

**3GPP TSG-CN Meeting #22**

**NP-030526**

**10th - 12th December. Maui, Hawaii.**

**Source: 3GPP TSG CN2**  
**Title: Collective CR for TS 23.078 on Rel-6 Enhanced Dialed Services**  
**Agenda item: 9.14**  
**Document for: APPROVAL**

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This document contains Collective CR on Enhanced Dialed Services for CAMEL for TS 23.078 (Release 6 WI EDCAMEL). The document was approved by CN2 (N2-030569) and is sent to CN#22 for approval.

After approval of this collective CR, CAMEL stage 2 specification for Release 6 will be created (TS 23.078 v6.0.0.)

CR-Form-v7

## CHANGE REQUEST

⌘ **23.078 CR 553** ⌘ rev **3** ⌘ Current version: **5.5.1** ⌘

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

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

<b>Title:</b>	⌘ 23.078-CR553 Collective CR for Rel-6 Enhanced Dialed Services		
<b>Source:</b>	⌘ CN2 EDS ad hoc		
<b>Work item code:</b>	⌘ EDCAMEL	<b>Date:</b>	⌘ 29/10/2003
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ Rel-6
	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 TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ 3GPP SA meeting #18 has approved the Workitem on "Enhancement of dialled service for CAMEL" and the corresponding 22.078 CR.
<b>Summary of change:</b>	⌘ Introduction of a new "Enhanced CSE capability for Dialed Services" CAMEL feature, functionality and Information Element. The Partial Implementation has been enhanced in this respect as well.
<b>Consequences if not approved:</b>	⌘ Enhanced Dialed Services is not available for the CAMEL Phase 4 feature.

<b>Clauses affected:</b>	⌘ 1, 1.1.2, 3.2, 4.5.2, 4.5.5, 4.5.7.4, 4.6.1.8.2										
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ 23.018-CR126, 29.078-CR332, 29.002-CR687	
Y	N										
X											
	X										
	X										
<b>Other comments:</b>	⌘ This document includes changes approved in following tdocs: <ul style="list-style-type: none"> <li>○ N2-030174 23.078-CR552</li> <li>○ N2-030169 23.078-CR551</li> <li>○ N2-030310 23.078-CR579</li> <li>○ N2-030258 23.078-CR589</li> </ul>										

- N2-030343 23.078-CR580
- N2-030444 23.078-CR590

This collective CR will be sent to CN#22.

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— **First modified section** —

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## 1 Scope

The present document specifies the stage 2 description for the fourth phase (see 3GPP TS 22.078 [6]) of the Customized Applications for Mobile network Enhanced Logic (CAMEL) feature which provides the mechanisms to support services of operators which are not covered by standardized services even when roaming outside the HPLMN.

The CAMEL feature is a network feature and not a supplementary service. It is a tool to help the network operator to provide the subscribers with the operator specific services even when roaming outside the HPLMN.

In the present document, the GSM Service Control Function (gsmSCF) is treated as being part of the HPLMN. The regulatory environment in some countries may require the possibility that the gsmSCF and the HPLMN are controlled by different operators, and the gsmSCF and the HPLMN are therefore distinct entities.

The fourth phase of the CAMEL feature supports, in addition to the third phase of the CAMEL:

- Interactions with Optimal Routing;
- Call Party Handling;
- DTMF Mid call procedure for Mobile Originated and Mobile Terminating calls;
- Inclusion of flexible tone injection;
- Provision of location information of called subscriber;
- Provide location information during ongoing call;
- CAMEL control over MT SMS;
- Notification of GPRS mobility management to CSE;
- Inclusion of ODB data in Any Time Modification;
- Enhancement of Any Time Interrogation and Provide Subscriber Information for PS Domain;
- [Enhanced Dialed Services](#).

CAMEL applicability to IP-based multimedia services is introduced in the fourth phase of the CAMEL. It is specified in 3GPP TS 23.278 [27].

CAMEL is not applicable to Emergency Setup (TS 12), i.e., if an Emergency call is requested, then the gsmSSF shall not be invoked.

The mechanism described in the present document addresses especially the need for information exchange between the VPLMN or IPLMN and the HPLMN for support of operator specific services. Any user procedures for the control of operator specific services are outside the scope of the present document. Subscribers who have subscribed to operator specific services and therefore need the functional support of the CAMEL feature shall be marked in the HPLMN and VPLMN. In case a subscriber is marked to need CAMEL support, the appropriate procedures which provide the necessary information to the VPLMN or the HPLMN are invoked. It is possible for the HPLMN to instruct the VPLMN or IPLMN to interact with a gsmSCF which is controlled by the HPLMN.

The specification of operator specific services is outside the scope of the present document.

— Next modified section —

## 1.1 Support of partial implementation of CAMEL phase 4

A functional entity (VMSC, GMSC or SGSN) may support the complete CAMEL phase 4 functionality or, as a network option, it may support the complete CAMEL phase 3 functionality and a partial implementation of CAMEL phase 4.

If a functional entity supports any part of CAMEL phase 4 then the HLR is informed of the CAMEL phase 4 CSIs supported. An SGSN may also indicate support of the Provide Subscriber Information IF. To indicate support of a specific CSI, a functional entity shall have the ability to trigger on any initial service event possible for that CSI.

If a VMSC or GMSC supports any of the CAMEL phase 4 circuit switched CSIs (O-CSI, D-CSI, T-CSI or VT-CSI) then the gsmSCF is informed of the CAMEL phase 4 circuit switched functionalities offered. The gsmSCF shall not send information flows or parameters that conflict with the functionalities offered by the VMSC or GMSC.

If a CAMEL subscriber attempts to register in a VMSC or SGSN which supports at least one CAMEL phase 4 CSI or the enhancement of Provide Subscriber Information IF then the VMSC or SGSN indicates in the registration request to the HLR the phase of CAMEL which the VMSC or SGSN supports (at least phase 4). In addition, the VMSC or SGSN indicates which CAMEL phase 4 CSIs may be downloaded. An SGSN may also indicate support of the Provide Subscriber Information IF.

If a GMSC supports at least one CAMEL phase 4 CSI then the GMSC indicates in the Send Routing Info to the HLR the phase of CAMEL which the GMSC supports (at least phase 4). In addition, the GMSC indicates which CAMEL phase 4 CSIs may be downloaded.

If a VMSC/gsmSSF or GMSC/gsmSSF initiates contact with the gsmSCF using the Initial DP IF, or acknowledges a gsmSCF initiated contact using the Initiate Call Attempt ack IF, then the VMSC/gsmSSF or GMSC/gsmSSF indicates in the IF the CAMEL phase 4 functionalities offered to the gsmSCF.

If a VLR initiates contact with the gsmSCF using a Mobility Management Event Notification IF then the VLR or SGSN indicates in the IF the functionalities offered to the gsmSCF.

### 1.1.1 CAMEL Phase 4 CSIs

A network entity may indicate to the HLR an offer of support for the following CAMEL phase 4 CSIs:

- CAMEL phase 4 O-CSI;
- CAMEL phase 4 D-CSI;
- CAMEL phase 4 T-CSI;
- CAMEL phase 4 VT-CSI;
- CAMEL phase 4 MT-SMS-CSI;
- CAMEL phase 4 MG-CSI.

An SGSN may also indicate support of the CAMEL phase 4 Provide Subscriber Information IF.

A functional entity (VMSC, GMSC or SGSN) may offer the CSIs in any combination applicable for this entity. A functional entity shall indicate to the HLR all the CSIs it offers. The HLR may ignore the offer of the supported CSIs if they are not applicable for the sending entity, but it shall not reject the operation in this case.

### 1.1.2 CAMEL Phase 4 Functionalities

The CAMEL phase 4 functionalities which may be offered to the gsmSCF are the following:

- Creating additional parties in a call, Creating a new call (Initiate Call Attempt,);
- Placing an individual call party on hold (Split Leg);
- Connecting an individual call party to the group (Move Leg);

- Releasing an individual call party (Disconnect Leg);
- Indication of the release of a call party or call segment (Entity Released);
- Enhancements for subscriber interactions with the gsmSCF (Disconnect Forward Connection With Argument);
- Inclusion of flexible tone injection (Play Tone);
- DTMF Mid call procedure for MO and VT calls (DP O\_Mid\_Call, DP T\_Mid\_Call, Automatic Rearm);
- Provision of charging indicator at answer DP (Charge Indicator at DP O\_Answer, DP T\_Answer);
- Support of Alerting DP (DP O\_Term\_Seized, DP Call\_Accepted);
- Provision of location information of called subscriber in the alerting phase (Location information at Alerting DP);
- Provision of location information during an ongoing call (DP O\_Change\_Of\_Position, DP T\_Change\_Of\_Position, Automatic Rearm);
- Interactions with Optimal Routing (BOR Interogation Requested, Route Not Permitted);
- Warning tone enhancements (Play Burstlist for Audible Indicator); ~~and~~
- Enhancements of Call Forwarding indication (Forwarding Destination Number);
- [Subscribed Enhanced Dialed Services \(see description below\)](#); and
- [Serving Network Enhanced Dialed Services \(see description below\)](#)

For the Subscribed Enhanced Dialed Services and Serving Network Enhanced Dialed Services, the following information flows apply in addition to the information flows allowed at TDP Analysed Information since CAMEL phase 3: Apply Charging, Call Information Request, Cancel (all requests) and Request Report BCSM Event together with their acknowledgements and reportings. In addition, all the other offered CAMEL phase 4 functionalities apply also to the enhanced dialed services.

A functional entity (VMSC or GMSC) may offer the functionalities in any combination applicable for this entity and applicable to the offered CSIs.

A functional entity (VMSC or GMSC) shall indicate to the gsmSCF all the functionalities it offers.

— Next modified section —

## 3 Definitions and abbreviations

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### 3.2 Abbreviations

Abbreviations used in the present document are listed in 3GPP TR 21.905 [**Error! Reference source not found.**].

For the purposes of the present document, the following abbreviations apply:

BCSM	Basic Call State Model
CAMEL	Customized Applications for Mobile network Enhanced Logic
CPH	Call Party Handling
CS	Call Segment
CS	Circuit Switched
CSA	Call Segment Association
CSID	Call Segment (followed by an identification Number e.g. CSID1)
DP	Detection Point
DTN	Deflected To Number
D-CSI	Dialled Services CAMEL Subscription Information
EDP	Event Detection Point
<u>EDS</u>	<u>Enhanced Dialled Services</u>
FTN	Forwarded To Number
GMLC	Gateway MLC
GMSC	Gateway MSC
GPRS	General Packet Radio Service
gprsSSF	GPRS Service Switching Function
GPRS-CSI	GPRS CAMEL Subscription Information
gsmSCF	GSM Service Control Function
gsmSRF	GSM Specialised Resource Function
gsmSSF	GSM Service Switching Function
HLR	Home Location Register
HPLMN	Home PLMN
ICA	Initiate Call Attempt
IE	Information Element
IF	Information Flow
IP	Intelligent Peripheral
IPLMN	Interrogating PLMN
LCS	Location Services
LSA	Localised Service Area
M-CSI	Mobility Management event Notification CAMEL Subscription Information
MF	Mobile Forwarding
MG-CSI	Mobility Management event Notification GPRS CAMEL Subscription Information
MLC	Mobile Location Centre
MO	Mobile Originating
MO-SMS-CSI	Mobile Originated Short Message Service CAMEL Subscription Information
MSC	Mobile service Switching Centre
MT	Mobile Terminating
MT	Mobile Terminating in GMSC
MT-SMS-CSI	Mobile Terminating Short Message Service CAMEL Subscription Information
N-CSI	Network CAMEL Service Information
NA	North American
NNI	Network Node Interface
O-BCSM	Originating Basic Call State Model
O-CSI	Originating CAMEL Subscription Information

ODB	Operator Determined Barring
OR	Optimal Routeing
OSS	Operator Specific Service
PDP	Packet Data Protocol
PIC	Point In Call
PLMN	Public Land Mobile Network
SGSN	Serving GPRS Support Node
SLPI	Service Logic Program Instance
SM	Short Message
SM-CP	Short Message Control Protocol
SMF	Service Management Function
SMLC	Serving MLC
SMRSE	Short Message Relay Service Element
SMS	Short Message Service
SMSC	Short Message Service Centre
SMS-CSI	Short Message Service CAMEL Subscription Information
SS-CSI	Supplementary Service Notification CAMEL Subscription Information
T-BCSM	Terminating Basic Call State Model
T-CSI	Terminating CAMEL Subscription Information (in the GMSC)
TDP	Trigger Detection Point
TPDU	Transfer Protocol Data Unit
TIF-CSI	Translation Information Flag
U-CSI	USSD CAMEL Subscription Information
UG-CSI	USSD General CAMEL Service Information
UNI	User Network Interface
VLR	Visitor Location Register
VPLMN	Visited PLMN
VT	Mobile Terminating in VMSC
VT-CSI	VMSC Terminating CAMEL Subscription Information



