [27] respectively. The CF data shall only be modified if the changed new CF data does not conflict with the existing ODB or CB entries.
  - If an instruction to modify the notification-to-CSE flag is present in the ATM request, then the notification-to-CSE flag is modified.
  - If the modification is partially successful (e.g. succeeds for one Basic Service but fails for the other another Basic Service), then the operation is partially accepted by the HLR. The accepted changes are made in the HLR and the changed data is sent in the ATM request acknowledgement.
- ATM\_Modify\_CB\_Data  
When only the SS-code and (optionally) a Basic Service code are present in the ATM request, then all Call Barring belonging to this SS code and basic service code is deactivated, the associated notificationToCSE flag is unchanged and the SS-Status is amended according to the state transition model defined in 3GPP TS 23.088 [39].  
Otherwise, the behaviour is as follows:
  - If a valid SS state is present in the ATM request, then an SS state transition is performed.
  - Before modification of CB data (SS state), the interaction checks between CF and CB shall be performed as described in 3GPP TS 23.088 [39]. The CB data shall only be modified if the changed new CB data does not conflict with the existing CF entries.
  - If a valid Password or "Wrong password attempt counter" is present in the ATM request, then the indicated variable is modified.
  - If an instruction to modify the notification-to-CSE flag is present in the ATM request, then the notification-to-CSE flag is modified.

- If the modification is partially successful (e.g. succeeds for one Basic Service but fails for ~~the other~~ another Basic Service), then the operation is partially accepted by the HLR. The accepted changes are made in the HLR and the changed data is sent in the ATM ~~request~~ acknowledgement.

After having executed the Any Time Modification instruction from the gsmSCF, the HLR calls the procedure CAMEL\_NSDC\_HLR, which sends notifications to gsmSCF(s), if required.



Process CAMEL\_ATM\_HLR

1(1)

/\* Process in the HLR receiving an Any Time Subscription Modification request from gsmSCF. \*/

/\* Signals to/from the left are to/from the gsmSCF, unless otherwise indicated.\*/

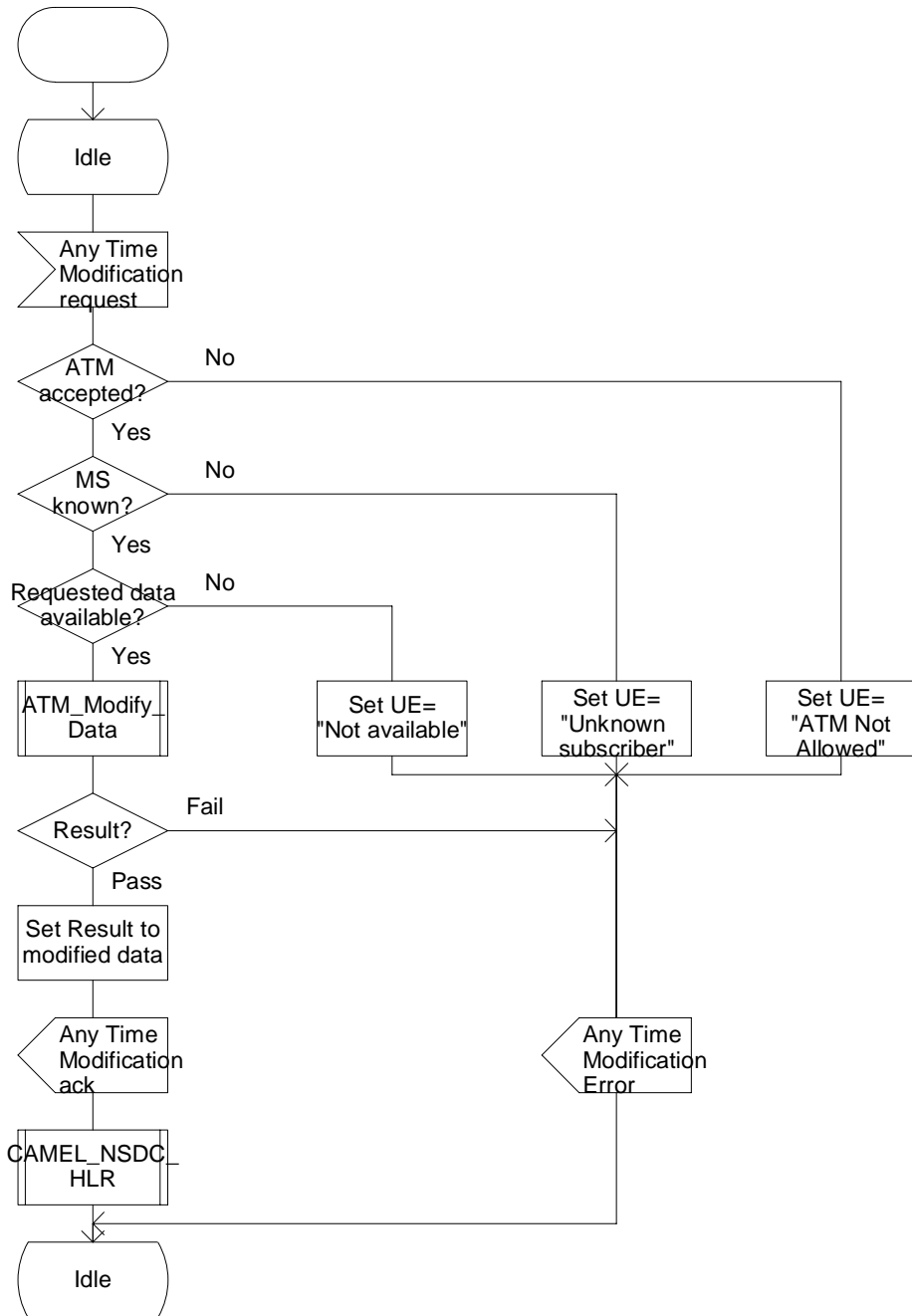


Figure Error! Reference source not found..1: Process CAMEL\_ATM\_HLR (sheet 1)

### Procedure ATM\_Modify\_Data

1(1)

/\* Procedure in the HLR to modify subscriber data as a result of an ATM request. \*/

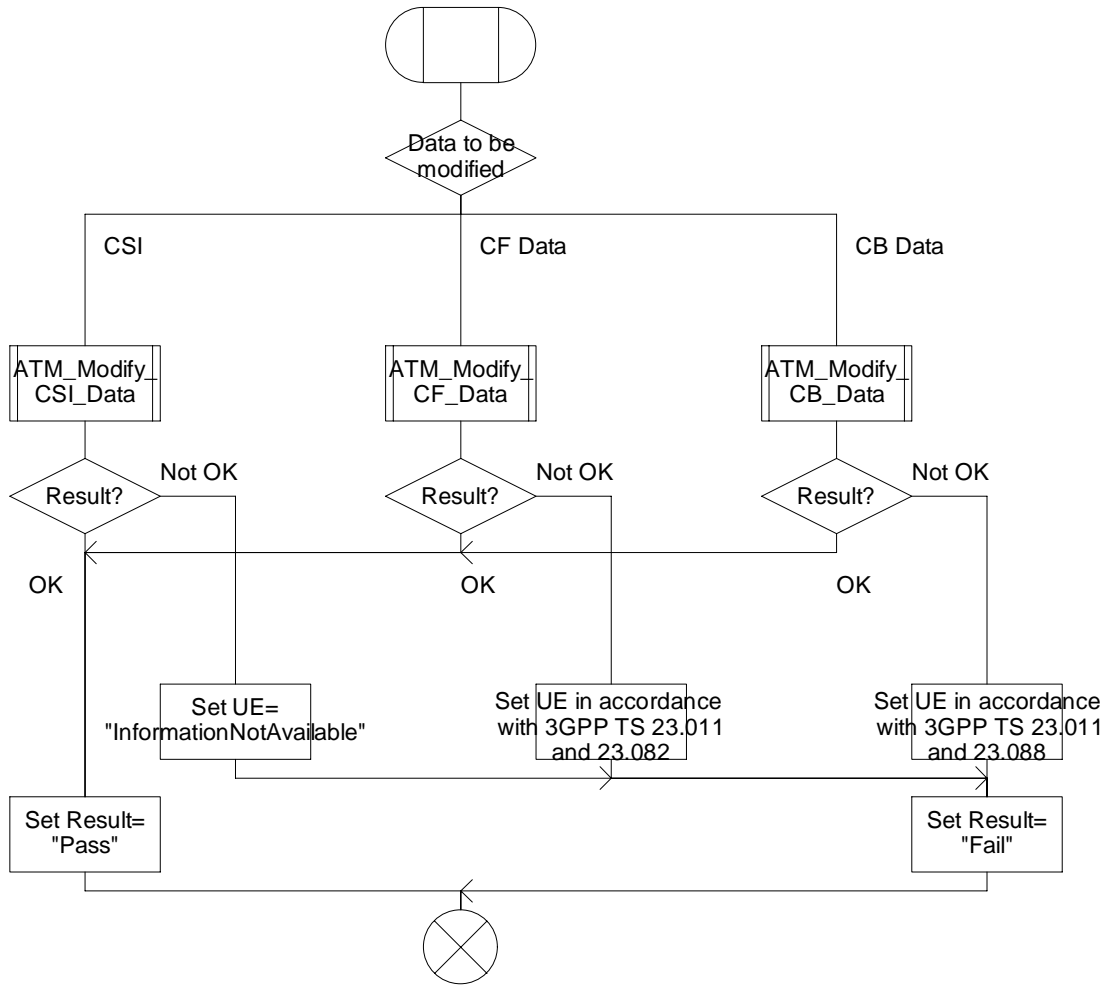


Figure Error! Reference source not found..2: Procedure ATM\_Modify\_Data (sheet 1)

### Procedure ATM\_Modify\_CSI\_Data

1(1)

/\* Procedure in the HLR to modify CSI data as a result of an ATM request. \*/

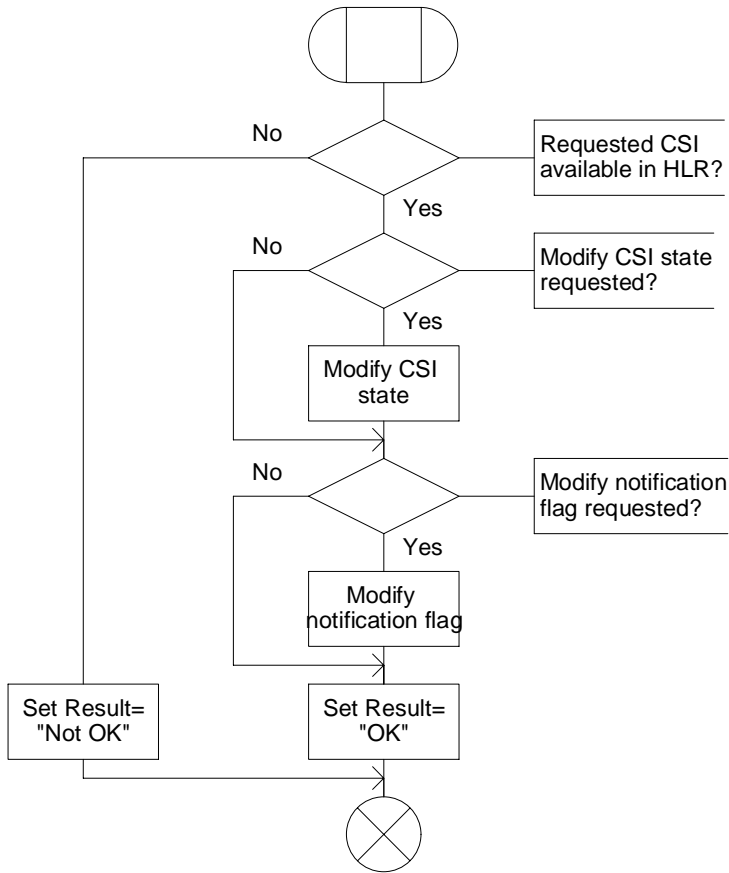


Figure Error! Reference source not found.:3: Procedure ATM\_Modify\_CSI\_Data (sheet 1)

Procedure ATM\_Modify\_CF\_Data

1(1)

/\* Procedure in the HLR to modify Call Forwarding data, as a result of an ATM request. \*/

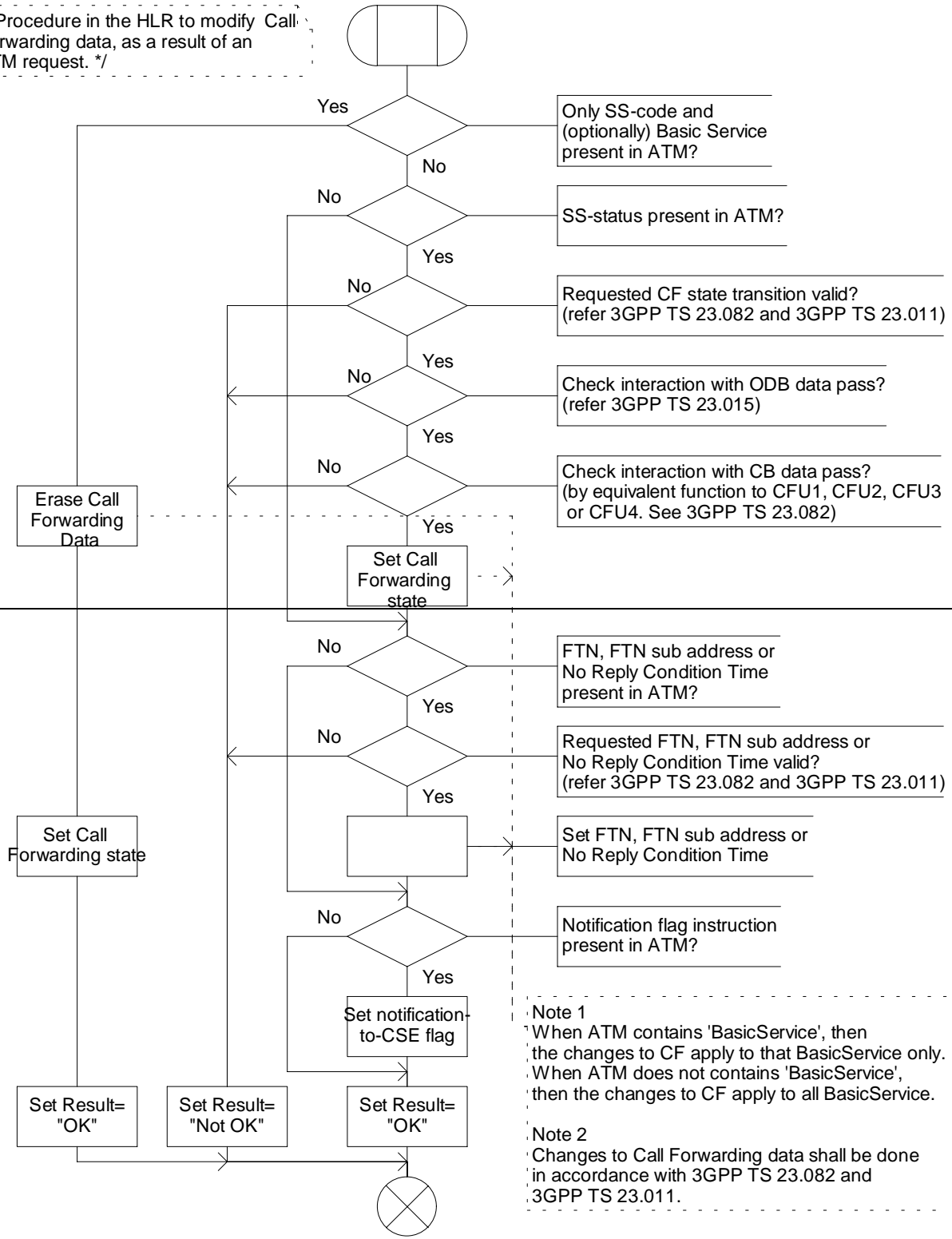
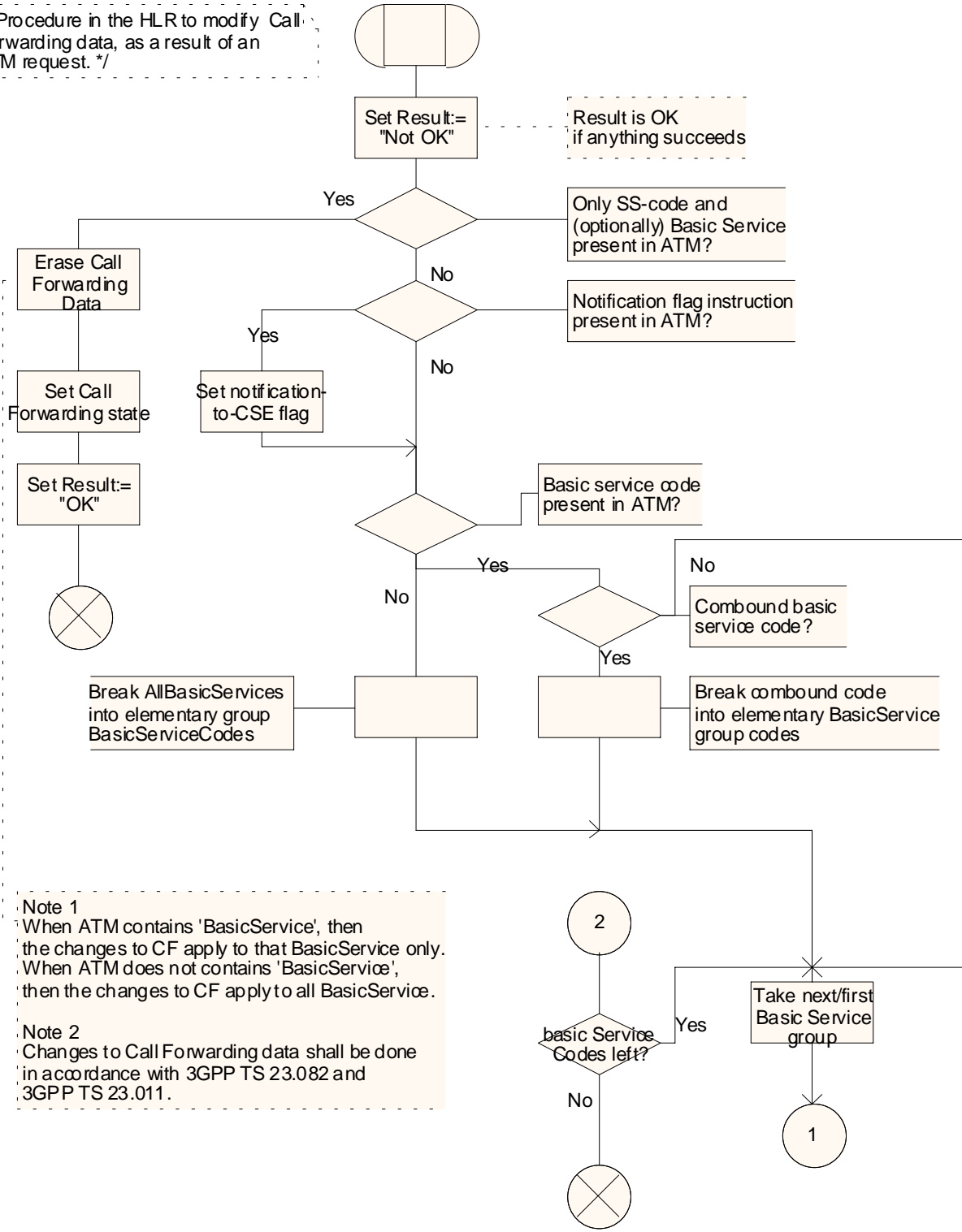


Figure Error! Reference source not found..4: Procedure ATM\_Modify\_CF\_Data (sheet 1)

Procedure ATM\_Modify\_CF\_Data

1(2)

/\* Procedure in the HLR to modify Call Forwarding data, as a result of an ATM request. \*/



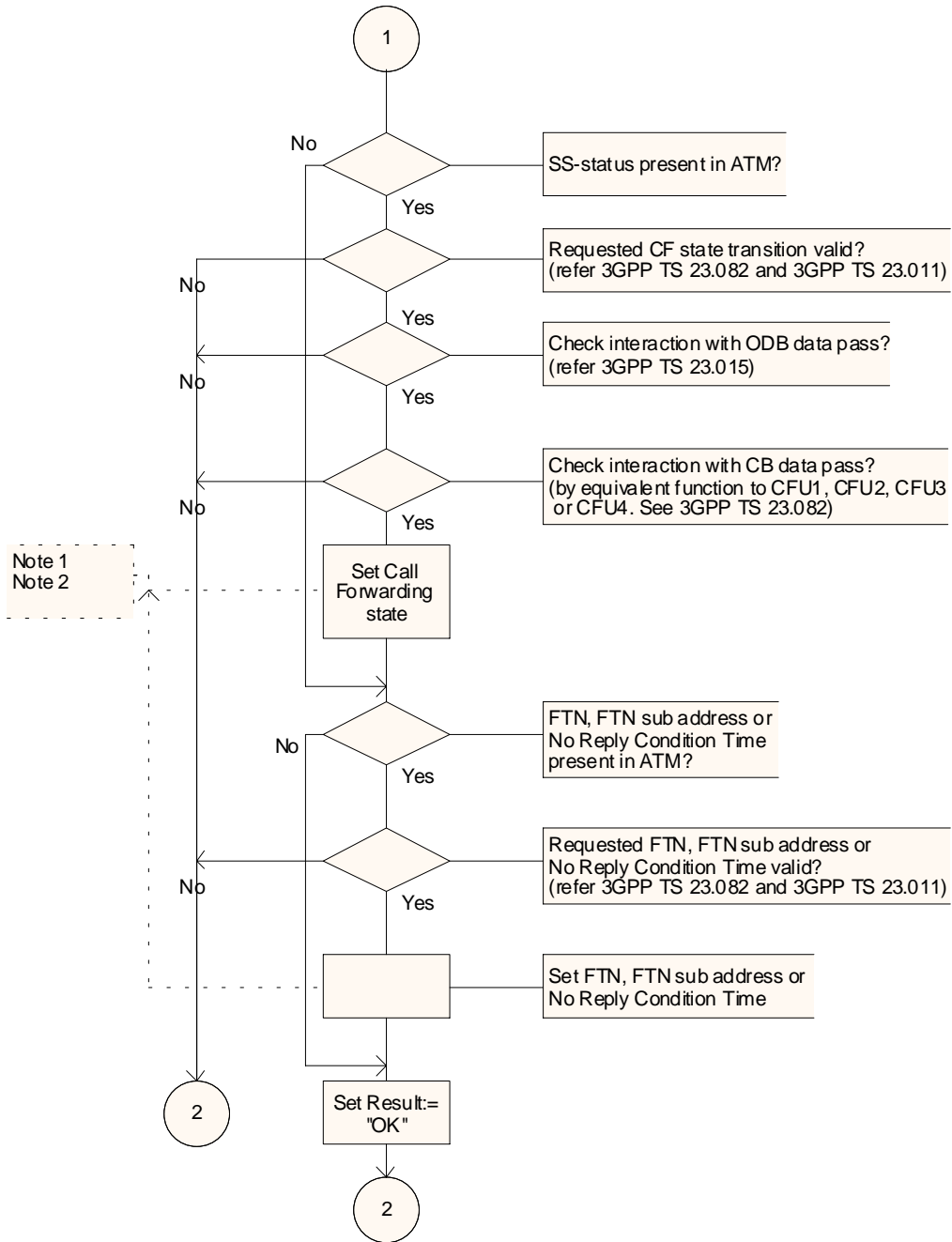
Note 1  
When ATM contains 'BasicService', then the changes to CF apply to that BasicService only. When ATM does not contains 'BasicService', then the changes to CF apply to all BasicService.

Note 2  
Changes to Call Forwarding data shall be done in accordance with 3GPP TS 23.082 and 3GPP TS 23.011.

Procedure ATM\_Modify\_CF\_Data

2(2)

/\* Procedure in the HLR to modify Call Forwarding data, as a result of an ATM request. \*/



<new sheet>

Procedure ATM\_Modify\_CB\_Data

1(1)

/\* Procedure in the HLR to modify Call Barring data, as a result of an ATM request. \*/

Note 1  
When ATM contains 'BasicService', then the changes to CB apply to that BasicService only.  
When ATM does not contains 'BasicService', then the changes to CB apply to all BasicService.

Note 2  
Changes to Call Barring data shall be done in accordance with 3GPP TS 23.088 and 3GPP TS 23.011.

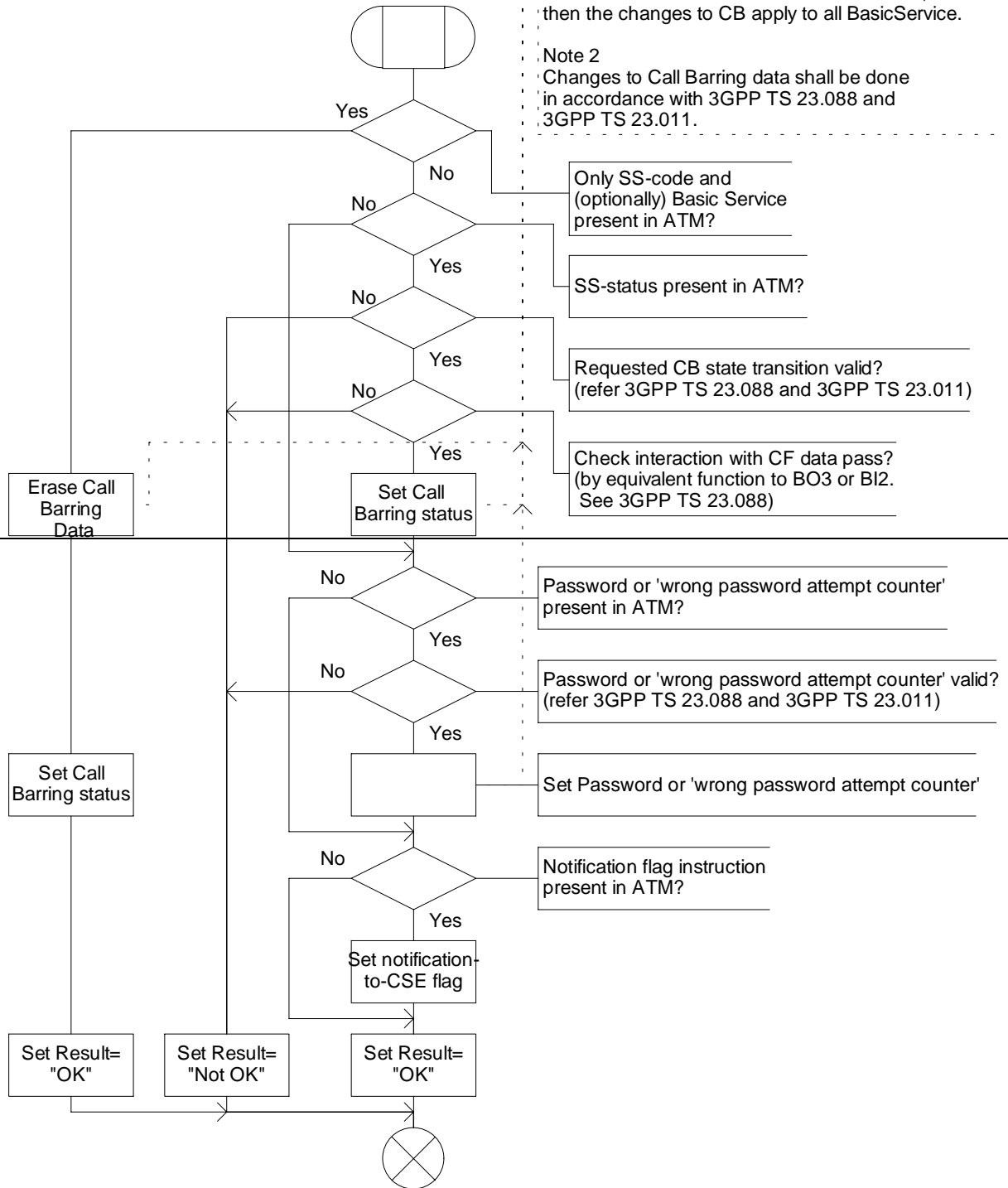


Figure Error! Reference source not found..5: Procedure ATM\_Modify\_CB\_Data (sheet 1)

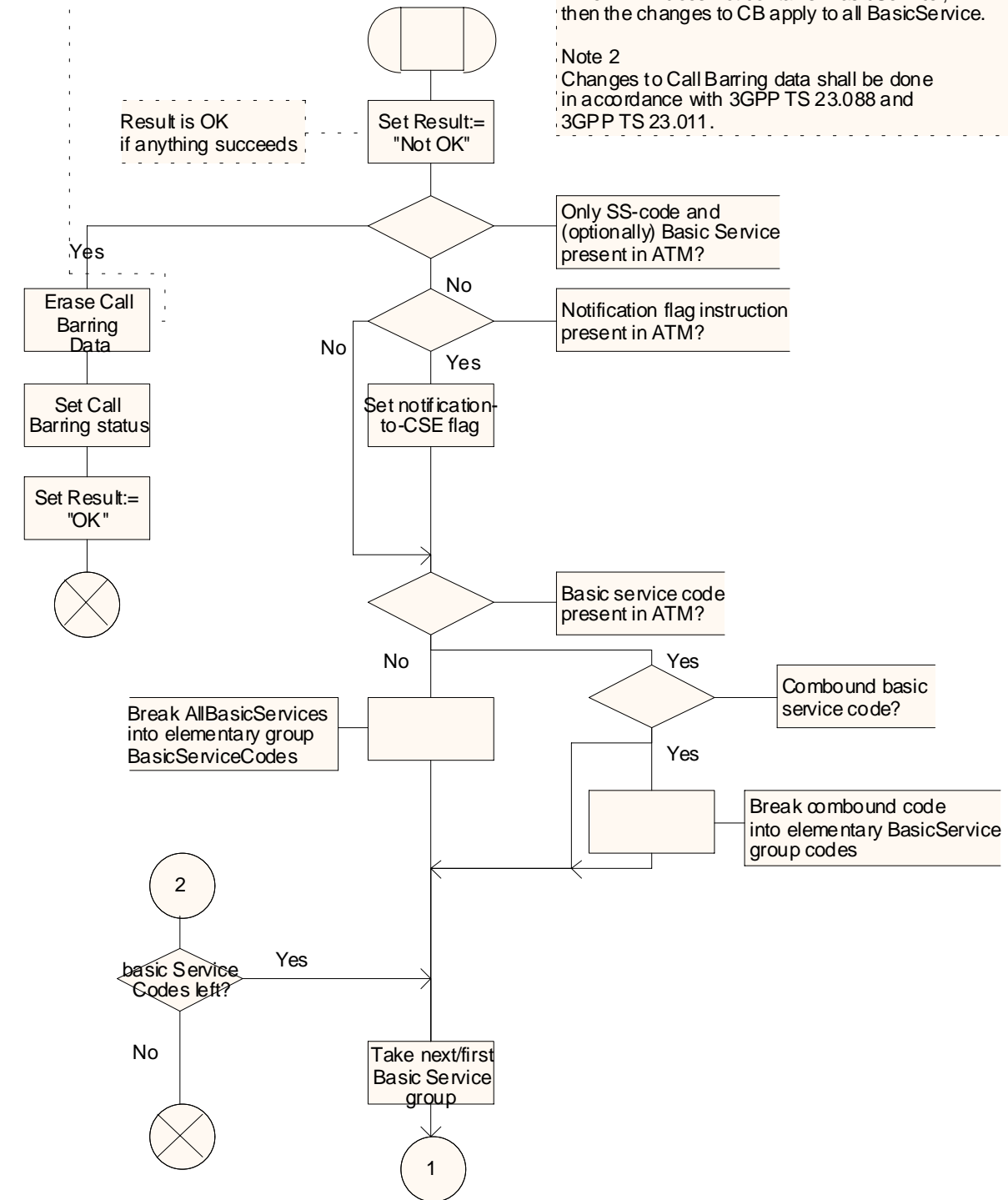
Procedure ATM\_Modify\_CB\_Data

1(2)

/\* Procedure in the HLR to modify Call Barring data, as a result of an ATM request. \*/

Note 1  
When ATM contains 'BasicService', then the changes to CB apply to that BasicService only.  
When ATM does not contains 'BasicService', then the changes to CB apply to all BasicService.

Note 2  
Changes to Call Barring data shall be done in accordance with 3GPP TS 23.088 and 3GPP TS 23.011.

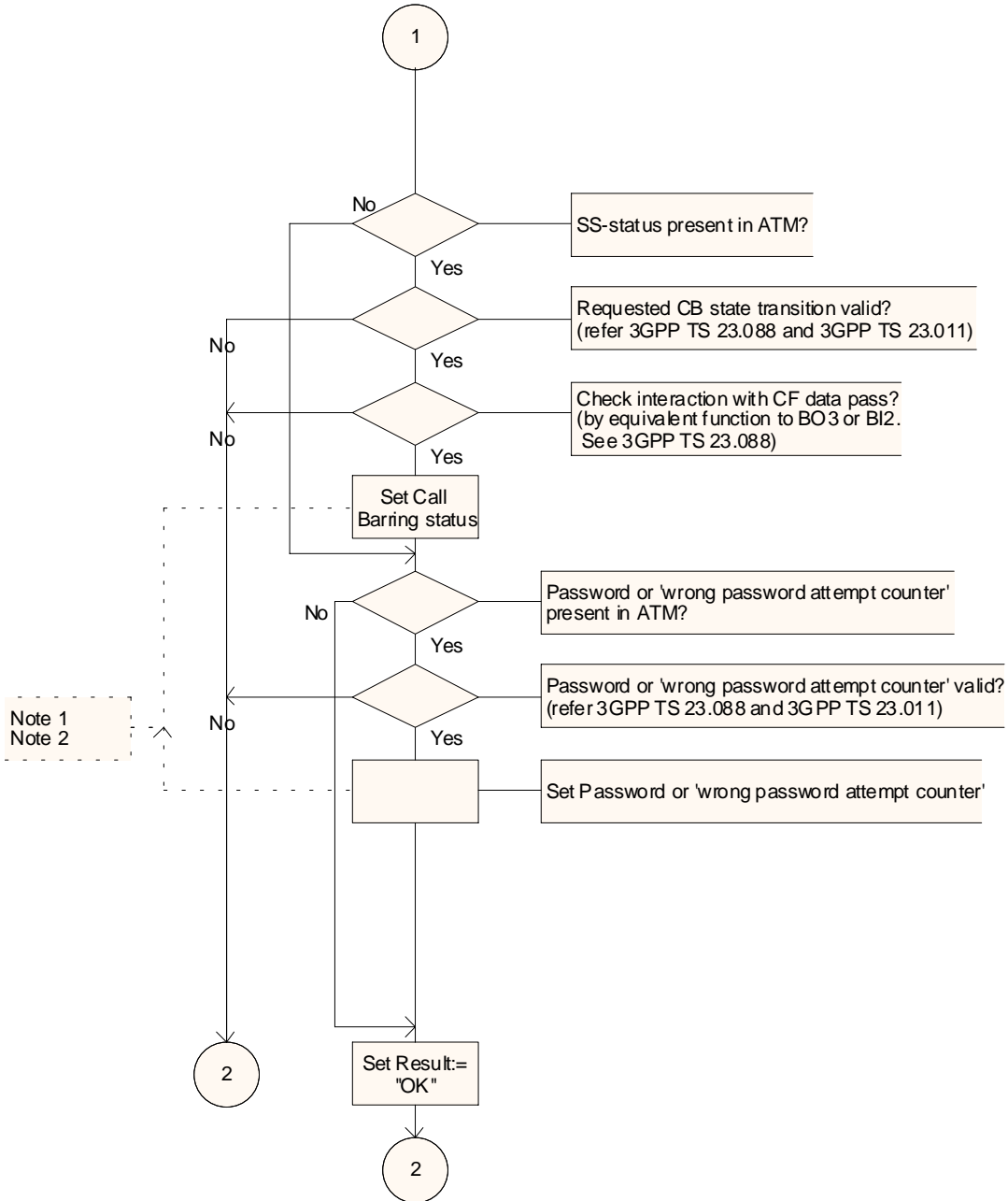




### Procedure ATM\_Modify\_CB\_Data

2(2)

/\* Procedure in the HLR to modify Call Barring data, as a result of an ATM request.\*/



Note 1  
Note 2

<New sheet>

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

## 10.3.2 HLR to gsmSCF information flows

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### 10.3.2.2 Any Time Modification ack

#### 10.3.2.2.1 Description

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

#### 10.3.2.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Call Forwarding SS data	C	This IE is described in a table below.
Call Barring SS data	C	This IE is described in a table below.
CAMEL Subscription Information	C	This IE is described in a table below.
C	Conditional (The IE shall be sent if it was modified).	

Call Forwarding SS data contains the following information:

Information element name	Required	Description
SS Code	C <sub>1</sub>	This IE indicates Call Forwarding supplementary service as defined in 3GPP TS 22.004 [25].
Forwarding Feature List	C <sub>2</sub>	See the table below.
Notification-to-CSE Flag	C <sub>3</sub>	This IE indicates whether the gsmSCF is notified of a change of Call Forwarding SS data.
C	Conditional (The IE shall be sent, if available).	
C <sub>1</sub>	Conditional (The IE shall be sent, if available. Only the SS code for which the modification applies is sent).	
C <sub>2</sub>	Conditional (The IE shall be sent, if available). If a Forwarding Feature List item is modified then all applicable fields within the item shall be sent. All modified Forwarding Feature List items shall be returned.	
C <sub>3</sub>	Conditional (The IE shall be sent, if available and modified).	

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

Information element name	Required	Description
Basic Service	C	See 3GPP TS 22.002 [24].
SS Status	C	See 3GPP TS 23.011 [26].
Forwarded-to Number	C	See 3GPP TS 23.082 [27].
Forwarded-to Subaddress	C	See 3GPP TS 23.082 [27].
Subscription Options	C	See 3GPP TS 23.082 [27].
No Reply Condition Time	C	See 3GPP TS 23.082 [27].
C	Conditional (The IE shall be sent, if available and applicable).	

Call Barring SS data contains the following information:

Information element name	Required	Description
SS Code	C <sub>1</sub>	This IE indicates Call Barring supplementary service as defined in 3GPP TS 22.004 [25].
Call Barring Feature List	C <sub>2</sub>	See the table below.
Password	C <sub>3</sub>	See 3GPP TS 23.011 [26].
Wrong password attempts counter	C <sub>3</sub>	See 3GPP TS 23.011 [26].
Notification-to-CSE flag	C <sub>3</sub>	This IE indicates whether the gsmSCF is notified of a change of Call Barring SS data.
C	Conditional (The IE shall be sent, if available).	
C <sub>1</sub>	Conditional (The IE shall be sent, if available. Only the SS code for which the modification applies is sent.	
C <sub>2</sub>	Conditional (The IE shall be sent, if available). If a Call Barring Feature List item is modified then all applicable fields within the item shall be sent. All modified Call Barring Feature List items shall be returned.	
C <sub>3</sub>	Conditional (The IE shall be sent, if available and modified).	

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

Information element name	Required	Description
Basic Service	C	See 3GPP TS 22.002 [24].
SS Status	C	See 3GPP TS 23.011 [26].
C	Conditional (The IE shall be sent, if available and applicable).	

CAMEL Subscription Information contains the following information:

Information element name	Required	Description
O-CSI	C	See clause 4.3.1.
D-CSI	C	See clause 4.3.2.
T-CSI	C	See clause 4.3.4.
VT-CSI	C	See clause 4.3.5.
TIF-CSI	C	See clause 4.3.6.2.
GPRS-CSI	C	See clause 6.3.1.
SMS-CSI	C	See clause 7.3.1.
SS-CSI	C	See clause 8.2.1.
M-CSI	C	See clause 9.2.1.
C	Conditional (The IE shall be sent, if it was modified. Only the modified CSI is sent).	

## CHANGE REQUEST

⌘ **23.078 CR 407** ⌘ rev ⌘ Current version: **4.4.0** ⌘

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

**Title:** ⌘ Clarifications on ATM-req/ATM-ack

**Source:** ⌘ Nokia

**Work item code:** ⌘ CAMEL3

**Date:** ⌘ 28.3.2002

**Category:** ⌘ A

**Release:** ⌘ Rel-4

Use one of the following categories:

Use one of the following releases:

**F** (correction)

2 (GSM Phase 2)

**A** (corresponds to a correction in an earlier release)

R96 (Release 1996)

**B** (addition of feature),

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**C** (functional modification of feature)

R98 (Release 1998)

**D** (editorial modification)

R99 (Release 1999)

REL-4 (Release 4)

REL-5 (Release 5)

**Reason for change:** ⌘ The present CR corrects ambiguity related the handling of Any Time Modification (ATM) in the HLR.

### Correction 1

When the gsmSCF send ATM-req, containing data pertaining to a particular supplementary service, then the HLR shall return in ATM-ack only the modified subscription data. This behaviour is currently not properly specified.

Example1: If CFNRc is modified as a result of ATM-req, then no CFU, CFB or CFNRy data shall be returned to the gsmSCF.

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When the gsmSCF sends ATM-req to the HLR, then it may occur that the HLR accepts the ATM-req only partially.

I.e. some of the data contained in ATM-req is used by the HLR to modify subscription data, but other data contained in ATM-req is not used to modify subscription data.

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**Correction 3**

Only the modified CSI is returned to the SCP.

**Summary of change:** ⌘

1. It is clarified that ATM-ack shall contain only the modified part of HLR data.
2. It is clarified that if ATM partially succeeds, then the operation is “partially accepted” by the HLR. The accepted changes are done in the HLR and the modified data is returned in the ATM-ack. This is in line with 3GPP TS 23.011, which specifies the HLR behaviour in the case that a modification requested by the mobile user succeeds partially.

**Consequences if not approved:** ⌘

Unclear specification. Different implementations may exist, and thus interoperability problems.

**Clauses affected:** ⌘

**Other specs affected:** ⌘

- Other core specifications ⌘
- Test specifications
- O&M Specifications

**Other comments:** ⌘

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

## 10.2.2 Any Time Modification

Handling of Any Time Modification involves the following process:

- CAMEL\_ATM\_HLR.

The following procedures are involved:

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If the CSI indicated in the ATM request is not available in the HLR, then an error is returned.  
Otherwise, the CSI state and/or Notification-to-CSE flag are set as instructed with the ATM request.
- ATM\_Modify\_CF\_Data  
When only the SS-code and (optionally) a Basic Service code are present in the ATM request, then all Call Forwarding data belonging to this SS code and basic service code is erased, the associated notificationToCSE flag is unchanged and the SS-Status is amended according to the state transition model defined in 3GPP TS 23.082 [27].  
Otherwise, the behaviour is as follows:
  - If a valid SS state is present in the ATM request, then an SS state transition is performed.
  - If a valid FTN, FTN sub address or No Reply Condition Time is present in the ATM request, then the indicated variable is modified.
  - Before modification of CF data (SS state changed to "registered", insert or change of FTN), the interaction checks between CF and ODB and between CF and CB shall be performed as described in 3GPP TS 23.015 [40] and 3GPP TS 23.082 [27] respectively. The CF data shall only be modified if the changed new CF data does not conflict with the existing ODB or CB entries.
  - If an instruction to modify the notification-to-CSE flag is present in the ATM request, then the notification-to-CSE flag is modified.
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Otherwise, the behaviour is as follows:
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  - If a valid Password or "Wrong password attempt counter" is present in the ATM request, then the indicated variable is modified.
  - If an instruction to modify the notification-to-CSE flag is present in the ATM request, then the notification-to-CSE flag is modified.