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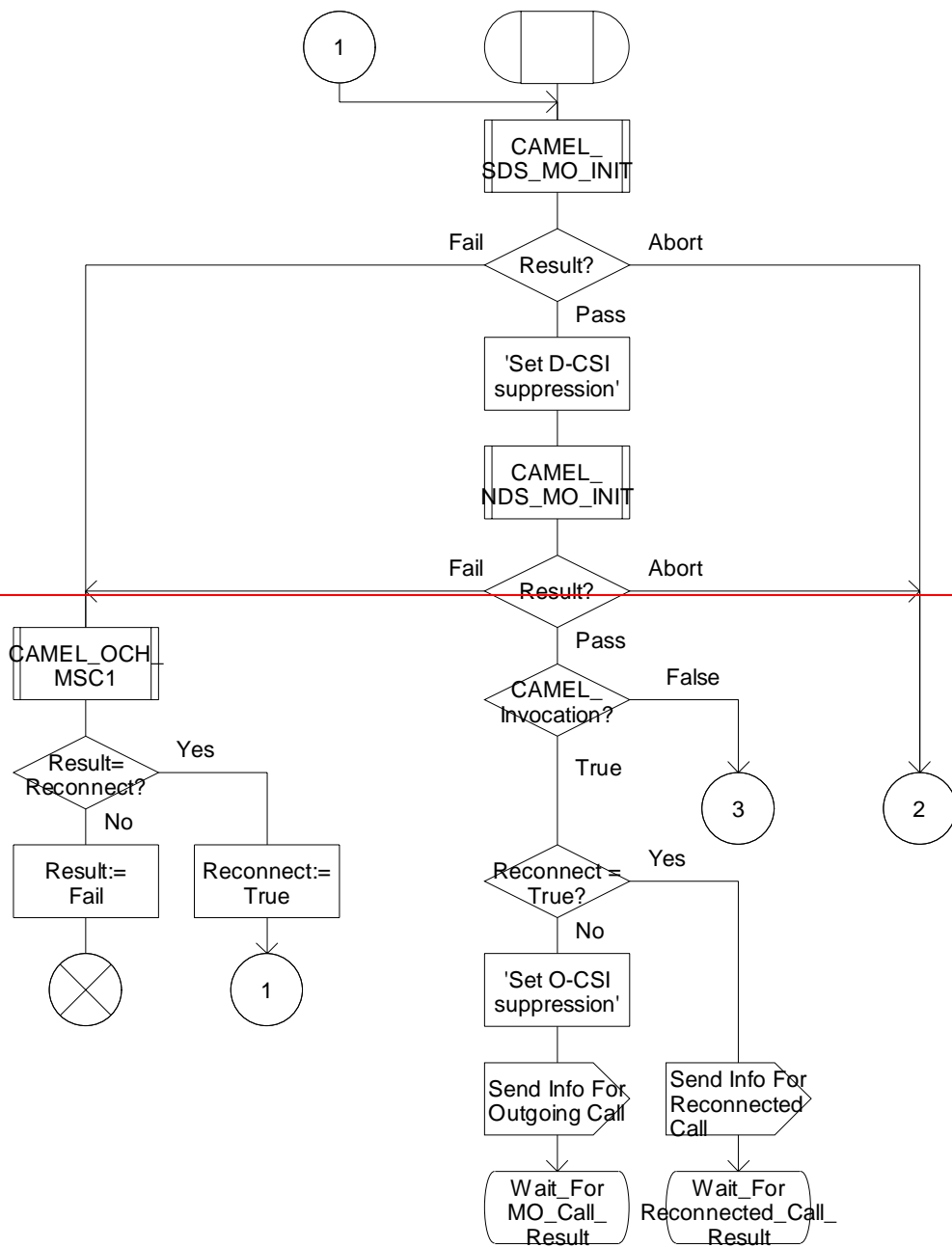
4.5.2.1 Handling of mobile originated calls in the originating MSC

Procedure CAMEL\_MO\_Dialled\_Services

1(3)

/\* Procedure in the MSC to process CAMEL dialled services for mobile originated calls \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the VLR. \*/



Procedure CAMEL\_MO\_Dialled\_Services

1(3)

/\* Procedure in the MSC to process CAMEL dialled services for mobile originated calls \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the VLR. \*/

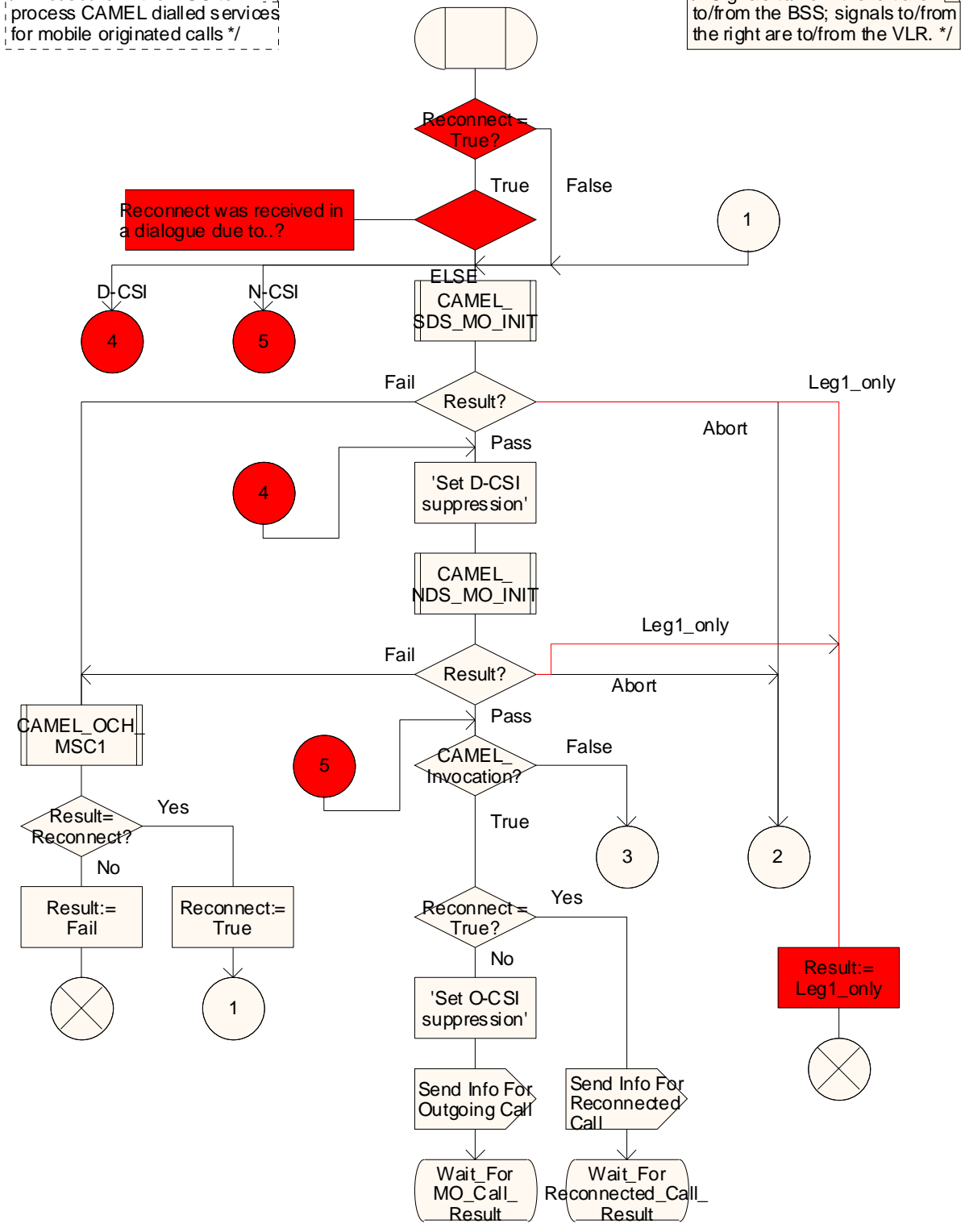


Figure 4.11-1: Procedure CAMEL\_MO\_Dialled\_Services (sheet 1)

### Procedure CAMEL\_MO\_Dialled\_Services

2(3)

/\* Procedure in the MSC to process CAMEL dialled services for mobile originated calls \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the VLR. \*/

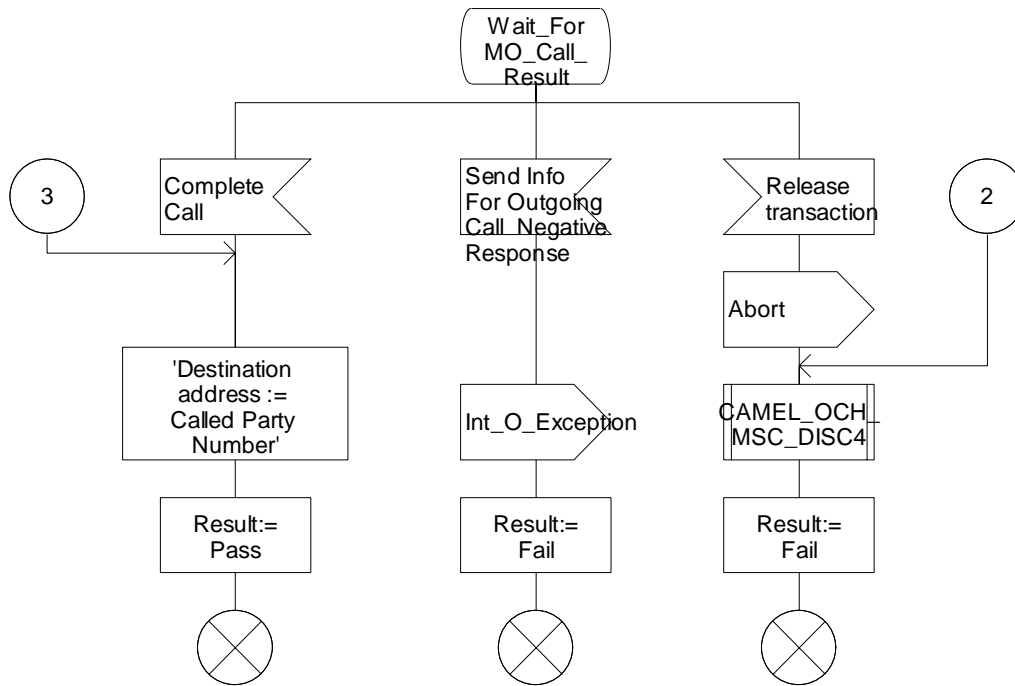


Figure 4.11-2: Procedure CAMEL\_MO\_Dialled\_Services (sheet 2)

### Procedure CAMEL\_MO\_Dialled\_Services

3(3)

/\* Procedure in the MSC to process CAMEL dialled services for mobile originated calls \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the VLR. \*/

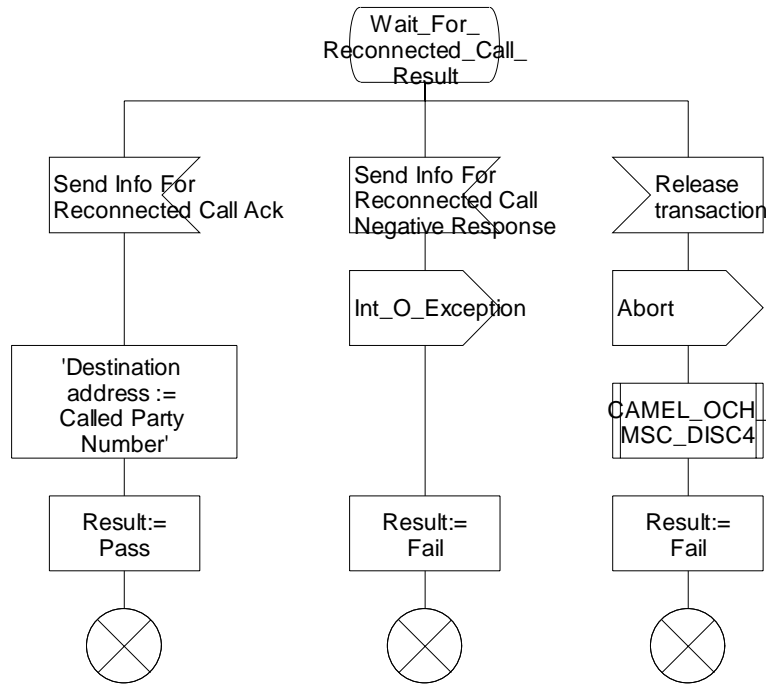


Figure 4.11-3: Procedure CAMEL\_MO\_Dialled\_Services (sheet 3)

Procedure CAMEL\_SDS\_MO\_INIT

1(3)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF. \*/

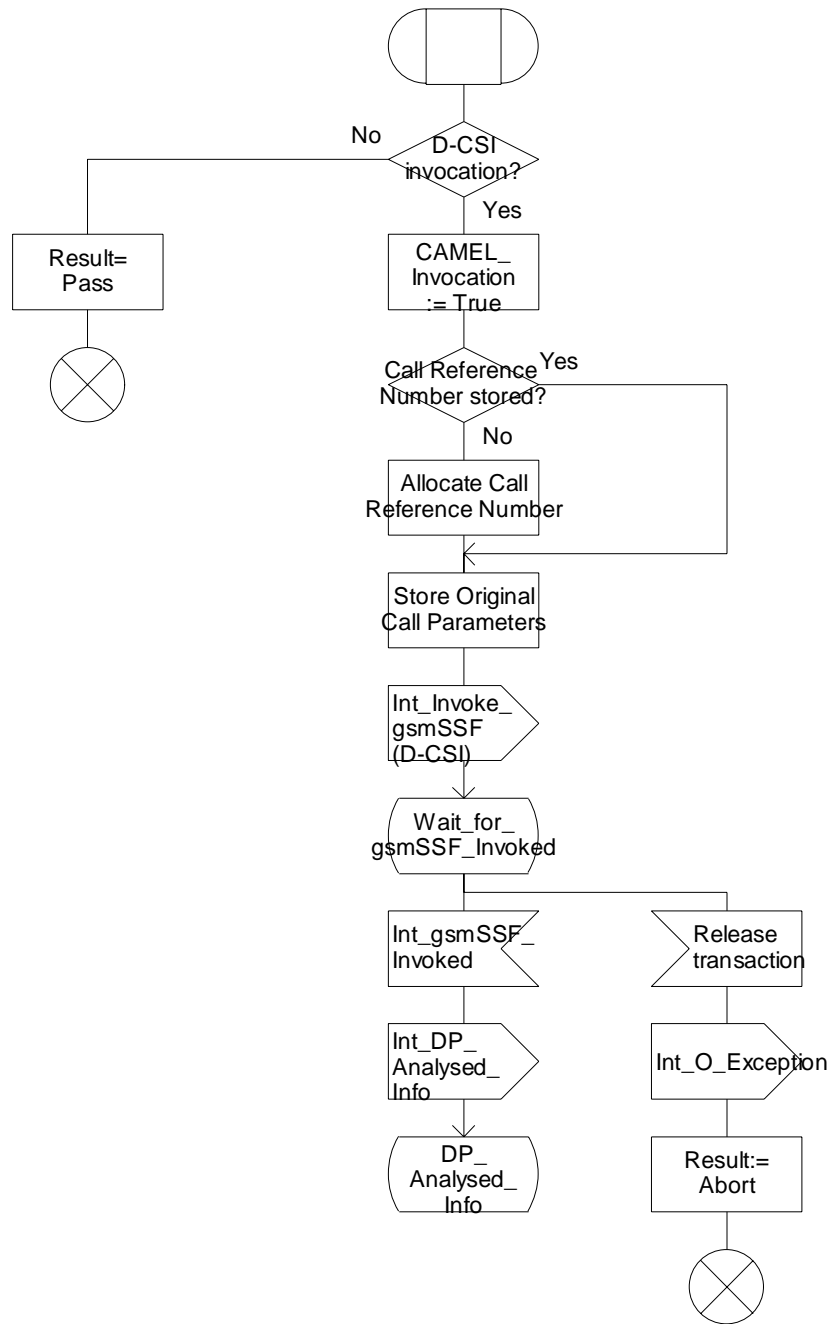


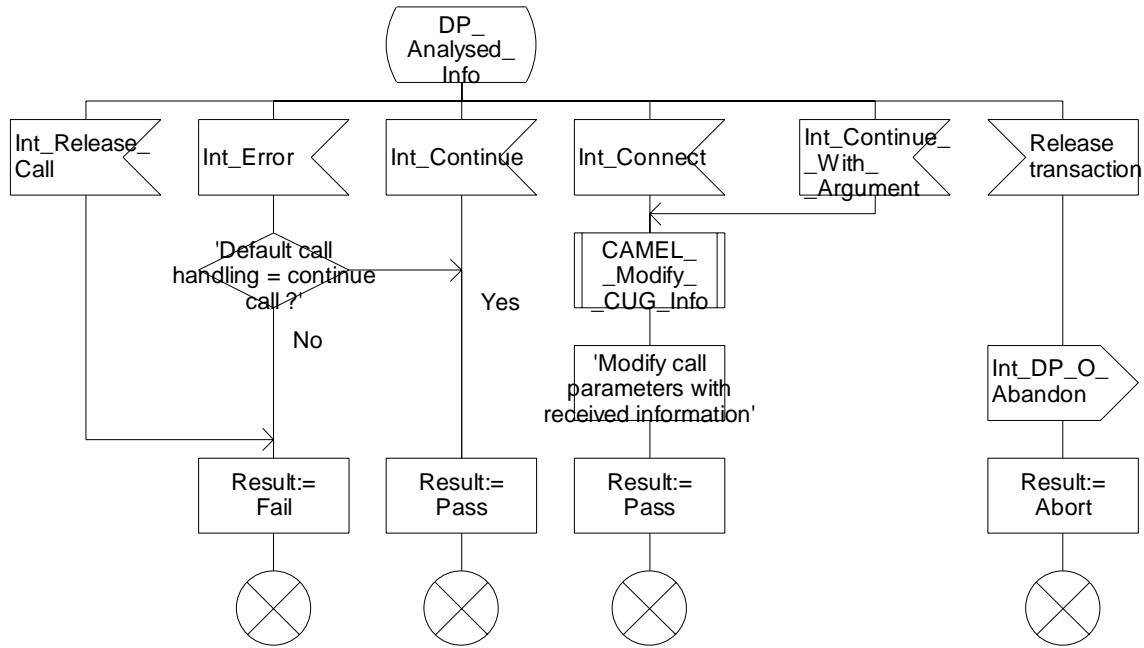
Figure 4.12-1: Procedure CAMEL\_SDS\_MO\_Init (sheet 1)

### Procedure CAMEL\_SDS\_MO\_INIT

2(3)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF. \*/



### Procedure CAMEL\_SDS\_MO\_INIT

2(4)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF. \*/

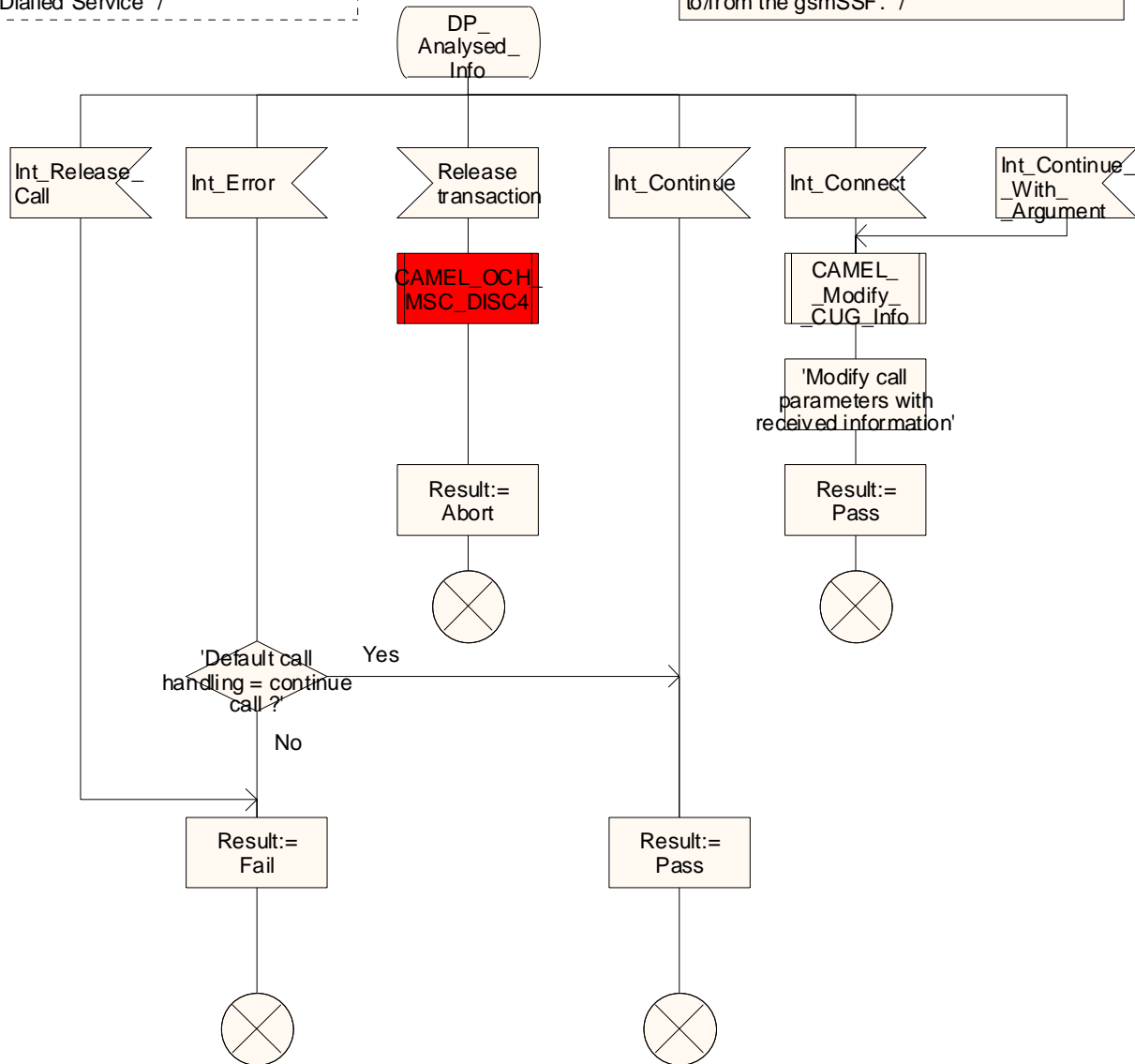


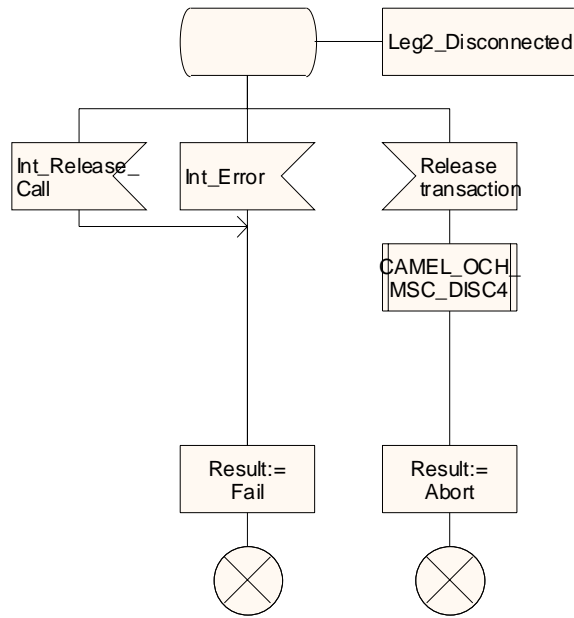
Figure 4.12-2: Procedure CAMEL\_SDS\_MO\_INIT (sheet 2)

Procedure CAMEL\_SDS\_MO\_INIT

3(4)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from the BSS; signals to/from the right are to/from the gsmSSF. \*/