- If the modification is partially successful (e.g. succeeds for one Basic Service but fails for ~~the other~~ another Basic Service), then the operation is partially accepted by the HLR. The accepted changes are made in the HLR and the changed data is sent in the ATM ~~request~~ acknowledgement.

After having executed the Any Time Modification instruction from the gsmSCF, the HLR calls the procedure CAMEL\_NSDC\_HLR, which sends notifications to gsmSCF(s), if required.

Process CAMEL\_ATM\_HLR

1(1)

/\* Process in the HLR receiving an Any Time Subscription Modification request from gsmSCF. \*/

/\* Signals to/from the left are to/from the gsmSCF, unless otherwise indicated.\*/

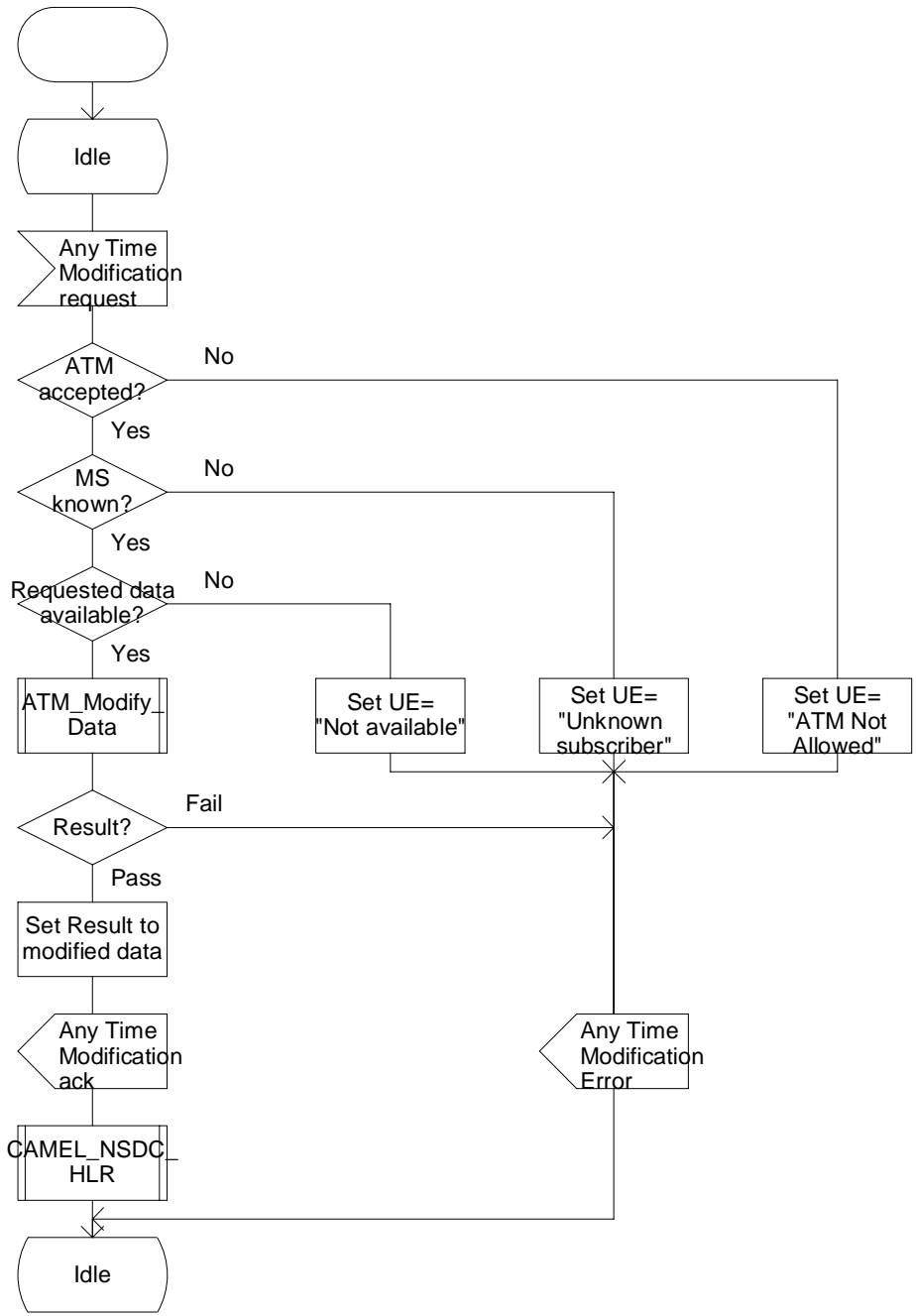


Figure Error! Reference source not found..1: Process CAMEL\_ATM\_HLR (sheet 1)



Procedure ATM\_Modify\_Data

1(1)

/\* Procedure in the HLR to modify subscriber data as a result of an ATM request. \*/

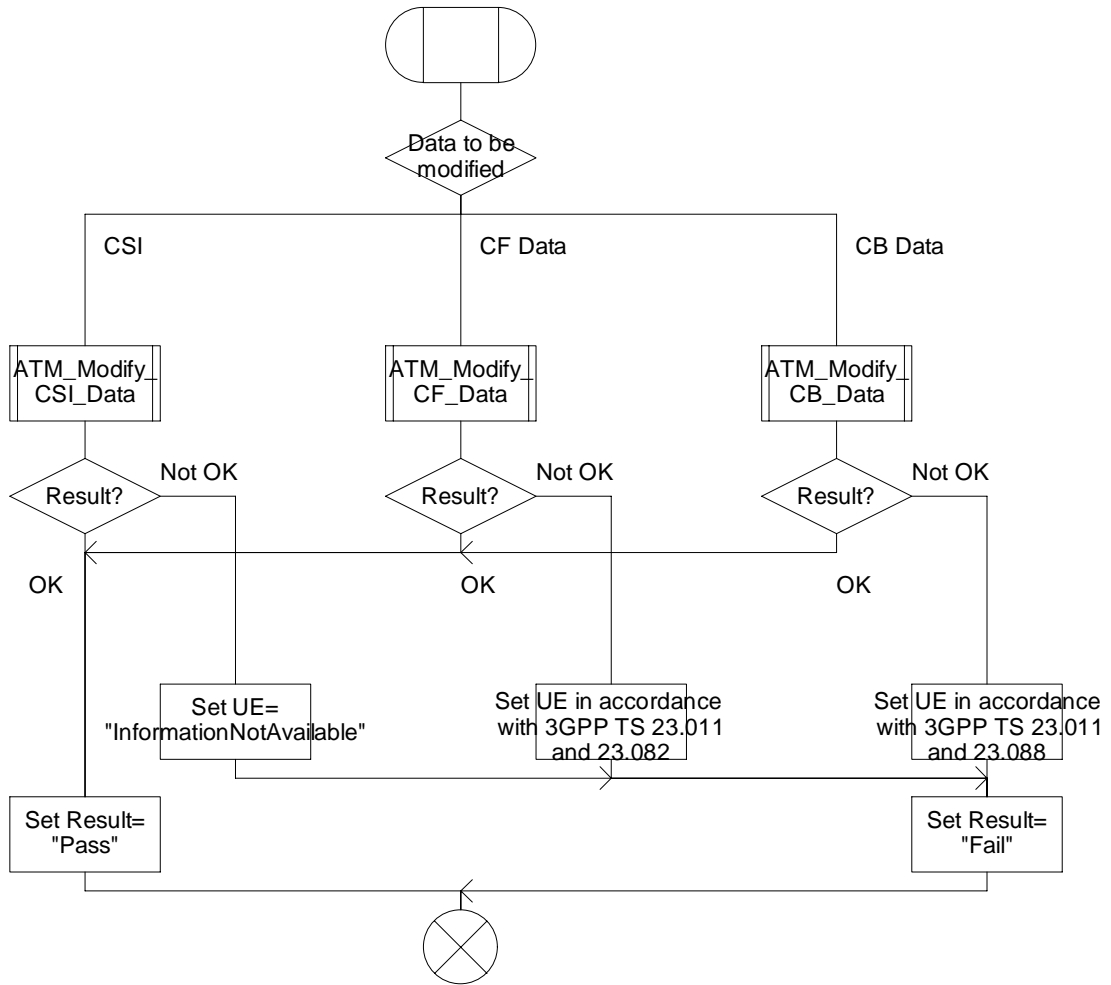


Figure Error! Reference source not found..2: Procedure ATM\_Modify\_Data (sheet 1)

### Procedure ATM\_Modify\_CSI\_Data

1(1)

/\* Procedure in the HLR to modify CSI data as a result of an ATM request. \*/

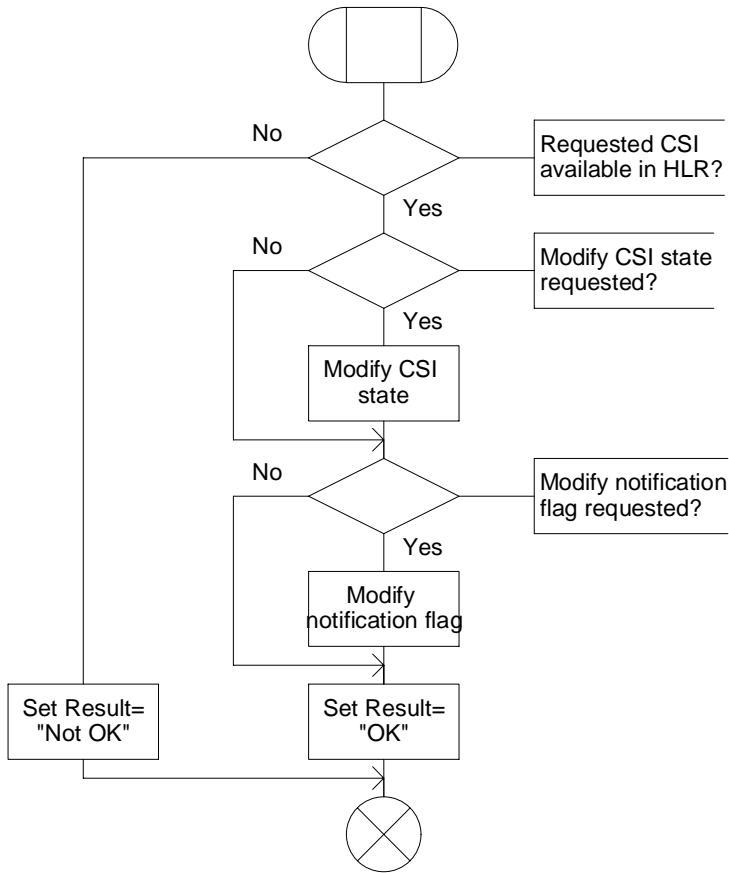
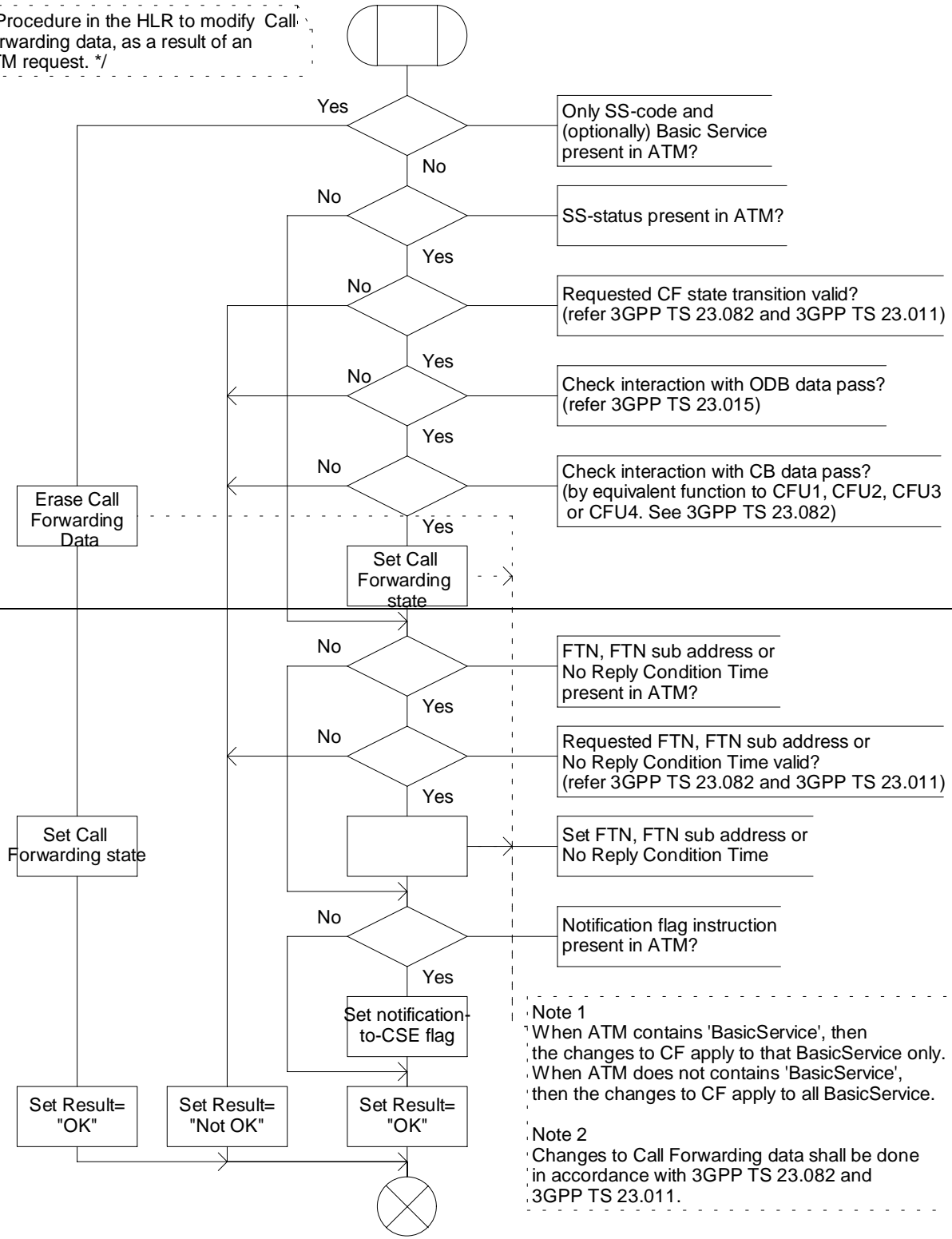


Figure Error! Reference source not found..3: Procedure ATM\_Modify\_CSI\_Data (sheet 1)

Procedure ATM\_Modify\_CF\_Data

1(1)

/\* Procedure in the HLR to modify Call Forwarding data, as a result of an ATM request. \*/



Note 1  
When ATM contains 'BasicService', then the changes to CF apply to that BasicService only. When ATM does not contain 'BasicService', then the changes to CF apply to all BasicService.

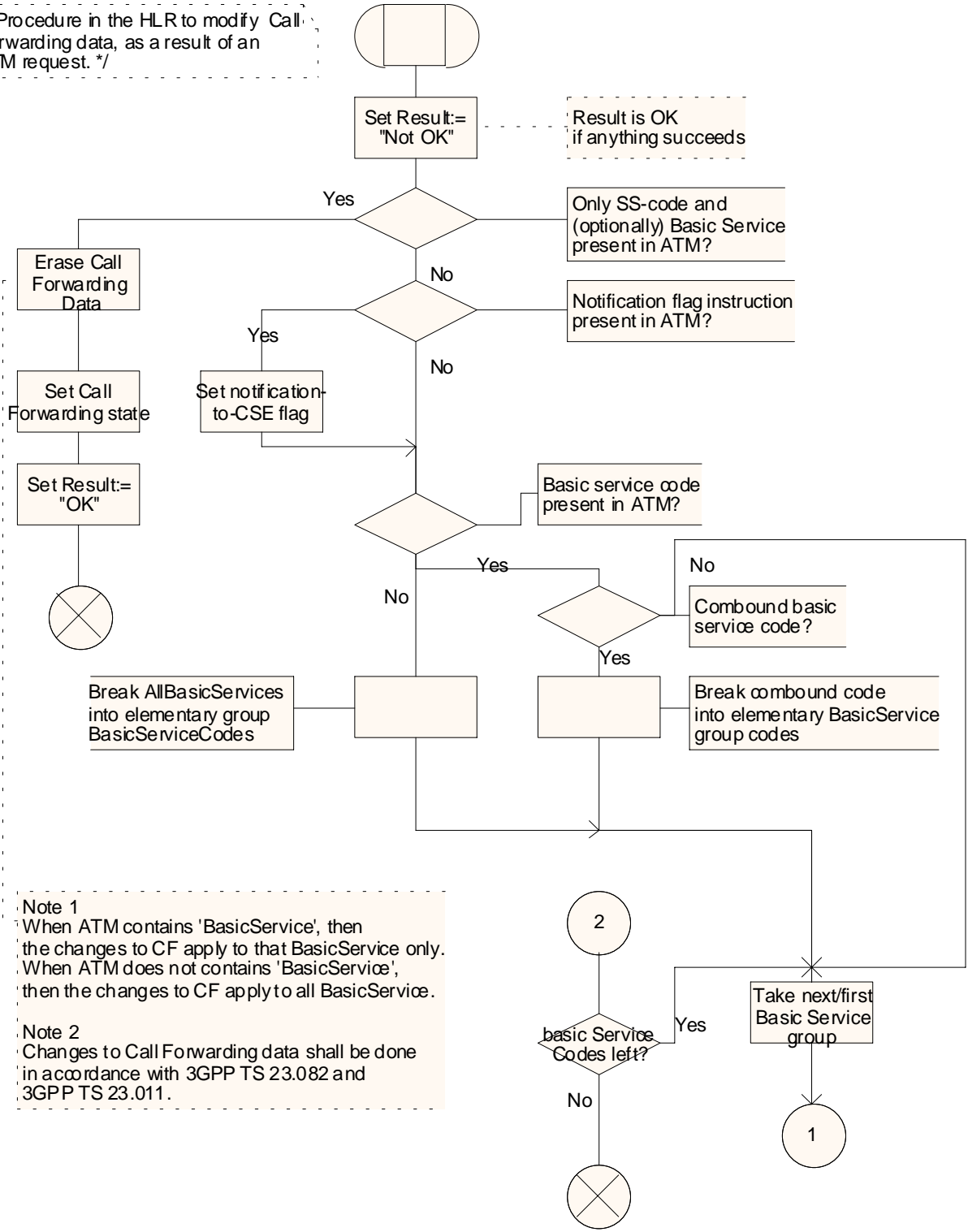
Note 2  
Changes to Call Forwarding data shall be done in accordance with 3GPP TS 23.082 and 3GPP TS 23.011.

Figure Error! Reference source not found.:4: Procedure ATM\_Modify\_CF\_Data (sheet 1)

Procedure ATM\_Modify\_CF\_Data

1(2)

/\* Procedure in the HLR to modify Call Forwarding data, as a result of an ATM request. \*/



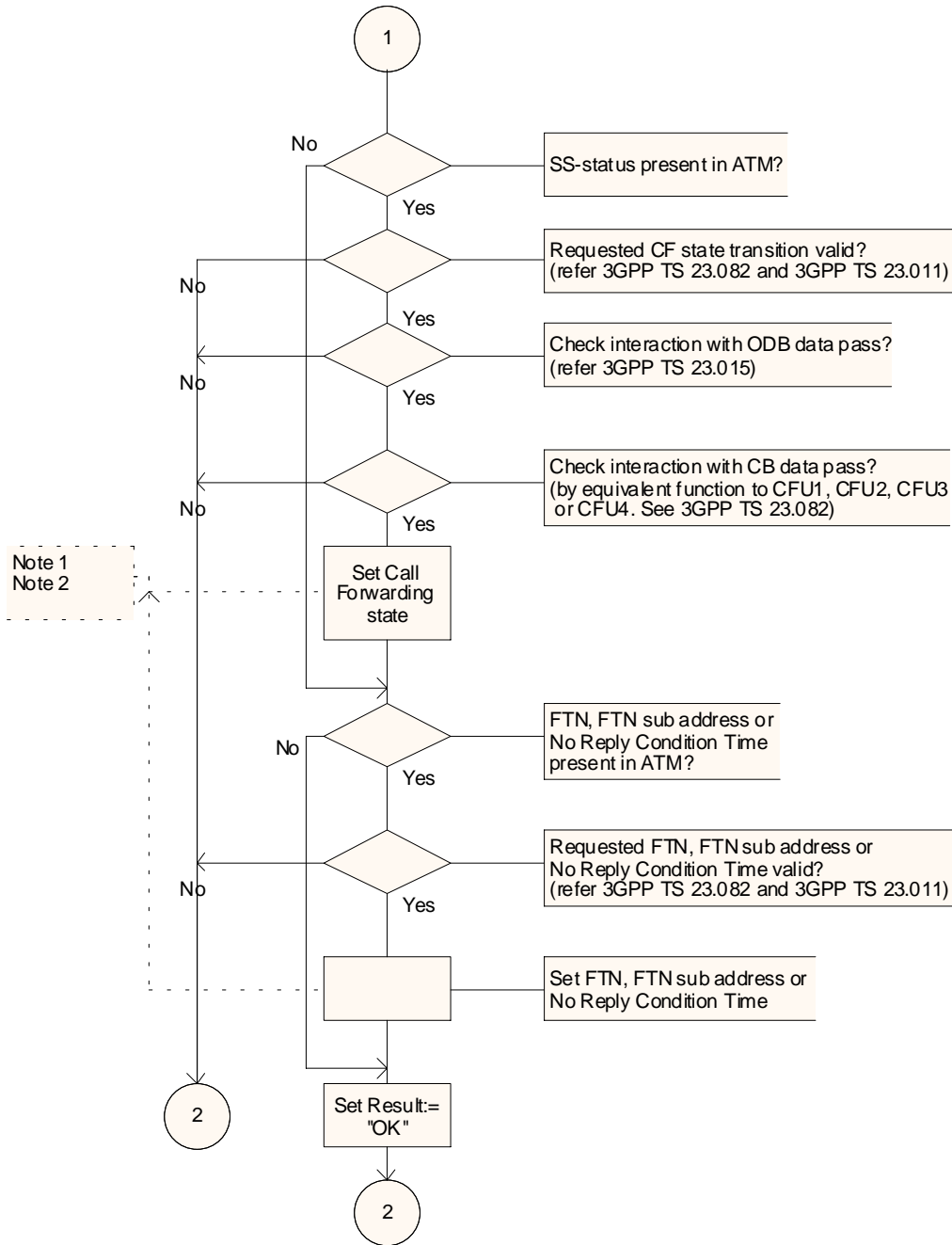
Note 1  
When ATM contains 'BasicService', then the changes to CF apply to that BasicService only. When ATM does not contains 'BasicService', then the changes to CF apply to all BasicService.

Note 2  
Changes to Call Forwarding data shall be done in accordance with 3GPP TS 23.082 and 3GPP TS 23.011.

Procedure ATM\_Modify\_CF\_Data

2(2)

/\* Procedure in the HLR to modify Call Forwarding data, as a result of an ATM request. \*/



<new sheet>

Procedure ATM\_Modify\_CB\_Data

1(1)

/\* Procedure in the HLR to modify Call Barring data, as a result of an ATM request. \*/

Note 1  
When ATM contains 'BasicService', then the changes to CB apply to that BasicService only.  
When ATM does not contains 'BasicService', then the changes to CB apply to all BasicService.

Note 2  
Changes to Call Barring data shall be done in accordance with 3GPP TS 23.088 and 3GPP TS 23.011.

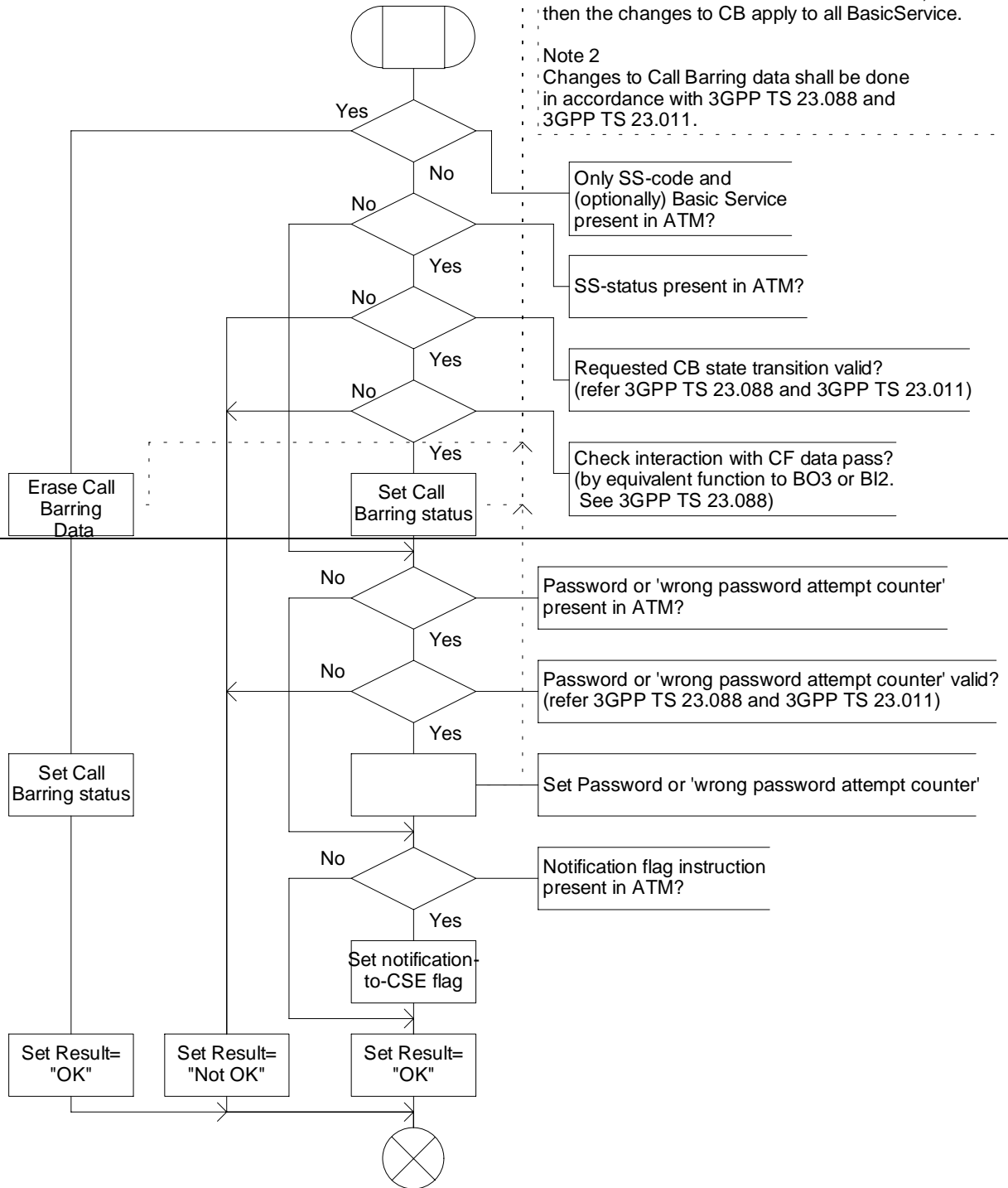


Figure Error! Reference source not found.:5: Procedure ATM\_Modify\_CB\_Data (sheet 1)

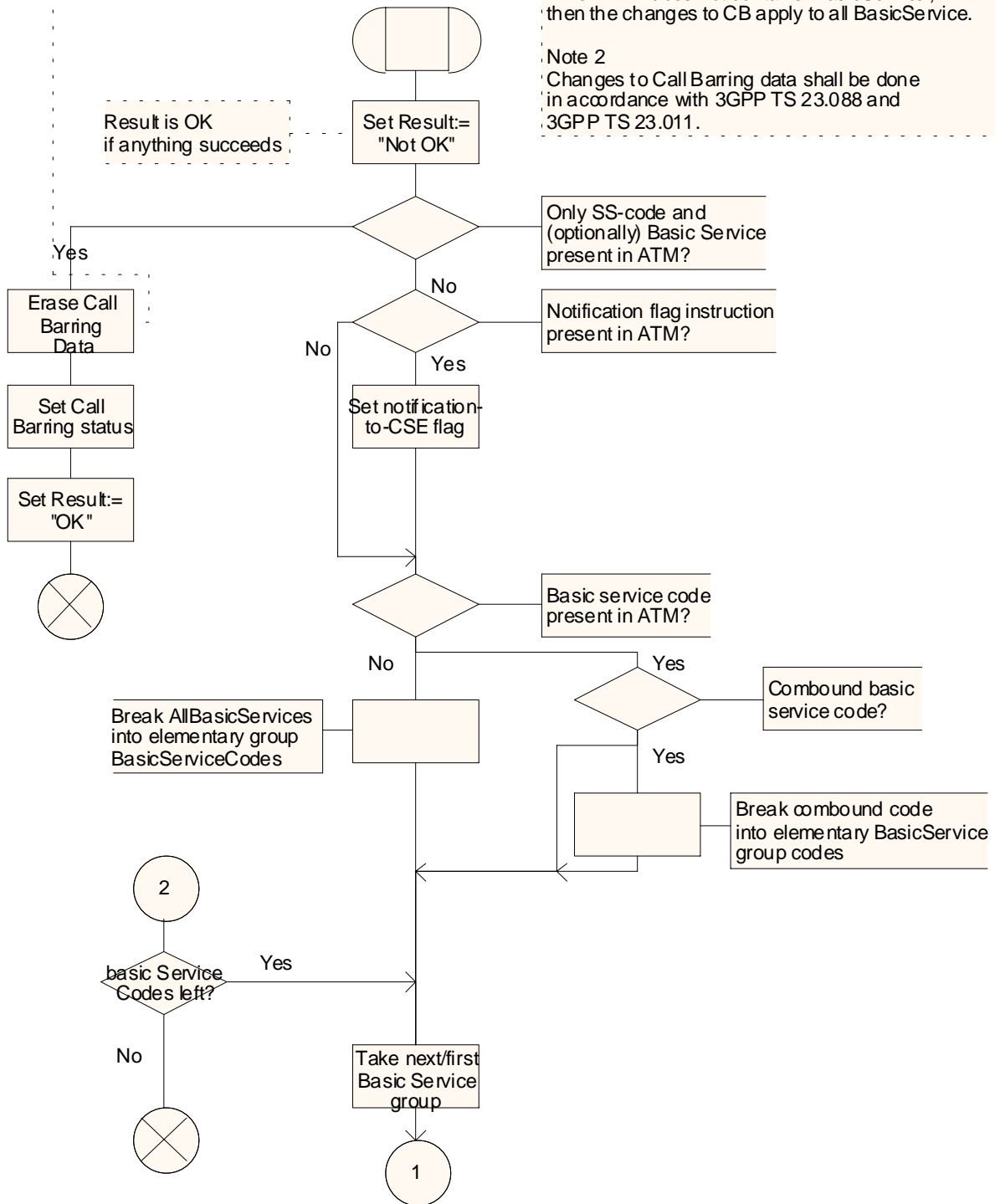
Procedure ATM\_Modify\_CB\_Data

1(2)

/\* Procedure in the HLR to modify Call Barring data, as a result of an ATM request. \*/

Note 1  
When ATM contains 'BasicService', then the changes to CB apply to that BasicService only.  
When ATM does not contains 'BasicService', then the changes to CB apply to all BasicService.

Note 2  
Changes to Call Barring data shall be done in accordance with 3GPP TS 23.088 and 3GPP TS 23.011.

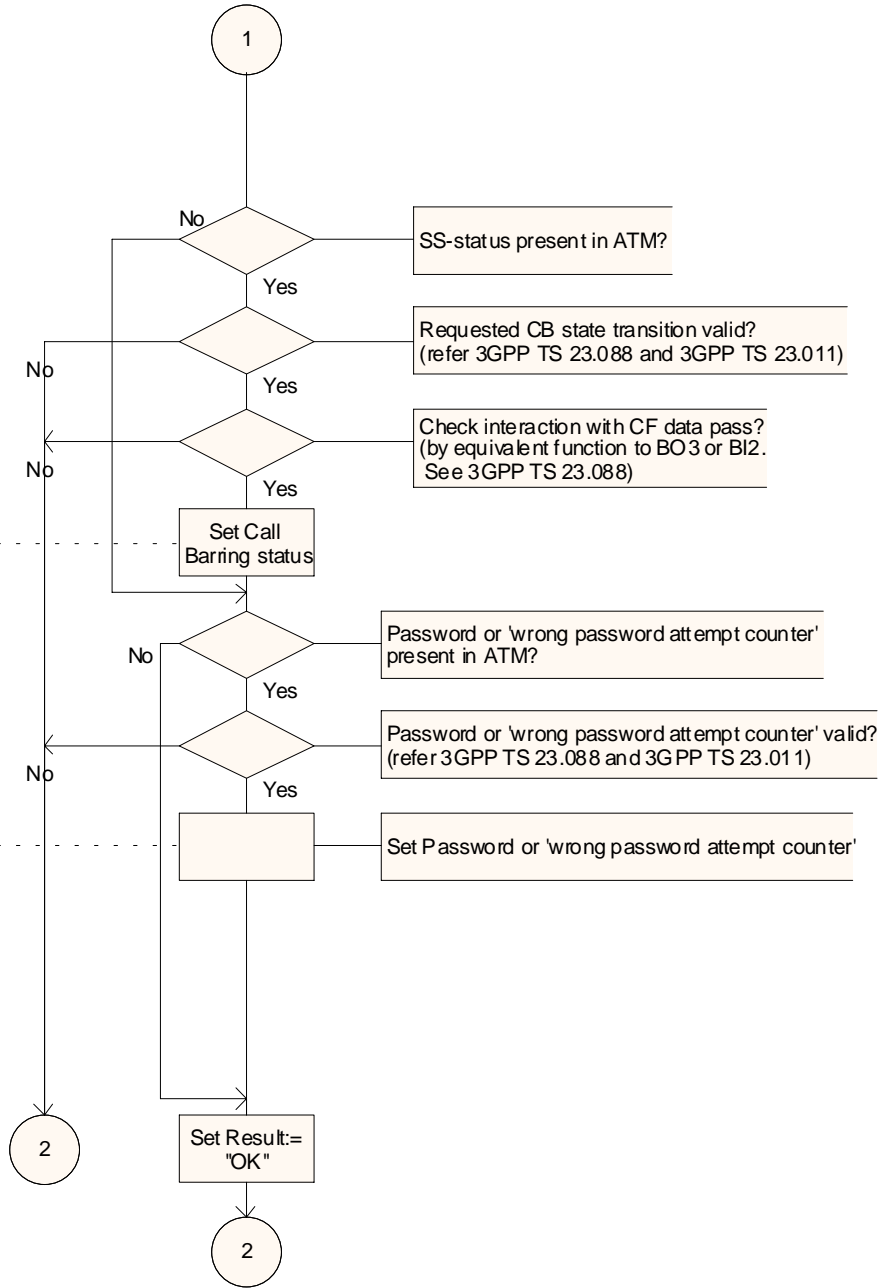


### Procedure ATM\_Modify\_CB\_Data

2(2)

/\* Procedure in the HLR to modify Call Barring data, as a result of an ATM request.\*/

Note 1  
Note 2



<New sheet>



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

## 10.3.2 HLR to gsmSCF information flows

....

### 10.3.2.2 Any Time Modification ack

#### 10.3.2.2.1 Description

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

#### 10.3.2.2.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Call Forwarding SS data	C	This IE is described in a table below.
Call Barring SS data	C	This IE is described in a table below.
CAMEL Subscription Information	C	This IE is described in a table below.
C	Conditional (The IE shall be sent if it was modified).	

Call Forwarding SS data contains the following information:

Information element name	Required	Description
SS Code	C <sub>1</sub>	This IE indicates Call Forwarding supplementary service as defined in 3GPP TS 22.004 [25].
Forwarding Feature List	C <sub>2</sub>	See the table below.
Notification-to-CSE Flag	C <sub>3</sub>	This IE indicates whether the gsmSCF is notified of a change of Call Forwarding SS data.
C	<del>Conditional (The IE shall be sent, if available).</del>	
C <sub>1</sub>	Conditional (The IE shall be sent, if available. Only the SS code for which the modification applies is sent.	
C <sub>2</sub>	Conditional (The IE shall be sent, if available). If a Forwarding Feature List item is modified then all applicable fields within the item shall be sent. All modified Forwarding Feature List items shall be returned.	
C <sub>3</sub>	Conditional (The IE shall be sent, if available and modified).	

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

Information element name	Required	Description
Basic Service	C	See 3GPP TS 22.002 [24].
SS Status	C	See 3GPP TS 23.011 [26].
Forwarded-to Number	C	See 3GPP TS 23.082 [27].
Forwarded-to Subaddress	C	See 3GPP TS 23.082 [27].
Subscription Options	C	See 3GPP TS 23.082 [27].
No Reply Condition Time	C	See 3GPP TS 23.082 [27].
C	Conditional (The IE shall be sent, if available and applicable).	

Call Barring SS data contains the following information:

Information element name	Required	Description
SS Code	C <sub>1</sub>	This IE indicates Call Barring supplementary service as defined in 3GPP TS 22.004 [25].
Call Barring Feature List	C <sub>2</sub>	See the table below.
Password	C <sub>3</sub>	See 3GPP TS 23.011 [26].
Wrong password attempts counter	C <sub>3</sub>	See 3GPP TS 23.011 [26].
Notification-to-CSE flag	C <sub>3</sub>	This IE indicates whether the gsmSCF is notified of a change of Call Barring SS data.
C	Conditional (The IE shall be sent, if available).	
C <sub>1</sub>	Conditional (The IE shall be sent, if available. Only the SS code for which the modification applies is sent).	
C <sub>2</sub>	Conditional (The IE shall be sent, if available). If a Call Barring Feature List item is modified then all applicable fields within the item shall be sent. All modified Call Barring Feature List items shall be returned.	
C <sub>3</sub>	Conditional (The IE shall be sent, if available and modified).	

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

Information element name	Required	Description
Basic Service	C	See 3GPP TS 22.002 [24].
SS Status	C	See 3GPP TS 23.011 [26].
C	Conditional (The IE shall be sent, if available and applicable).	

CAMEL Subscription Information contains the following information:

Information element name	Required	Description
O-CSI	C	See clause 4.3.1.
D-CSI	C	See clause 4.3.2.
T-CSI	C	See clause 4.3.4.
VT-CSI	C	See clause 4.3.5.
TIF-CSI	C	See clause 4.3.6.2.
GPRS-CSI	C	See clause 6.3.1.
SMS-CSI	C	See clause 7.3.1.
SS-CSI	C	See clause 8.2.1.
M-CSI	C	See clause 9.2.1.
C	Conditional (The IE shall be sent, if it was modified. Only the modified CSI is sent).	

CR-Form-v5.1

## CHANGE REQUEST

⌘ **23.078 CR 405** ⌘ rev **1** ⌘ Current version: **3.12.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network  X

<b>Title:</b>	⌘ Corrections to CTR and ETC Procedures		
<b>Source:</b>	⌘ Vodafone		
<b>Work item code:</b>	⌘ CAMEL3	<b>Date:</b>	⌘ 13 <sup>th</sup> May 2002
<b>Category:</b>	⌘ <b>F</b> Essential Correction	<b>Release:</b>	⌘ R99
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ The procedure CAMEL_OCH_CTR defines multiple and different handling of the Int_Disconnect_Forward_Connection signal in the Wait_For_Disconnect_Forward_Connection state and the Int_Continue signal in the DP_O_Abandon state. This is incorrect SDL and will cause confusion to manufacturers. The same error exists in CAMEL_MT_CTR and CAMEL_CF_CTR.  The procedure CAMEL_OCH_ETC replicates the handling of the Int_Continue signal in the DP_O_Abandon state. This is incorrect SDL and will cause confusion to manufacturers. The same error exists in CAMEL_MT_ETC and CAMEL_CF_ETC.
<b>Summary of change:</b>	⌘ In CTR Procedures: Removal of duplication to reflect original intention and change of state name DP_O_Abandon to differentiate handling.  In ETC Procedures: Removal of duplication.
<b>Consequences if not approved:</b>	⌘ Mis-implementation leading to problems with the Connect To Resource operation (CAMEL_OCH_CTR will not provide an accurate return result).

<b>Clauses affected:</b>	⌘ 4.5.2.1, 4.5.3.1, and 4.5.5		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘ Changes since the previous version: Re-organisation of SDLs so that states are at the top of SDL sheets to ease reading.		

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

4.5.2.1 Handling of mobile originated calls in the originating MSC

...