<New sheet>Figure 4.12-3: Procedure CAMEL\_SDS\_MO\_INIT (sheet 3)

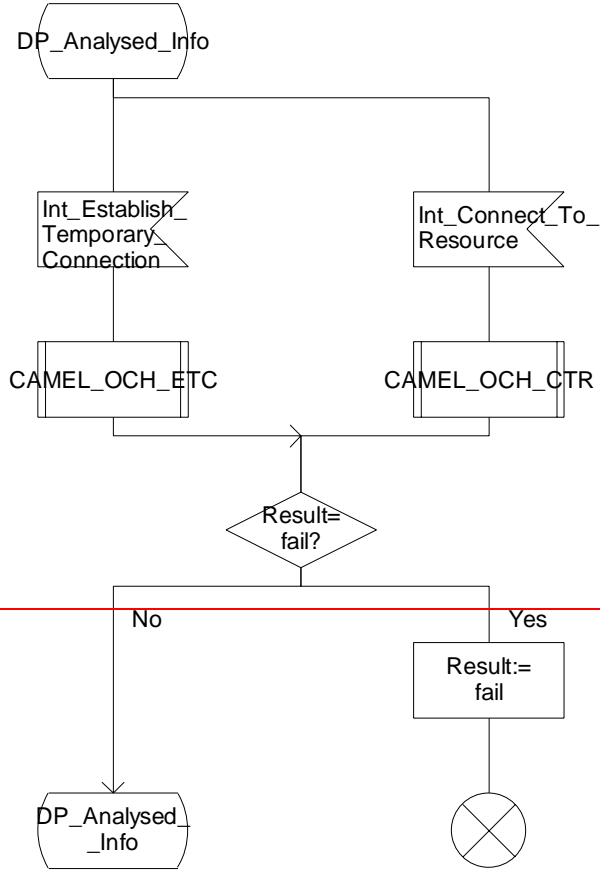


### Procedure CAMEL\_SDS\_MO\_INIT

3(3)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



Procedure CAMEL\_SDS\_MO\_INIT

4(4)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

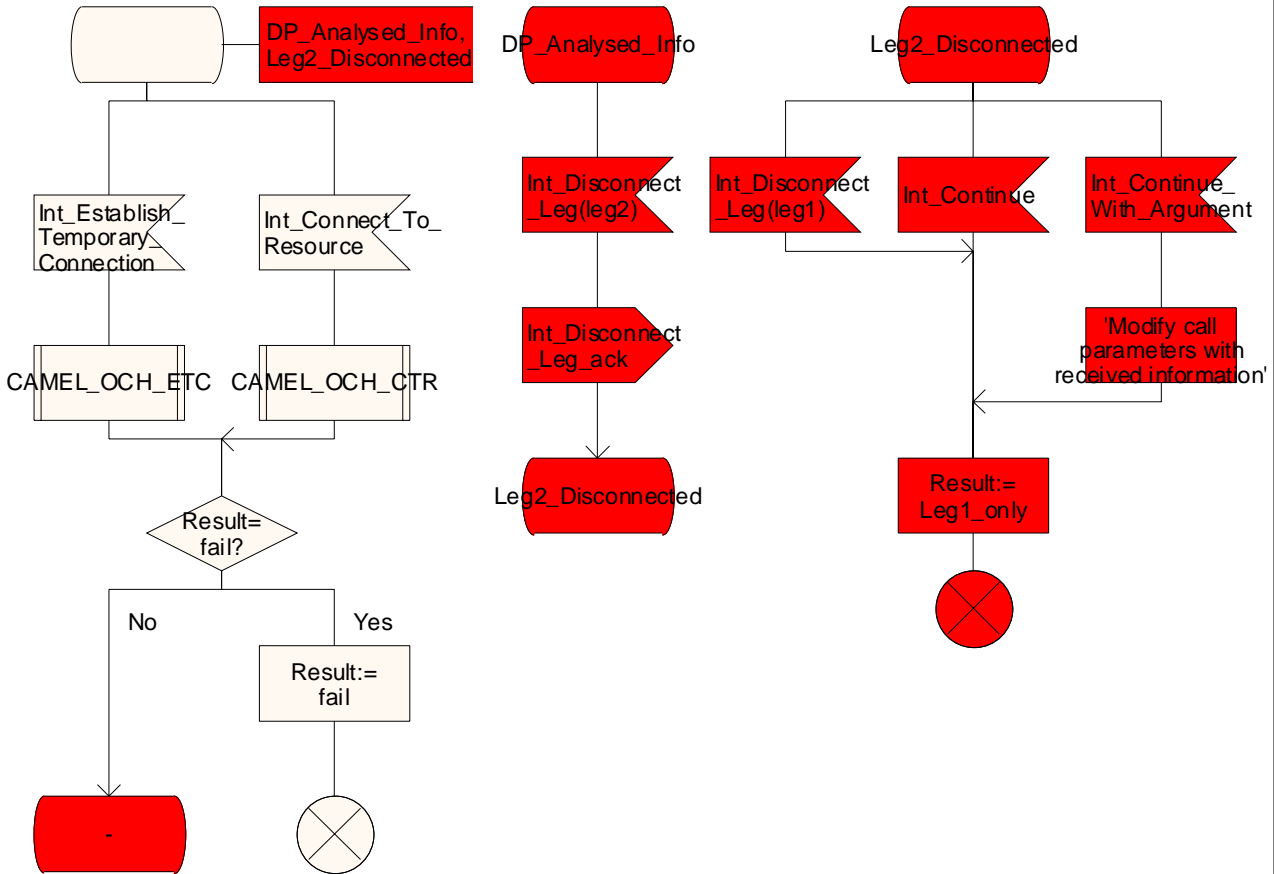


Figure 4.12-34: Procedure CAMEL\_SDS\_MO\_INIT (sheet 34)

### Procedure CAMEL\_NDS\_MO\_INIT

1(3)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls\*/

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

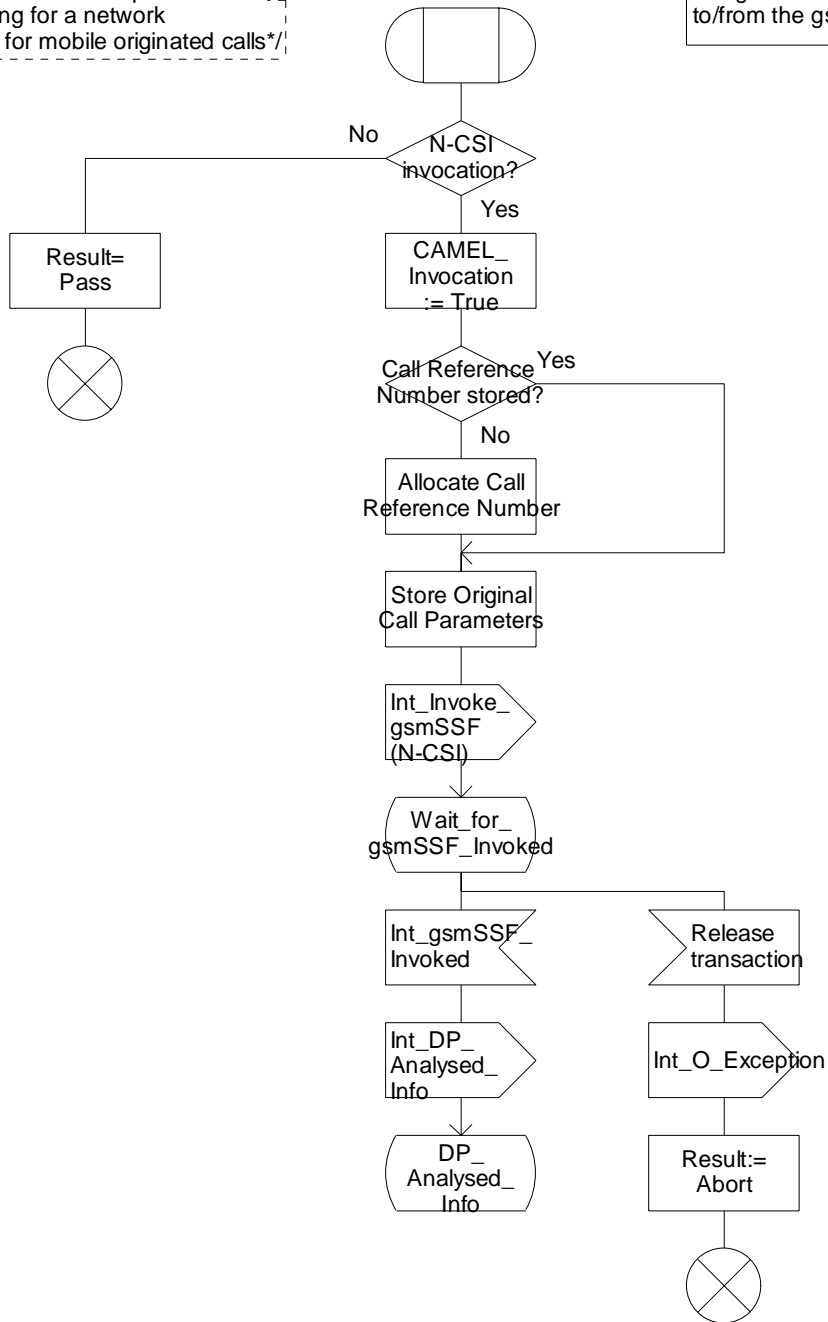


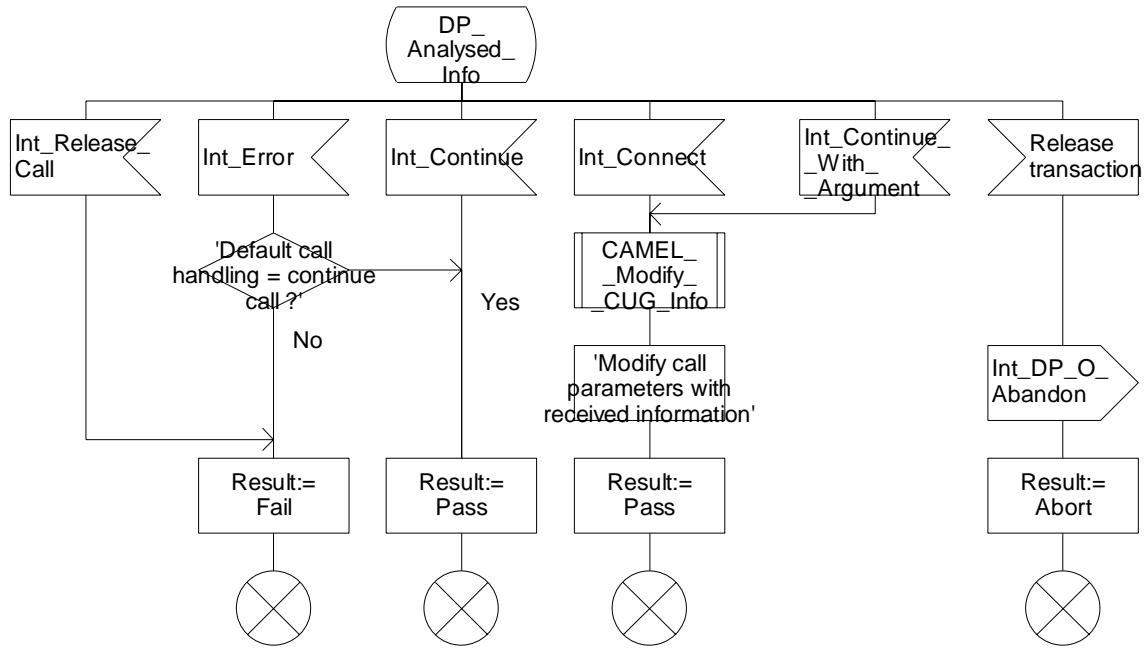
Figure 4.13-1: Procedure CAMEL\_NDS\_MO\_INIT (sheet 1)

### Procedure CAMEL\_NDS\_MO\_INIT

2(3)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls\*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



### Procedure CAMEL\_NDS\_MO\_INIT

2(4)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls\*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

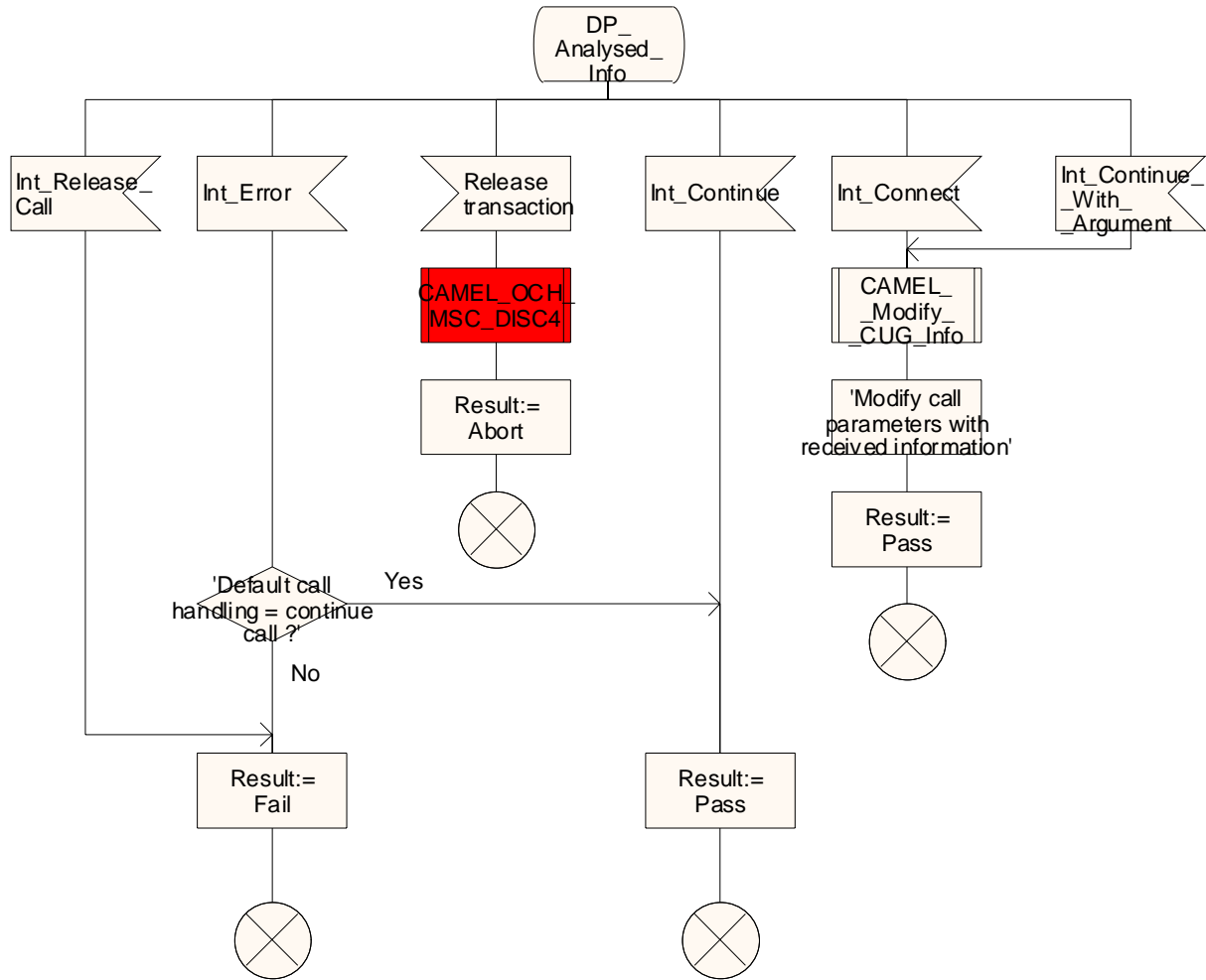


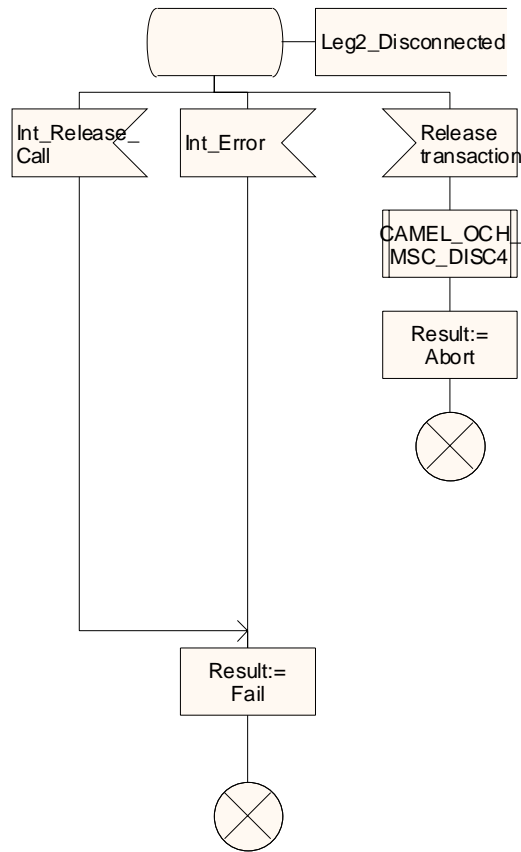
Figure 4.13-2: Procedure CAMEL\_NDS\_MO\_INIT (sheet 2)

Procedure CAMEL\_NDS\_MO\_INIT

3(4)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls\*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



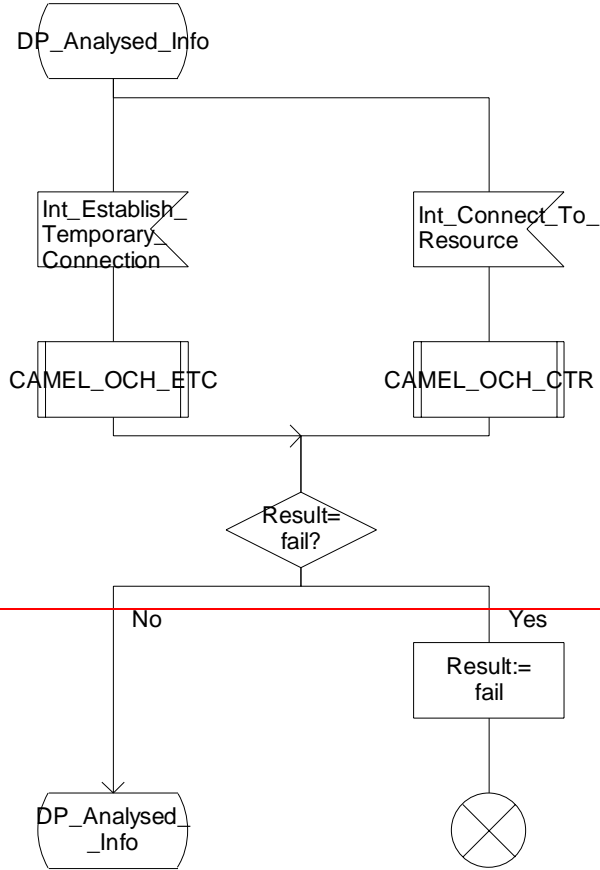
<New sheet>Figure 4.13-3: Procedure CAMEL\_NDS\_MO\_INIT (sheet 3)

### Procedure CAMEL\_NDS\_MO\_INIT

3(3)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls\*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



Procedure CAMEL\_NDS\_MO\_INIT

4(4)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls\*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

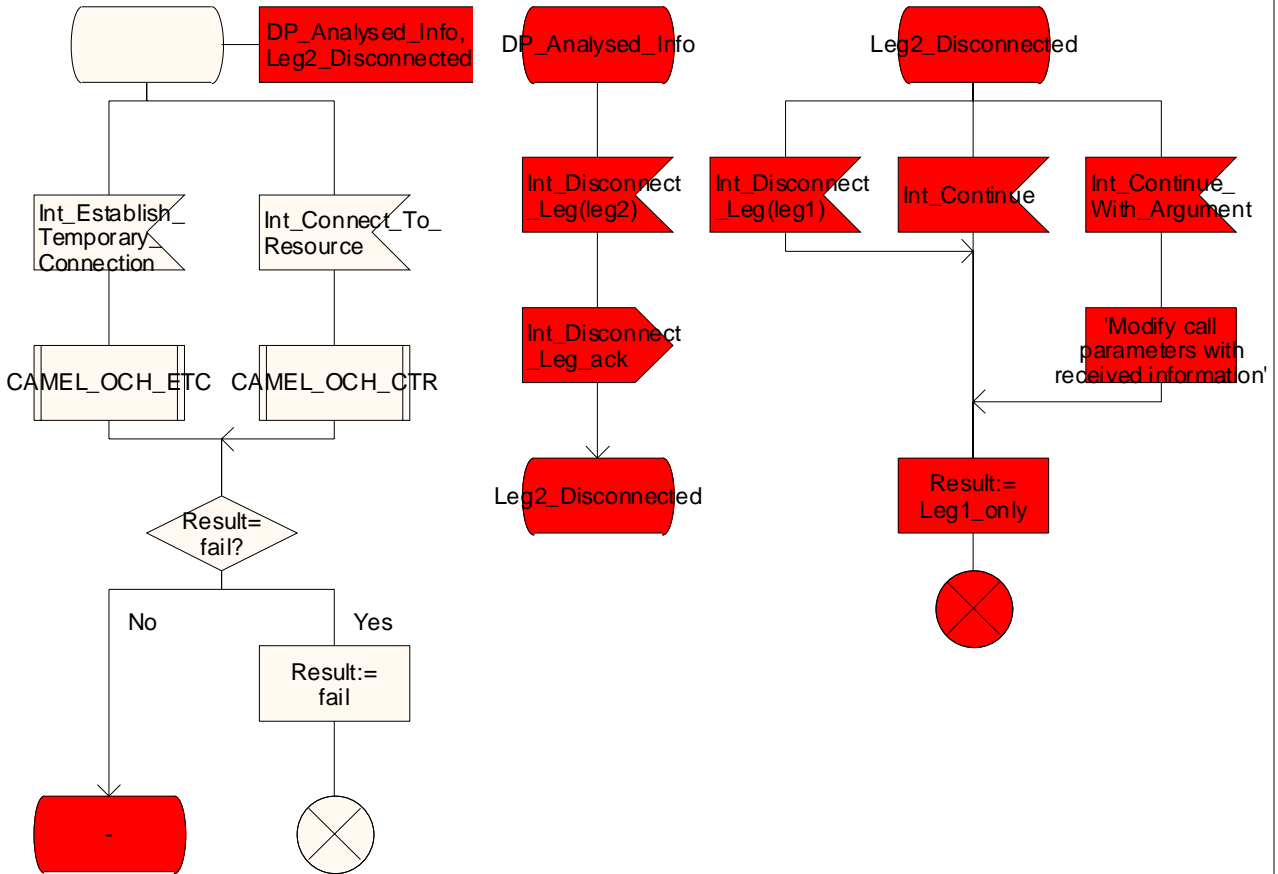


Figure 4.13-34: Procedure CAMEL\_NDS\_MO\_INIT (sheet 34)