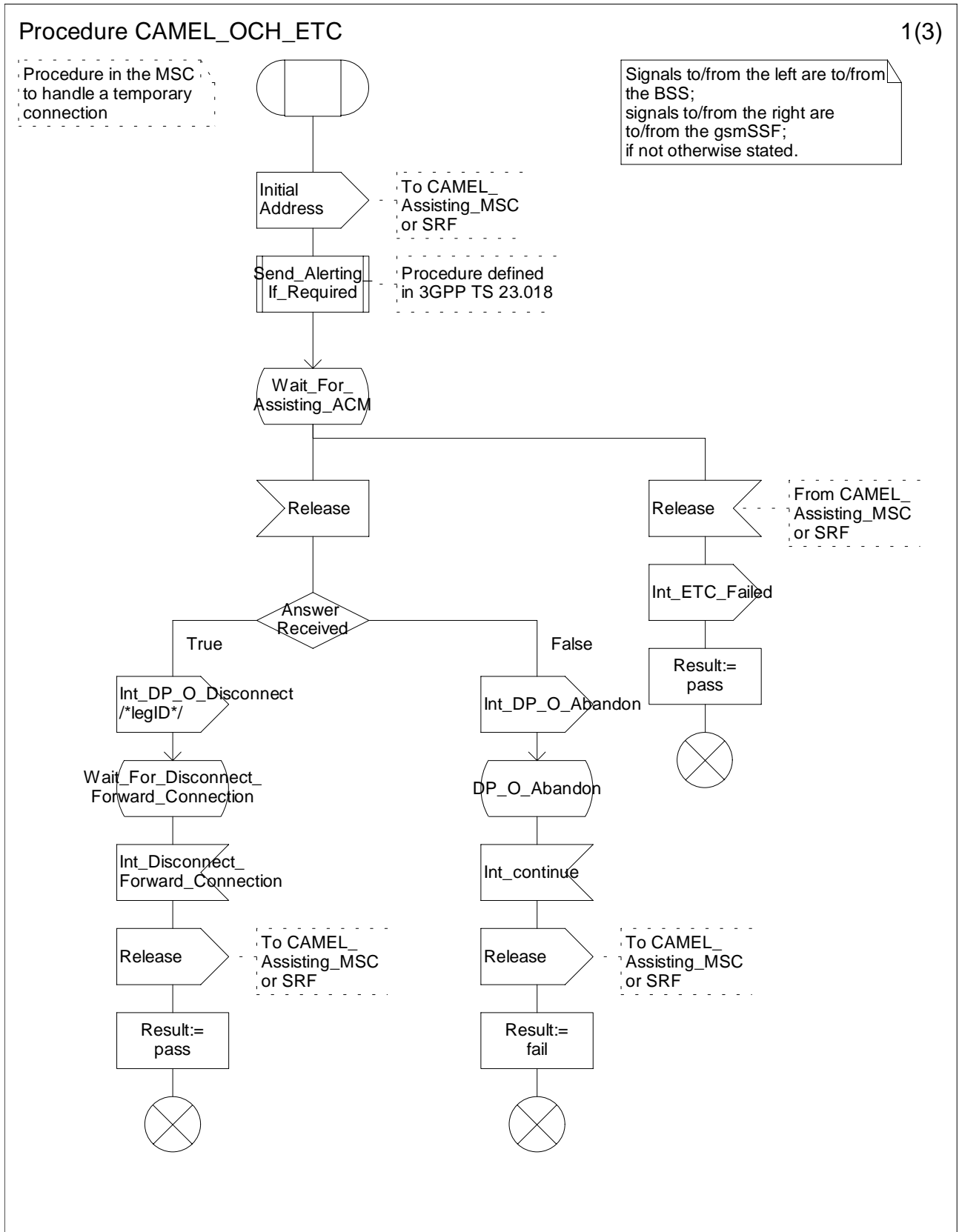


Figure 4.20a: Procedure CAMEL\_OCH\_ETC (sheet 1)

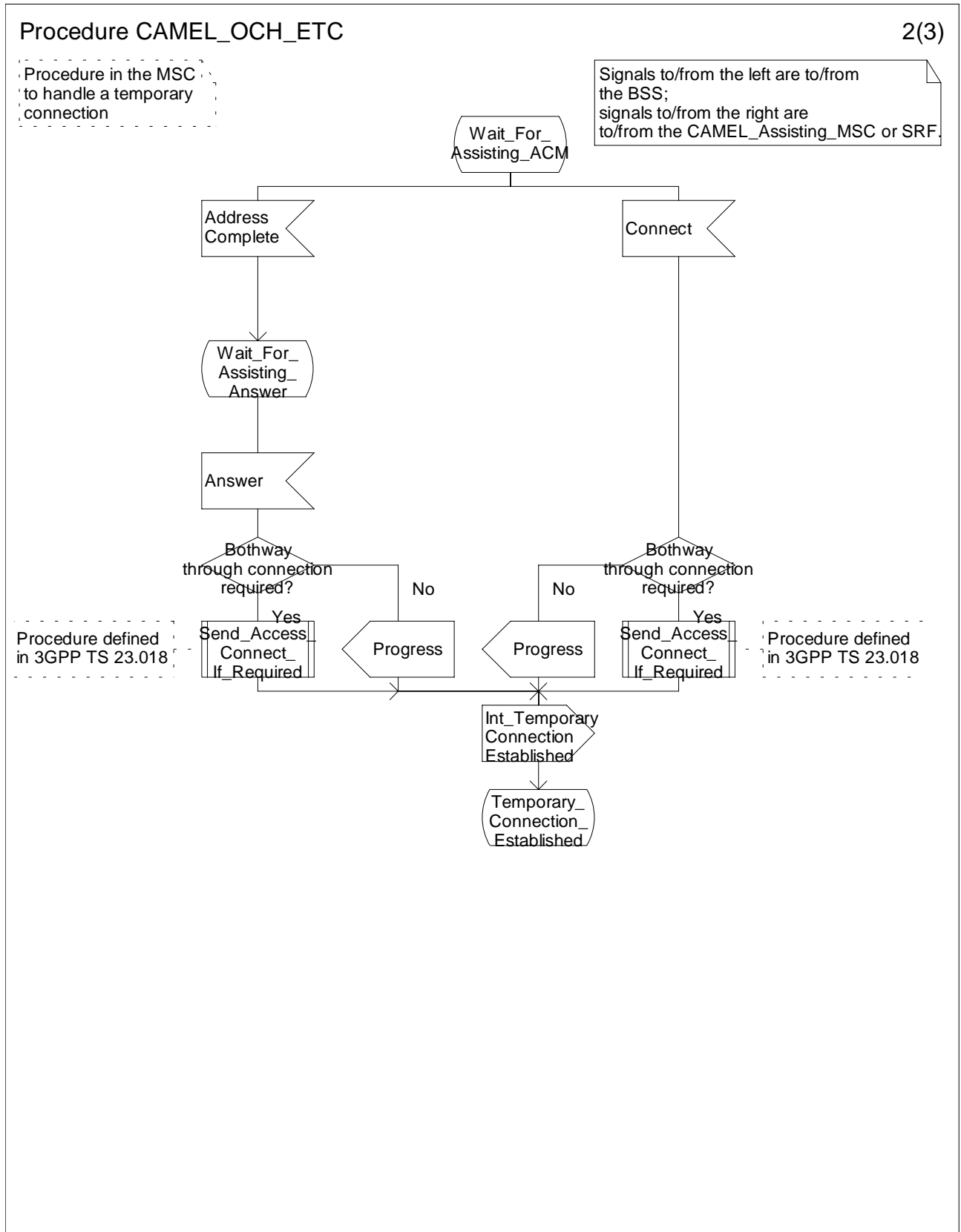


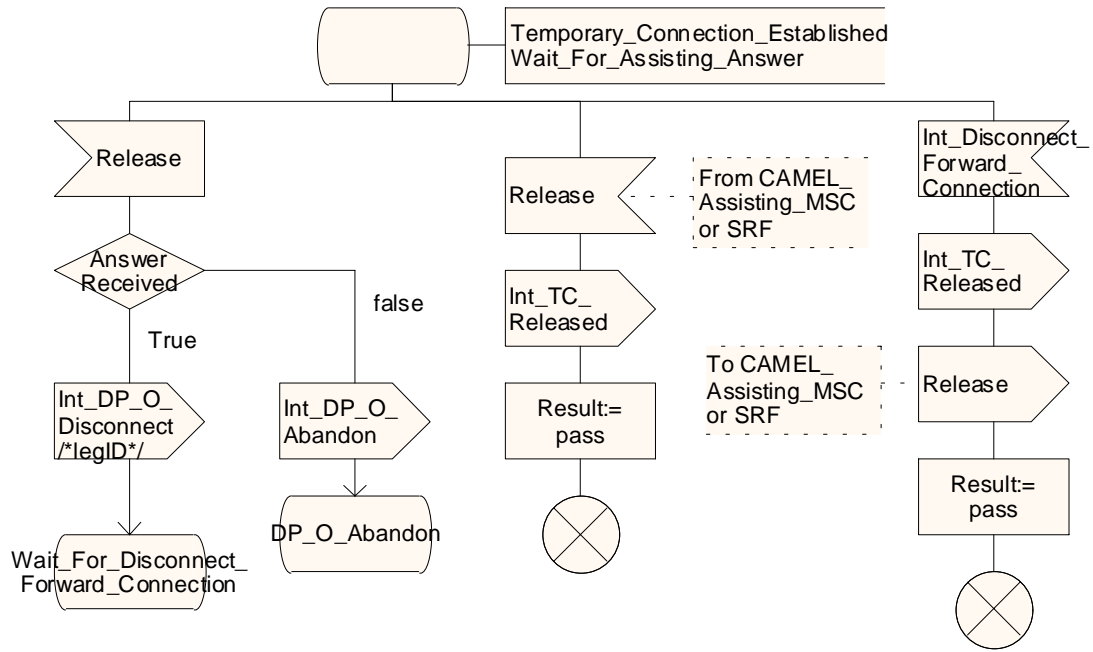
Figure 4.20b: Procedure CAMEL\_OCH\_ETC (sheet 2)

### Procedure CAMEL\_OCH\_ETC

3(3)

Procedure in the MSC to handle a temporary connection

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF; if not otherwise stated.



### Procedure CAMEL\_OCH\_ETC

3(3)

Procedure in the MSC to handle a temporary connection

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF; if not otherwise stated.

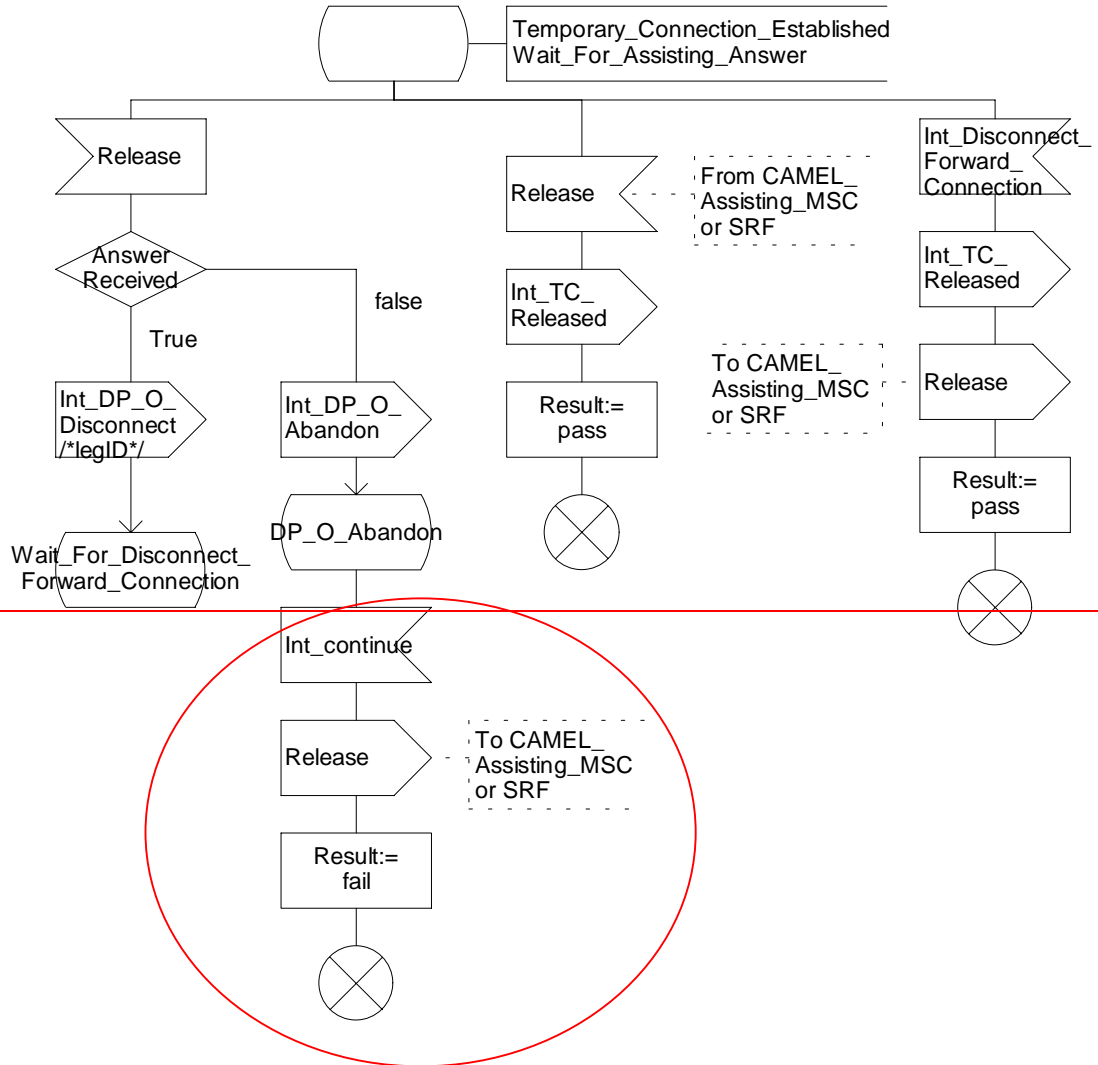


Figure 4.20c: Procedure CAMEL\_OCH\_ETC (sheet 3)



### Procedure CAMEL\_OCH\_CTR

1(4)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

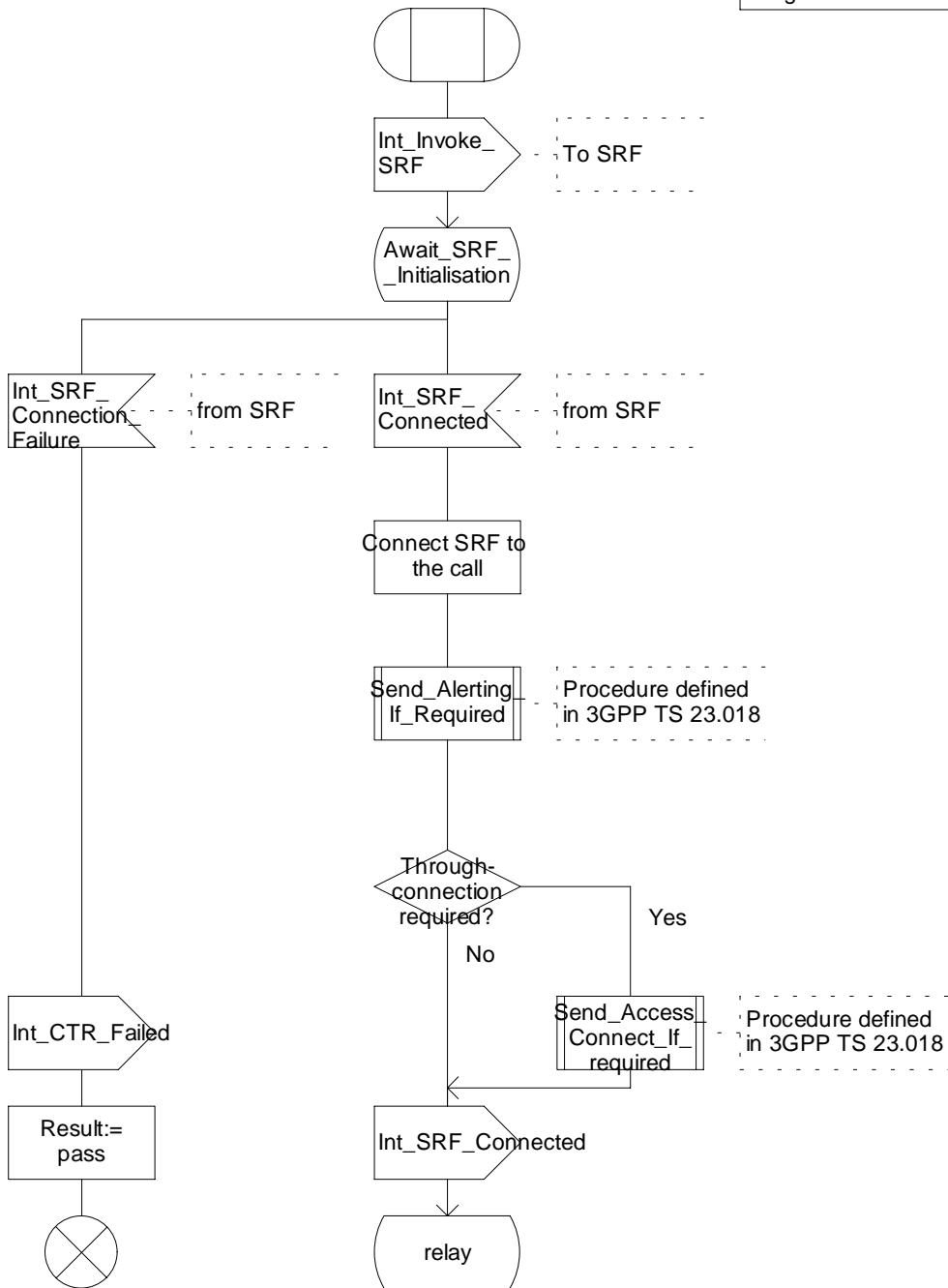


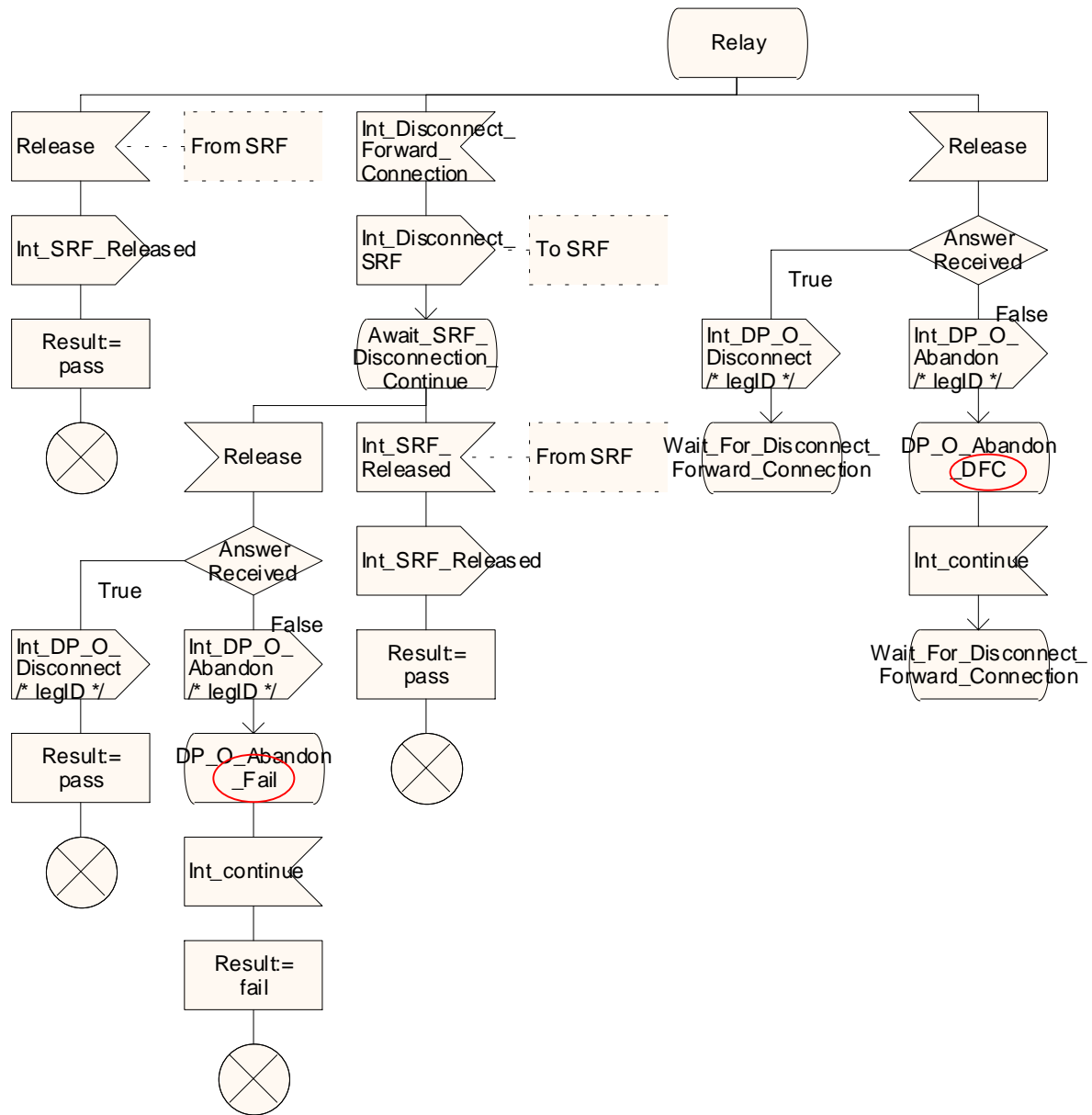
Figure 4.21a: Procedure CAMEL\_OCH\_CTR (sheet 1)

### Procedure CAMEL\_OCH\_CTR

2(5)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.



Procedure CAMEL\_OCH\_CTR

2(4)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

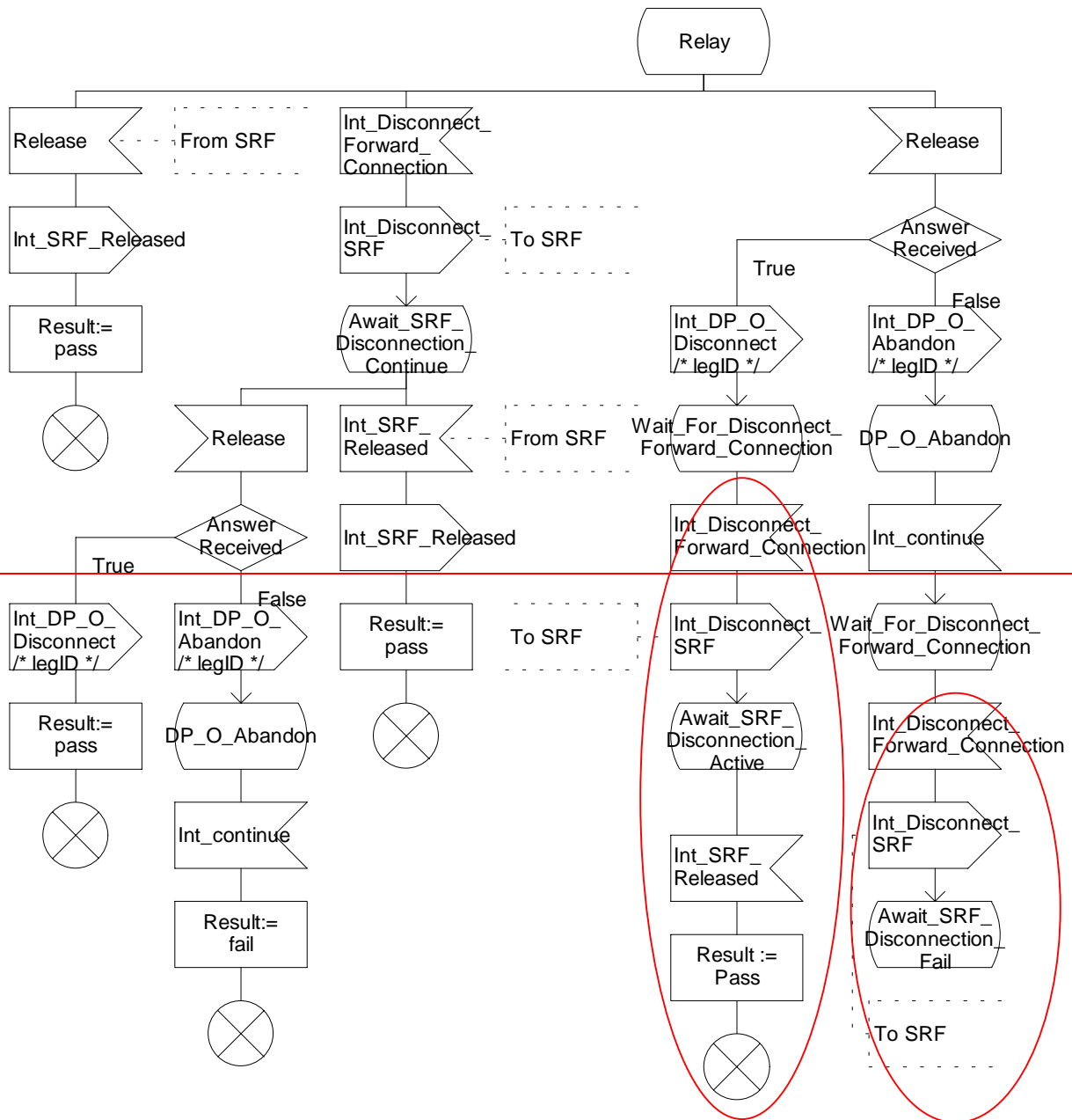


Figure 4.21b: Procedure CAMEL\_OCH\_CTR (sheet 2)

### Procedure CAMEL\_OCH\_CTR

3(4)

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

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

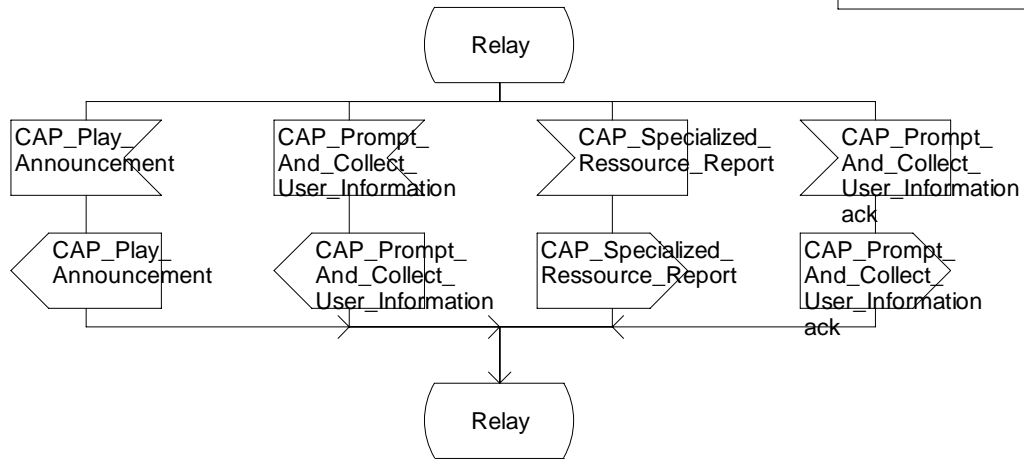


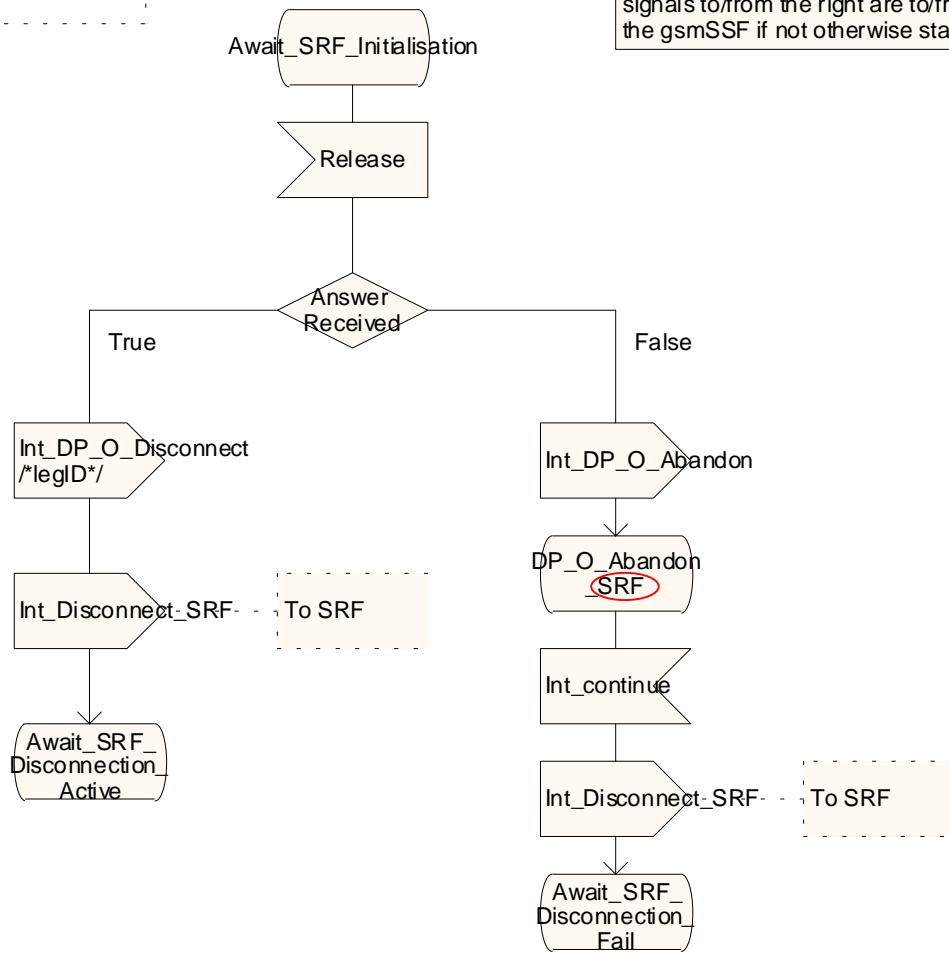
Figure 4.21c: Procedure CAMEL\_OCH\_CTR (sheet 3)

### Procedure CAMEL\_OCH\_CTR

4(5)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.



### Procedure CAMEL\_OCH\_CTR

4(4)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

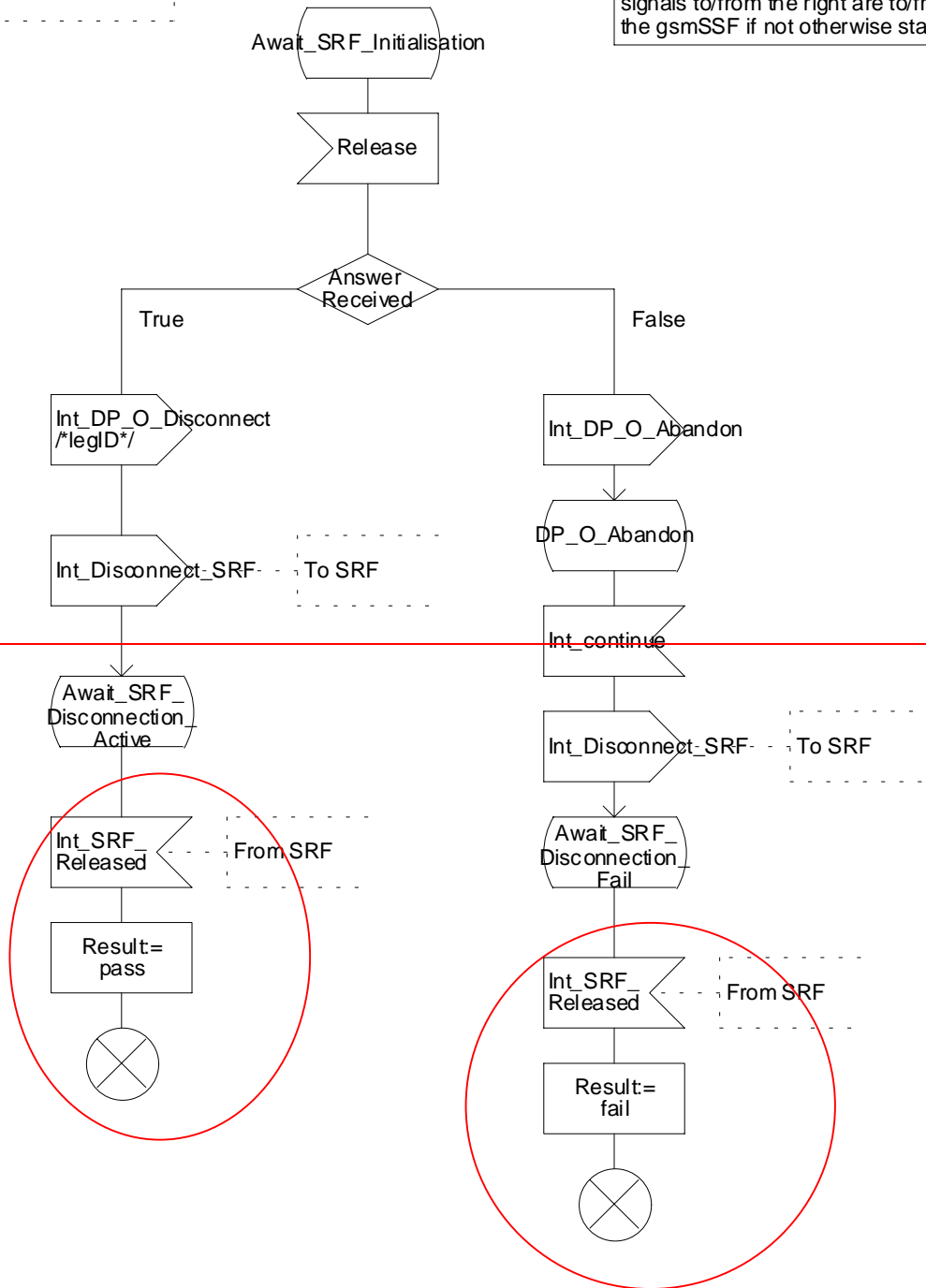


Figure 4.21d: Procedure CAMEL\_OCH\_CTR (sheet 4)

Procedure CAMEL\_OCH\_CTR

5(5)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

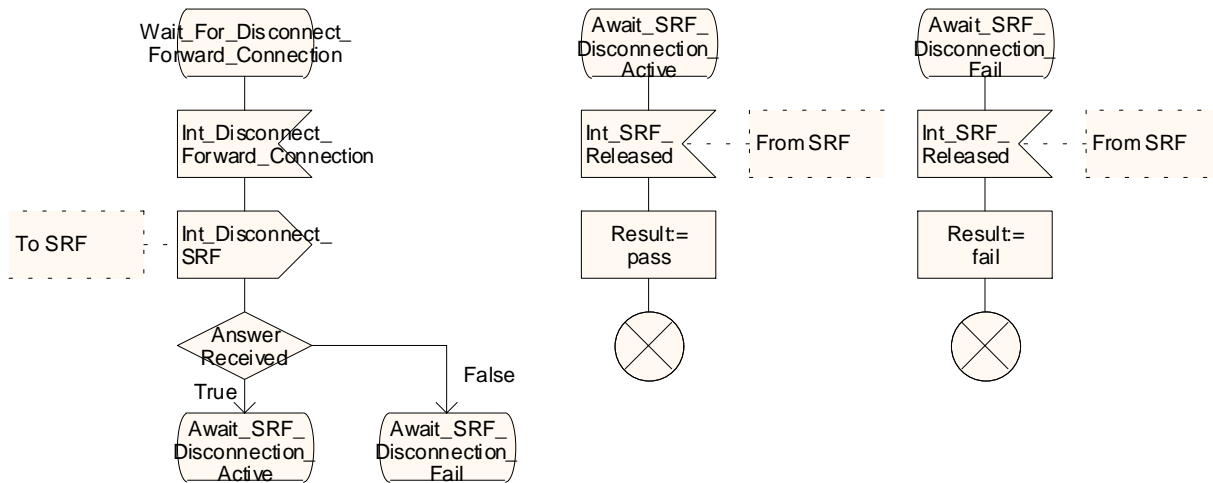


Figure 4.21e: Procedure CAMEL\_OCH\_CTR (sheet 5)

...

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

4.5.3.1 Retrieval of routeing information in the GMSC

...



Procedure CAMEL\_MT\_ETC

1(3)

Procedure in the GMSC to handle a temporary connection

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

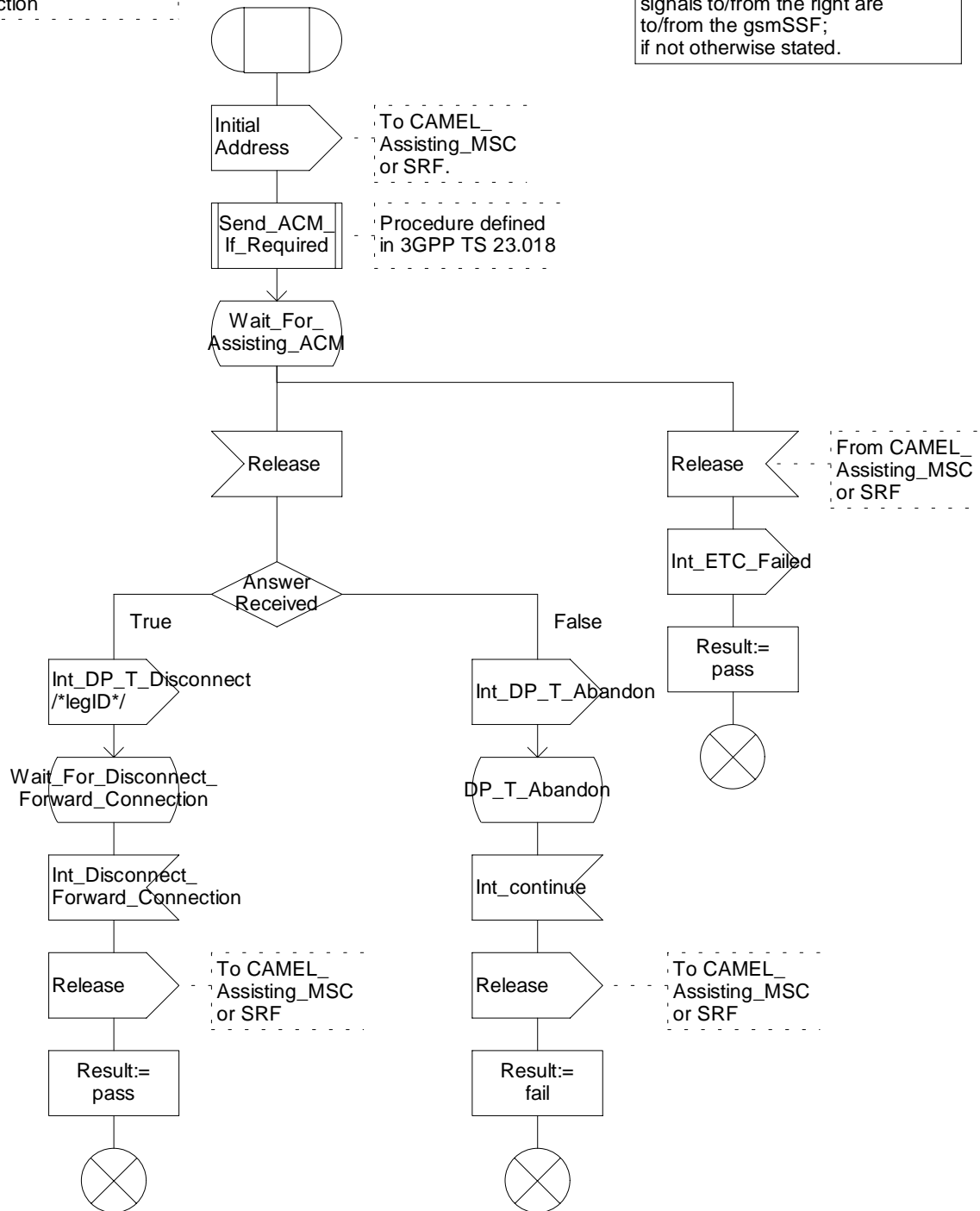


Figure 4.38a: Procedure CAMEL\_MT\_ETC (sheet 1)

### Procedure CAMEL\_MT\_ETC

2(3)

Procedure in the GMSC to handle a temporary connection

Signals to/from the left are to/from the originating exchange; signals to/from the right are to/from the CAMEL\_Assisting\_MSC or SRF.

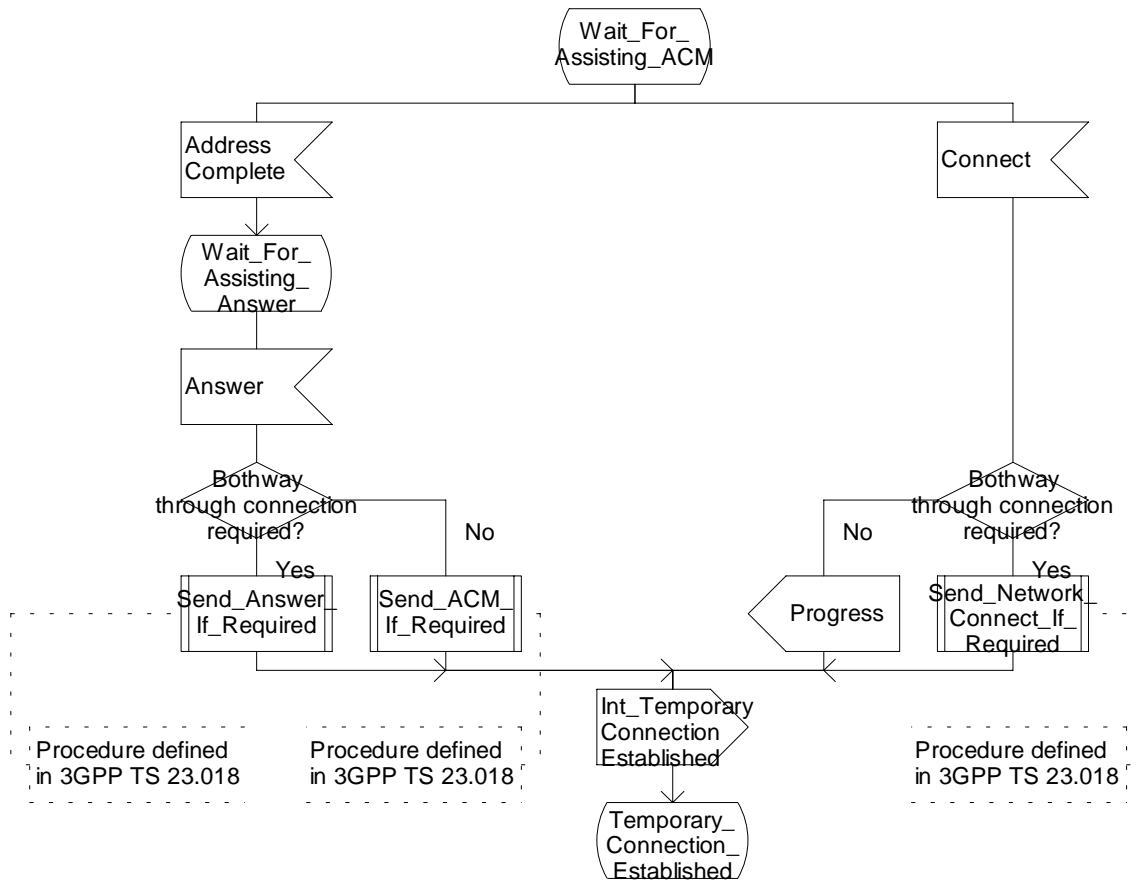


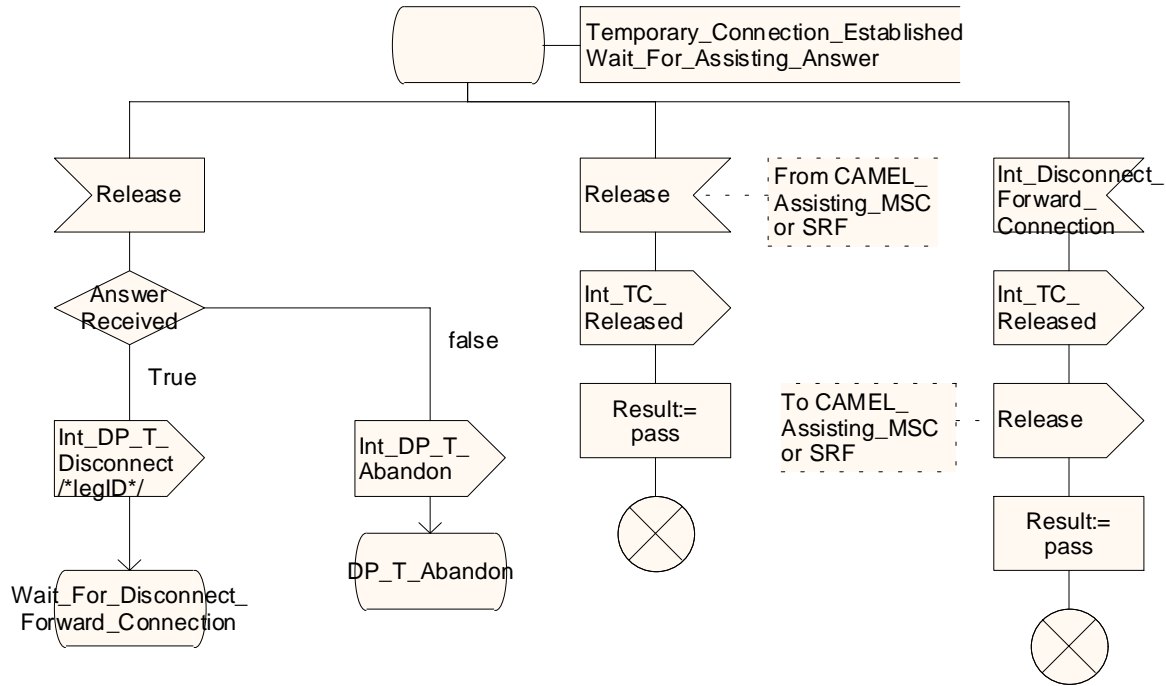
Figure 4.38b: Procedure CAMEL\_MT\_ETC (sheet 2)

### Procedure CAMEL\_MT\_ETC

3(3)

Procedure in the GMSC to handle a temporary connection

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



Procedure CAMEL\_MT\_ETC

3(3)

Procedure in the GMSC to handle a temporary connection

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

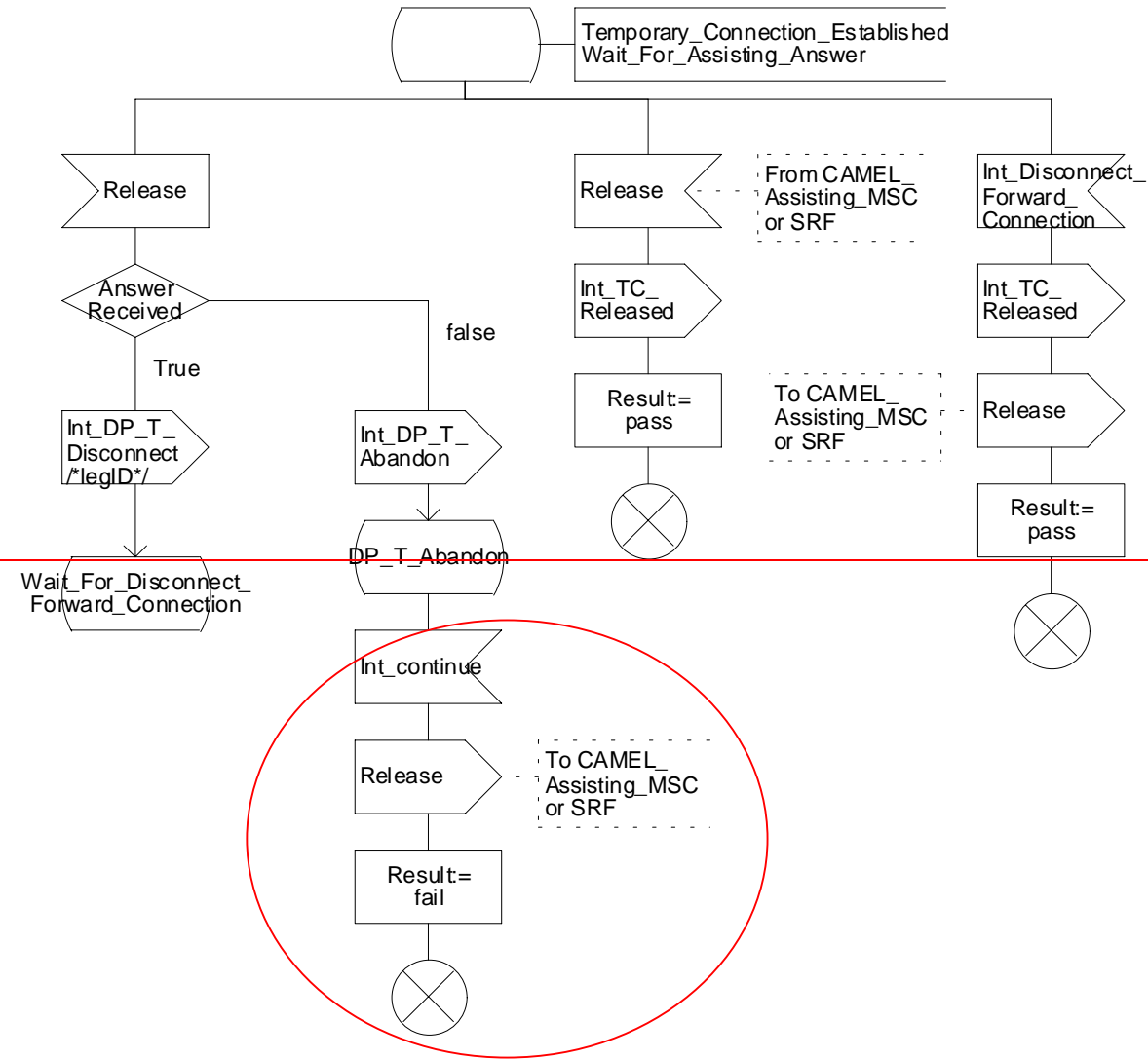


Figure 4.38c: Procedure CAMEL\_MT\_ETC (sheet 3)

### Procedure CAMEL\_MT\_CTR

1(4)

Procedure in the GMSC to handle a Connect To Resource operation

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

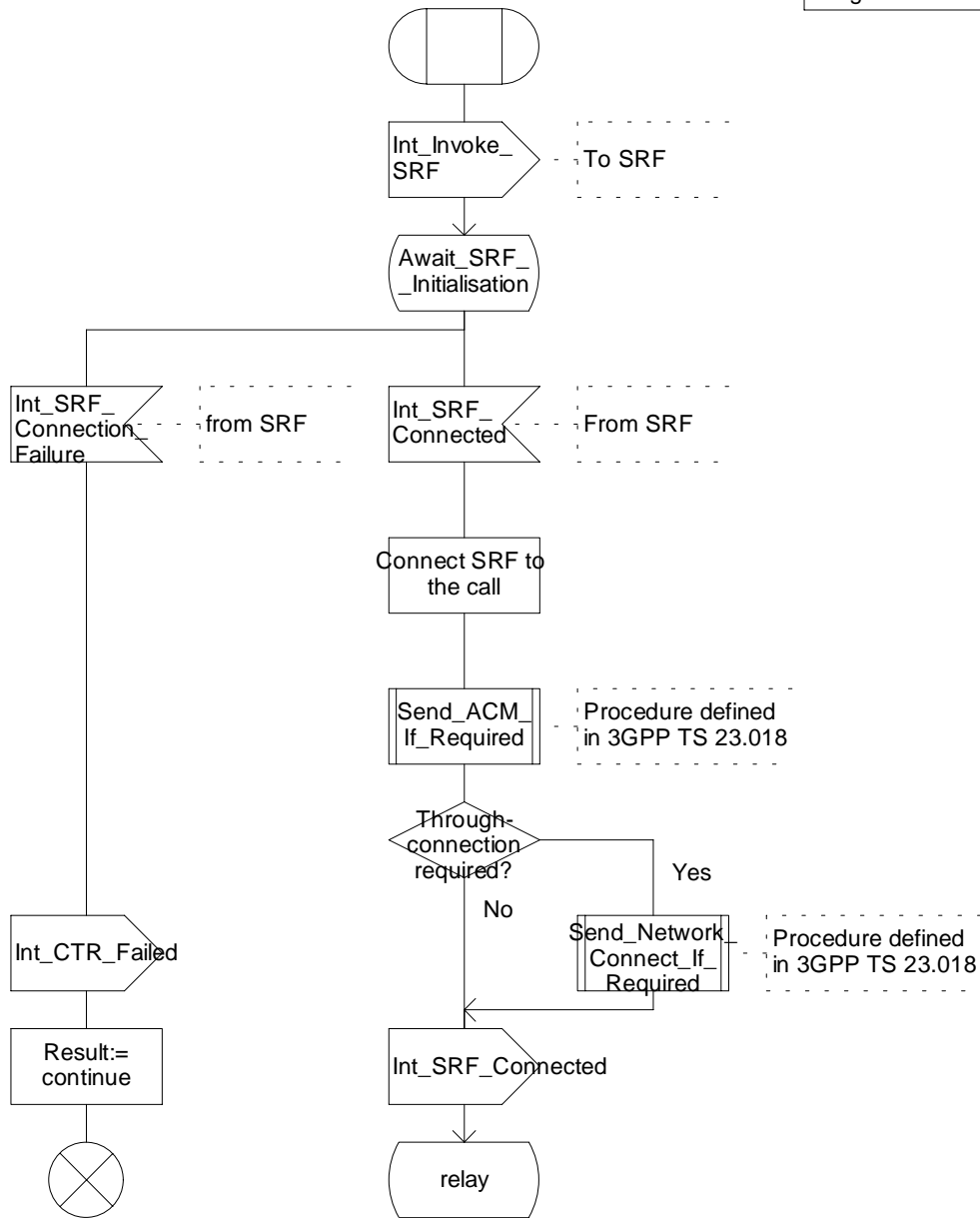


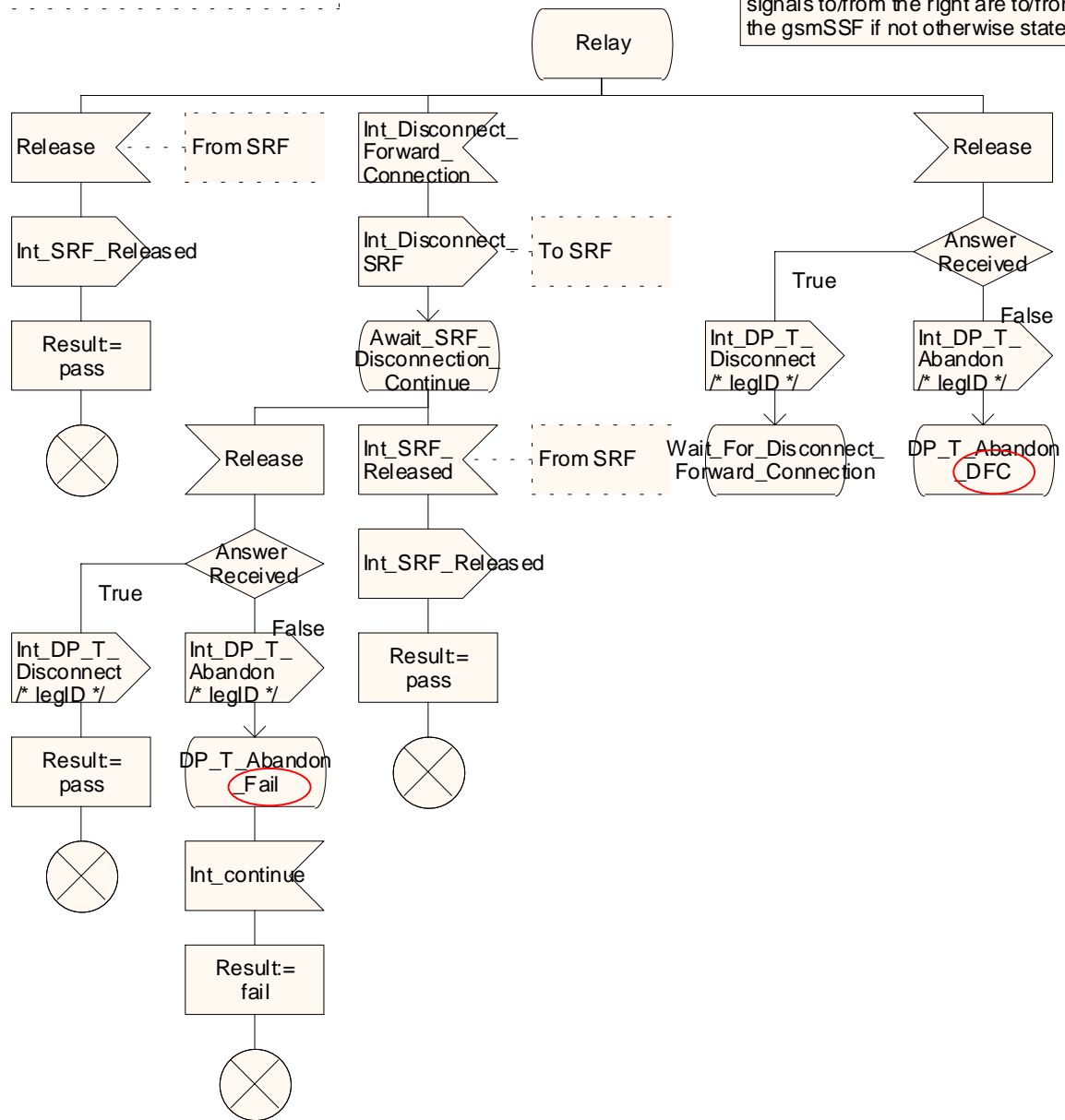
Figure 4.39a: Procedure CAMEL\_MT\_CTR (sheet 1)

### Procedure CAMEL\_MT\_CTR

2(5)

Procedure in the GMSC to handle a Connect To Resource operation

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



### Procedure CAMEL\_MT\_CTR

2(4)

Procedure in the GMSC to handle a Connect To Resource operation

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

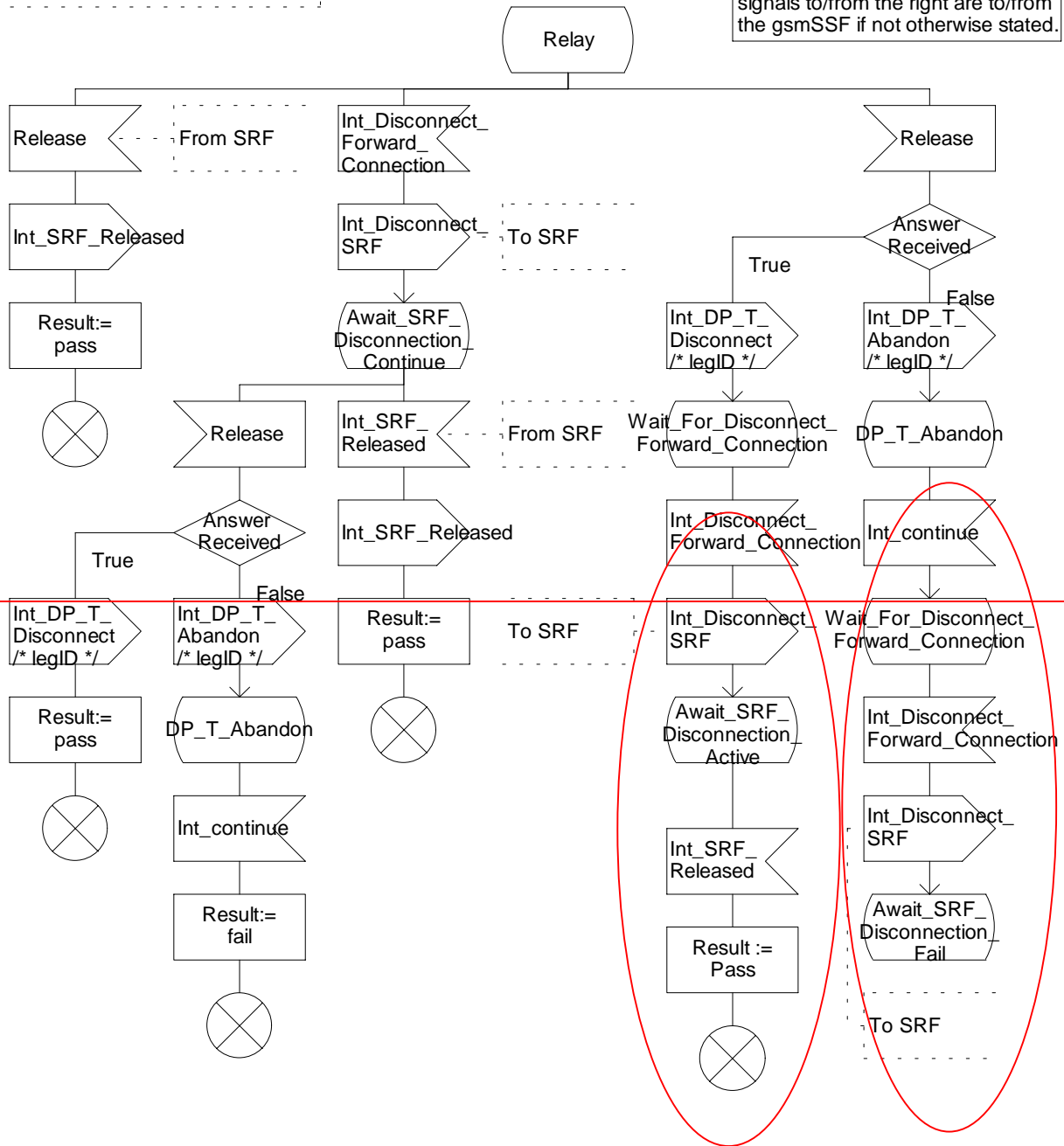


Figure 4.39b: Procedure CAMEL\_MT\_CTR (sheet 2)

### Procedure CAMEL\_MT\_CTR

3(4)

Procedure in the GMSC to handle a Connect To Resource operation

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

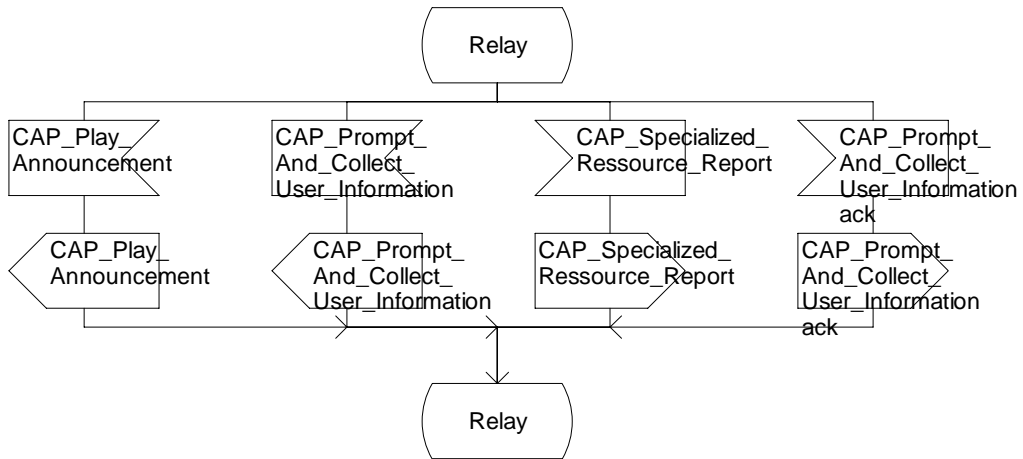


Figure 4.39c: Procedure CAMEL\_MT\_CTR (sheet 3)

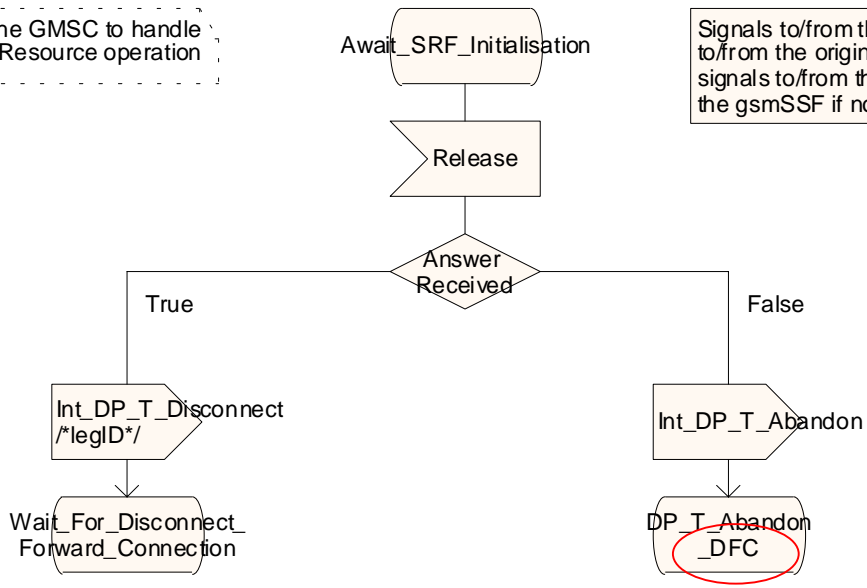


### Procedure CAMEL\_MT\_CTR

4(5)

Procedure in the GMSC to handle a Connect To Resource operation

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



### Procedure CAMEL\_MT\_CTR

4(4)

Procedure in the GMSC to handle a Connect To Resource operation

Await\_SRF\_Initialisation

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

Release

Answer Received

True

False

Int\_DP\_T\_Disconnect /\*legID\*/

Int\_DP\_T\_Abandon

Wait\_For\_Disconnect\_Forward\_Connection

DP\_T\_Abandon

Int\_Disconnect\_Forward\_Connection

Int\_continue

Int\_Disconnect\_SRF To SRF

Wait\_For\_Disconnect\_Forward\_Connection

Await\_SRF\_Disconnection\_Active

Int\_Disconnect\_Forward\_Connection

Int\_SRF\_Released From SRF

Int\_Disconnect\_SRF To SRF

Result:= pass

Await\_SRF\_Disconnection\_Fail

Int\_SRF\_Released From SRF

Result:= fail

Figure 4.39d: Procedure CAMEL\_MT\_CTR (sheet 4)

Procedure CAMEL\_MT\_CTR

5(5)

Procedure in the GMSC to handle a Connect To Resource operation

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

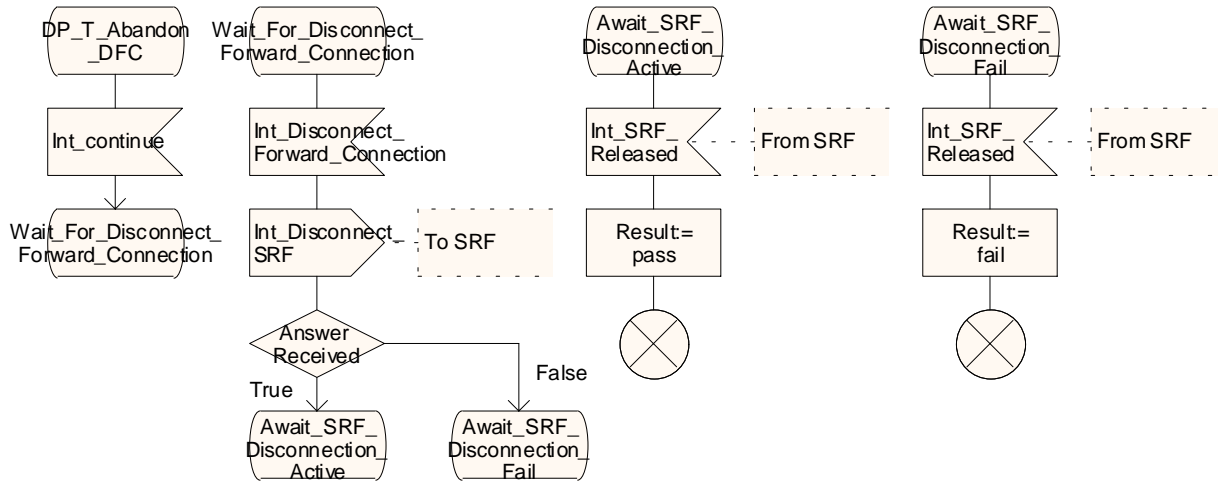


Figure 4.39e: Procedure CAMEL\_MT\_CTR (sheet 5)

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

#### 4.5.5 Handling of forwarded calls

...

Procedure CAMEL\_CF\_ETC

1(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF; if not otherwise stated. \*/

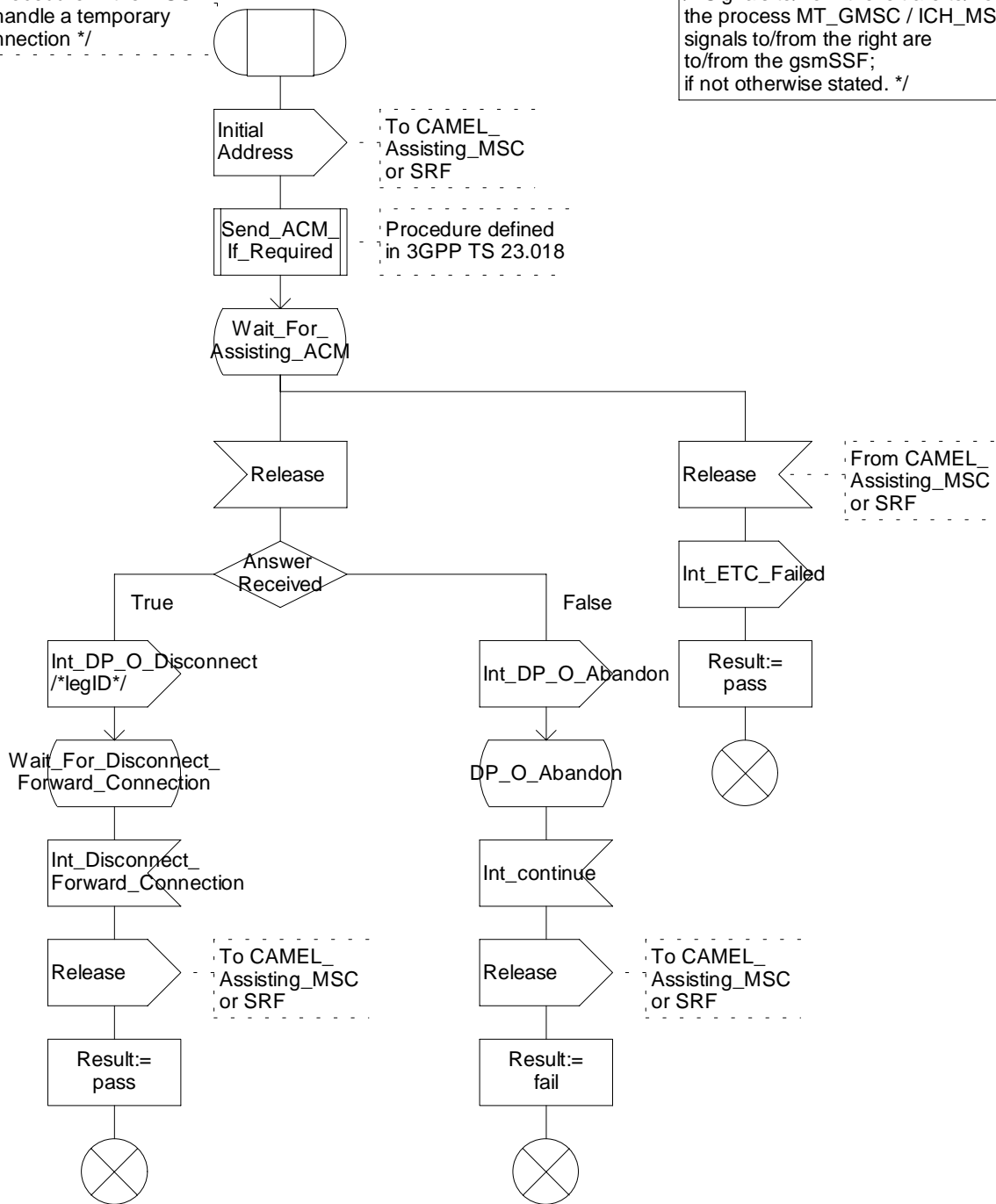


Figure 4.61a: Process CAMEL\_CF\_ETC (sheet 1)

### Procedure CAMEL\_CF\_ETC

2(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the CAMEL\_Assisting\_MSC or SRF. \*/

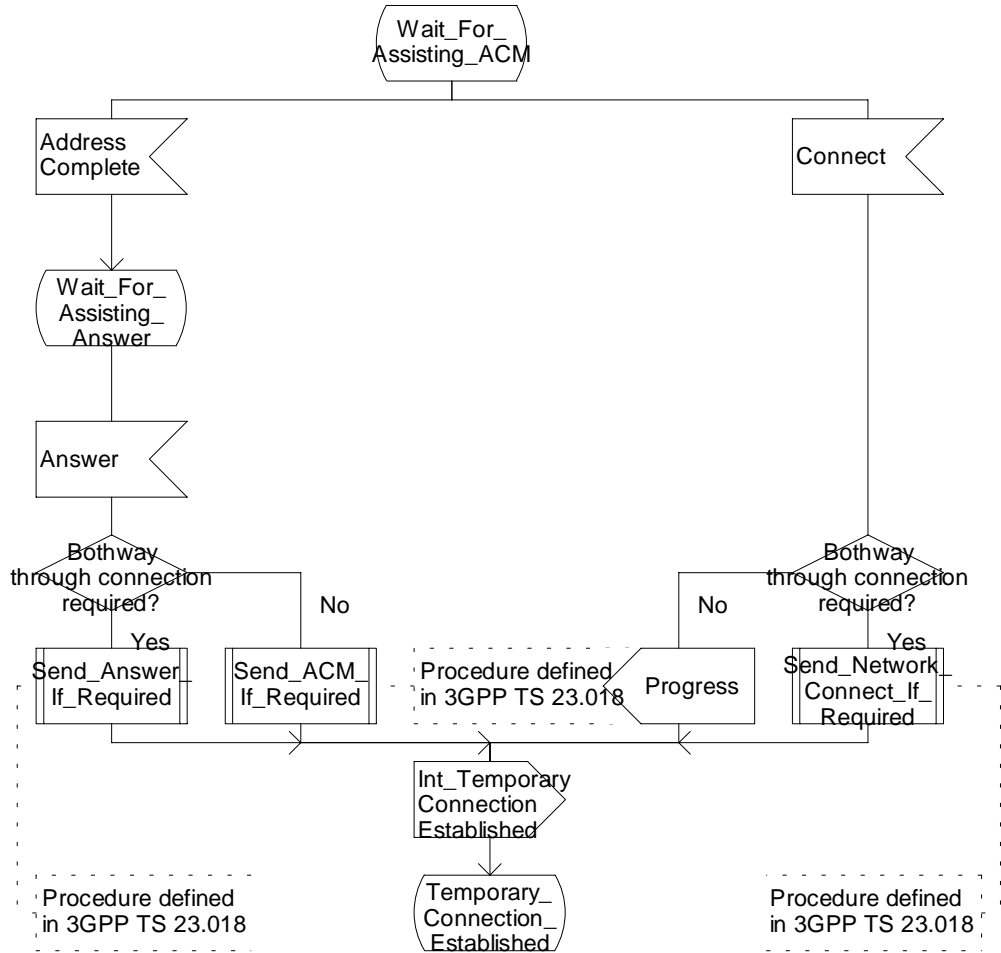


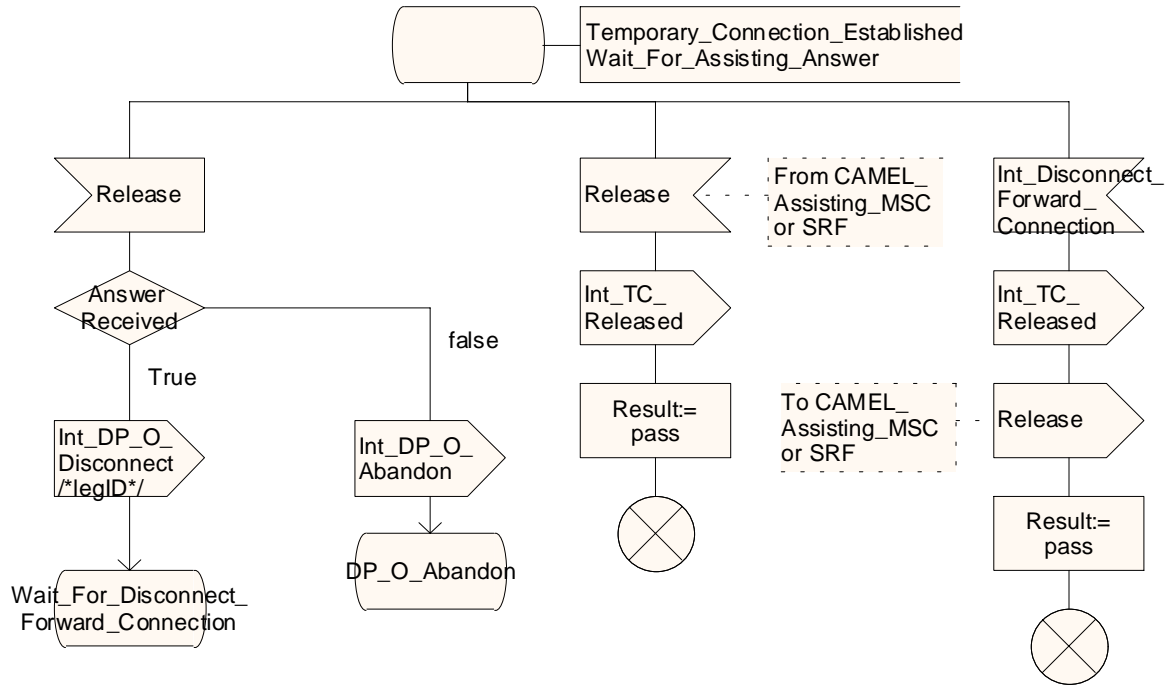
Figure 4.61b: Procedure CAMEL\_CF\_ETC (sheet 2)

### Procedure CAMEL\_CF\_ETC

3(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF; if not otherwise stated. \*/



### Procedure CAMEL\_CF\_ETC

3(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF; if not otherwise stated. \*/

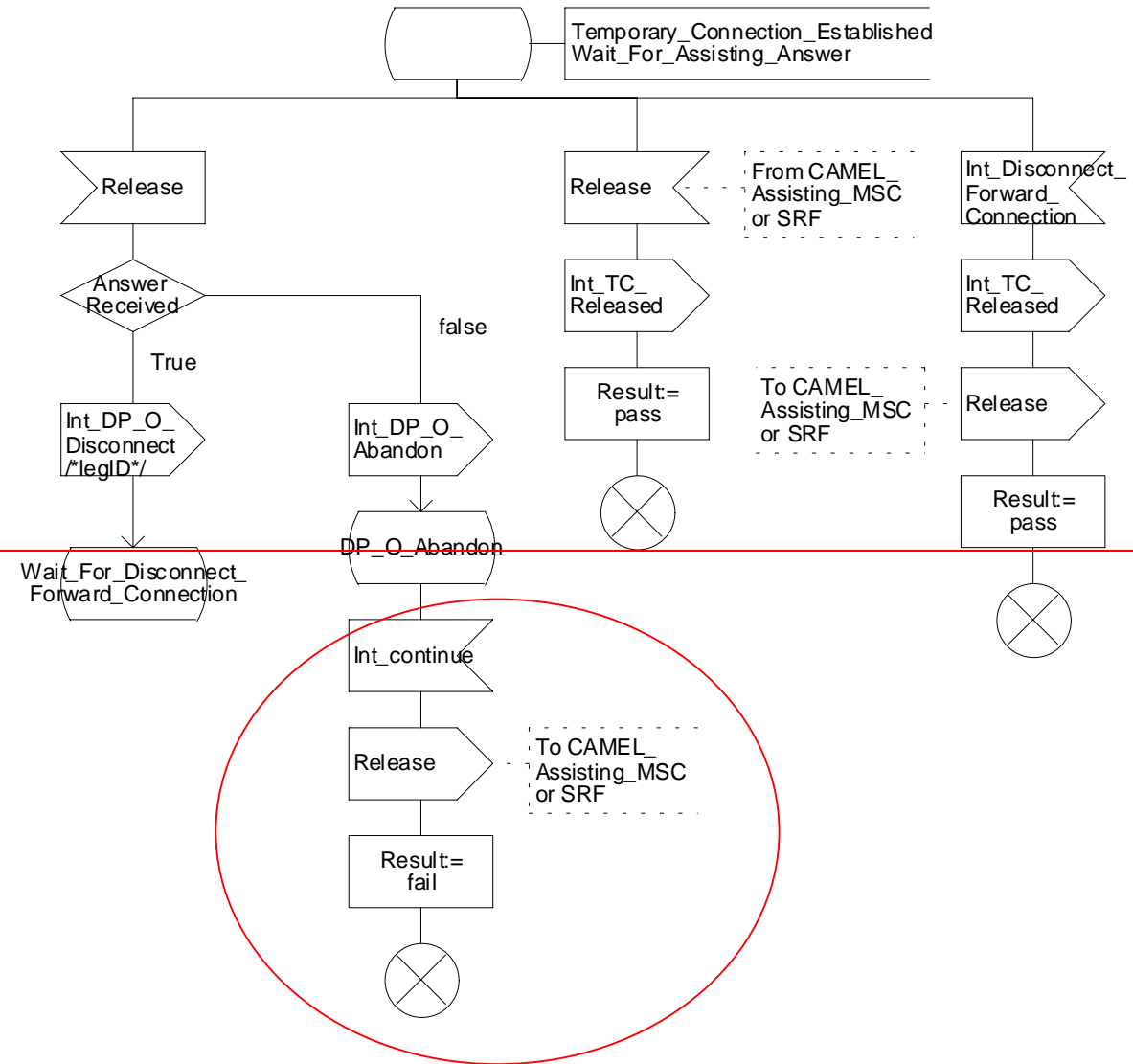


Figure 4.61c: Procedure CAMEL\_CF\_ETC (sheet 3)



### Procedure CAMEL\_CF\_CTR

1(4)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

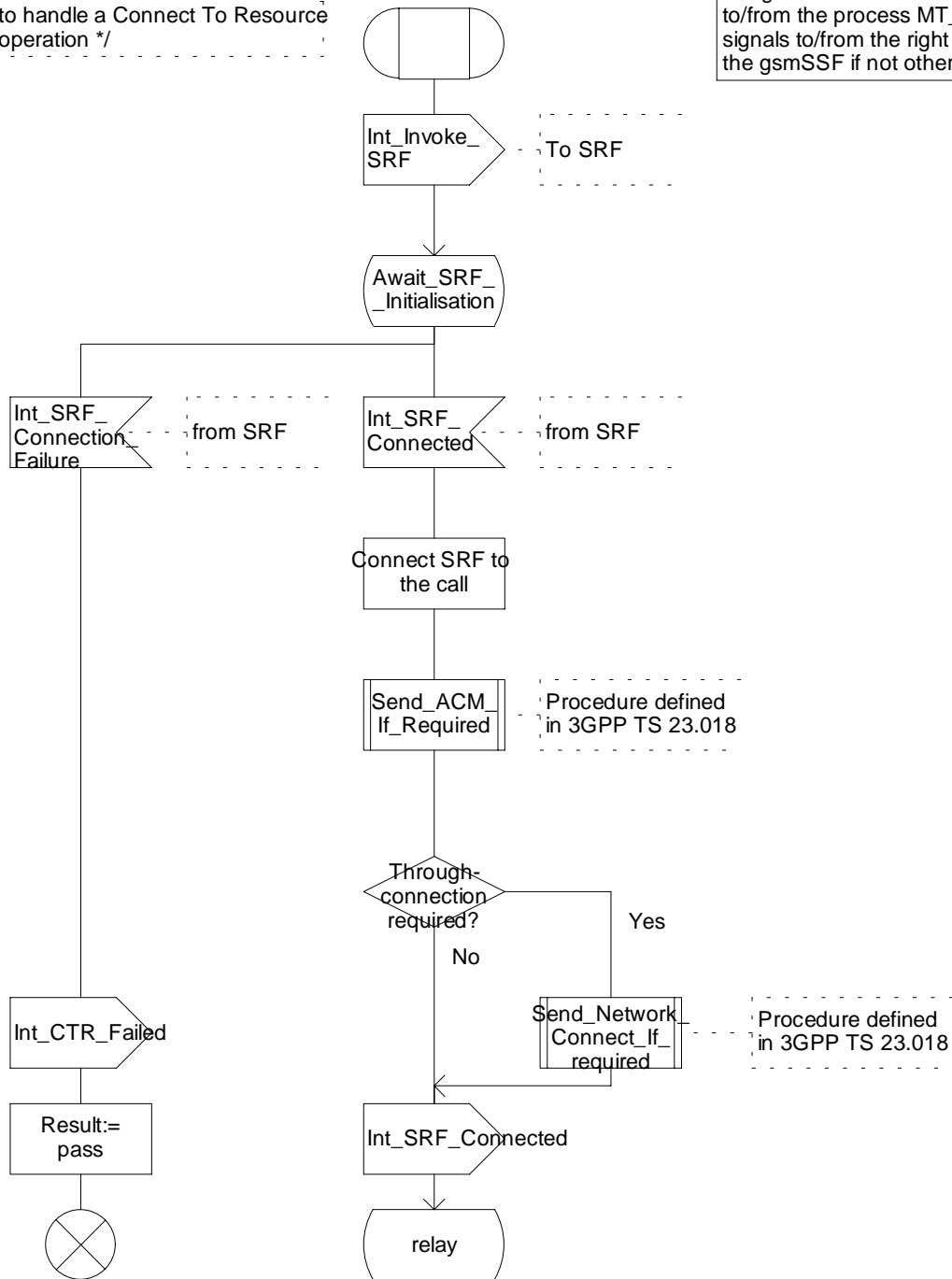


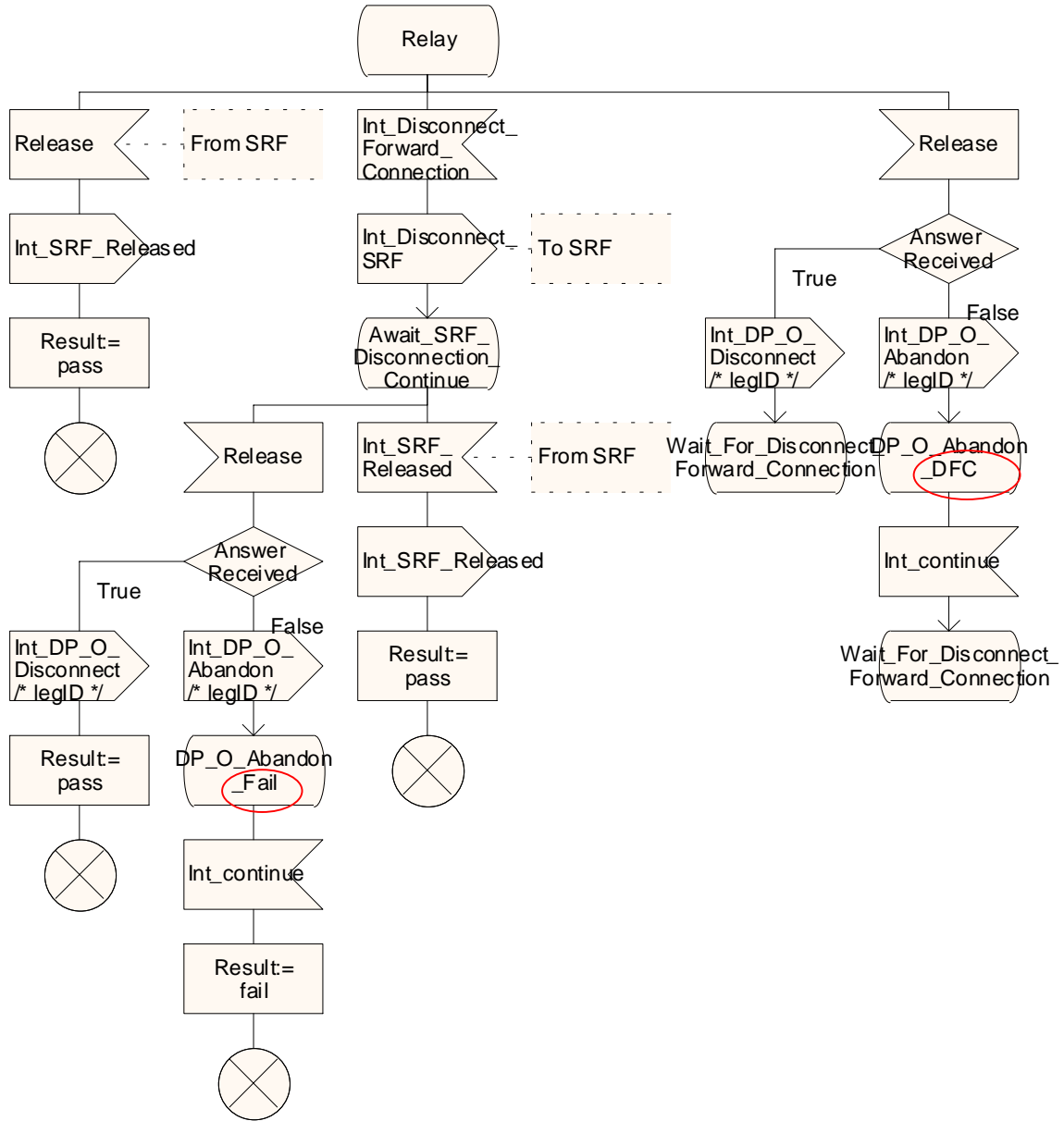
Figure 4.62a: Process CAMEL\_CF\_CTR (sheet 1)