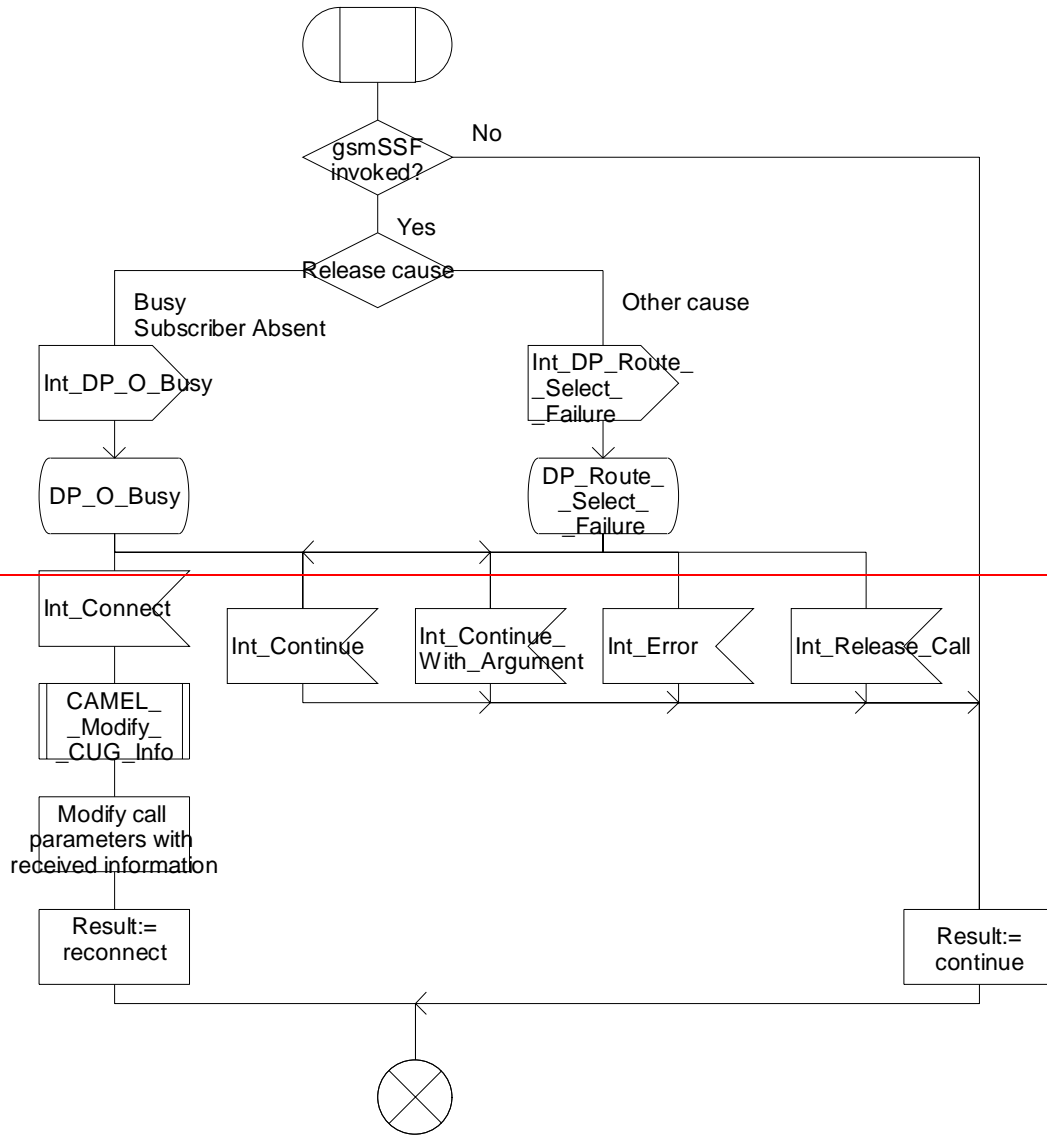


### Procedure CAMEL\_OCH\_MSC1

1(3)

/\* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

Signals to/from the right are to/from the gsmSSF if not otherwise stated.



Procedure CAMEL\_OCH\_MSC1

1(4)

/\* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

Signals to/from the right are to/from the gsmSSF if not otherwise stated.

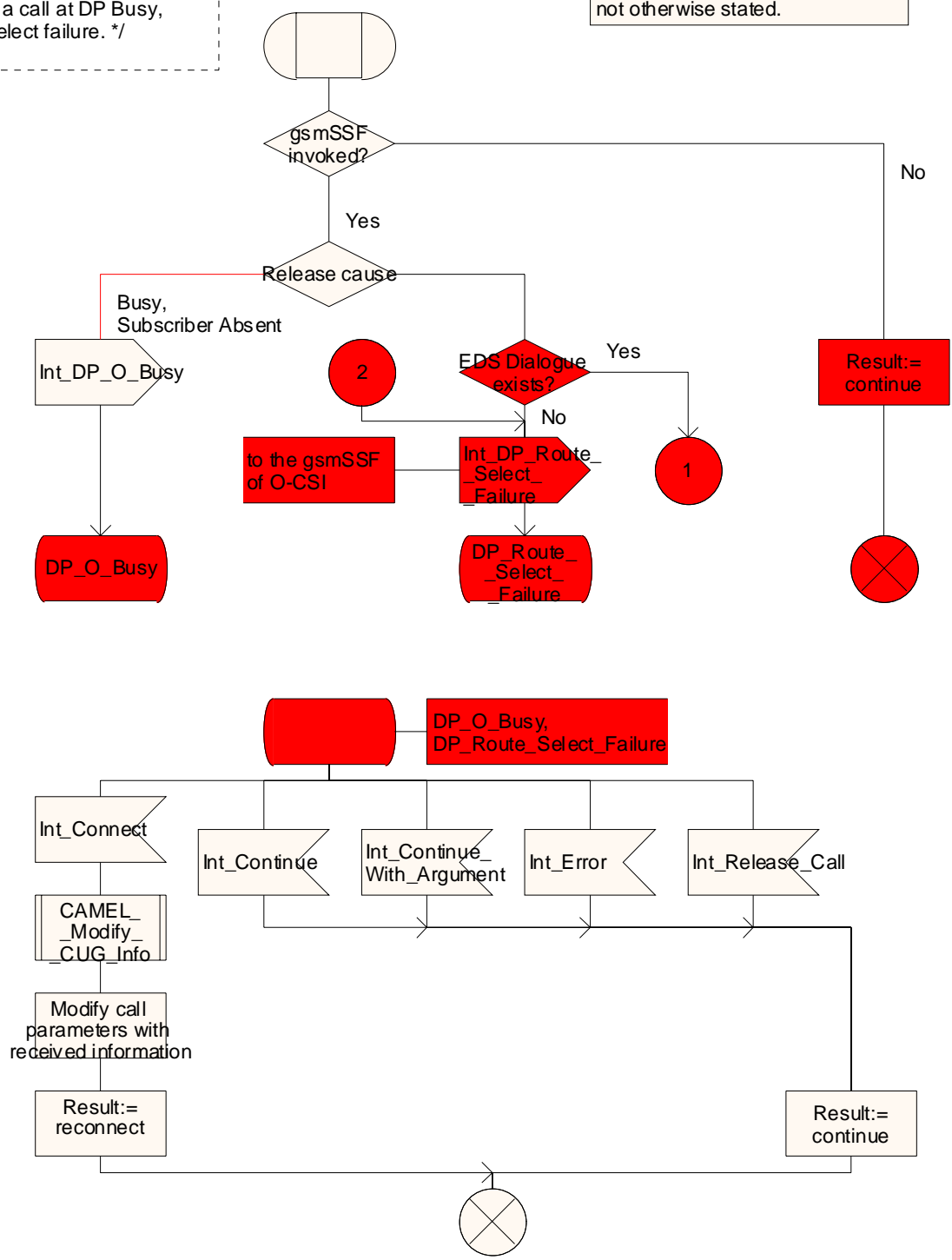


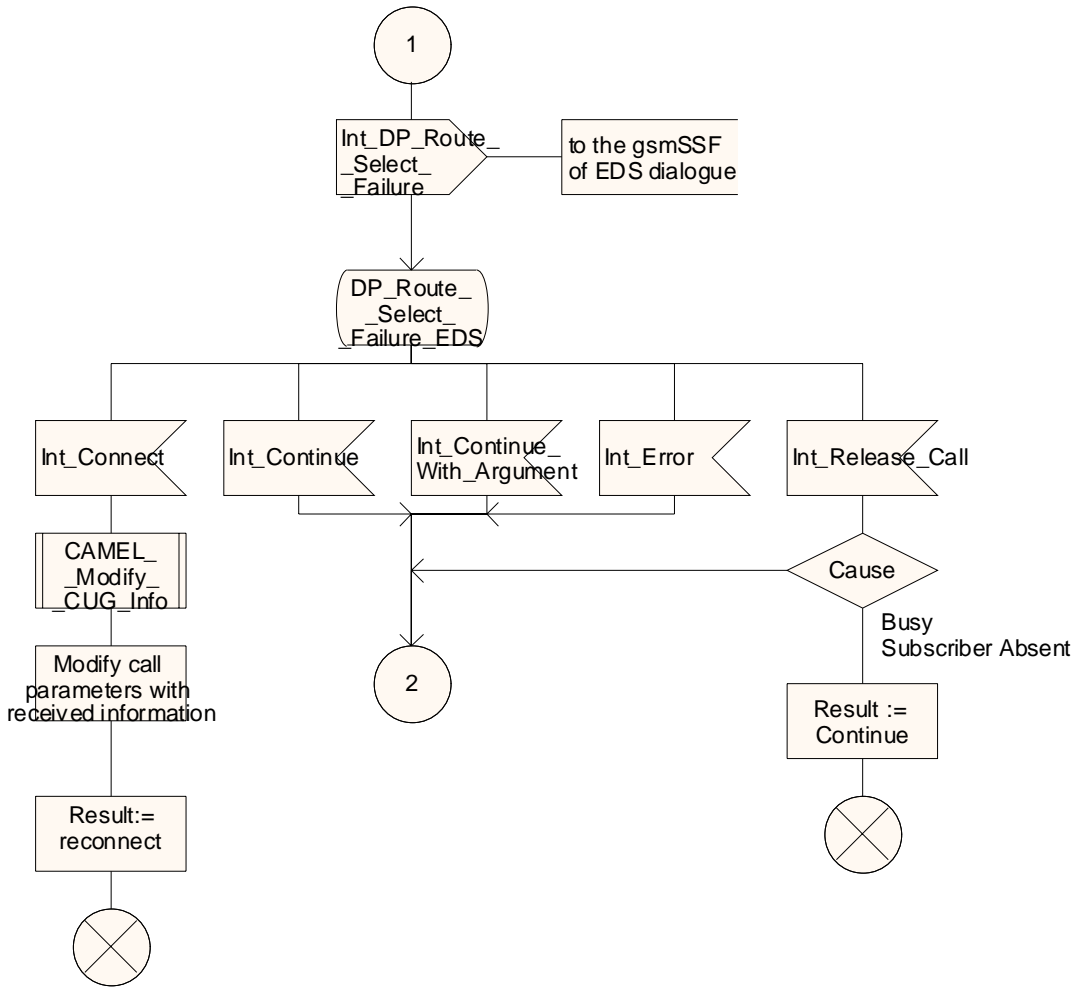
Figure 4.16-1: Procedure CAMEL\_OCH\_MSC1 (sheet 1)

### Procedure CAMEL\_OCH\_MSC1

2(4)

/\* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

Signals to/from the right are to/from the gsmSSF if not otherwise stated.



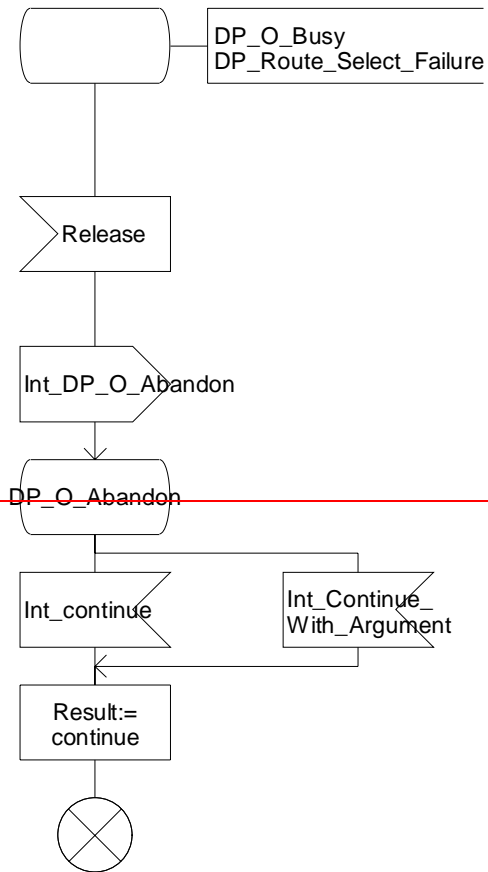
<New sheet> Figure 4.16-2: Procedure CAMEL\_OCH\_MSC1 (sheet 2)

### Procedure CAMEL\_OCH\_MSC1

2(3)

/\* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

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\_MSC1

3(4)