### Procedure CAMEL\_CF\_CTR

2(5)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



### Procedure CAMEL\_CF\_CTR

2(4)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

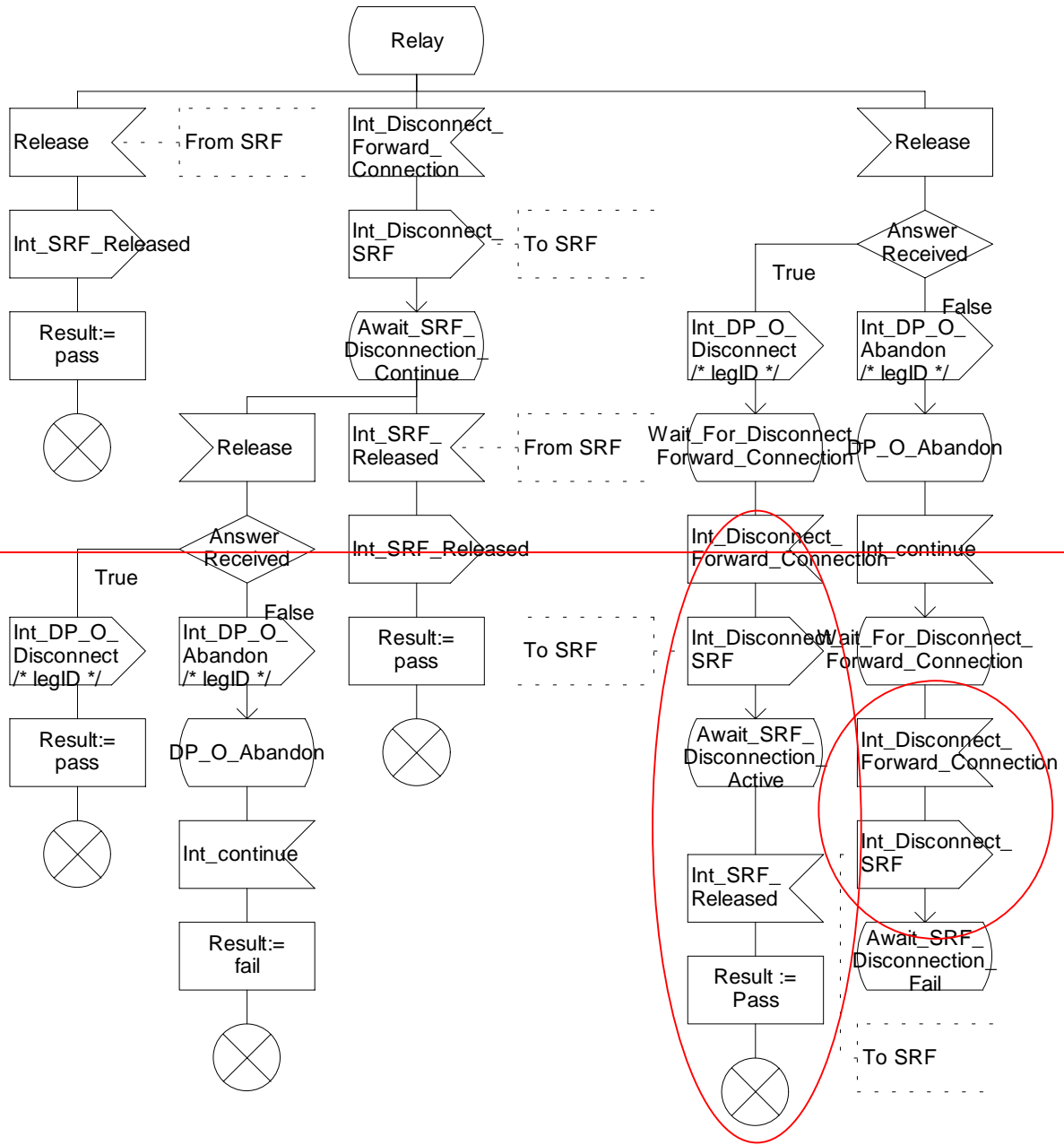


Figure 4.62b: Procedure CAMEL\_CF\_CTR (sheet 2)

### Procedure CAMEL\_CF\_CTR

3(4)

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

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

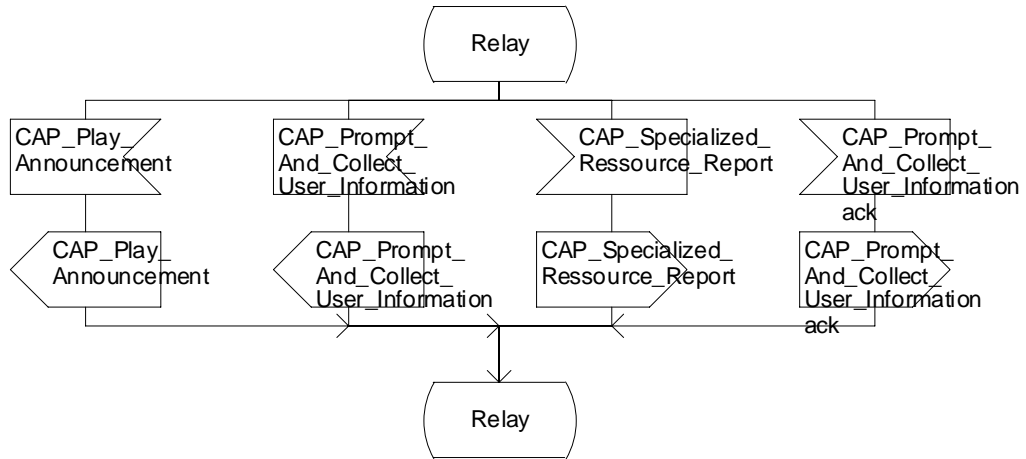


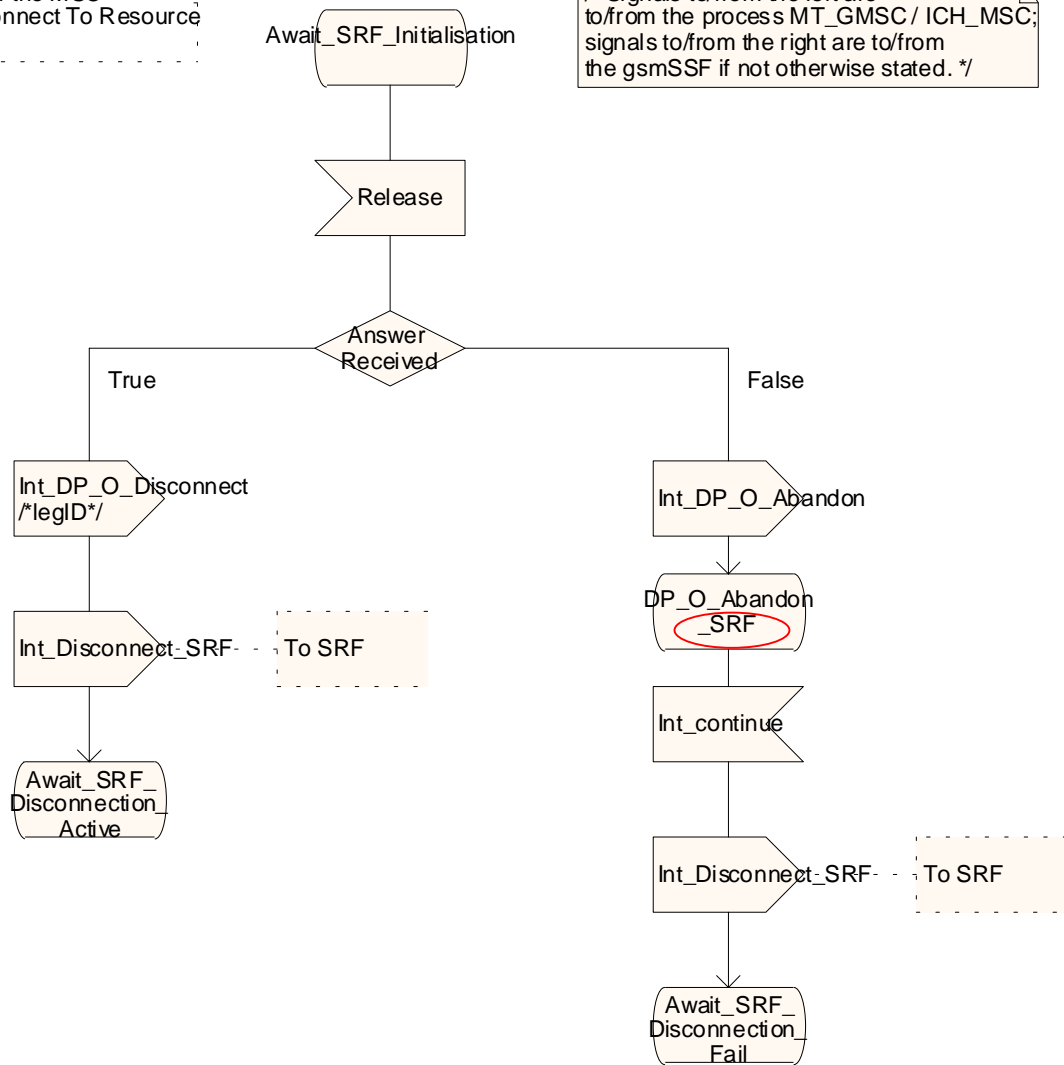
Figure 4.62c: Procedure CAMEL\_CF\_CTR (sheet 3)

### Procedure CAMEL\_CF\_CTR

4(5)

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

*/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/*



### Procedure CAMEL\_CF\_CTR

4(4)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

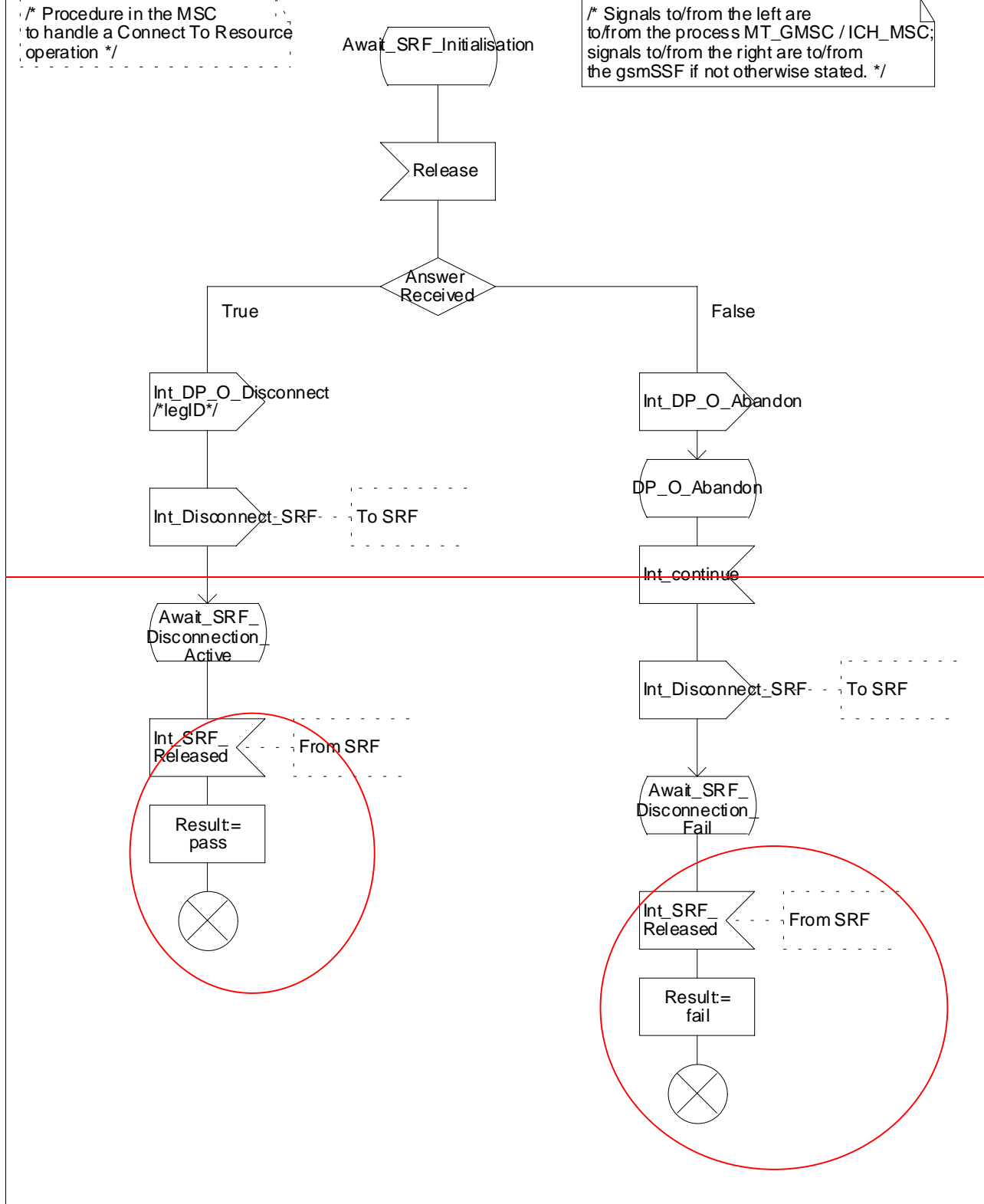


Figure 4.62d: Procedure CAMEL\_CF\_CTR (sheet 4)

Procedure CAMEL\_CF\_CTR

5(5)

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

/\* Signals to/from the left are to/from the process MT\_GMSC/ ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

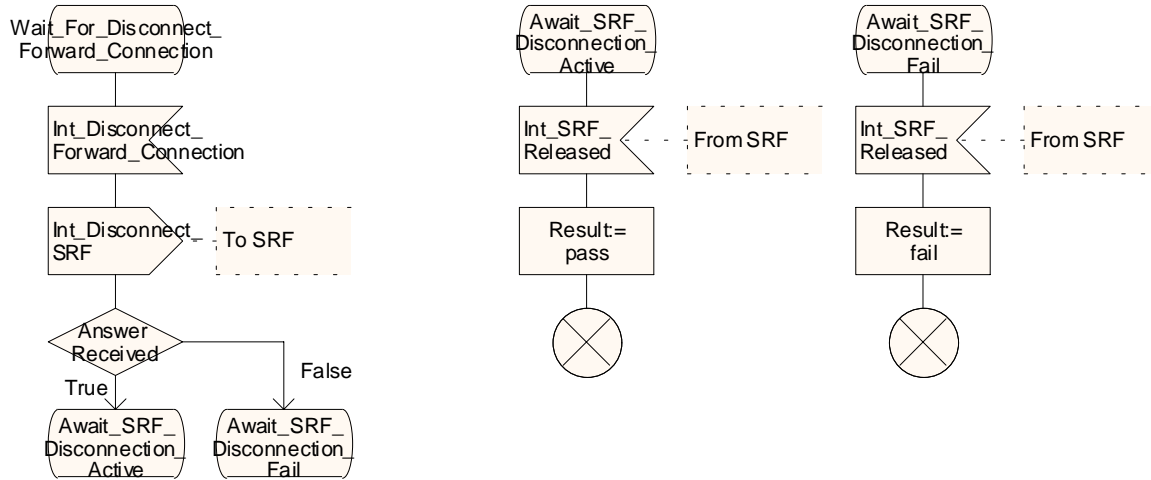


Figure 4.62e: Procedure CAMEL\_CF\_CTR (sheet 5)

\*\*\* End Of Document \*\*\*

## CHANGE REQUEST

⌘ **23.078 CR 406** ⌘ rev **1** ⌘ Current version: **4.4.0** ⌘

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

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Corrections to CTR and ETC Procedures		
<b>Source:</b>	⌘ Vodafone		
<b>Work item code:</b>	⌘ CAMEL3	<b>Date:</b>	⌘ 13 <sup>th</sup> May 2002
<b>Category:</b>	⌘ <b>A</b>	<b>Release:</b>	⌘ REL-4
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The procedure CAMEL_OCH_CTR defines multiple and different handling of the Int_Disconnect_Forward_Connection signal in the Wait_For_Disconnect_Forward_Connection state and the Int_Continue signal in the DP_O_Abandon state. This is incorrect SDL and will cause confusion to manufacturers. The same error exists in CAMEL_MT_CTR and CAMEL_CF_CTR.  The procedure CAMEL_OCH_ETC replicates the handling of the Int_Continue signal in the DP_O_Abandon state. This is incorrect SDL and will cause confusion to manufacturers. The same error exists in CAMEL_MT_ETC and CAMEL_CF_ETC.
<b>Summary of change:</b>	⌘ In CTR Procedures: Removal of duplication to reflect original intention and change of state name DP_O_Abandon to differentiate handling.  In ETC Procedures: Removal of duplication.
<b>Consequences if not approved:</b>	⌘ Mis-implementation leading to problems with the Connect To Resource operation (CAMEL_OCH_CTR will not provide an accurate return result).

<b>Clauses affected:</b>	⌘ 4.5.2.1, 4.5.3.1, and 4.5.5		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications	⌘	
	<input type="checkbox"/> Test specifications		
	<input type="checkbox"/> O&M Specifications		
<b>Other comments:</b>	⌘ Changes since the previous version: Re-organisation of SDLs so that states are at the top of SDL sheets to ease reading.		



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

4.5.2.1 Handling of mobile originated calls in the originating MSC

...

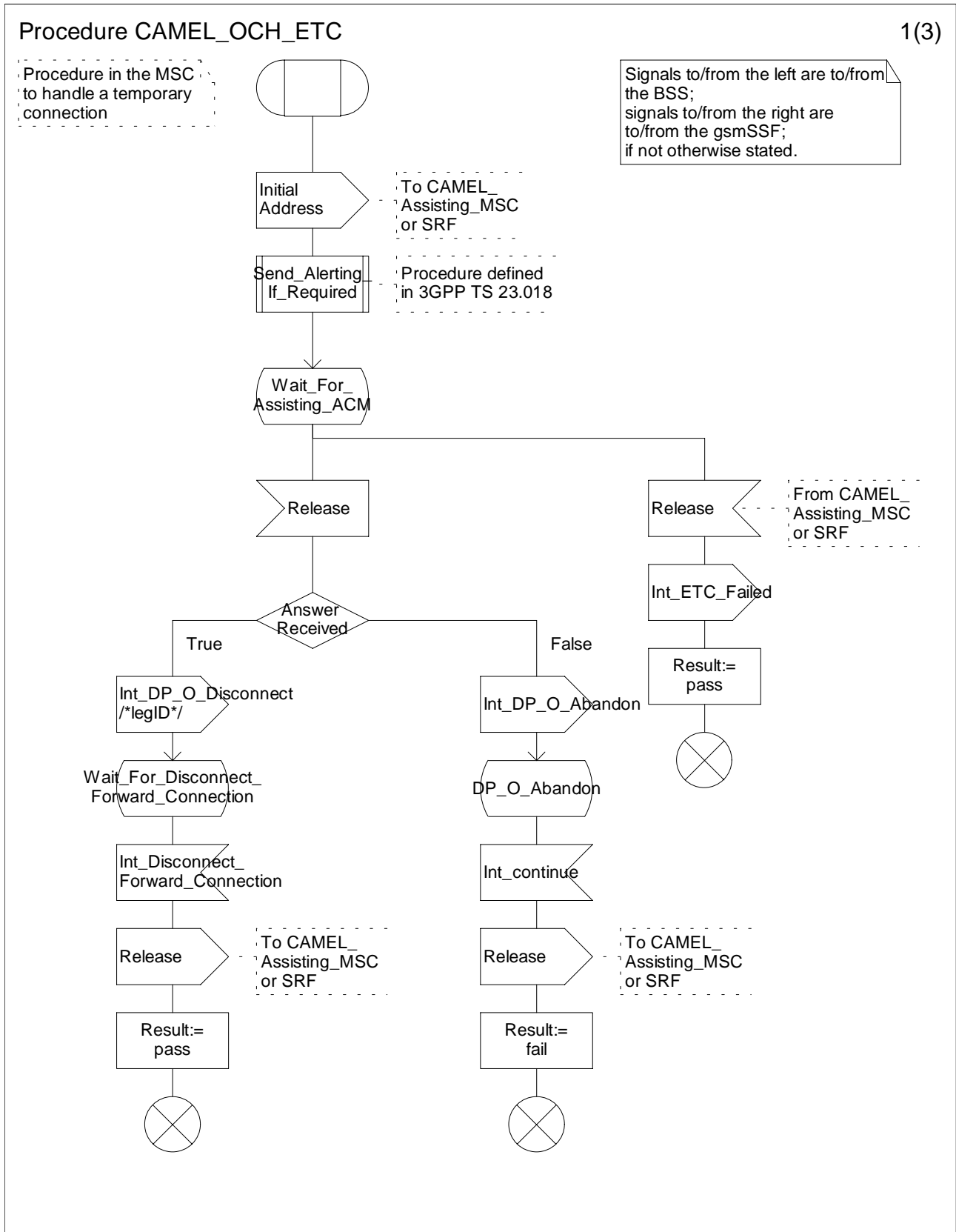


Figure 4.20a: Procedure CAMEL\_OCH\_ETC (sheet 1)

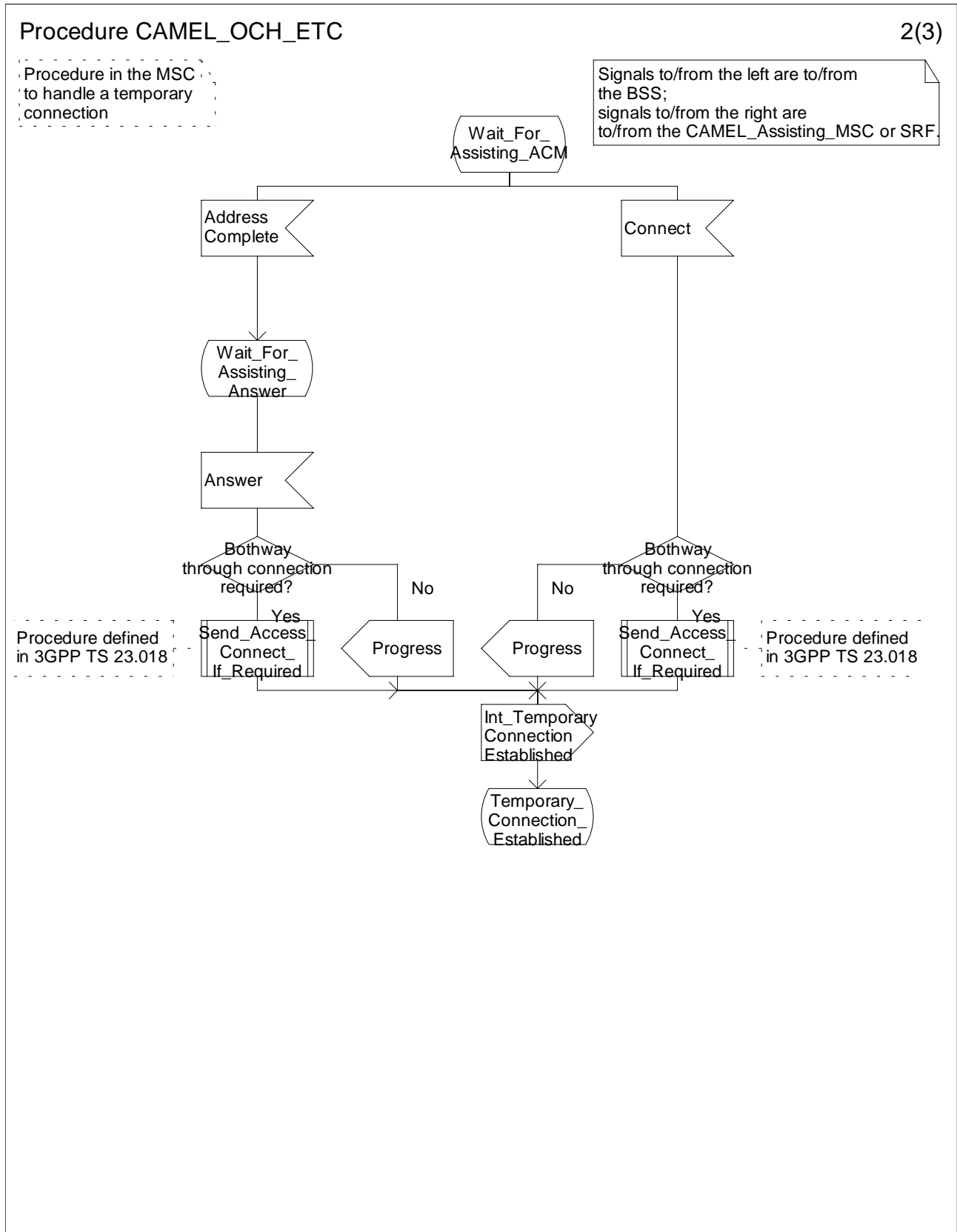


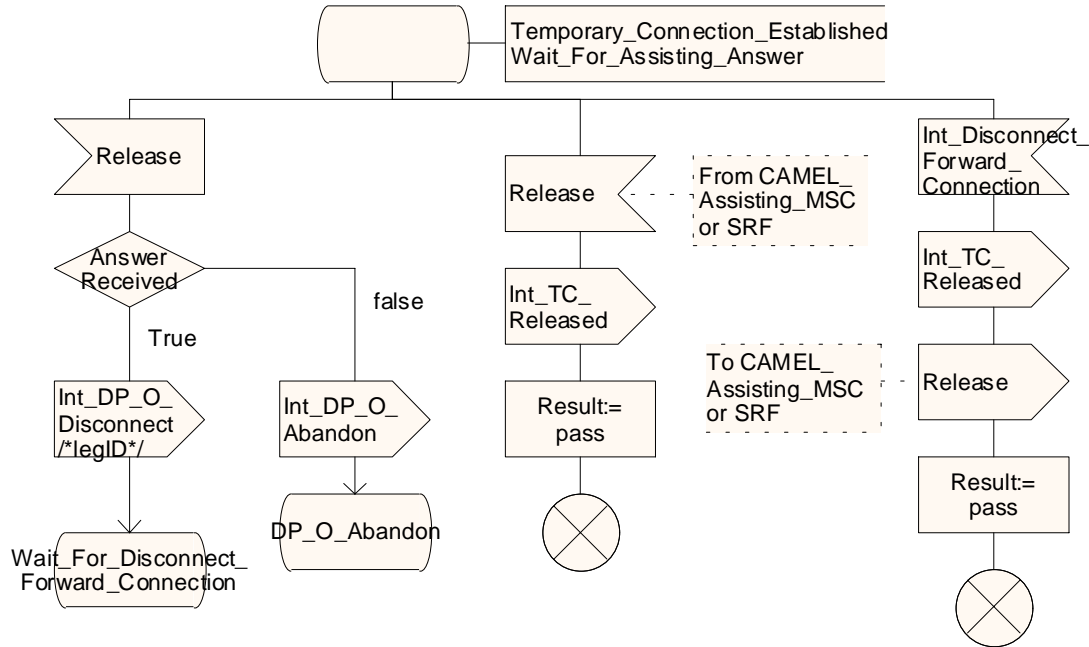
Figure 4.20b: Procedure CAMEL\_OCH\_ETC (sheet 2)

### Procedure CAMEL\_OCH\_ETC

3(3)

Procedure in the MSC to handle a temporary connection

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF; if not otherwise stated.



### Procedure CAMEL\_OCH\_ETC

3(3)

Procedure in the MSC to handle a temporary connection

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF; if not otherwise stated.

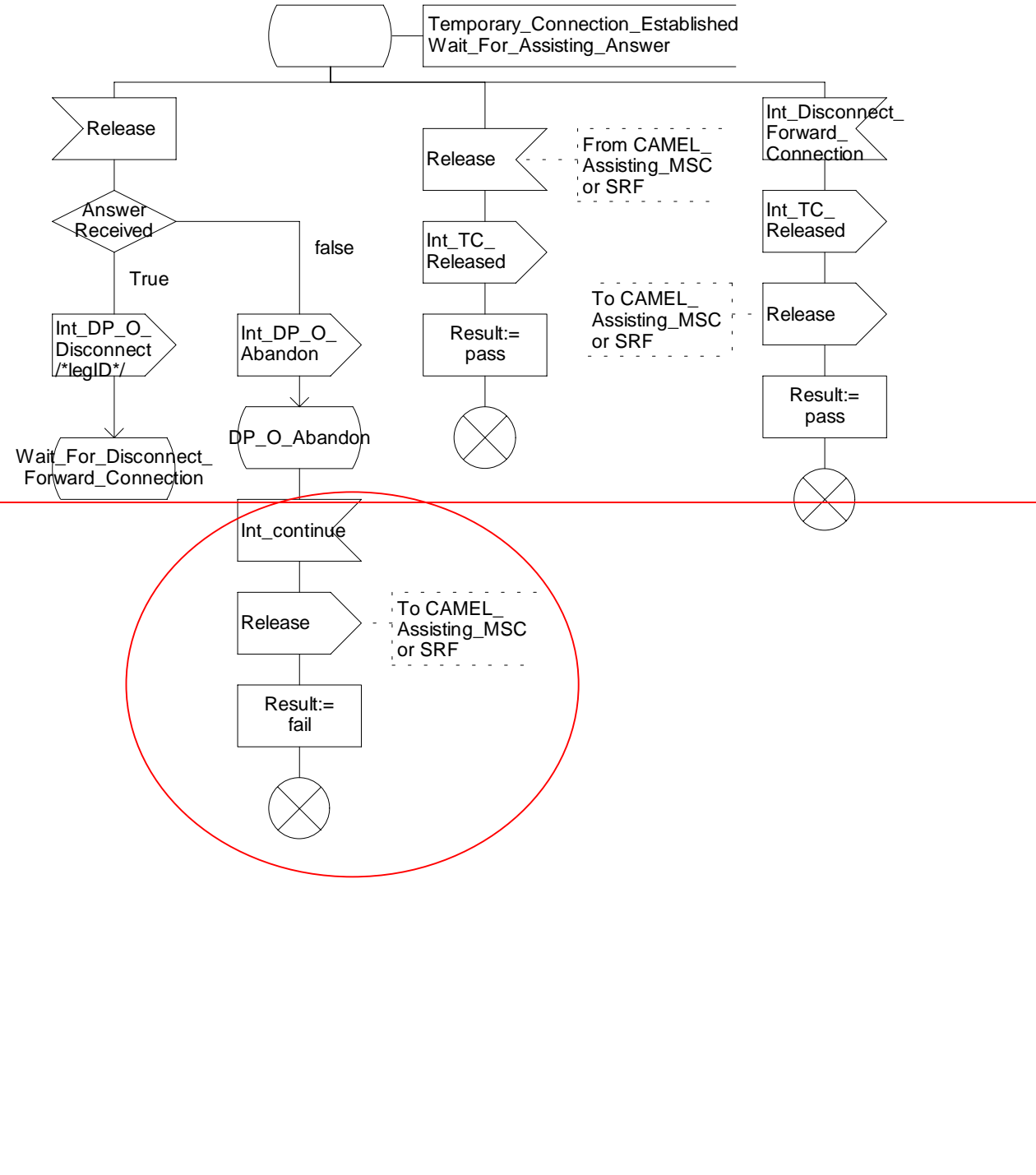


Figure 4.20c: Procedure CAMEL\_OCH\_ETC (sheet 3)

### Procedure CAMEL\_OCH\_CTR

1(4)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

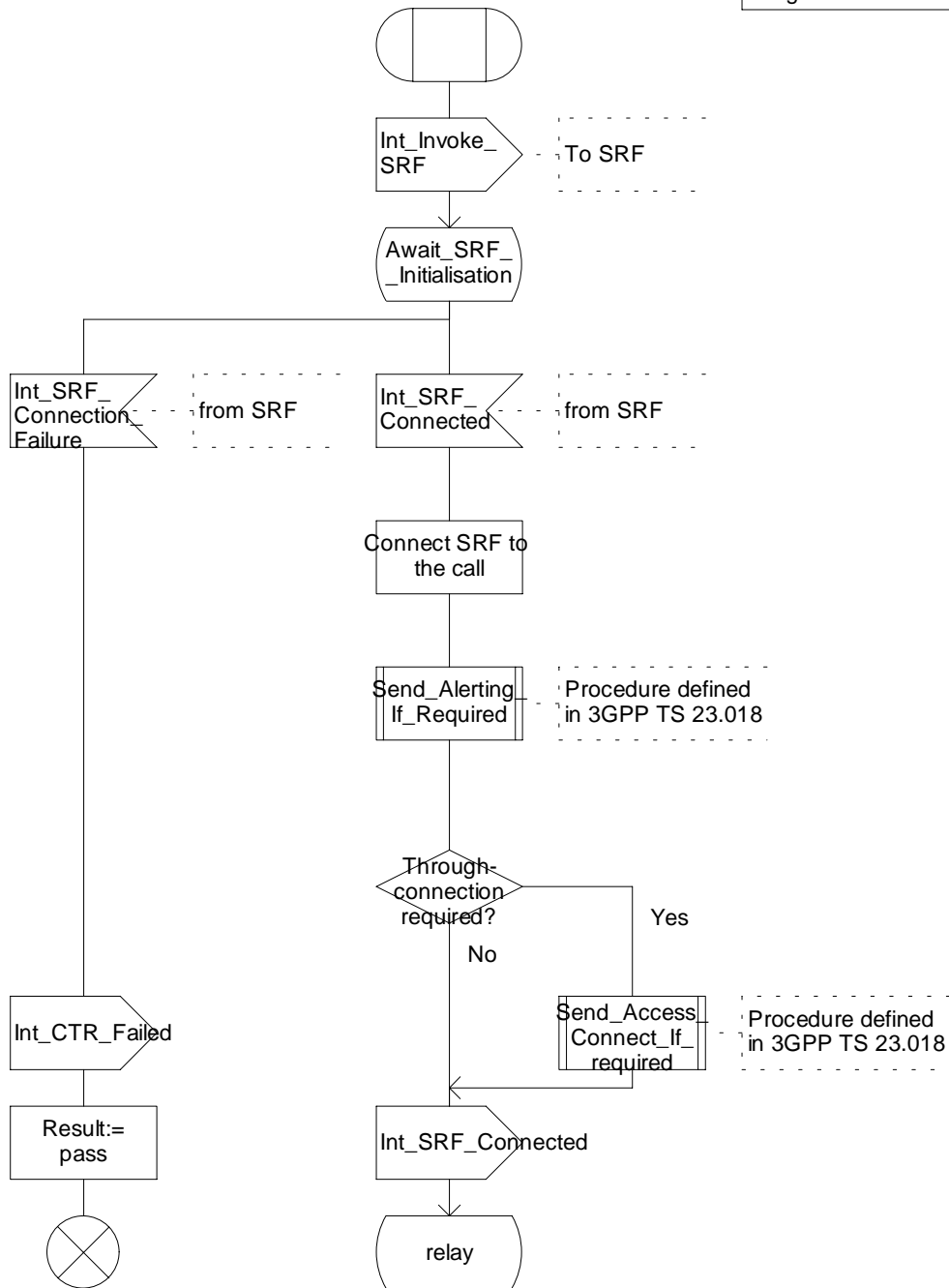


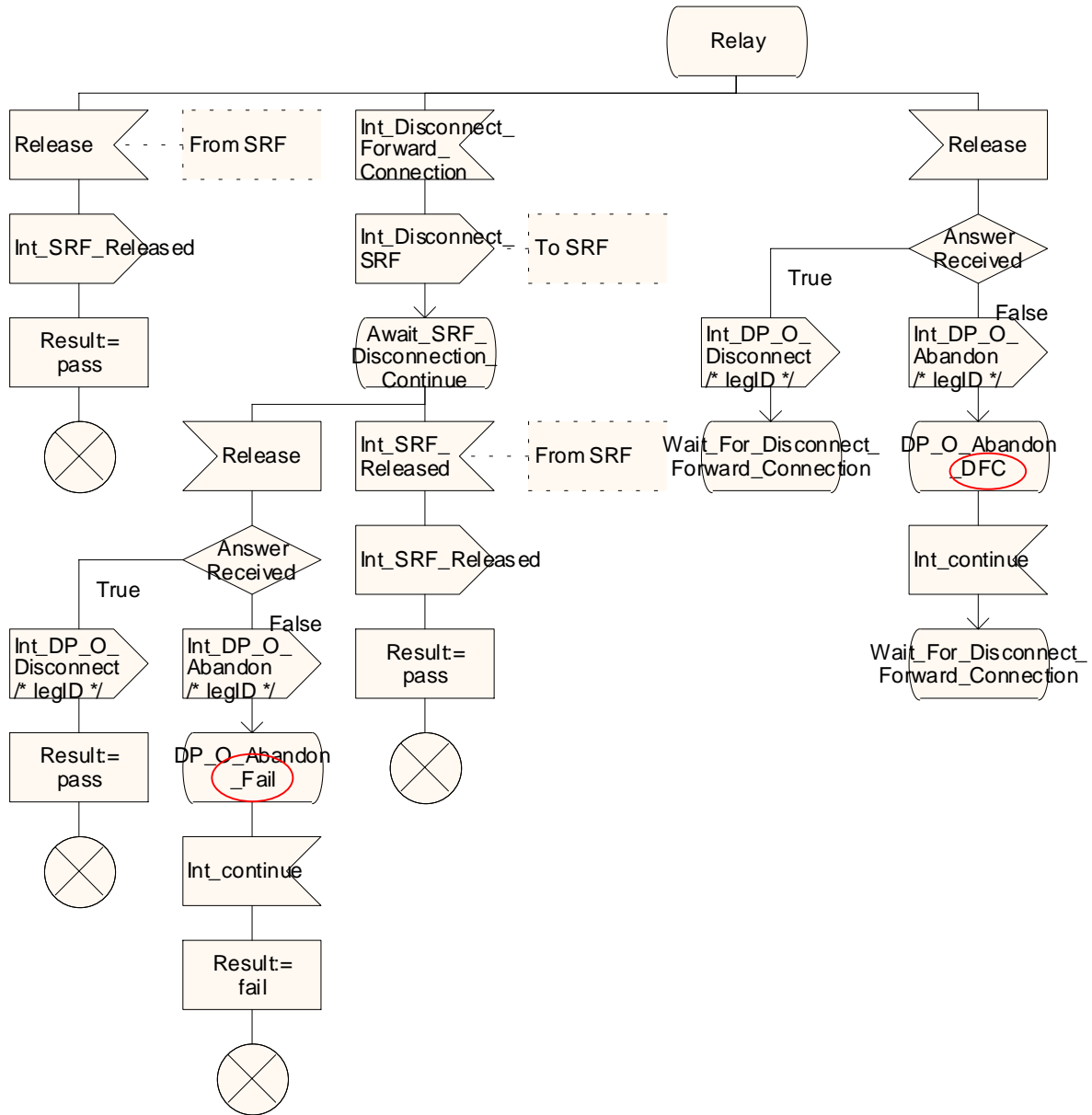
Figure 4.21a: Procedure CAMEL\_OCH\_CTR (sheet 1)

### Procedure CAMEL\_OCH\_CTR

2(5)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.



### Procedure CAMEL\_OCH\_CTR

2(4)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

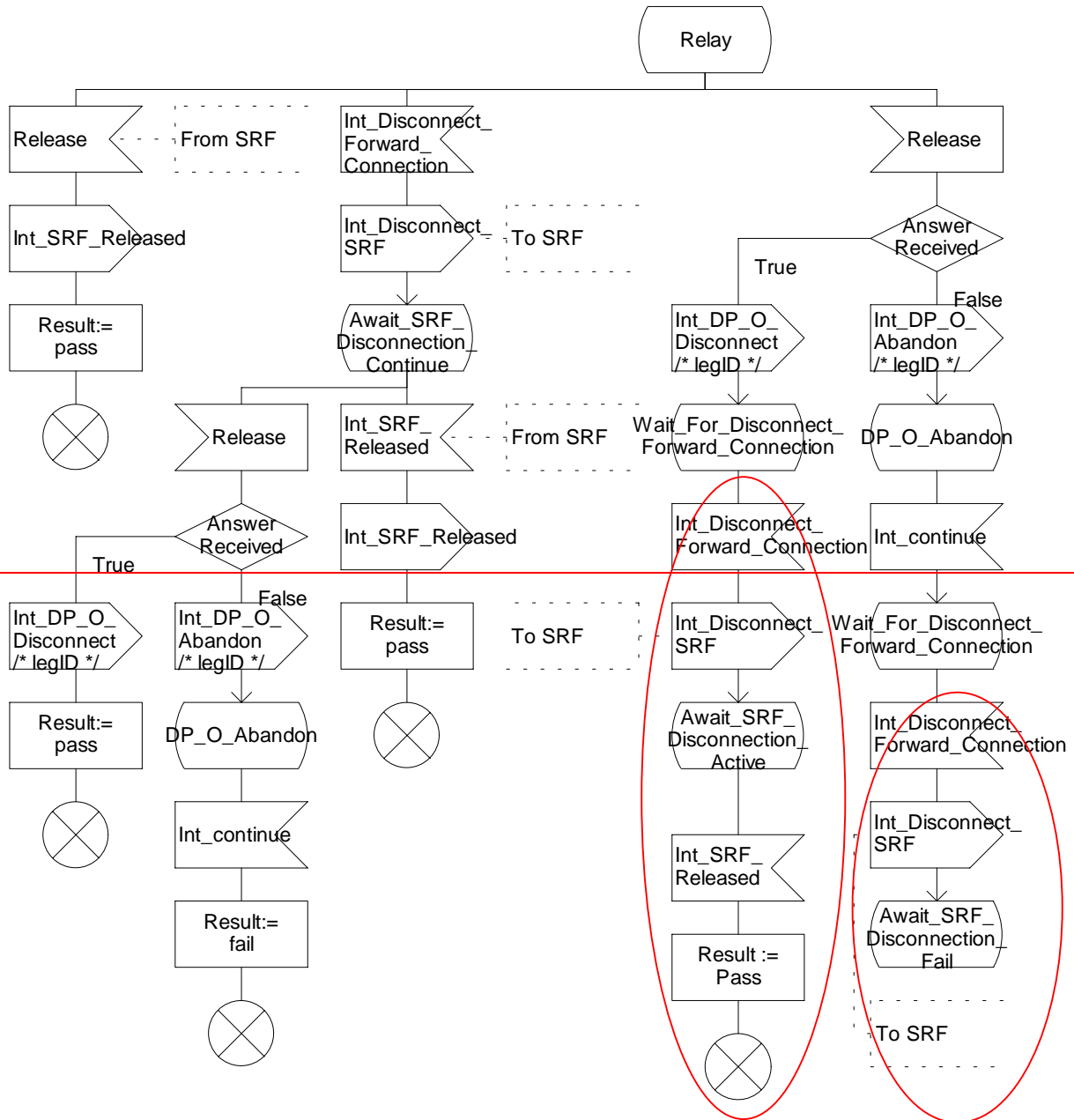


Figure 4.21b: Procedure CAMEL\_OCH\_CTR (sheet 2)



### Procedure CAMEL\_OCH\_CTR

3(4)

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

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

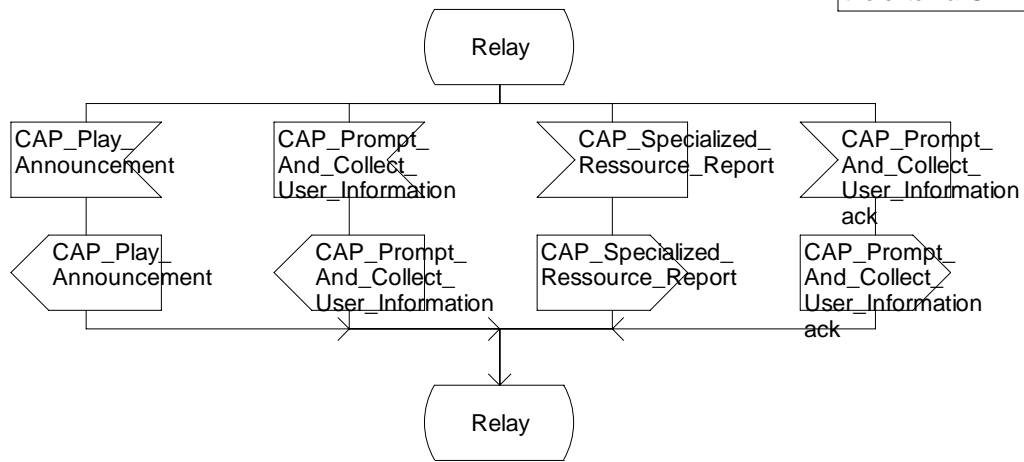


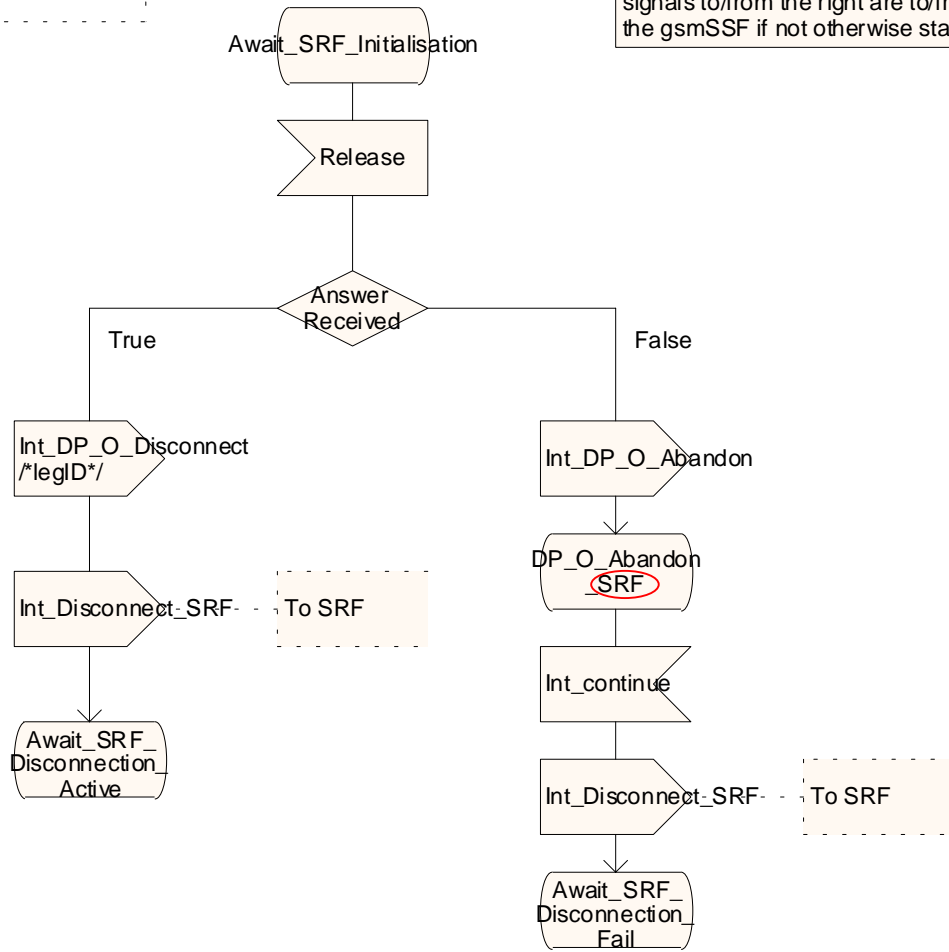
Figure 4.21c: Procedure CAMEL\_OCH\_CTR (sheet 3)

### Procedure CAMEL\_OCH\_CTR

4(5)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.



### Procedure CAMEL\_OCH\_CTR

4(4)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

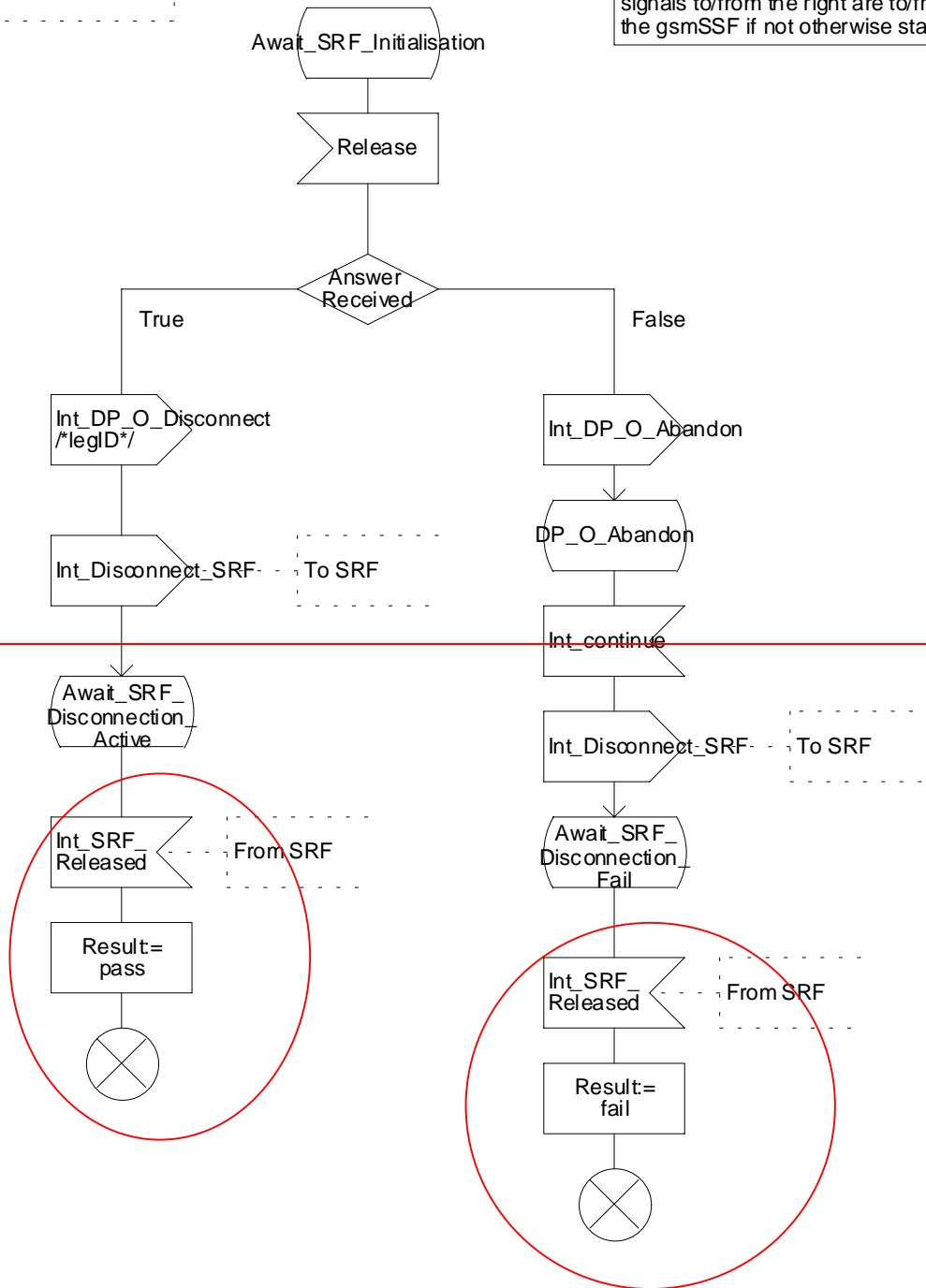


Figure 4.21d: Procedure CAMEL\_OCH\_CTR (sheet 4)

Procedure CAMEL\_OCH\_CTR

5(5)

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

Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF if not otherwise stated.

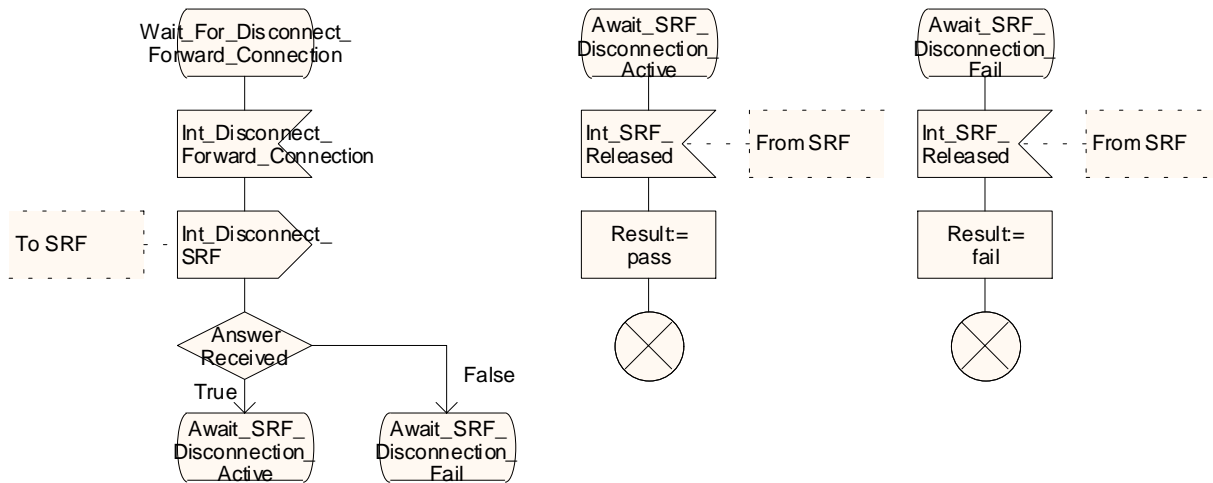


Figure 4.21e: Procedure CAMEL\_OCH\_CTR (sheet 5)

...

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

4.5.3.1 Retrieval of routing information in the GMSC

...

### Procedure CAMEL\_MT\_ETC

1(3)

Procedure in the GMSC to handle a temporary connection

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

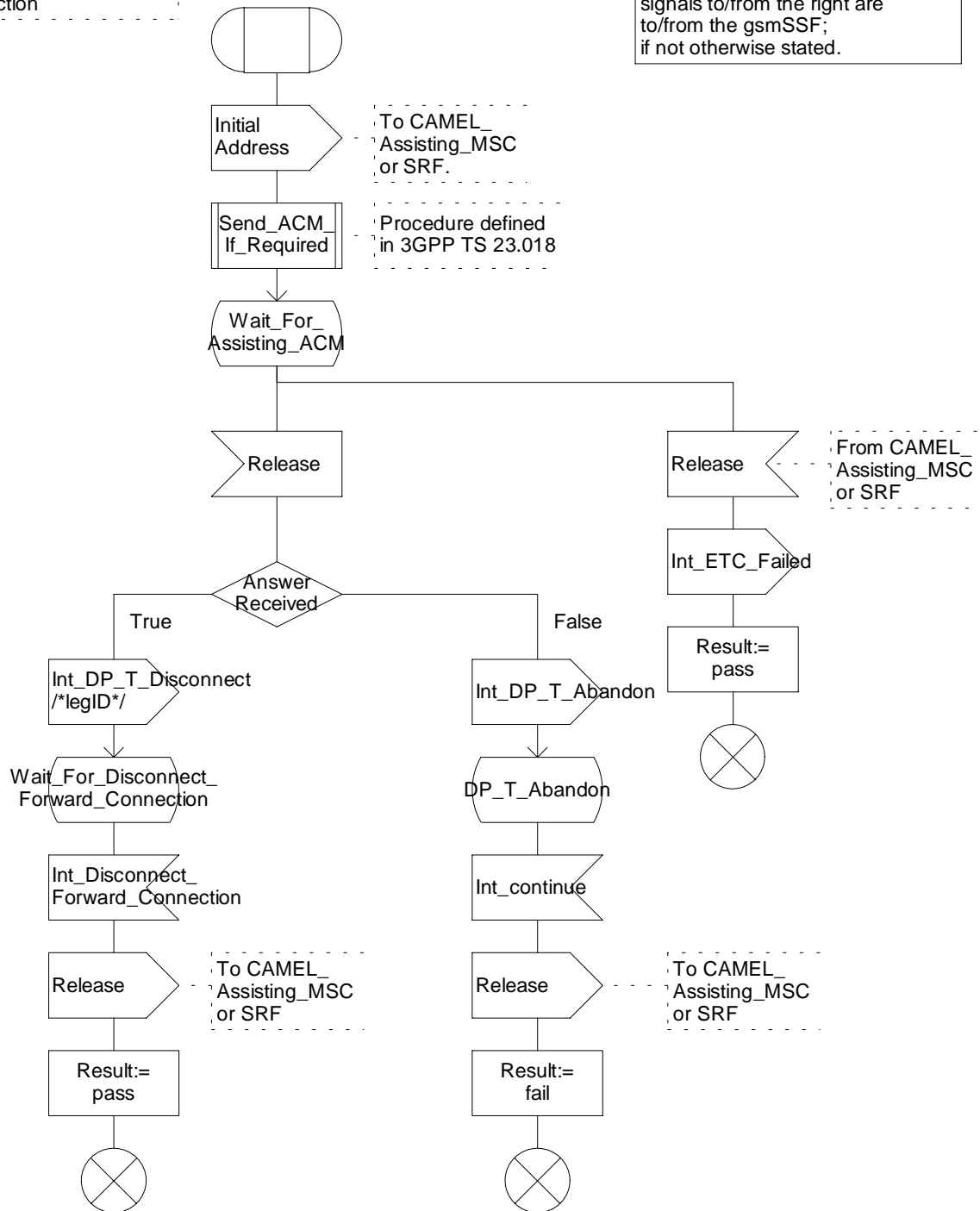


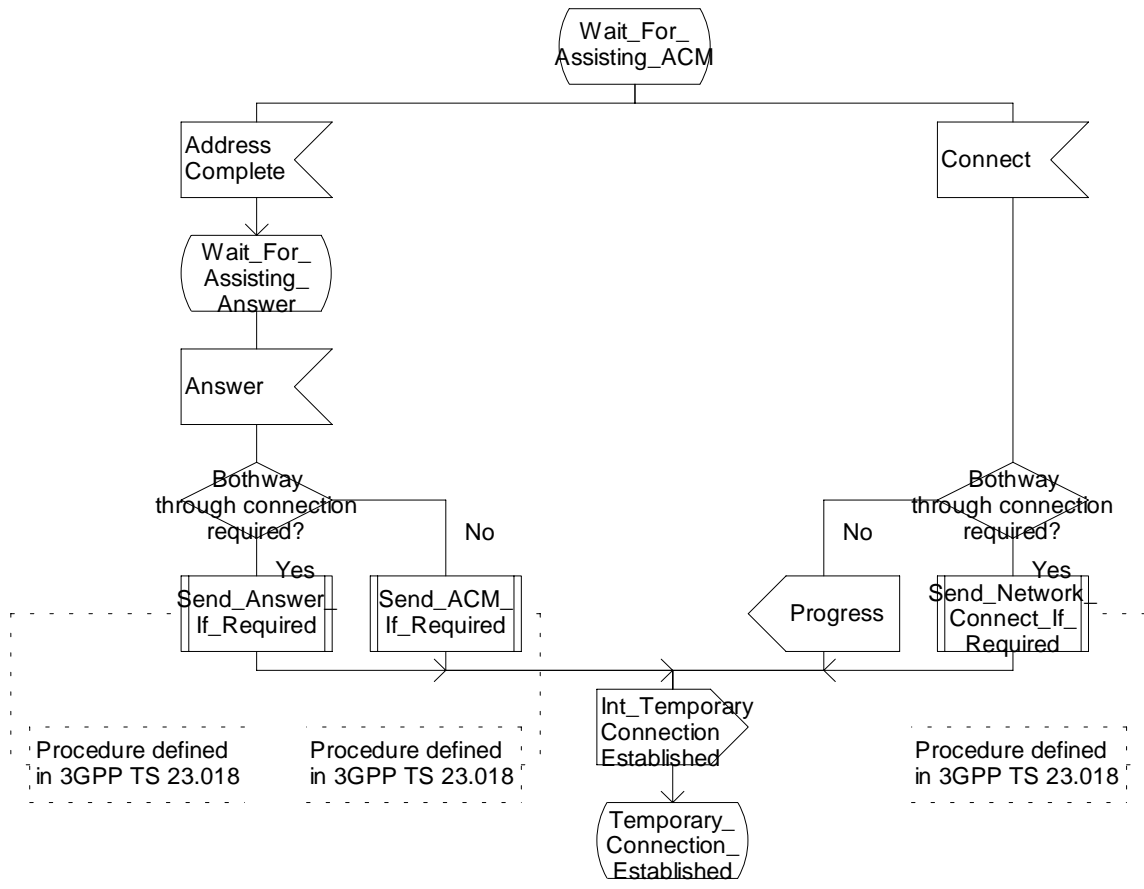
Figure 4.38a: Procedure CAMEL\_MT\_ETC (sheet 1)

### Procedure CAMEL\_MT\_ETC

2(3)

Procedure in the GMSC to handle a temporary connection

Signals to/from the left are to/from the originating exchange; signals to/from the right are to/from the CAMEL\_Assisting\_MSC or SRF.



Procedure defined in 3GPP TS 23.018

Procedure defined in 3GPP TS 23.018

Procedure defined in 3GPP TS 23.018

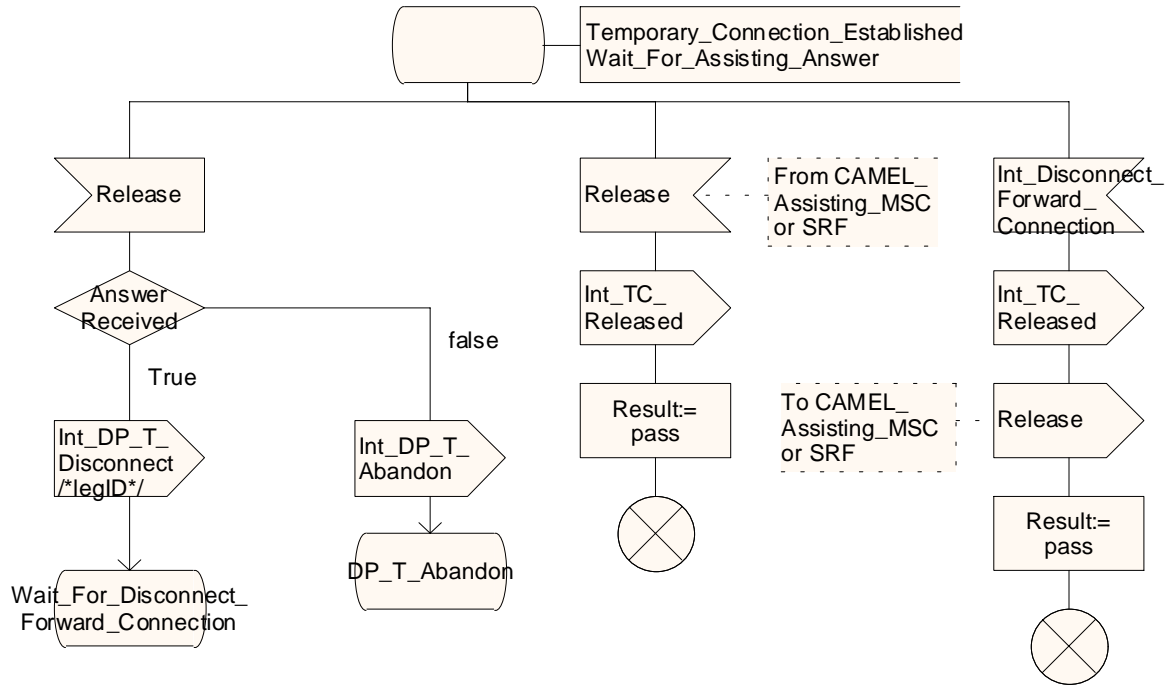
Figure 4.38b: Procedure CAMEL\_MT\_ETC (sheet 2)

### Procedure CAMEL\_MT\_ETC

3(3)

Procedure in the GMSC to handle a temporary connection

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





### Procedure CAMEL\_MT\_ETC

3(3)

Procedure in the GMSC to handle a temporary connection

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

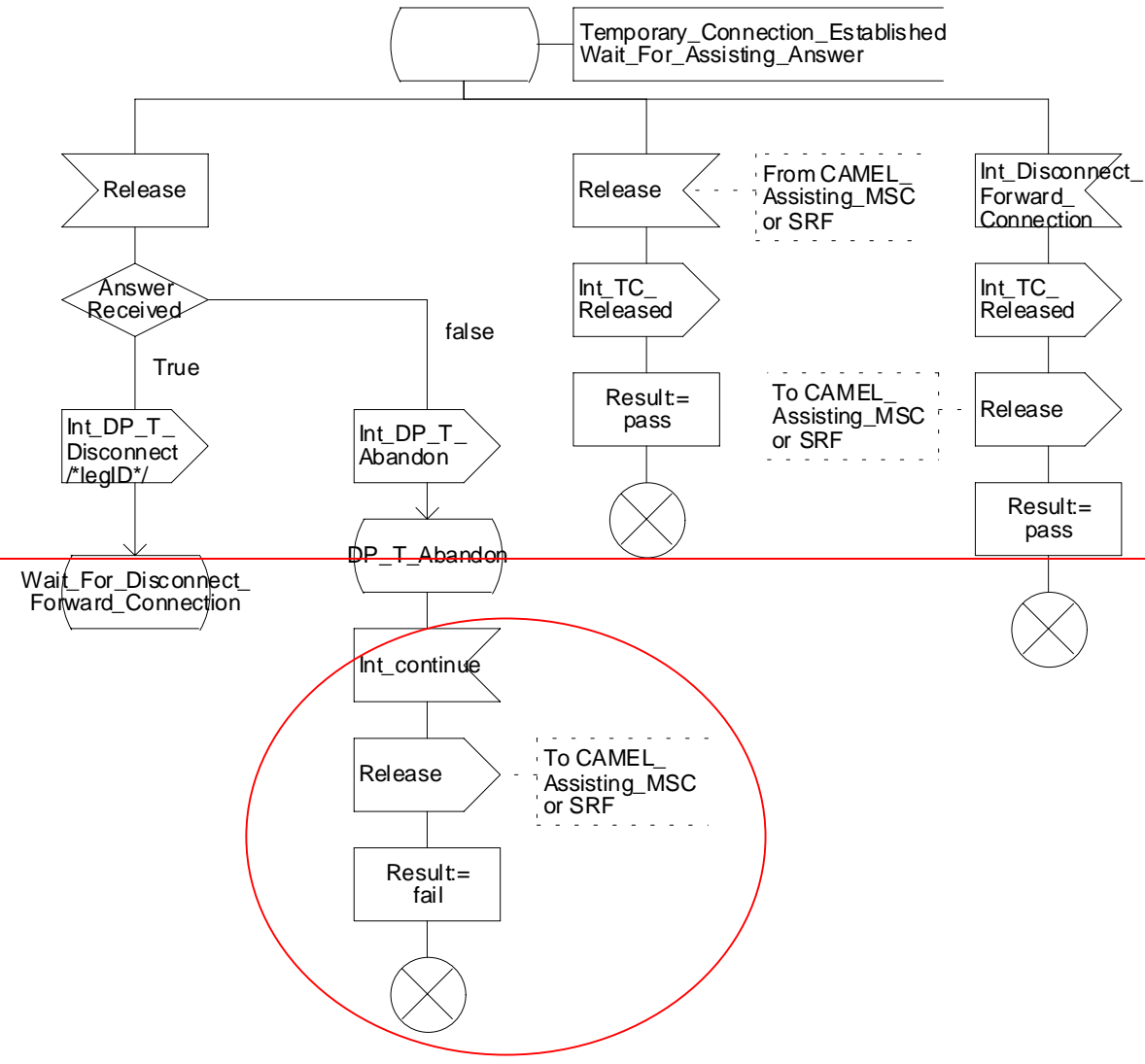


Figure 4.38c: Procedure CAMEL\_MT\_ETC (sheet 3)

### Procedure CAMEL\_MT\_CTR

1(4)

Procedure in the GMSC to handle a Connect To Resource operation

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

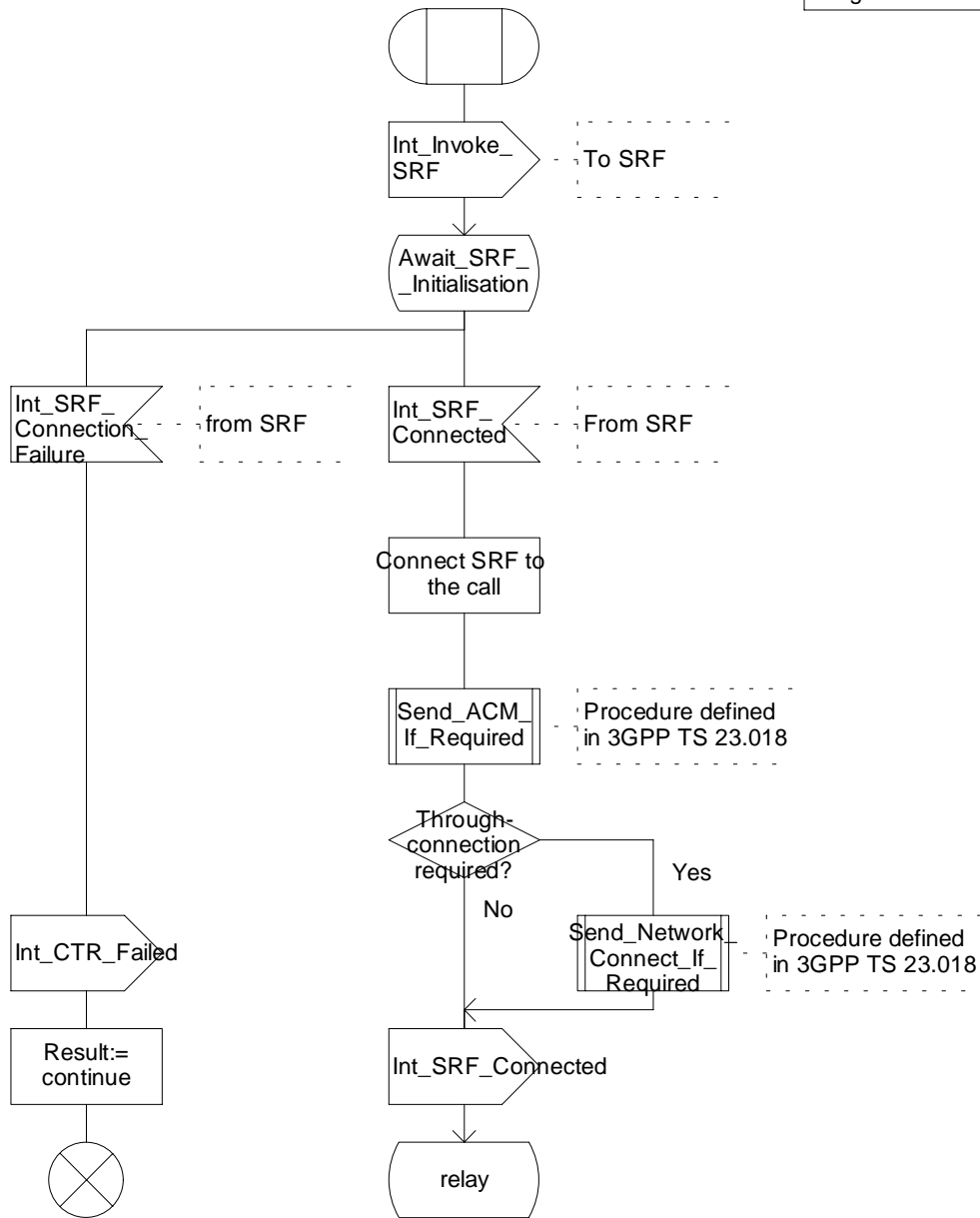


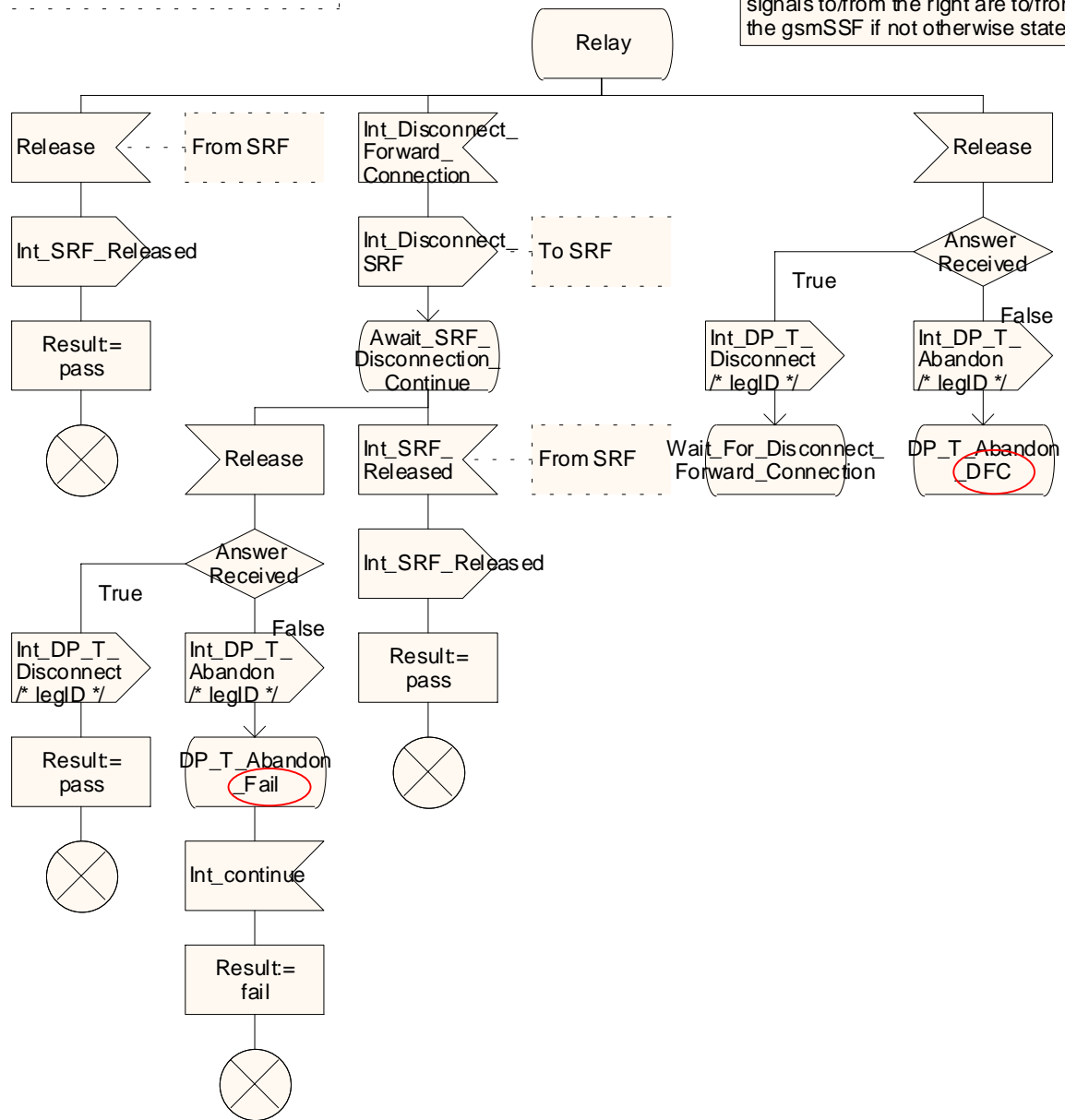
Figure 4.39a: Procedure CAMEL\_MT\_CTR (sheet 1)

### Procedure CAMEL\_MT\_CTR

2(5)

Procedure in the GMSC to handle a Connect To Resource operation

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



### Procedure CAMEL\_MT\_CTR

2(4)

Procedure in the GMSC to handle a Connect To Resource operation

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

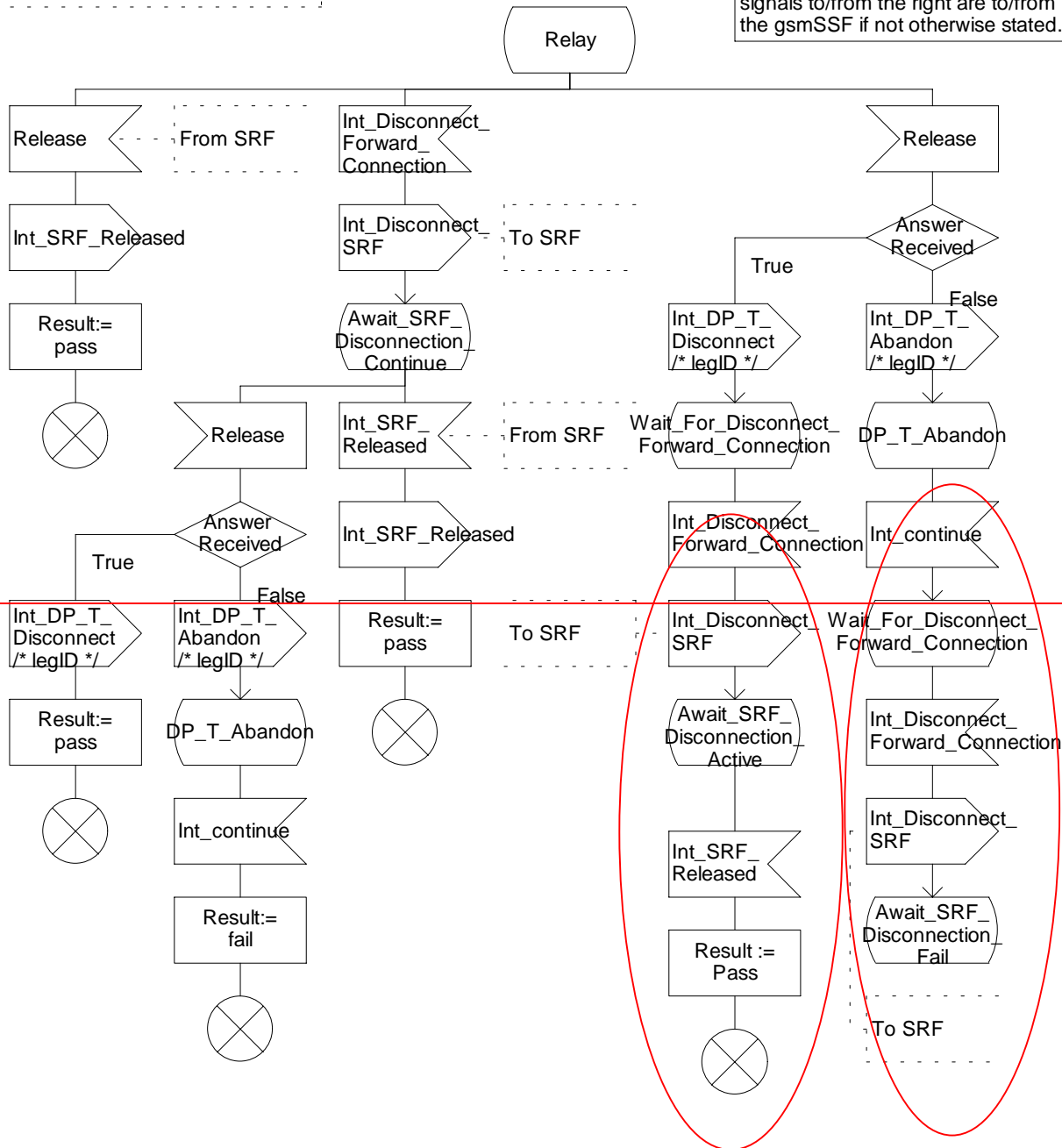


Figure 4.39b: Procedure CAMEL\_MT\_CTR (sheet 2)

### Procedure CAMEL\_MT\_CTR

3(4)

Procedure in the GMSC to handle a Connect To Resource operation

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

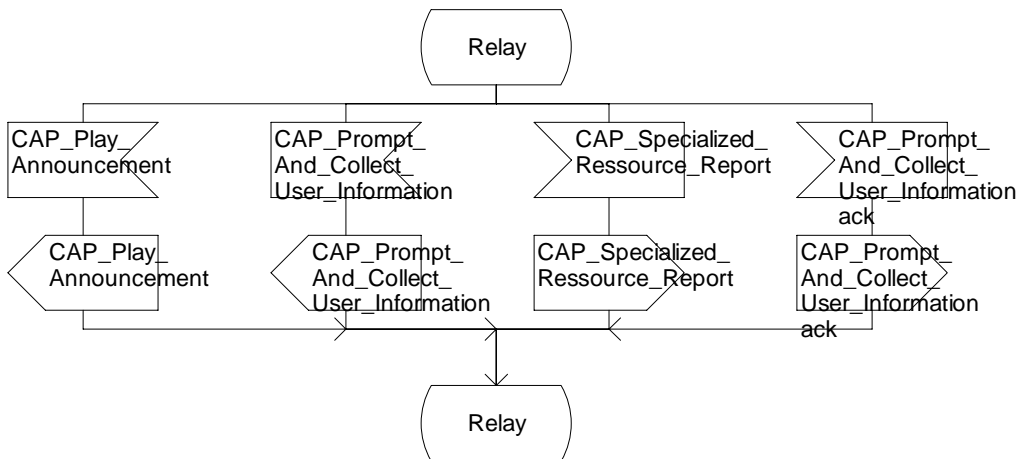


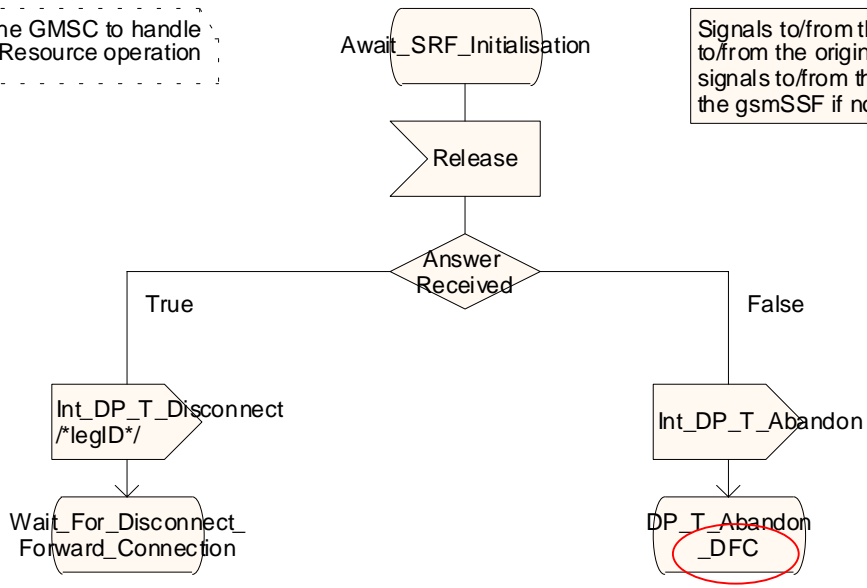
Figure 4.39c: Procedure CAMEL\_MT\_CTR (sheet 3)

### Procedure CAMEL\_MT\_CTR

4(5)

Procedure in the GMSC to handle a Connect To Resource operation

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



Procedure CAMEL\_MT\_CTR

4(4)

Procedure in the GMSC to handle a Connect To Resource operation

Await\_SRF\_Initialisation

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

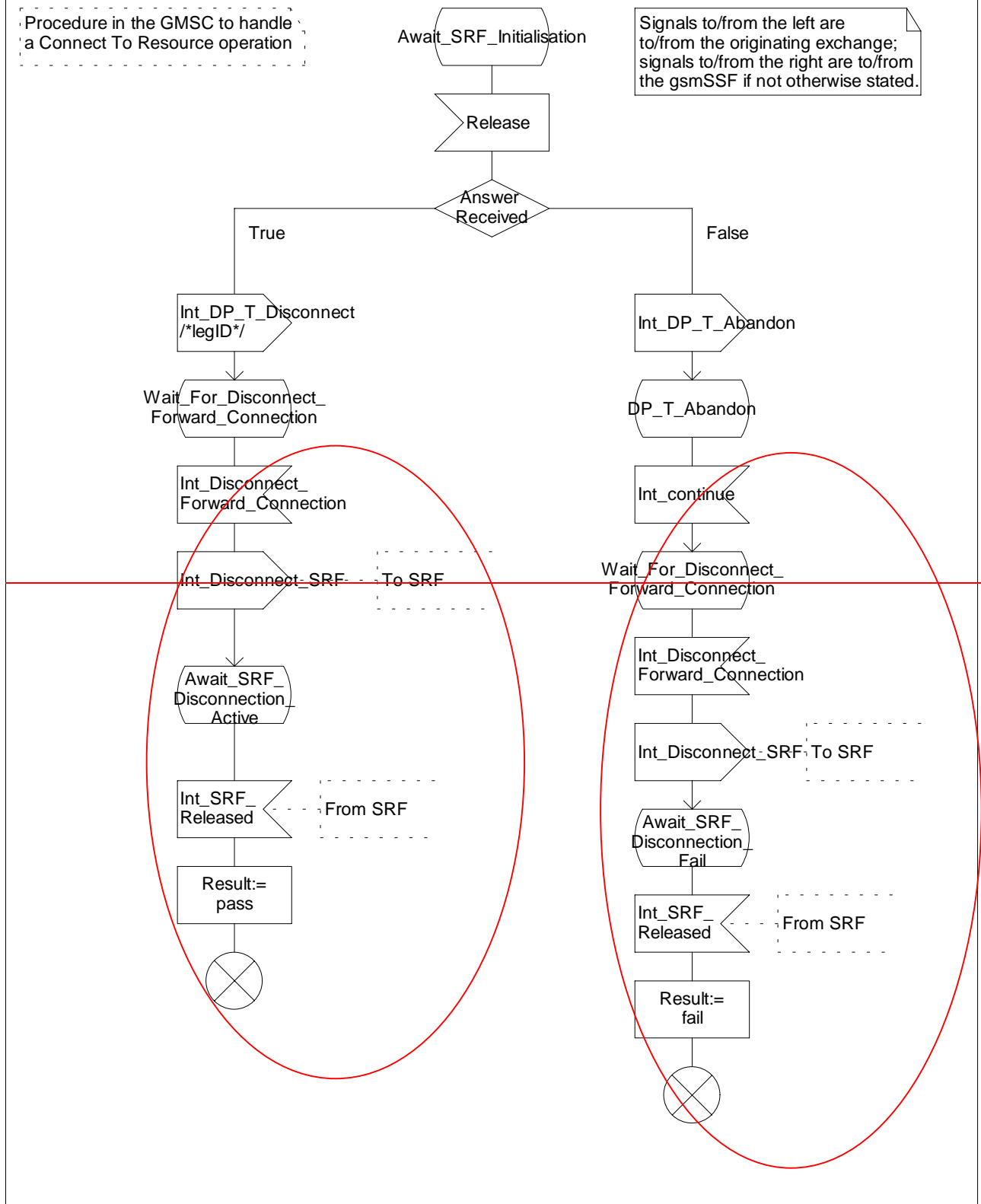


Figure 4.39d: Procedure CAMEL\_MT\_CTR (sheet 4)

Procedure CAMEL\_MT\_CTR

5(5)

Procedure in the GMSC to handle a Connect To Resource operation

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

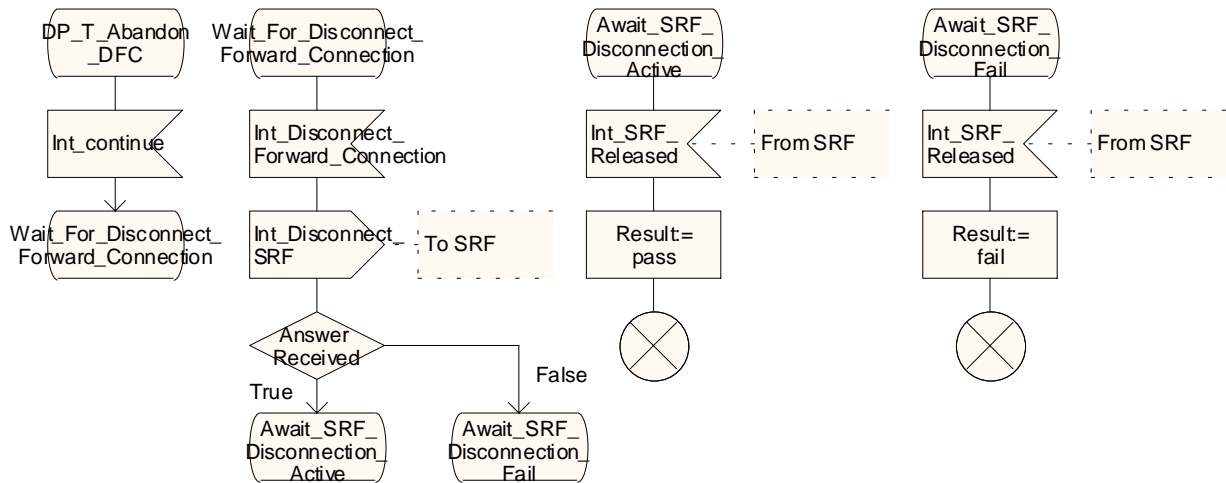


Figure 4.39e: Procedure CAMEL\_MT\_CTR (sheet 5)



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

#### 4.5.5 Handling of forwarded calls

...