/\* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

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

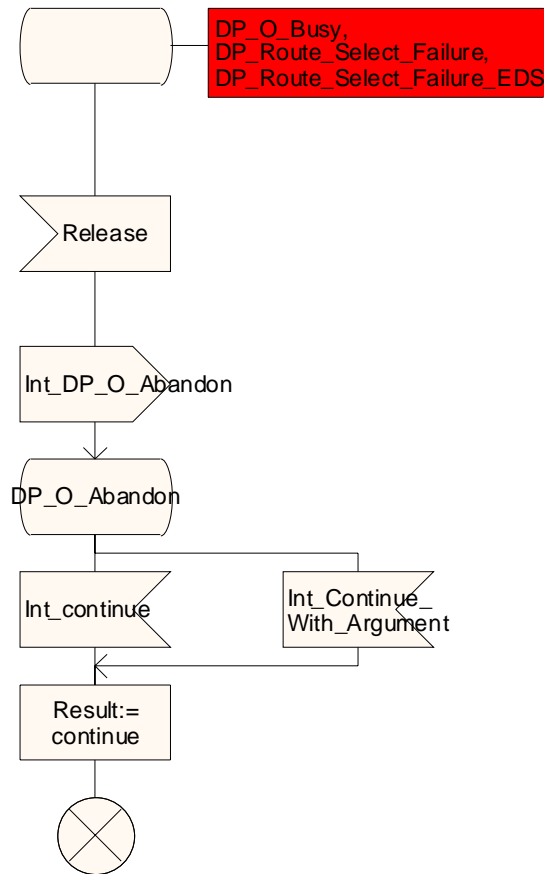


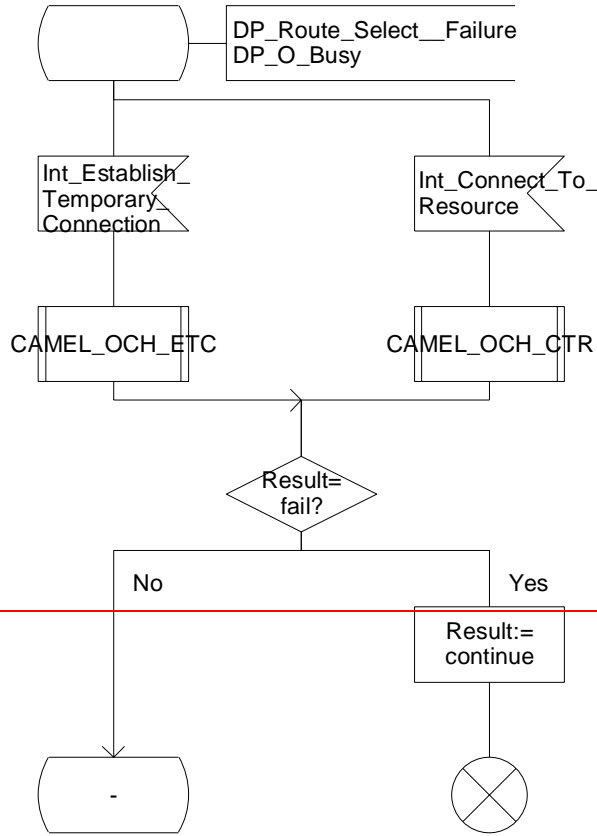
Figure 4.16-23: Procedure CAMEL\_OCH\_MSC1 (sheet 23)

### Procedure CAMEL\_OCH\_MSC1

3(3)

/\* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

Signals to/from the right are to/from the gsmSSF if not otherwise stated.



### Procedure CAMEL\_OCH\_MSC1

4(4)

/\* Procedure in the MSC in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

Signals to/from the right are to/from the gsmSSF if not otherwise stated.

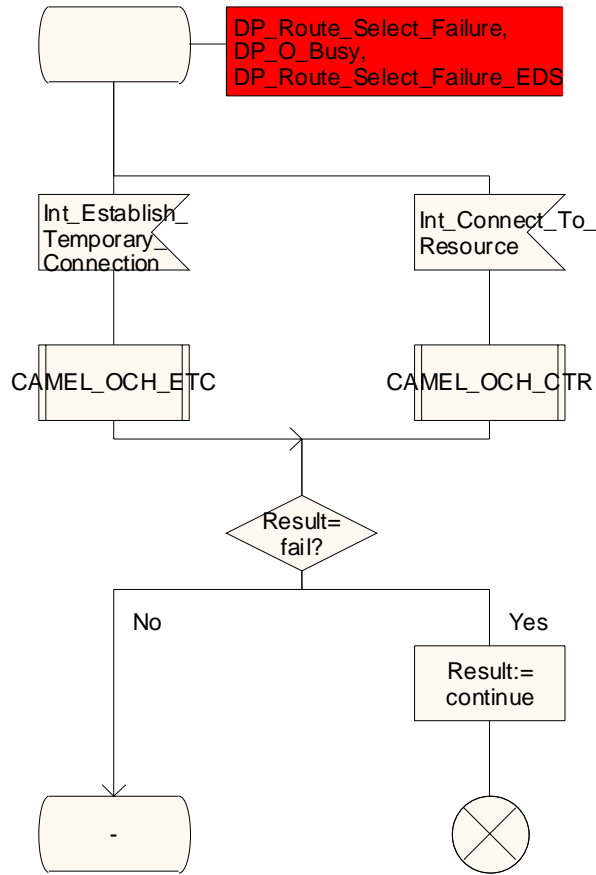


Figure 4.16-34: Procedure CAMEL\_OCH\_MSC1 (sheet 34)

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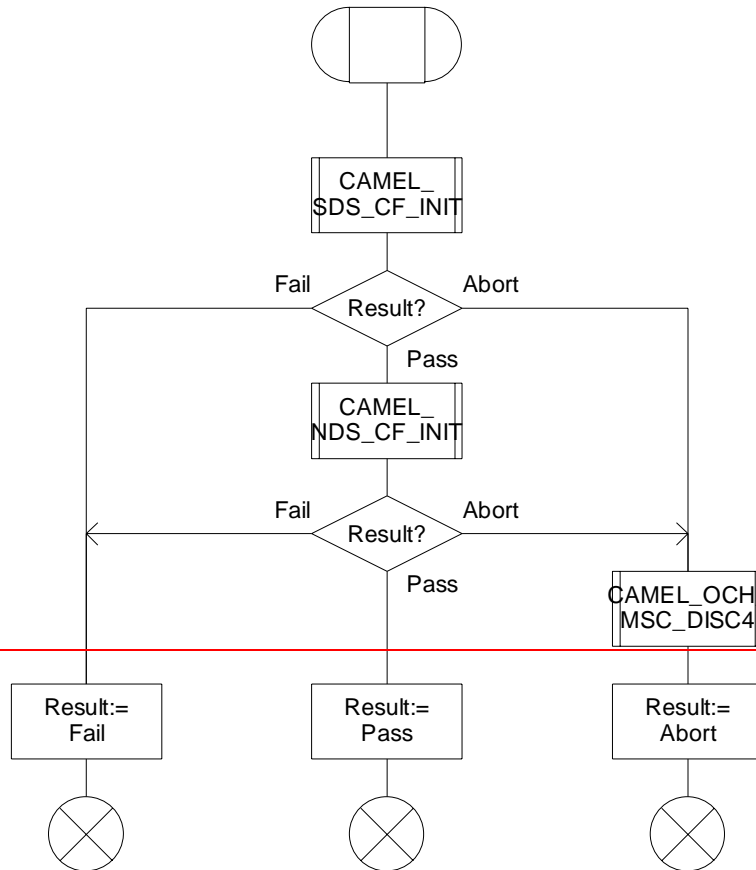
4.5.5 Handling of forwarded calls

Procedure CAMEL\_CF\_Dialled\_Services

1(1)

Procedure in the MSC to process CAMEL dialled services for forwarded calls

/\* Signals to/from the left are to/from the origination Exchange. \*/





### Procedure CAMEL\_CF\_Dialled\_Services

1(1)

Procedure in the MSC to process CAMEL dialled services for forwarded calls

\* Signals to/from the left are to/from the origination Exchange. \*

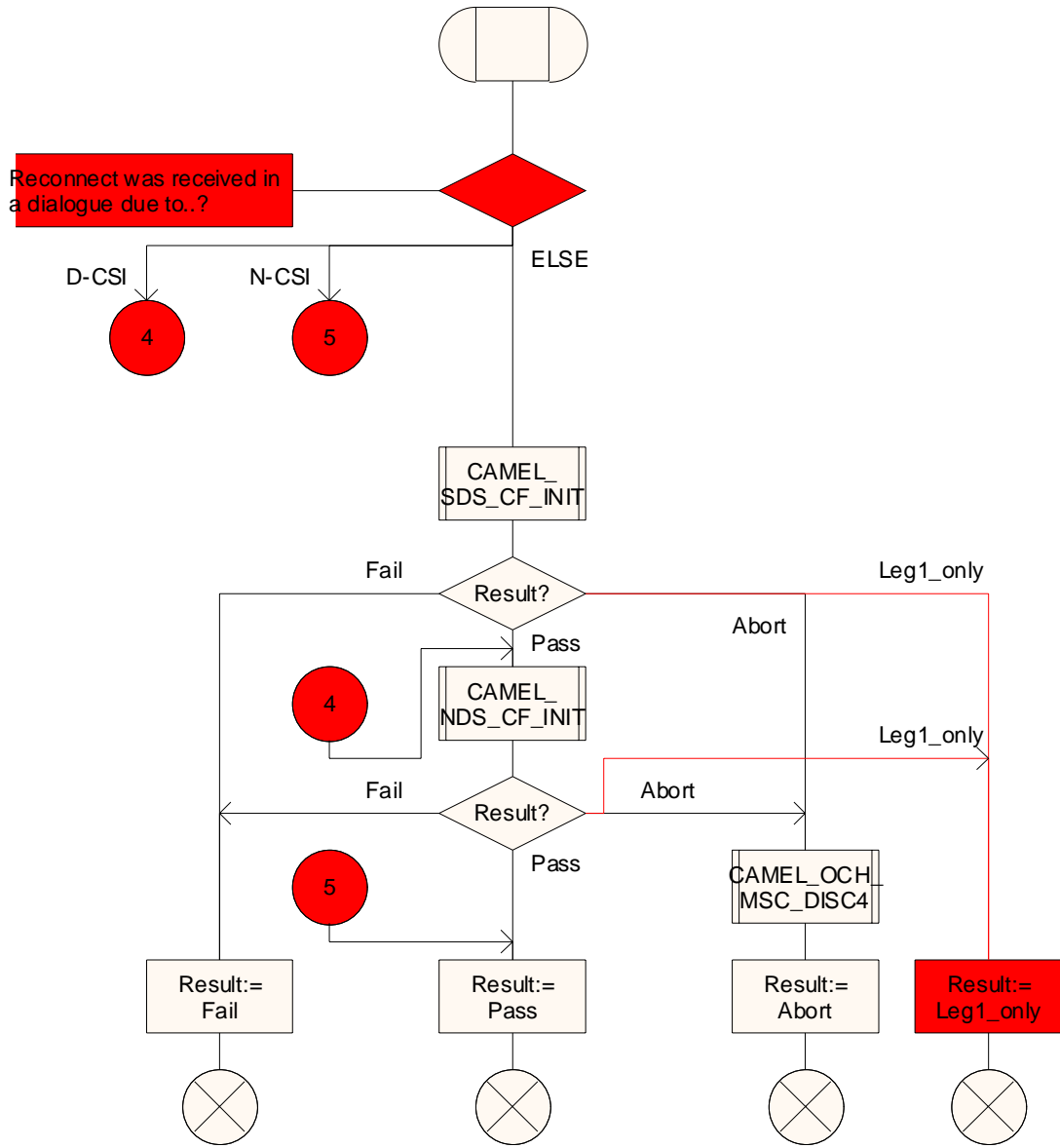


Figure 4.74-1: Procedure CAMEL\_CF\_Dialled\_Services (sheet 1)

### Procedure CAMEL\_SDS\_CF\_INIT

1(3)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from parent process; signals to/from the right are to/from the gsmSSF. \*/