Procedure CAMEL\_CF\_ETC

1(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF; if not otherwise stated. \*/

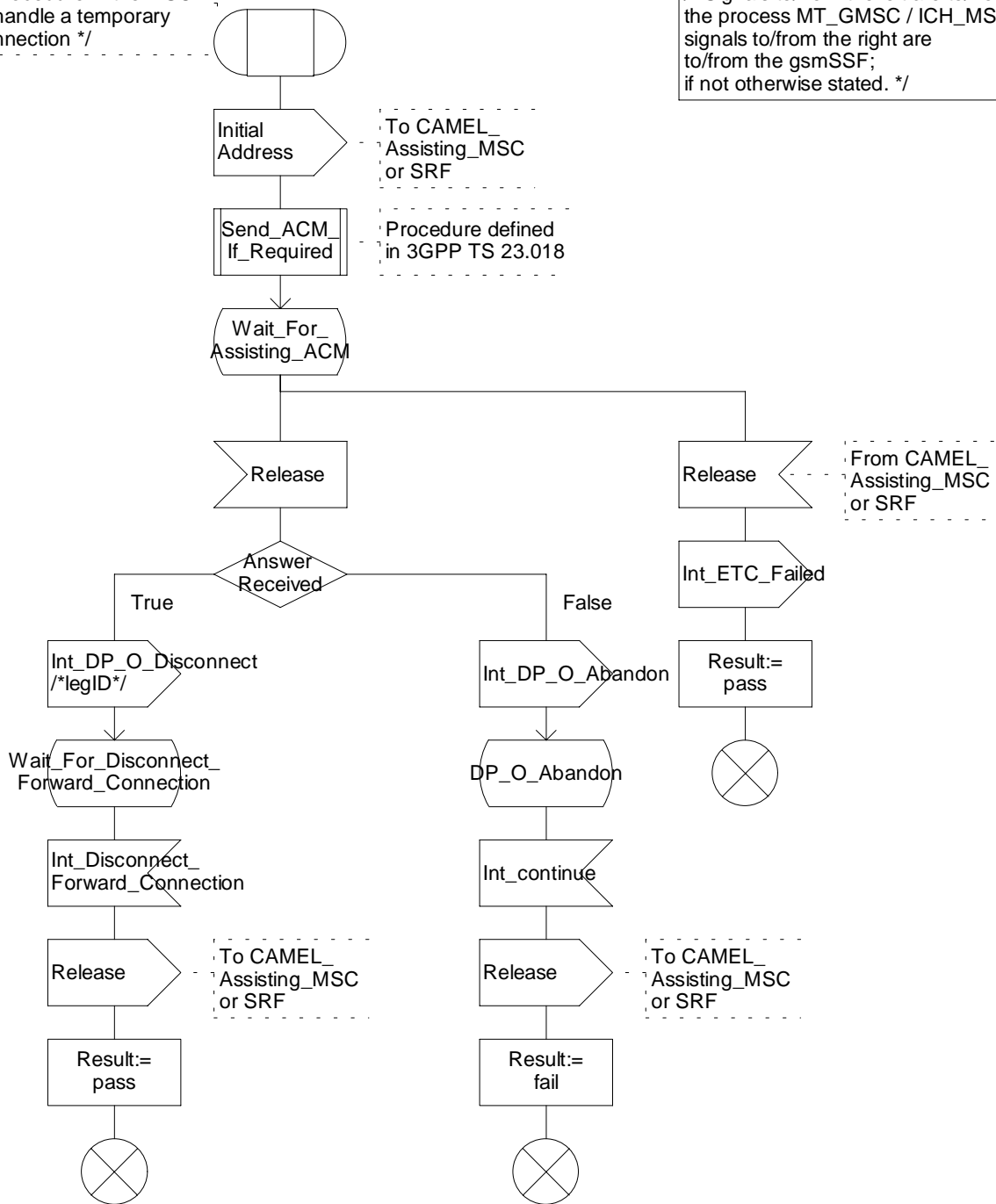


Figure 4.61a: Process CAMEL\_CF\_ETC (sheet 1)

### Procedure CAMEL\_CF\_ETC

2(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the CAMEL\_Assisting\_MSC or SRF. \*/

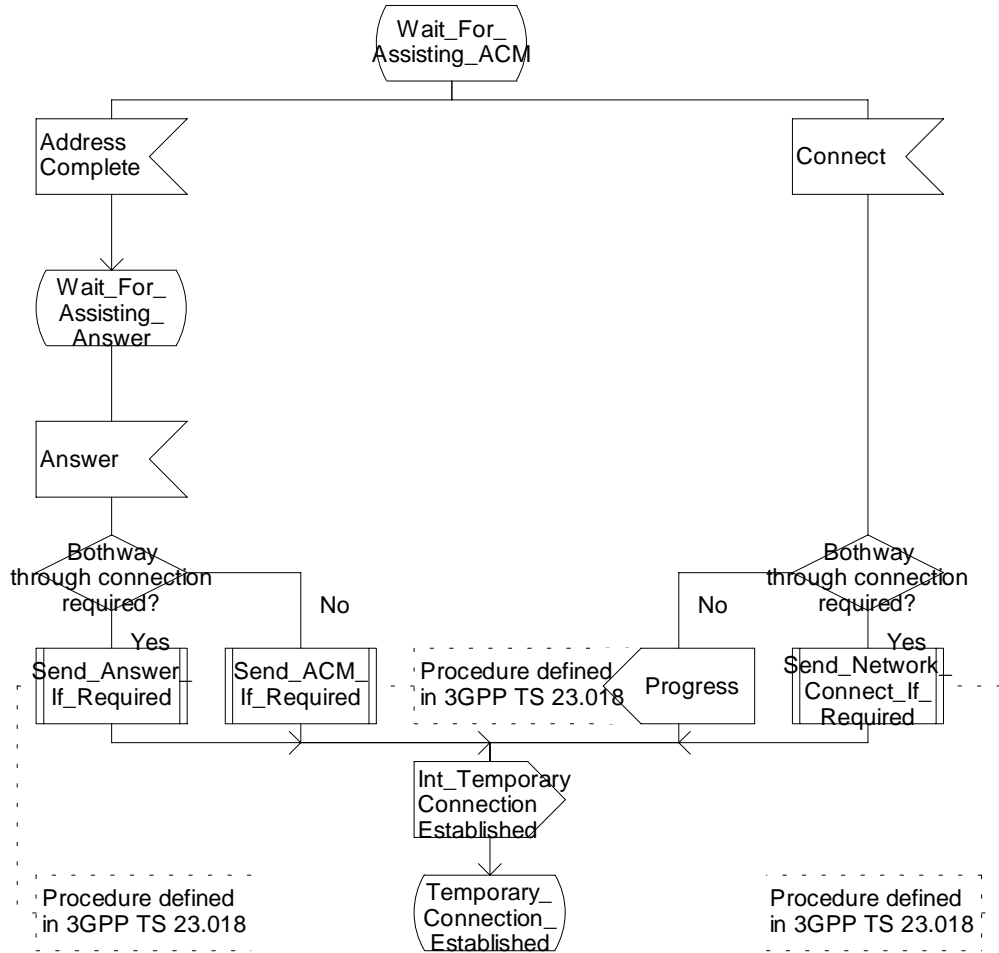


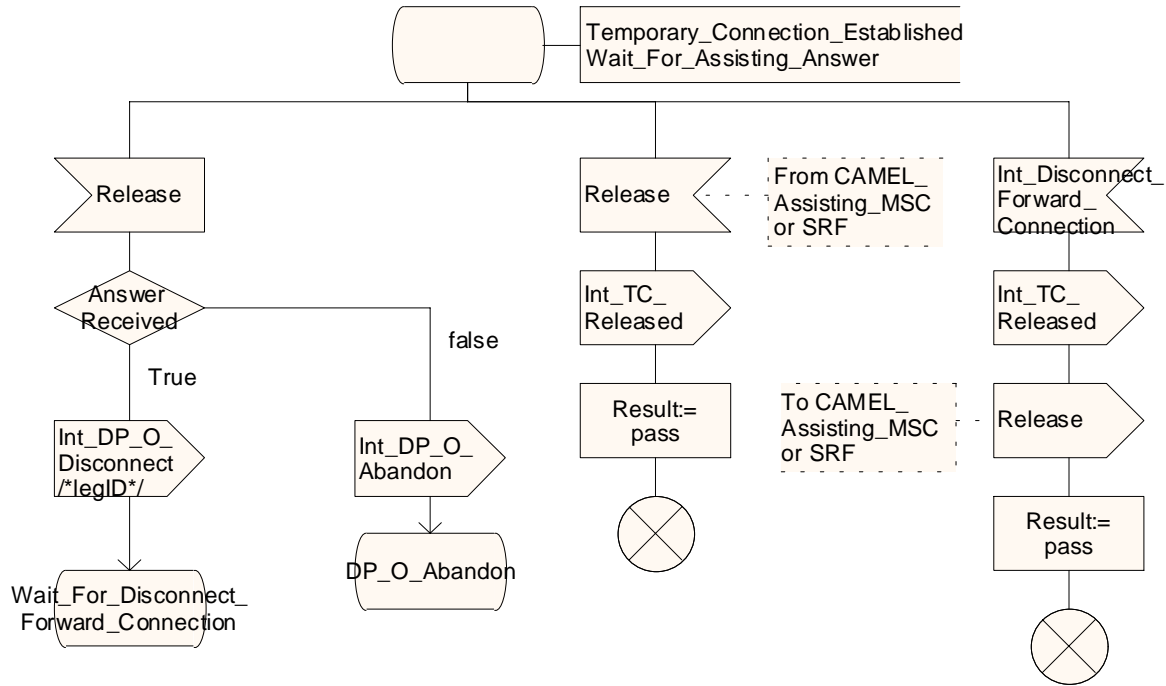
Figure 4.61b: Procedure CAMEL\_CF\_ETC (sheet 2)

### Procedure CAMEL\_CF\_ETC

3(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF; if not otherwise stated. \*/



### Procedure CAMEL\_CF\_ETC

3(3)

/\* Procedure in the MSC to handle a temporary connection \*/

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF; if not otherwise stated. \*/

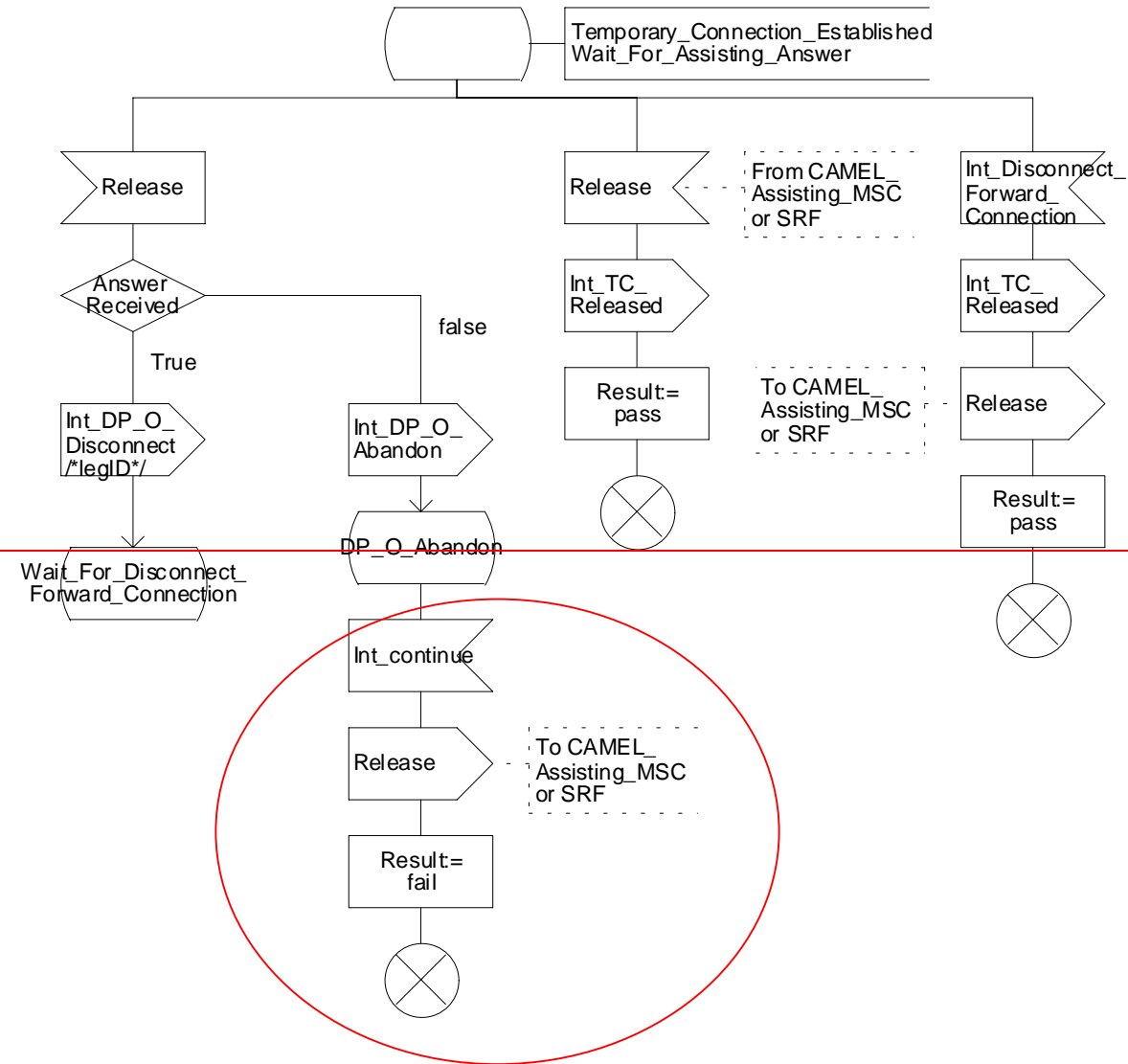


Figure 4.61c: Procedure CAMEL\_CF\_ETC (sheet 3)

### Procedure CAMEL\_CF\_CTR

1(4)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

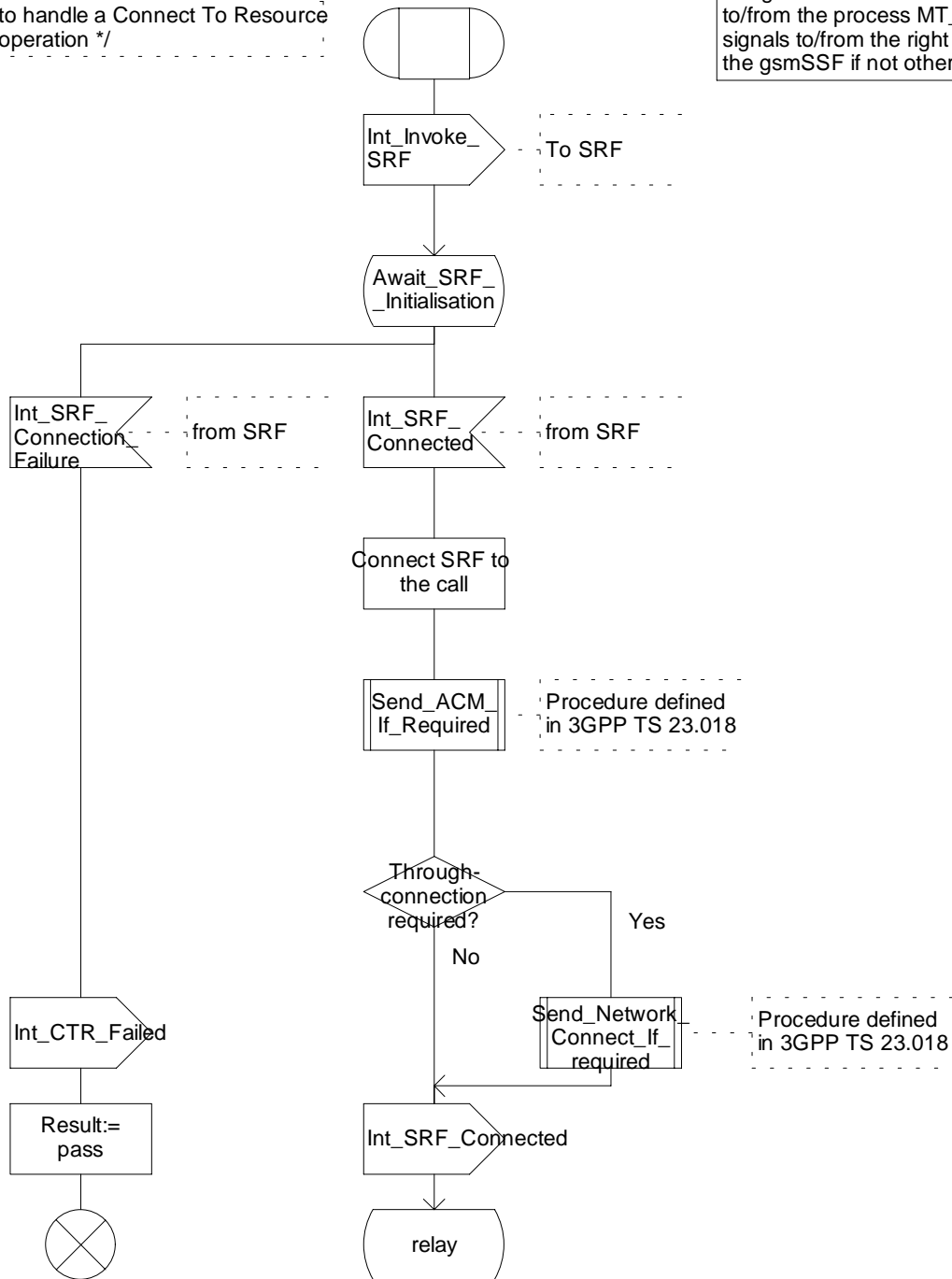


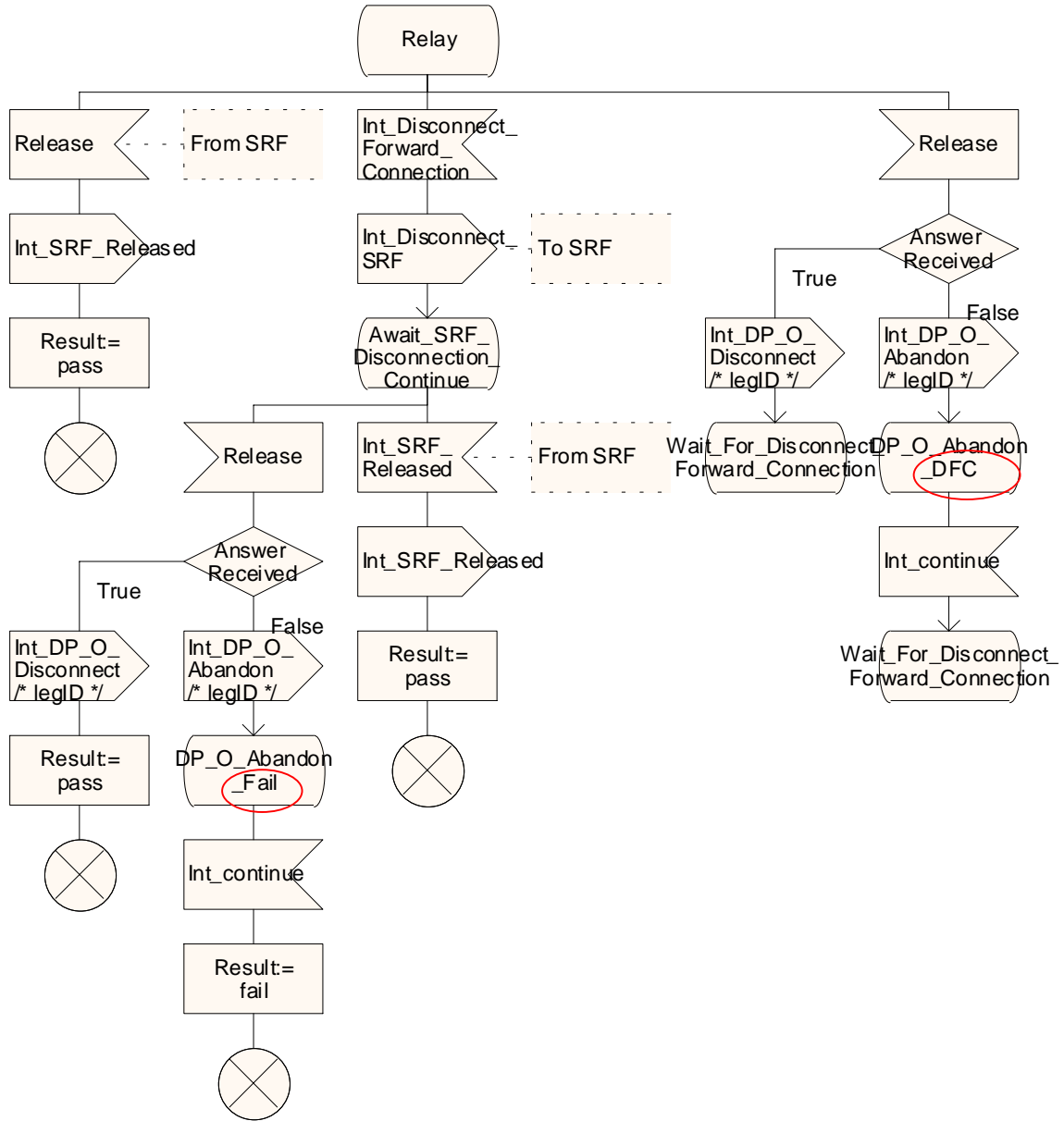
Figure 4.62a: Process CAMEL\_CF\_CTR (sheet 1)

### Procedure CAMEL\_CF\_CTR

2(5)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



### Procedure CAMEL\_CF\_CTR

2(4)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

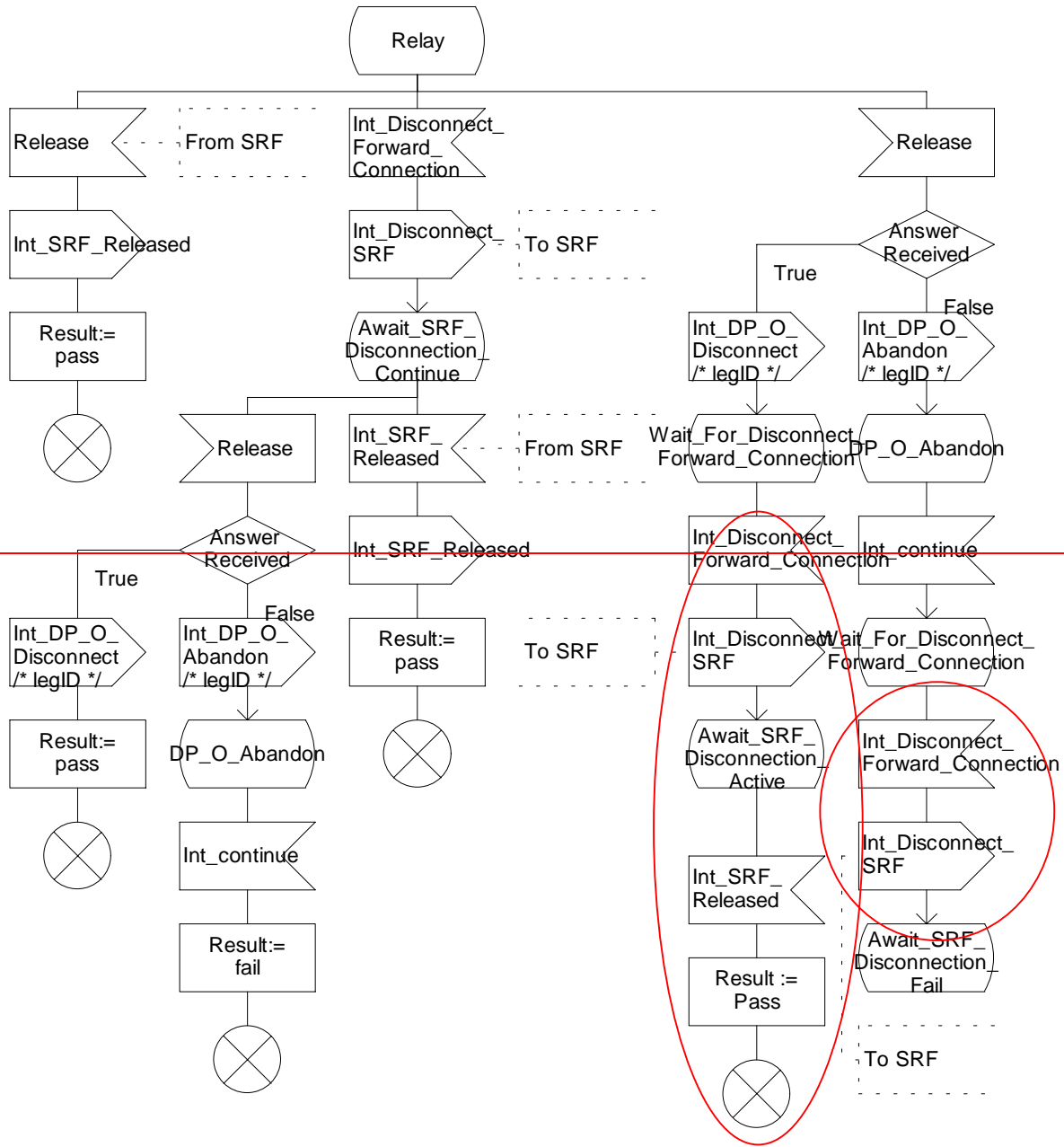


Figure 4.62b: Procedure CAMEL\_CF\_CTR (sheet 2)



### Procedure CAMEL\_CF\_CTR

3(4)

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

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

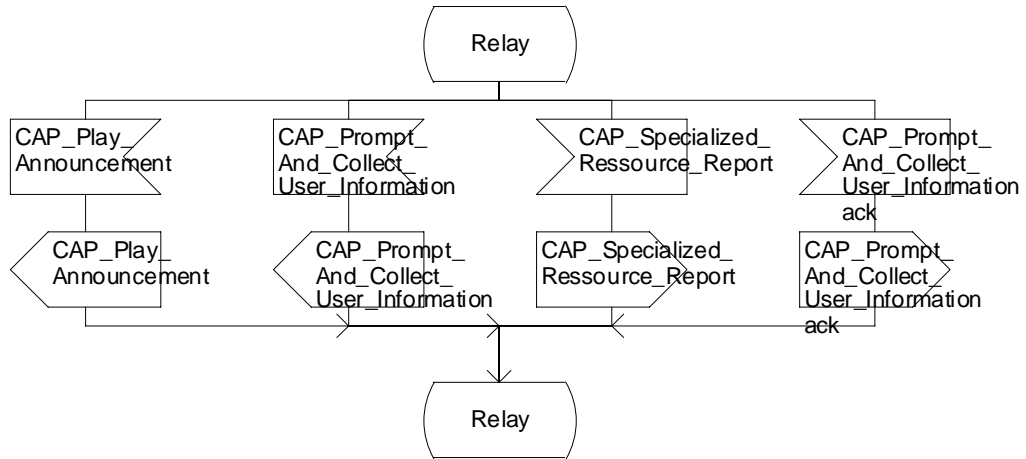


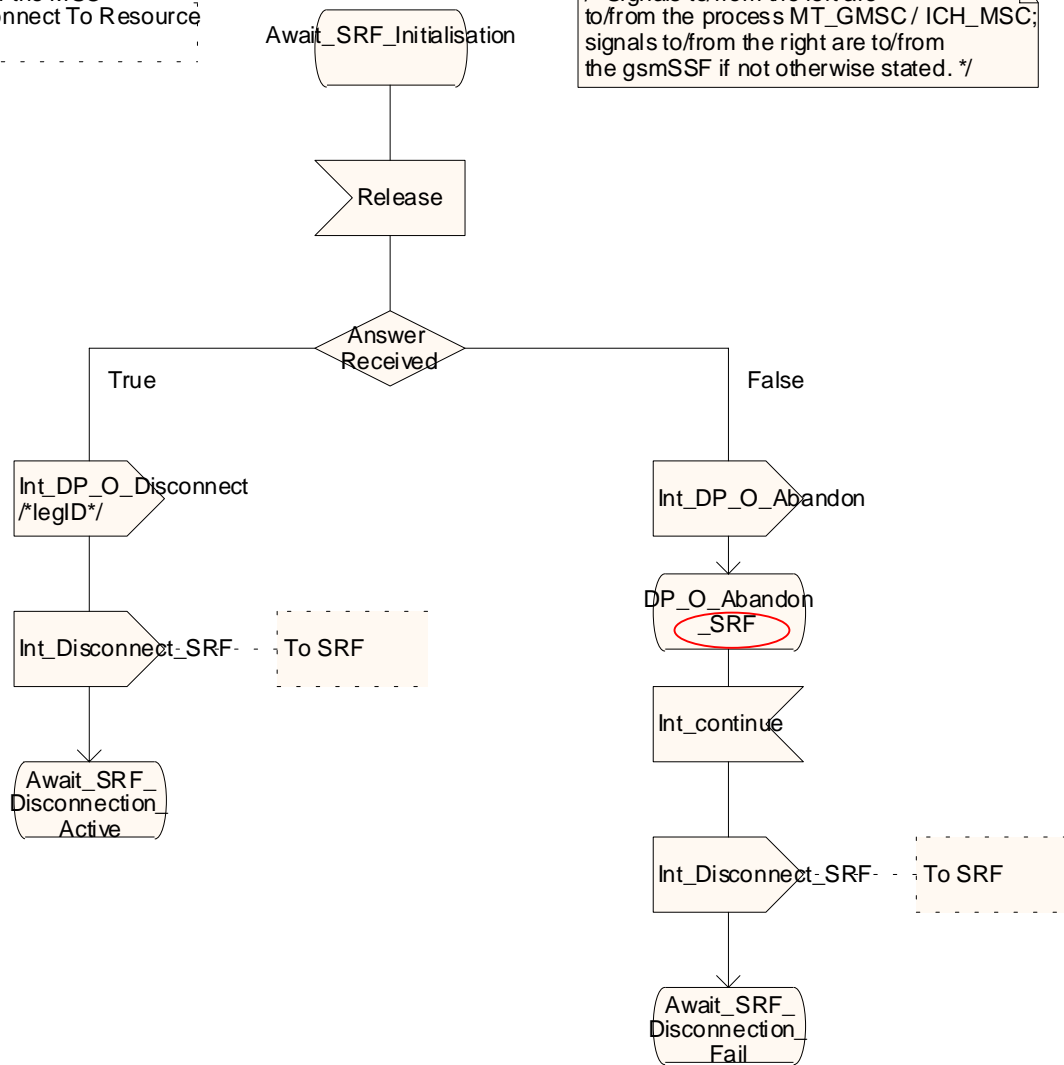
Figure 4.62c: Procedure CAMEL\_CF\_CTR (sheet 3)

### Procedure CAMEL\_CF\_CTR

4(5)

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

*/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/*



Procedure CAMEL\_CF\_CTR

4(4)

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

/\* Signals to/from the left are to/from the process MT\_GMSC / ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

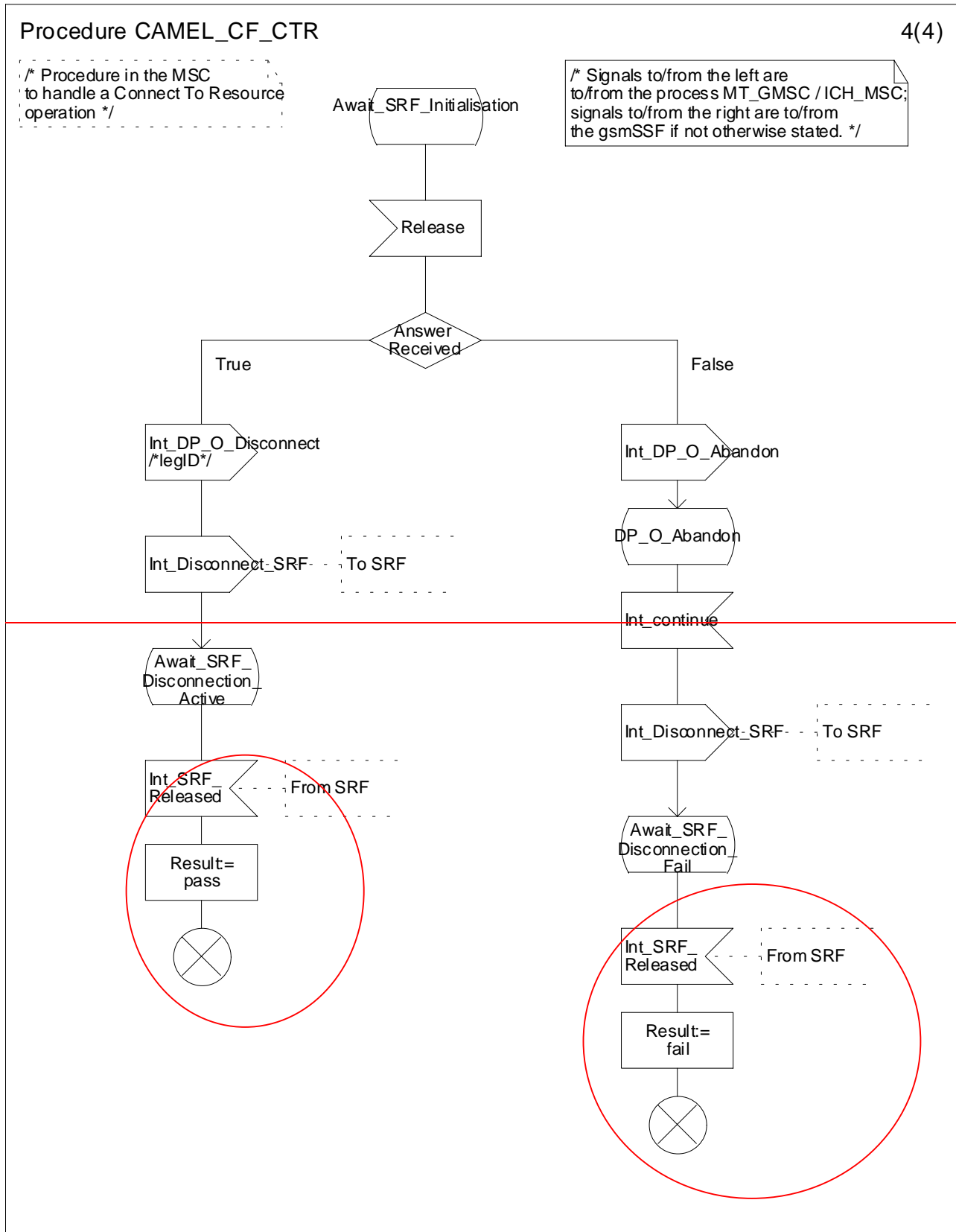


Figure 4.62d: Procedure CAMEL\_CF\_CTR (sheet 4)

Procedure CAMEL\_CF\_CTR

5(5)

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

/\* Signals to/from the left are to/from the process MT\_GMSC/ ICH\_MSC; signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

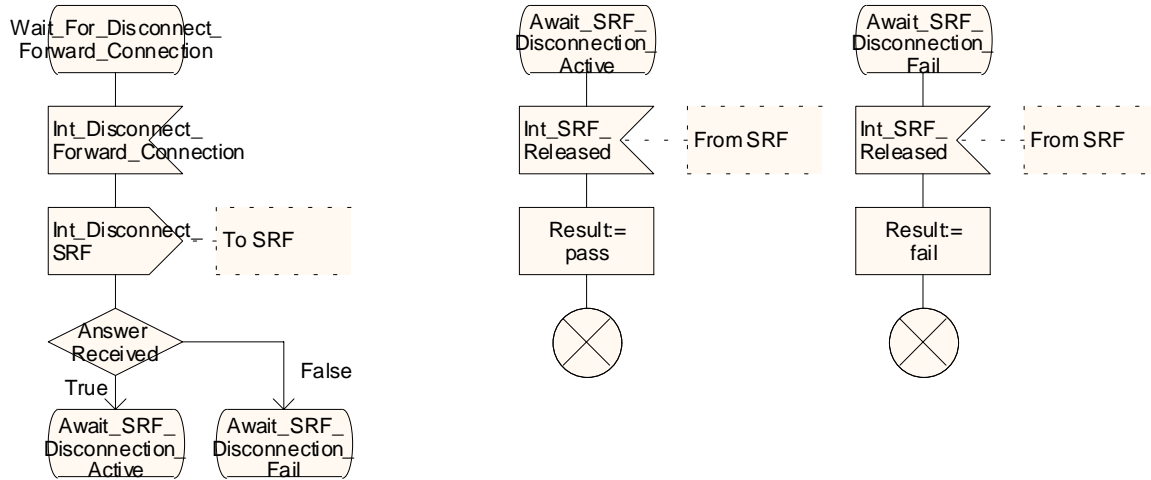


Figure 4.62e: Procedure CAMEL\_CF\_CTR (sheet 5)

\*\*\* End Of Document \*\*\*

## CHANGE REQUEST

⌘ **29.078 CR 253** ⌘ rev ⌘ Current version: **4.4.0** ⌘

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction of GPRSMSCClass		
<b>Source:</b>	⌘ Ericsson		
<b>Work item code:</b>	⌘ CAMEL3	<b>Date:</b>	⌘ 15 May 2002
<b>Category:</b>	⌘ A	<b>Release:</b>	⌘ Rel-4
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification)		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ Tdoc N2-020493, containing an LS from CN4 to CN2, clarifies that CN4 has decided, during the CN4#13 meeting in Fort Lauderdale, to mark the parameter "MsRadioAccessCapability" in "GPRSMSCClass" <u>OPTIONAL</u> in TS 29.002 for Rel-5. CN4 explains in said LS why this parameter needs to be marked OPTIONAL, rather than mandatory; the MsRadioAccessCapability may not always be available in the SGSN, so it needs to be marked OPTIONAL. MS Radio Access Capability is not available to the SGSN if the MS accesses the network via lu-mode.  Refer to N4-020485, containing CR 29.002-408r2, for the CN4-approved change to TS 29.002.  For CAMEL Phase 3, the data type definition of GPRSMSCClass is specified in TS 29.078. For CAMEL Phase 4, the data type definition of GPRSMSCClass is specified in TS 29.002 and is imported by CAP.  Since CAMEL Phase 3 and CAMEL Phase 4 use the same CAP V3 Application Context for GPRS control (between gsmSCF and gprsSSF), the data type definition of GPRSMSCClass needs to be identical in TS 29.002 Rel-5 and TS 29.078 R99 & Rel-4.  To accomplish equal definitions of GPRSMSCClass in R99 & Rel-4 and Rel-5, MsRadioAccessCapability shall be marked OPTIONAL in TS 29.078 R99 and Rel-4.
<b>Summary of change:</b>	⌘ Mark MsRadioAccessCapability in GPRSMSCClass OPTIONAL.
<b>Consequences if not approved:</b>	⌘ - misalignment between CAP V3 for GPRS in R99 & Rel-4 and CAP V3 for GPRS in Rel-5; - an SGSN will not be able to report "mSNetworkCapability" in InitialDPGPRS when "MsRadioAccessCapability" is not available.

<b>Clauses affected:</b>	⌘	5	
<b>Other specs affected:</b>	⌘	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘
<b>Other comments:</b>	⌘	<ul style="list-style-type: none"> <li>- In TS 23.078, the Information Element "GPRS MS Class" is not split up in sub-parameters "mS Network Capability" and "mS Radio Access Capability". Therefore, marking mSRadioAccessCapability OPTIONAL in TS 29.078 and TS 29.002 does not affect TS 23.078.</li> <li>- In CAMEL Phase 3, the parameter "GPRS MS Class" is not included in Initial DP SMS; it is included in Initial DP GPRS only.</li> <li>- In CAMEL Phase 4, the Information Element "GPRS MS Class" is used by various Information Flows, both CAP and MAP. Hence, the OPTIONAL marking of mSRadioAccessCapability will, by inheritance, be applicable to all the Information Flows that include GPRS MS Class.</li> </ul>	

**\*\*\* First Modification \*\*\***

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## 5 Common CAP Types

### 5.1 Data types

-- The **Definition of Common Data Types** follows

```
CAP-datatypes {ccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-datatypes(52) version3(2)}
-- This module contains the type definitions for the CAP v.3 data types.
```

```
DEFINITIONS IMPLICIT TAGS ::= BEGIN
```

...

<unmodified >

...

```
GPRSMSClass ::= SEQUENCE {
  mSNetworkCapability [0] MSNetworkCapability,
  mSRadioAccessCapability [1] MSRadioAccessCapability_____OPTIONAL
}
```

```
-- GPRS MS class mark describes the terminal capabilities.
-- Refer to 3GPP TS 24.008 [12] for an explanation of these elements.
```

...

<unmodified >

...

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

## CHANGE REQUEST

⌘ **23.078 CR 408** ⌘ rev **2** ⌘ Current version: **3.12.0** ⌘

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

**Title:** ⌘ Correction on the usage of PDP Id for GPRS Control

**Source:** ⌘ Ericsson

**Work item code:** ⌘ CAMEL3

**Date:** ⌘ 17 May 2002

**Category:** ⌘ **F** (essential correction)

**Release:** ⌘ **R99**

Use one of the following categories:

Use one of the following releases:

**F** (correction)

**2** (GSM Phase 2)

**A** (corresponds to a correction in an earlier release)

**R96** (Release 1996)

**B** (addition of feature),

**R97** (Release 1997)

**C** (functional modification of feature)

**R98** (Release 1998)

**D** (editorial modification)

**R99** (Release 1999)

**REL-4** (Release 4)

**REL-5** (Release 5)

**Reason for change:** ⌘ In CAMEL control of GPRS, a single CAMEL dialogue between the gsmSCF and the gprsSSF may be used to control a GPRS Session and multiple PDP Contexts ("scenario 1"). The SCP has a relationship with the GPRS Session and with the individual PDP Contexts.

The "PDP Id" Information Element may be included in the Information Flows between the gsmSCF and the gprsSSF. The presence or absence of the PDP Id dictates how the Information Flow shall be processed by the gprsSSF or the gsmSCF. Especially for e.g. the Cancel GPRS Information Flow, it is very important to specify the behaviour of the gprsSSF in the case that Cancel GPRS is sent without PDP Id in scenario 1.

In the light of the above, it is deemed very important to have the usage of the PDP ID properly specified. Without proper specification thereof, chances are high that operators will experience interworking problems when CAMEL control of GPRS in scenario 1 will be deployed in GPRS networks.

**Summary of change:** ⌘ Specify in the GPRS Information Flow descriptions how the PDP Id shall be used.

**Consequences if not approved:** ⌘

- It is unclear how to handle a Cancel GPRS Information Flow that does not contain a PDP ID in scenario 1. This can cause severe problems which may result in malfunctioning of the system. It may e.g. result in the SCP losing control of a scenario 1 control relationship, whilst the user may continue transmitting data. This may result in loss of income for operators.
- Designers do not know when to use the PDP Id. The result may be that an entity sends a PDP Id in scenario 2, which may lead to rejection of a CAMEL dialogue.
- Interworking problems between different vendors; deploying "scenario 1" for CAMEL control of GPRS may not be possible.
- Designers will have difficulty in implementing scenario 1 in the SGSN or SCP.



<b>Clauses affected:</b>	⌘	6.6.1.2, 6.6.1.3, 6.6.1.4, 6.6.2.2, 6.6.2.4, 6.6.2.5, 6.6.2.6, 6.6.2.9, 6.6.2.10, 6.6.2.11, 6.6.2.13												
<b>Other specs affected:</b>	⌘	<table border="1"><tr><td><input type="checkbox"/></td><td>Other core specifications</td><td>⌘</td><td></td></tr><tr><td><input type="checkbox"/></td><td>Test specifications</td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>O&amp;M Specifications</td><td></td><td></td></tr></table>	<input type="checkbox"/>	Other core specifications	⌘		<input type="checkbox"/>	Test specifications			<input type="checkbox"/>	O&M Specifications		
<input type="checkbox"/>	Other core specifications	⌘												
<input type="checkbox"/>	Test specifications													
<input type="checkbox"/>	O&M Specifications													
<b>Other comments:</b>	⌘													

**\*\*\* First modification \*\*\***

## 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	<del>This IE identifies the PDP context which the Apply Charging Report GPRS is applicable for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>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.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
Charging Roll Over	C	This IE indicates which parameter(s) of the <i>Charging Result</i> 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.
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

### 6.6.1.3 Entity Released GPRS

#### 6.6.1.3.1 Description

This IF is used by the gprsSSF to inform the gsmSCF at any phase that a GPRS Session has been detached or a PDP Context has been disconnected without reporting any EDP.

#### 6.6.1.3.2 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.
GPRS Cause	M	This IE contains the Cause value indicating the reason for the GPRS Session Detach event or the PDP Context Disconnection event.
PDP ID	C	<del>This IE identifies the PDP context which has been terminated. If not present the relationship corresponds to the Attach/Detach State Model or to one single PDP context within a PDP context relationship.</del> This IE identifies the PDP Context to which the IF applies.  Scenario 1: <u>If no PDP Id is present in the IF, then the Entity Released GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Entity Released GPRS applies to the indicated PDP Context.</u>  Scenario 2: <u>No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

**\*\*\* Next modification \*\*\***

### 6.6.1.4 Event Report GPRS

#### 6.6.1.4.1 Description

This IF is used to notify the gsmSCF of a GPRS event previously requested by the gsmSCF in a Request Report GPRS Event IF.

#### 6.6.1.4.2 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.
GPRS Event type	M	This IE specifies the type of event that is reported.
Misc GPRS Info	M	This IE indicates the DP type (EDP-N or EDP-R).
GPRS Event Specific Information	M	This IE contains information specific to the reported event.
PDP ID	C	<del>This IE identifies the PDP context, which the Report GPRS Event is applicable for. If not present the dialogue corresponds to the Attach/Detach State Model or to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>Scenario 1: If no PDP Id is present in the IF, then the Event Report GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Event Report GPRS applies to the indicated PDP Context.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

If the *GPRS Event type* contains DP Change of Position GPRS Session, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Location Information in SGSN	M	See clause 7.6.1.2.2.
M	Mandatory (The IE shall always be sent).	

If the *GPRS Event type* contains DP Change of Position Context, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Access Point Name	C1	This IE identifies the Access Point Name to which the MS is connected.
Charging ID	C1	This IE contains the Charging ID received from the GGSN for the PDP context.
Location Information in SGSN	M	See clause 7.6.1.2.2.
End User Address	C1	See clause 6.6.1.5.2.
Quality Of Service	C1	This IE is described in the table below.
Time and Time Zone	C1	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
GGSN Address	C1	This IE contains the GGSN address for control plane to which the MS is connected, see 3GPP TS 23.003 [37].
M	Mandatory (The IE shall always be sent).	
C1	Conditional (The IE shall be sent, if available at inter-SGSN routing area update. Shall not be sent at intra-SGSN routing area update).	

If the *GPRS Event type* contains DP Detach or DP PDP context disconnection, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Initiating Entity	M	This IE identifies the entity that has initiated the disconnection or detachment.
Routeing Area Update	C	This IE indicates that the Detach or Disconnection is due to inter-SGSN routeing area update.
M	Mandatory (The IE shall always be sent).	
C	Optional (The IE shall be sent, if applicable).	

If the *GPRS Event type* contains DP PDP context establishment, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Access Point Name	C	This IE identifies the Access Point Name the MS has requested to connect to.
End User Address	C	See clause 6.6.1.5.2.
Quality Of Service	M	This IE is described in the table below.
Location Information in SGSN	M	See clause 7.6.1.2.2.
Time and Time Zone	M	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
PDP Initiation Type	M	This IE indicates whether a PDP context was established as a result of a network-initiated request or as a result of a subscriber request.
Secondary PDP context	C	This IE indicates that the PDP context activation was requested for a secondary PDP context. See 3GPP TS 23.060 [11].
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

If the *GPRS Event type* contains DP PDP context establishment acknowledgement, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Access Point Name	M	This IE identifies the Access Point Name to which the MS is connected.
Charging ID	M	This IE contains the Charging ID received from the GGSN for the PDP context.
End User Address	M	See clause 6.6.1.5.2.
Quality Of Service	M	This IE is described in the table below.
Location Information in SGSN	M	See clause 7.6.1.2.2.
Time and Time Zone	M	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
GGSN Address	M	This IE contains the GGSN address for control plane to which the MS is connected, see 3GPP TS 23.003 [37].
M	Mandatory (The IE shall always be sent).	

**\*\*\* Next modification \*\*\***

## 6.6.2.2 Apply Charging GPRS

### 6.6.2.2.1 Description

This IF is used for interacting from the gsmSCF with the gprsSSF charging mechanisms to control the charging of a GPRS session or a PDP Context.

6.6.2.2.2 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 Characteristics	M	This IE specifies the charging related information to be provided by the gprsSSF and the conditions on which this information has to be provided back to the gsmSCF. It is a choice between granted volume and granted time for the data transfer. Time charging may be applied to GPRS Session or PDP Contexts; volume charging may be applied to PDP Contexts only.
Tariff Switch Interval	O	This information element specifies the time duration until the next tariff switch occurrence.
PDP ID	C	<del>This IE identifies the PDP context, which the Apply GPRS Charging is applicable for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del> <u>This IE identifies the PDP Context to which the IF applies.</u>  Scenario 1: <u>If no PDP Id is present in the IF, then the Apply Charging GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Apply Charging GPRS applies to the indicated PDP Context.</u>  Scenario 2: <u>No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
O	Optional (Service logic dependent).	
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

6.6.2.4 Cancel GPRS

6.6.2.4.1 Description

This IF is used by the gsmSCF to request the gprsSSF to cancel all EDPs and reports.

6.6.2.4.2 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.
PDP ID	C	<p><del>This IE identifies the PDP context which is to be cancelled. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del>                      This IE identifies the PDP Context to which the IF applies.</p> <p><u>Scenario 1: If no PDP Id is present in the IF, then all pending reports of the GPRS Session and all pending reports of the PDP Contexts shall be cancelled and all armed events of the GPRS Session, all armed events of the PDP Contexts and all generically armed events shall be disarmed.</u></p> <p><u>If a PDP Id is present in the IF, then all pending reports of the indicated PDP Context shall be cancelled and all armed events of the indicated PDP Context shall be disarmed.</u></p> <p><u>Scenario 2: No PDP Id is used in the IF.</u></p>
C	Conditional.	

**\*\*\* Next modification \*\*\***

6.6.2.5 Connect GPRS

6.6.2.5.1 Description

This IF is used by the gsmSCF to request the gprsSSF to modify the APN used when establishing a PDP Context. This IF shall not be used for a secondary PDP context or for a network initiated PDP context.

6.6.2.5.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Access Point Name	M	This IE contains the Access Point Name (APN) to be used when establishing the PDP Context. The gsmSCF should provide an APN which is allowed by the served subscriber's subscription. The APN provided by the gsmSCF is used for selecting the primary PDP context as specified in 3GPP TS 23.060 [11]. The gsmSCF provided APN may consist of Network Identity (NI) only, or Network Identity and Operator Identity (OI). The APN provided by the gsmSCF replaces entirely the APN requested by the MS. If the gsmSCF does not provide OI in APN then the SGSN selects the OI independent of MS.
PDP Id	C	<del>This IE identifies the PDP Context where the new Access Point Name shall be used. If not present the dialogue corresponds to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>Scenario 1: There shall always be a PDP Id present in this IF. The PDP Id indicates the PDP Context to which the Connect GPRS applies.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

**\*\*\* Next modification \*\*\***

### 6.6.2.6 Continue GPRS

#### 6.6.2.6.1 Description

This information flow requests the gprsSSF to proceed with processing at the DP at which it previously suspended processing to await gsmSCF instructions. The gprsSSF completes DP processing, and continues processing (i.e. proceeds to the next point in the Attach/Detach State Model or PDP Context State Model) without substituting new data from the gsmSCF.

#### 6.6.2.6.2 Information Elements

The following information element is required:

Information element name	Required	Description
PDP ID	C	<del>This IE identifies the PDP context which processing shall continue for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>Scenario 1: If no PDP Id is present in the IF, then the Continue GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Continue GPRS applies to the indicated PDP Context.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***



## 6.6.2.9 Furnish Charging Information GPRS

### 6.6.2.9.1 Description

This IF is used to request the gprsSSF to include information in the CAMEL specific logical call record.

The logical call record is created when FCI-GPRS is received and a logical call record for that state model does not exist. For modelling purposes the logical call record is buffered in the gprsSSF. The gprsSSF completes logical call records as defined in the SDLs. Once the logical call record is completed, then its free format data is moved to the corresponding CDR and the logical call record is deleted.

In the SGSN there is a separate Logical call record for the attach/detach state model and for each PDP context.

The CSE can send multiple concatenated FCIs per Logical Call Record for completion. The total maximum of free format data is 160 octets per Logical Call Record. The 160 octets may be sent in one or more FCI operations. If there is non-completed free format data and new FCI operation(s) is/are received to overwrite the non-completed data, then the non-completed data is discarded and the gsmSCF can send another 160 octets per CDR.

### 6.6.2.9.2 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.
FCI GPRS Billing Charging Characteristics	M	This IE is described in the next table.
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

FCI GPRS Billing Charging Characteristics contains the following information:

Information element name	Required	Description
FCIBCCCAMEL Sequence 1	M	This IE is described in the next table.
M	Mandatory (The IE shall always be sent).	

FCIBCCCAMEL Sequence 1 contains the following information:

Information element name	Required	Description
Free Format Data	M	This IE is a free format data to be inserted in the CAMEL logical call record.
Append Free Format Data	O	<p>This IE indicates that the gprsSSF shall append the free format data to the Logical call record. In the SGSN there is a separate Logical call record for the attach/detach state model and for each PDP context.</p> <ul style="list-style-type: none"> <li>- If this IE is present indicating "Append", the gprsSSF shall append the free format data received in this IF to the free format data already present in the Logical call record for that GPRS session or PDP Context.</li> <li>- If this IE is absent or in value "Overwrite", then the gprsSSF shall overwrite all free format data already present in the Logical call record for that GPRS session or PDP Context, by the free format data received in this IF.</li> <li>- If no Logical call record exists yet for that GPRS session or PDP Context, then the gprsSSF shall ignore this IE.</li> </ul>
PDP Id	C	<p><del>This IE identifies the PDP context's Logical call record to which the free format data shall be appended or overwritten. If not present, the free format data belong to a Logical call record for a GPRS session or a single PDP context for the dialogue.</del></p> <p>This IE identifies the PDP Context to which the IF applies.</p> <p><u>Scenario 1: If no PDP Id is present in the IF, then the Furnish Charging Information GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Furnish Charging Information GPRS applies to the indicated PDP Context.</u></p> <p>Scenario 2: No PDP Id is used in the IF.</p>
M	Mandatory (The IE shall always be sent).	
O	Optimal (Service logic dependent).	
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

### 6.6.2.10 Release GPRS

#### 6.6.2.10.1 Description

This IF is used by the gsmSCF to tear down an existing GPRS session or PDP Context at any phase.

6.6.2.10.2 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.
GPRS Cause	M	This IE contains the Cause value indicating the reason for releasing the GPRS session or PDP context.
PDP ID	C	<p><del>This IE identifies the PDP context which shall be released. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del></p> <p>This IE identifies the PDP Context to which the IF applies.</p> <p><u>Scenario 1: If no PDP Id is present in the IF, then the Release GPRS applies to the GPRS Session. In that case, the GPRS Session and all PDP Contexts shall be released.</u></p> <p><u>If a PDP Id is present in the IF, then the Release GPRS applies to the indicated PDP Context. In that case, the indicated PDP Context shall be released.</u></p> <p>Scenario 2: No PDP Id is used in the IF.</p>
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

6.6.2.11 Request Report GPRS Event

6.6.2.11.1 Description

This IF is used to request the gprsSSF to monitor for an event and send a notification back to the gsmSCF when the event is detected (see Event Report GPRS IF).

## 6.6.2.11.2 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.
GPRS Event	M	This IE specifies the event or events of which a report is requested.
PDP ID	C	This IE identifies the PDP context, which the Request Report GPRS Event is applicable for. If not present the dialogue corresponds: <ul style="list-style-type: none"> <li>— to the GPRS session; or</li> <li>— to a generically armed EDP in a Session dialogue; or</li> <li>— to one single PDP context in a PDP Context dialogue.</li> </ul> This IE identifies the PDP Context to which the IF applies. <p>Scenario 1: If this IF is used to arm an event related to the GPRS Session, then this IF shall not include a PDP Id.            If this IF is used to arm an event related to a specific PDP Context, then this IF shall include the PDP Id for that PDP Context.            If this IF is used to generically arm a PDP Context related event, then this IF shall not include a PDP Id.</p> <p>Scenario 2: No PDP Id is used in the IF.</p>
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

Data Event contains the following information:

Information element name	Required	Description
GPRS Event type	M	This IE specifies the type of event of which a report is requested.
Monitor Mode	M	This IE indicates how the event shall be reported.
M	Mandatory (The IE shall always be sent).	

**\*\*\* Next modification \*\*\***

## 6.6.2.13 Send Charging Information GPRS

## 6.6.2.13.1 Description

This IF is used to send e-parameters from the gsmSCF to the gprsSSF. If charge advice information is received from the gsmSCF, it shall replace the charge advice information which would be generated by the SGSN and inhibit any further generation of CAI by the SGSN. Further processing of the charge advice information by the SGSN shall be in accordance with the GSM Advice of Charge Supplementary Service.

If the SGSN supports Advice of Charge, then the gsmSCF may use this IF to send e-parameters to the gprsSSF. However, if the subscriber is not provisioned with the GSM Advice of Charge supplementary service, then no e-parameters shall be sent to the MS and no error due to this fact shall be sent back to the gsmSCF.

If the SGSN does not support Advice of Charge, then the gsmSCF shall not send e-parameters to the gprsSSF.

The SGSN's support of Advice of Charge is indicated in the Initial DP GPRS IF.

**NOTE:** If charge advice information is received from the gsmSCF after charge information has been generated by the SGSN and sent to the MS, the behaviour of the service may be unpredictable or incorrect; the service designer should therefore ensure that the first set of charge advice information is sent to the gprsSSF before charge information is sent to the MS.

## 6.6.2.13.2 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.
SCI GPRS Billing ChargingCharacteristics	M	This IE defines the Advice Of Charge related information to be provided to the Mobile Station, if supported by the SGSN.
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

GPRS SCI Billing Charging Characteristics contains the following information:

Information element name	Required	Description
AOC GPRS	M	This IE is sent after an Activate PDP Context Accept or Attach Accept has been received from the SGSN. This IE defines the Advice Of Charge related information to be provided to the Mobile Station, if supported by the SGSN.
PDP Id	C	<del>This IE is included if the AoC is applicable to a PDP context. If not present the AoC is applicable to the GPRS session or for a single PDP context for the dialogue.</del> This IE identifies the PDP Context to which the IF applies.  Scenario 1: If no PDP Id is present in the IF, then the <u>Send Charging Information GPRS applies to the GPRS Session</u> . If a PDP Id is present in the IF, then the <u>Send Charging Information GPRS applies to the indicated PDP Context</u> .  Scenario 2: No PDP Id is used in the IF.
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

AOC GPRS contains the following information:

Information element name	Required	Description
AOC Initial	M	This IE contains CAI elements as defined in 3GPP TS 22.024 [31].
AOC Subsequent	O	See definition in the next table.
M	Mandatory (The IE shall always be sent).	
O	Optional (Service logic dependent).	

AOC Subsequent contains the following information:

Information element name	Required	Description
CAI Elements	M	This IE contains CAI elements as defined in 3GPP TS 22.024 [31].
Tariff Switch Interval	O	This IE indicates the tariff switch time until the next tariff switch applies.
M	Mandatory (The IE shall always be sent).	
O	Optional (Service logic dependent).	

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

## CHANGE REQUEST

⌘ **23.078 CR 410** ⌘ rev ⌘ Current version: **4.4.0** ⌘

**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Correction on the usage of PDP Id for GPRS Control		
<b>Source:</b>	⌘ Ericsson		
<b>Work item code:</b>	⌘ CAMEL3	<b>Date:</b>	⌘ 17 May 2002
<b>Category:</b>	⌘ A	<b>Release:</b>	⌘ Rel-4
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
			REL-4 (Release 4)
			REL-5 (Release 5)

<b>Reason for change:</b>	⌘ In CAMEL control of GPRS, a single CAMEL dialogue between the gsmSCF and the gprsSSF may be used to control a GPRS Session and multiple PDP Contexts ("scenario 1"). The SCP has a relationship with the GPRS Session and with the individual PDP Contexts.
	The "PDP Id" Information Element may be included in the Information Flows between the gsmSCF and the gprsSSF. The presence or absence of the PDP Id dictates how the Information Flow shall be processed by the gprsSSF or the gsmSCF. Especially for e.g. the Cancel GPRS Information Flow, it is very important to specify the behaviour of the gprsSSF in the case that Cancel GPRS is sent without PDP Id in scenario 1.
	In the light of the above, it is deemed very important to have the usage of the PDP ID properly specified. Without proper specification thereof, chances are high that operators will experience interworking problems when CAMEL control of GPRS in scenario 1 will be deployed in GPRS networks.
<b>Summary of change:</b>	⌘ Specify in the GPRS Information Flow descriptions how the PDP Id shall be used.
<b>Consequences if not approved:</b>	⌘ <ul style="list-style-type: none"> <li>• It is unclear how to handle a Cancel GPRS Information Flow that does not contain a PDP ID in scenario 1. This can cause severe problems which may result in malfunctioning of the system. It may e.g. result in the SCP losing control of a scenario 1 control relationship, whilst the user may continue transmitting data. This may result in loss of income for operators.</li> <li>• Designers do not know when to use the PDP Id. The result may be that an entity sends a PDP Id in scenario 2, which may lead to rejection of a CAMEL dialogue.</li> <li>• Interworking problems between different vendors; deploying "scenario 1" for CAMEL control of GPRS may not be possible.</li> <li>• Designers will have difficulty in implementing scenario 1 in the SGSN or SCP.</li> </ul>

<b>Clauses affected:</b>	⌘	6.6.1.2, 6.6.1.3, 6.6.1.4, 6.6.2.2, 6.6.2.4, 6.6.2.5, 6.6.2.6, 6.6.2.9, 6.6.2.10, 6.6.2.11, 6.6.2.13												
<b>Other specs affected:</b>	⌘	<table border="1"><tr><td><input type="checkbox"/></td><td>Other core specifications</td><td>⌘</td><td></td></tr><tr><td><input type="checkbox"/></td><td>Test specifications</td><td></td><td></td></tr><tr><td><input type="checkbox"/></td><td>O&amp;M Specifications</td><td></td><td></td></tr></table>	<input type="checkbox"/>	Other core specifications	⌘		<input type="checkbox"/>	Test specifications			<input type="checkbox"/>	O&M Specifications		
<input type="checkbox"/>	Other core specifications	⌘												
<input type="checkbox"/>	Test specifications													
<input type="checkbox"/>	O&M Specifications													
<b>Other comments:</b>	⌘													

**\*\*\* First modification \*\*\***

## 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	<del>This IE identifies the PDP context which the Apply Charging Report GPRS is applicable for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>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.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
Charging Roll Over	C	This IE indicates which parameter(s) of the <i>Charging Result</i> 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.
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***



### 6.6.1.3 Entity Released GPRS

#### 6.6.1.3.1 Description

This IF is used by the gprsSSF to inform the gsmSCF at any phase that a GPRS Session has been detached or a PDP Context has been disconnected without reporting any EDP.

#### 6.6.1.3.2 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.
GPRS Cause	M	This IE contains the Cause value indicating the reason for the GPRS Session Detach event or the PDP Context Disconnection event.
PDP ID	C	<del>This IE identifies the PDP context which has been terminated. If not present the relationship corresponds to the Attach/Detach State Model or to one single PDP context within a PDP context relationship.</del> This IE identifies the PDP Context to which the IF applies.  Scenario 1: <u>If no PDP Id is present in the IF, then the Entity Released GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Entity Released GPRS applies to the indicated PDP Context.</u>  Scenario 2: <u>No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

**\*\*\* Next modification \*\*\***

### 6.6.1.4 Event Report GPRS

#### 6.6.1.4.1 Description

This IF is used to notify the gsmSCF of a GPRS event previously requested by the gsmSCF in a Request Report GPRS Event IF.

#### 6.6.1.4.2 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.
GPRS Event type	M	This IE specifies the type of event that is reported.
Misc GPRS Info	M	This IE indicates the DP type (EDP-N or EDP-R).
GPRS Event Specific Information	M	This IE contains information specific to the reported event.
PDP ID	C	<del>This IE identifies the PDP context, which the Report GPRS Event is applicable for. If not present the dialogue corresponds to the Attach/Detach State Model or to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>Scenario 1: If no PDP Id is present in the IF, then the Event Report GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Event Report GPRS applies to the indicated PDP Context.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

If the *GPRS Event type* contains DP Change of Position GPRS Session, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Location Information in SGSN	M	See clause 7.6.1.2.2.
M	Mandatory (The IE shall always be sent).	

If the *GPRS Event type* contains DP Change of Position Context, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Access Point Name	C1	This IE identifies the Access Point Name to which the MS is connected.
Charging ID	C1	This IE contains the Charging ID received from the GGSN for the PDP context.
Location Information in SGSN	M	See clause 7.6.1.2.2.
End User Address	C1	See clause 6.6.1.5.2.
Quality Of Service	C1	This IE is described in the table below.
Time and Time Zone	C1	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
GGSN Address	C1	This IE contains the GGSN address for control plane to which the MS is connected, see 3GPP TS 23.003 [37].
M	Mandatory (The IE shall always be sent).	
C1	Conditional (The IE shall be sent, if available at inter-SGSN routing area update. Shall not be sent at intra-SGSN routing area update).	

If the *GPRS Event type* contains DP Detach or DP PDP context disconnection, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Initiating Entity	M	This IE identifies the entity that has initiated the disconnection or detachment.
Routeing Area Update	C	This IE indicates that the Detach or Disconnection is due to inter-SGSN routeing area update.
M	Mandatory (The IE shall always be sent).	
C	Optional (The IE shall be sent, if applicable).	

If the *GPRS Event type* contains DP PDP context establishment, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Access Point Name	C	This IE identifies the Access Point Name the MS has requested to connect to.
End User Address	C	See clause 6.6.1.5.2.
Quality Of Service	M	This IE is described in the table below.
Location Information in SGSN	M	See clause 7.6.1.2.2.
Time and Time Zone	M	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
PDP Initiation Type	M	This IE indicates whether a PDP context was established as a result of a network-initiated request or as a result of a subscriber request.
Secondary PDP context	C	This IE indicates that the PDP context activation was requested for a secondary PDP context. See 3GPP TS 23.060 [11].
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

If the *GPRS Event type* contains DP PDP context establishment acknowledgement, then the GPRS Event Specific Information IE contains the following information elements:

Information element name	Required	Description
Access Point Name	M	This IE identifies the Access Point Name to which the MS is connected.
Charging ID	M	This IE contains the Charging ID received from the GGSN for the PDP context.
End User Address	M	See clause 6.6.1.5.2.
Quality Of Service	M	This IE is described in the table below.
Location Information in SGSN	M	See clause 7.6.1.2.2.
Time and Time Zone	M	This IE contains the time that the gprsSSF met the detection point, and the time zone the gprsSSF resides in.
GGSN Address	M	This IE contains the GGSN address for control plane to which the MS is connected, see 3GPP TS 23.003 [37].
M	Mandatory (The IE shall always be sent).	

**\*\*\* Next modification \*\*\***

## 6.6.2.2 Apply Charging GPRS

### 6.6.2.2.1 Description

This IF is used for interacting from the gsmSCF with the gprsSSF charging mechanisms to control the charging of a GPRS session or a PDP Context.

6.6.2.2.2 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 Characteristics	M	This IE specifies the charging related information to be provided by the gprsSSF and the conditions on which this information has to be provided back to the gsmSCF. It is a choice between granted volume and granted time for the data transfer. Time charging may be applied to GPRS Session or PDP Contexts; volume charging may be applied to PDP Contexts only.
Tariff Switch Interval	O	This information element specifies the time duration until the next tariff switch occurrence.
PDP ID	C	<del>This IE identifies the PDP context, which the Apply GPRS Charging is applicable for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del> <u>This IE identifies the PDP Context to which the IF applies.</u>  Scenario 1: <u>If no PDP Id is present in the IF, then the Apply Charging GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Apply Charging GPRS applies to the indicated PDP Context.</u>  Scenario 2: <u>No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
O	Optional (Service logic dependent).	
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

6.6.2.4 Cancel GPRS

6.6.2.4.1 Description

This IF is used by the gsmSCF to request the gprsSSF to cancel all EDPs and reports.

6.6.2.4.2 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.
PDP ID	C	<p><del>This IE identifies the PDP context which is to be cancelled. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del>                      This IE identifies the PDP Context to which the IF applies.</p> <p><u>Scenario 1: If no PDP Id is present in the IF, then all pending reports of the GPRS Session and all pending reports of the PDP Contexts shall be cancelled and all armed events of the GPRS Session, all armed events of the PDP Contexts and all generically armed events shall be disarmed.</u></p> <p><u>If a PDP Id is present in the IF, then all pending reports of the indicated PDP Context shall be cancelled and all armed events of the indicated PDP Context shall be disarmed.</u></p> <p><u>Scenario 2: No PDP Id is used in the IF.</u></p>
C	Conditional.	

**\*\*\* Next modification \*\*\***

6.6.2.5 Connect GPRS

6.6.2.5.1 Description

This IF is used by the gsmSCF to request the gprsSSF to modify the APN used when establishing a PDP Context. This IF shall not be used for a secondary PDP context or for a network initiated PDP context.

6.6.2.5.2 Information Elements

The following information elements are required:

Information element name	Required	Description
Access Point Name	M	This IE contains the Access Point Name (APN) to be used when establishing the PDP Context. The gsmSCF should provide an APN which is allowed by the served subscriber's subscription. The APN provided by the gsmSCF is used for selecting the primary PDP context as specified in 3GPP TS 23.060 [11]. The gsmSCF provided APN may consist of Network Identity (NI) only, or Network Identity and Operator Identity (OI). The APN provided by the gsmSCF replaces entirely the APN requested by the MS. If the gsmSCF does not provide OI in APN then the SGSN selects the OI independent of MS.
PDP Id	C	<del>This IE identifies the PDP Context where the new Access Point Name shall be used. If not present the dialogue corresponds to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>Scenario 1: There shall always be a PDP Id present in this IF. The PDP Id indicates the PDP Context to which the Connect GPRS applies.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

**\*\*\* Next modification \*\*\***

### 6.6.2.6 Continue GPRS

#### 6.6.2.6.1 Description

This information flow requests the gprsSSF to proceed with processing at the DP at which it previously suspended processing to await gsmSCF instructions. The gprsSSF completes DP processing, and continues processing (i.e. proceeds to the next point in the Attach/Detach State Model or PDP Context State Model) without substituting new data from the gsmSCF.

#### 6.6.2.6.2 Information Elements

The following information element is required:

Information element name	Required	Description
PDP ID	C	<del>This IE identifies the PDP context which processing shall continue for. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del> This IE identifies the PDP Context to which the IF applies.  <u>Scenario 1: If no PDP Id is present in the IF, then the Continue GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Continue GPRS applies to the indicated PDP Context.</u>  <u>Scenario 2: No PDP Id is used in the IF.</u>
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

## 6.6.2.9 Furnish Charging Information GPRS

### 6.6.2.9.1 Description

This IF is used to request the gprsSSF to include information in the CAMEL specific logical call record.

The logical call record is created when FCI-GPRS is received and a logical call record for that state model does not exist. For modelling purposes the logical call record is buffered in the gprsSSF. The gprsSSF completes logical call records as defined in the SDLs. Once the logical call record is completed, then its free format data is moved to the corresponding CDR and the logical call record is deleted.

In the SGSN there is a separate Logical call record for the attach/detach state model and for each PDP context.

The CSE can send multiple concatenated FCIs per Logical Call Record for completion. The total maximum of free format data is 160 octets per Logical Call Record. The 160 octets may be sent in one or more FCI operations. If there is non-completed free format data and new FCI operation(s) is/are received to overwrite the non-completed data, then the non-completed data is discarded and the gsmSCF can send another 160 octets per CDR.

### 6.6.2.9.2 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.
FCI GPRS Billing Charging Characteristics	M	This IE is described in the next table.
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

FCI GPRS Billing Charging Characteristics contains the following information:

Information element name	Required	Description
FCIBCCCAMEL Sequence 1	M	This IE is described in the next table.
M	Mandatory (The IE shall always be sent).	

FCIBCCAMEL Sequence 1 contains the following information:

Information element name	Required	Description
Free Format Data	M	This IE is a free format data to be inserted in the CAMEL logical call record.
Append Free Format Data	O	<p>This IE indicates that the gprsSSF shall append the free format data to the Logical call record. In the SGSN there is a separate Logical call record for the attach/detach state model and for each PDP context.</p> <ul style="list-style-type: none"> <li>- If this IE is present indicating "Append", the gprsSSF shall append the free format data received in this IF to the free format data already present in the Logical call record for that GPRS session or PDP Context.</li> <li>- If this IE is absent or in value "Overwrite", then the gprsSSF shall overwrite all free format data already present in the Logical call record for that GPRS session or PDP Context, by the free format data received in this IF.</li> <li>- If no Logical call record exists yet for that GPRS session or PDP Context, then the gprsSSF shall ignore this IE.</li> </ul>
PDP Id	C	<p><del>This IE identifies the PDP context's Logical call record to which the free format data shall be appended or overwritten. If not present, the free format data belong to a Logical call record for a GPRS session or a single PDP context for the dialogue.</del></p> <p>This IE identifies the PDP Context to which the IF applies.</p> <p>Scenario 1: <u>If no PDP Id is present in the IF, then the Furnish Charging Information GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Furnish Charging Information GPRS applies to the indicated PDP Context.</u></p> <p>Scenario 2: No PDP Id is used in the IF.</p>
M	Mandatory (The IE shall always be sent).	
O	Optimal (Service logic dependent).	
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

### 6.6.2.10 Release GPRS

#### 6.6.2.10.1 Description

This IF is used by the gsmSCF to tear down an existing GPRS session or PDP Context at any phase.



6.6.2.10.2 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.
GPRS Cause	M	This IE contains the Cause value indicating the reason for releasing the GPRS session or PDP context.
PDP ID	C	<p><del>This IE identifies the PDP context which shall be released. If not present the dialogue corresponds to the GPRS session or to one single PDP context.</del></p> <p>This IE identifies the PDP Context to which the IF applies.</p> <p><u>Scenario 1: If no PDP Id is present in the IF, then the Release GPRS applies to the GPRS Session. In that case, the GPRS Session and all PDP Contexts shall be released.</u></p> <p><u>If a PDP Id is present in the IF, then the Release GPRS applies to the indicated PDP Context. In that case, the indicated PDP Context shall be released.</u></p> <p>Scenario 2: No PDP Id is used in the IF.</p>
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

**\*\*\* Next modification \*\*\***

6.6.2.11 Request Report GPRS Event

6.6.2.11.1 Description

This IF is used to request the gprsSSF to monitor for an event and send a notification back to the gsmSCF when the event is detected (see Event Report GPRS IF).

## 6.6.2.11.2 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.
GPRS Event	M	This IE specifies the event or events of which a report is requested.
PDP ID	C	This IE identifies the PDP context, which the Request Report GPRS Event is applicable for. If not present the dialogue corresponds: <ul style="list-style-type: none"> <li>— to the GPRS session; or</li> <li>— to a generically armed EDP in a Session dialogue; or</li> <li>— to one single PDP context in a PDP Context dialogue.</li> </ul> This IE identifies the PDP Context to which the IF applies. <p>Scenario 1: If this IF is used to arm an event related to the GPRS Session, then this IF shall not include a PDP Id.  If this IF is used to arm an event related to a specific PDP Context, then this IF shall include the PDP Id for that PDP Context.  If this IF is used to generically arm a PDP Context related event, then this IF shall not include a PDP Id.</p> <p>Scenario 2: No PDP Id is used in the IF.</p>
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

Data Event contains the following information:

Information element name	Required	Description
GPRS Event type	M	This IE specifies the type of event of which a report is requested.
Monitor Mode	M	This IE indicates how the event shall be reported.
M	Mandatory (The IE shall always be sent).	

**\*\*\* Next modification \*\*\***

## 6.6.2.13 Send Charging Information GPRS

## 6.6.2.13.1 Description

This IF is used to send e-parameters from the gsmSCF to the gprsSSF. If charge advice information is received from the gsmSCF, it shall replace the charge advice information which would be generated by the SGSN and inhibit any further generation of CAI by the SGSN. Further processing of the charge advice information by the SGSN shall be in accordance with the GSM Advice of Charge Supplementary Service.

If the SGSN supports Advice of Charge, then the gsmSCF may use this IF to send e-parameters to the gprsSSF. However, if the subscriber is not provisioned with the GSM Advice of Charge supplementary service, then no e-parameters shall be sent to the MS and no error due to this fact shall be sent back to the gsmSCF.

If the SGSN does not support Advice of Charge, then the gsmSCF shall not send e-parameters to the gprsSSF.

The SGSN's support of Advice of Charge is indicated in the Initial DP GPRS IF.

**NOTE:** If charge advice information is received from the gsmSCF after charge information has been generated by the SGSN and sent to the MS, the behaviour of the service may be unpredictable or incorrect; the service designer should therefore ensure that the first set of charge advice information is sent to the gprsSSF before charge information is sent to the MS.

6.6.2.13.2 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.
SCI GPRS Billing ChargingCharacteristics	M	This IE defines the Advice Of Charge related information to be provided to the Mobile Station, if supported by the SGSN.
M	Mandatory (The IE shall always be sent).	
C	Conditional.	

GPRS SCI Billing Charging Characteristics contains the following information:

Information element name	Required	Description
AOC GPRS	M	This IE is sent after an Activate PDP Context Accept or Attach Accept has been received from the SGSN. This IE defines the Advice Of Charge related information to be provided to the Mobile Station, if supported by the SGSN.
PDP Id	C	<del>This IE is included if the AoC is applicable to a PDP context. If not present the AoC is applicable to the GPRS session or for a single PDP context for the dialogue.</del> This IE identifies the PDP Context to which the IF applies.  Scenario 1: If no PDP Id is present in the IF, then the <u>Send Charging Information GPRS applies to the GPRS Session. If a PDP Id is present in the IF, then the Send Charging Information GPRS applies to the indicated PDP Context.</u>  Scenario 2: No PDP Id is used in the IF.
M	Mandatory (The IE shall always be sent).	
C	Conditional (The IE shall be sent, if available).	

AOC GPRS contains the following information:

Information element name	Required	Description
AOC Initial	M	This IE contains CAI elements as defined in 3GPP TS 22.024 [31].
AOC Subsequent	O	See definition in the next table.
M	Mandatory (The IE shall always be sent).	
O	Optional (Service logic dependent).	

AOC Subsequent contains the following information:

Information element name	Required	Description
CAI Elements	M	This IE contains CAI elements as defined in 3GPP TS 22.024 [31].
Tariff Switch Interval	O	This IE indicates the tariff switch time until the next tariff switch applies.
M	Mandatory (The IE shall always be sent).	
O	Optional (Service logic dependent).	

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