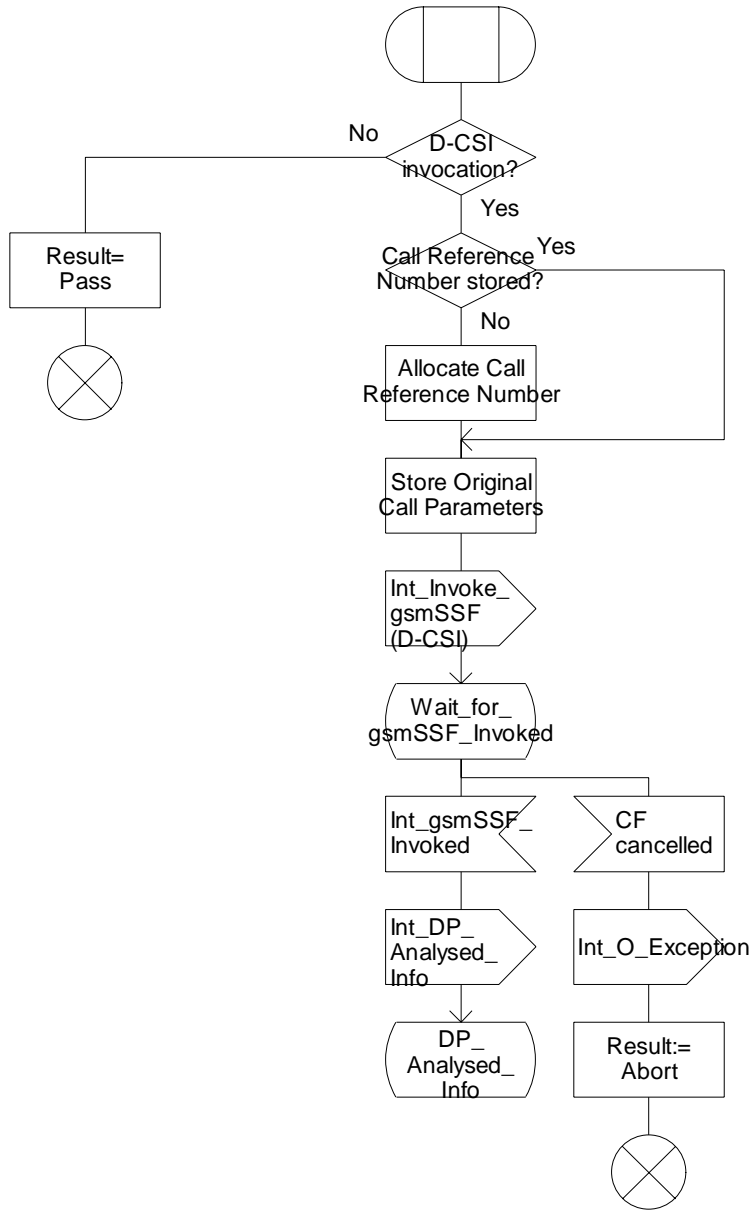


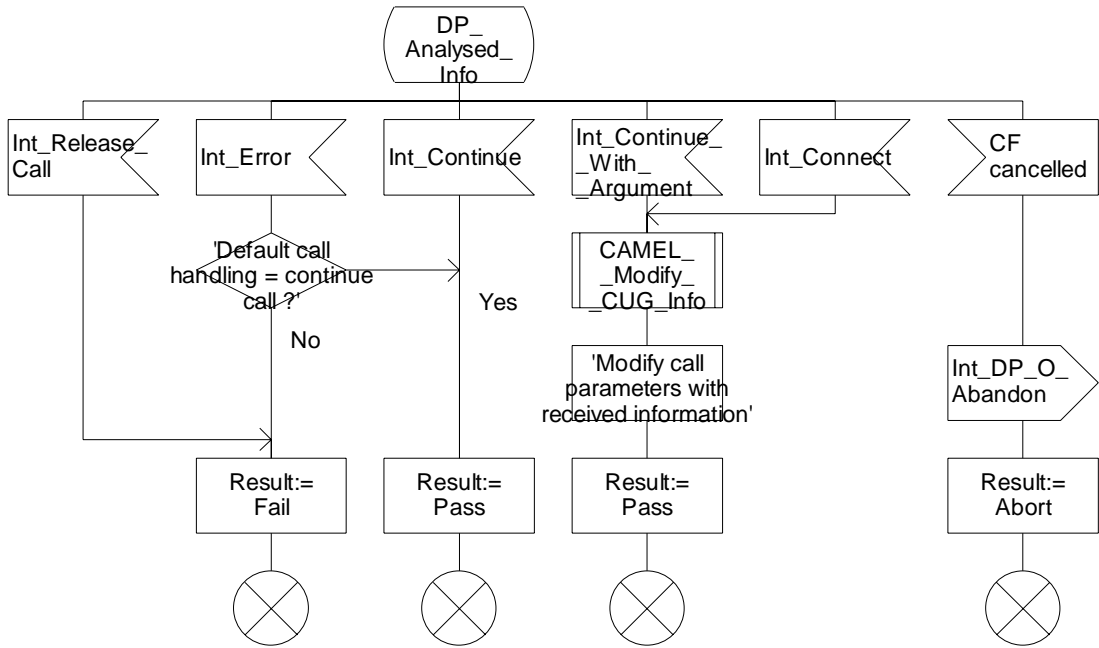
Figure 4.76-1: Procedure CAMEL\_SDS\_CF\_INIT (sheet 1)

### Procedure CAMEL\_SDS\_CF\_INIT

2(3)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from the parent process; signals to/from the right are to/from the gsmSSF. \*/



### Procedure CAMEL\_SDS\_CF\_INIT

2(4)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from the parent process; signals to/from the right are to/from the gsmSSF. \*/

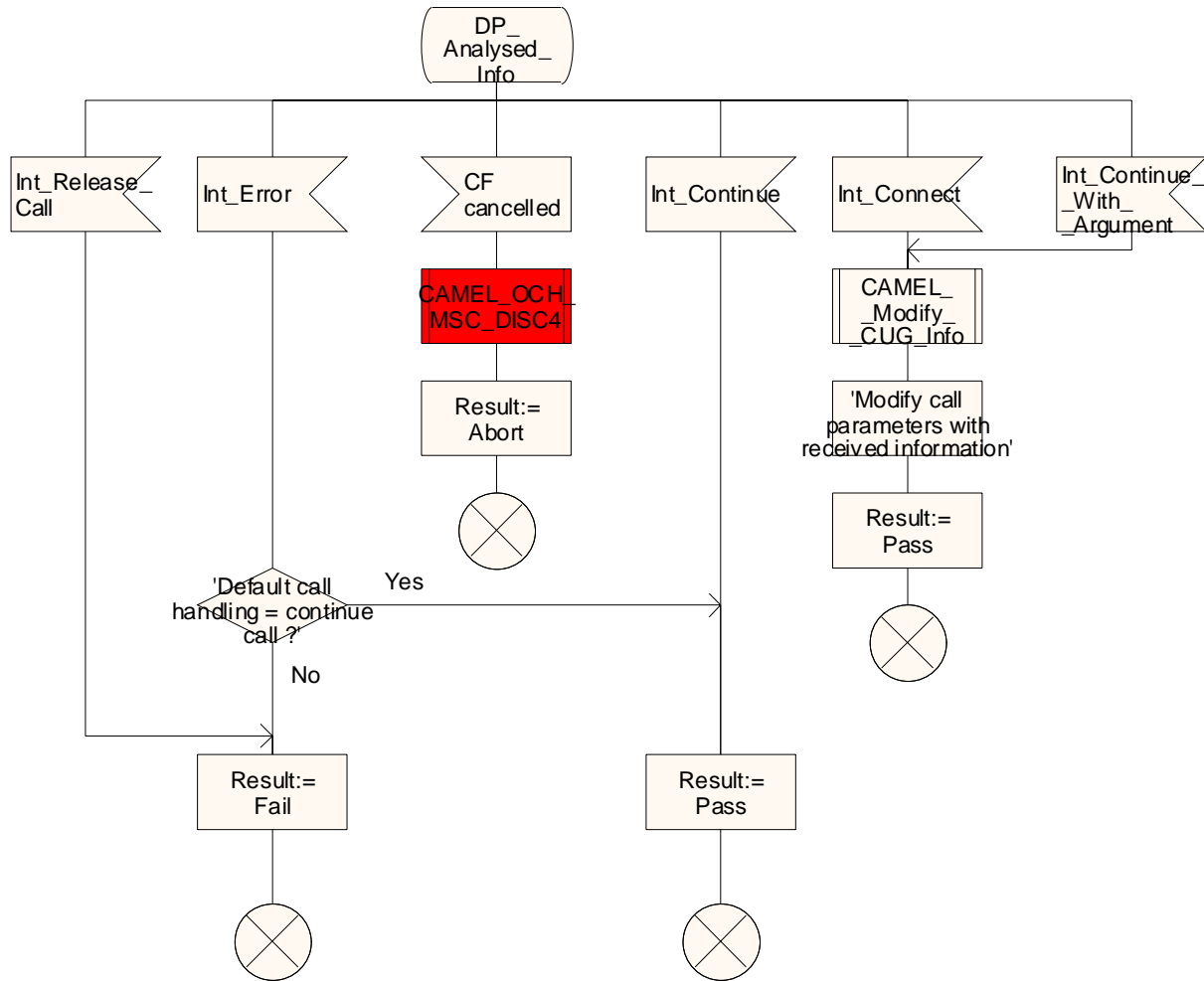


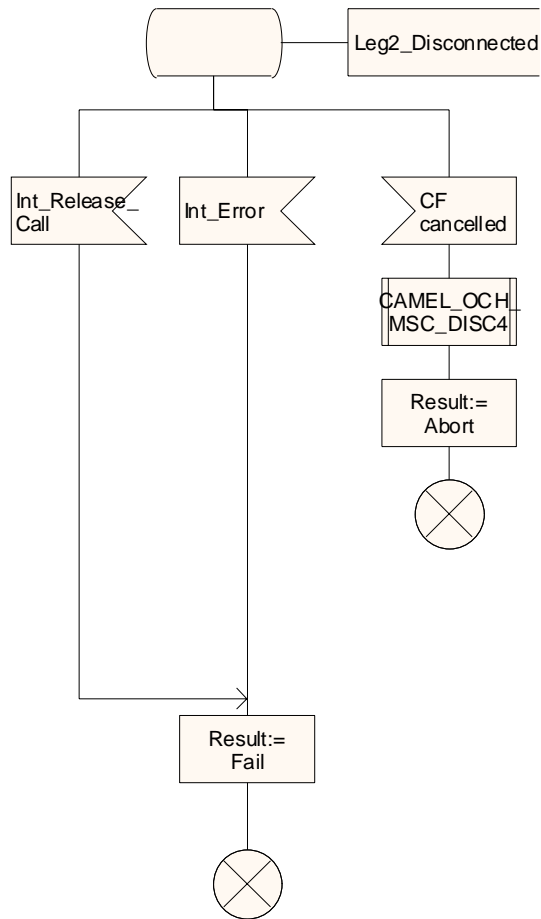
Figure 4.76-2: Procedure CAMEL\_SDS\_CF\_INIT (sheet 2)

Procedure CAMEL\_SDS\_CF\_INIT

3(4)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the left are to/from the parent process; signals to/from the right are to/from the gsmSSF. \*/



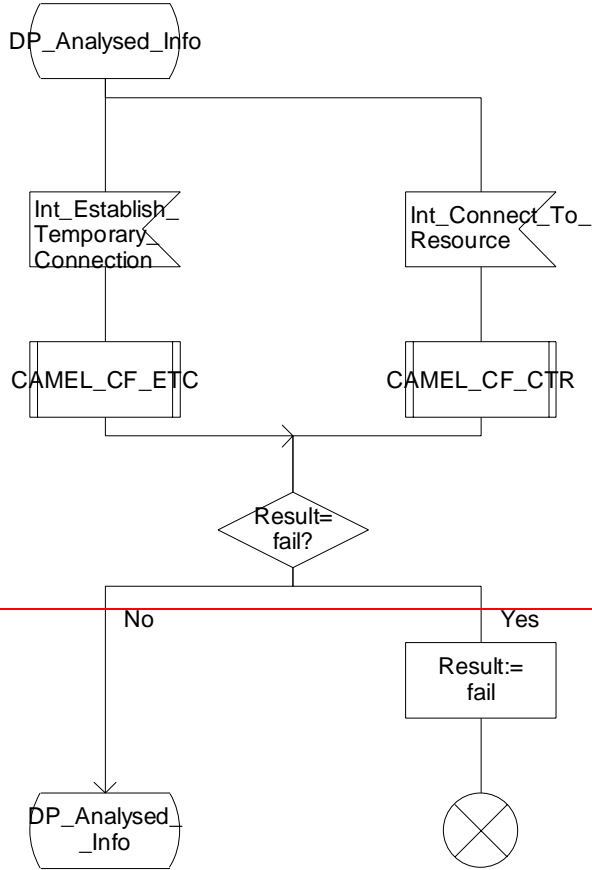
<new sheet> Figure 4.76-3: Procedure CAMEL\_SDS\_CF\_INIT (sheet 3)

### Procedure CAMEL\_SDS\_CF\_INIT

3(3)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



### Procedure CAMEL\_SDS\_CF\_INIT

4(4)

/\* Procedure in the MSC to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

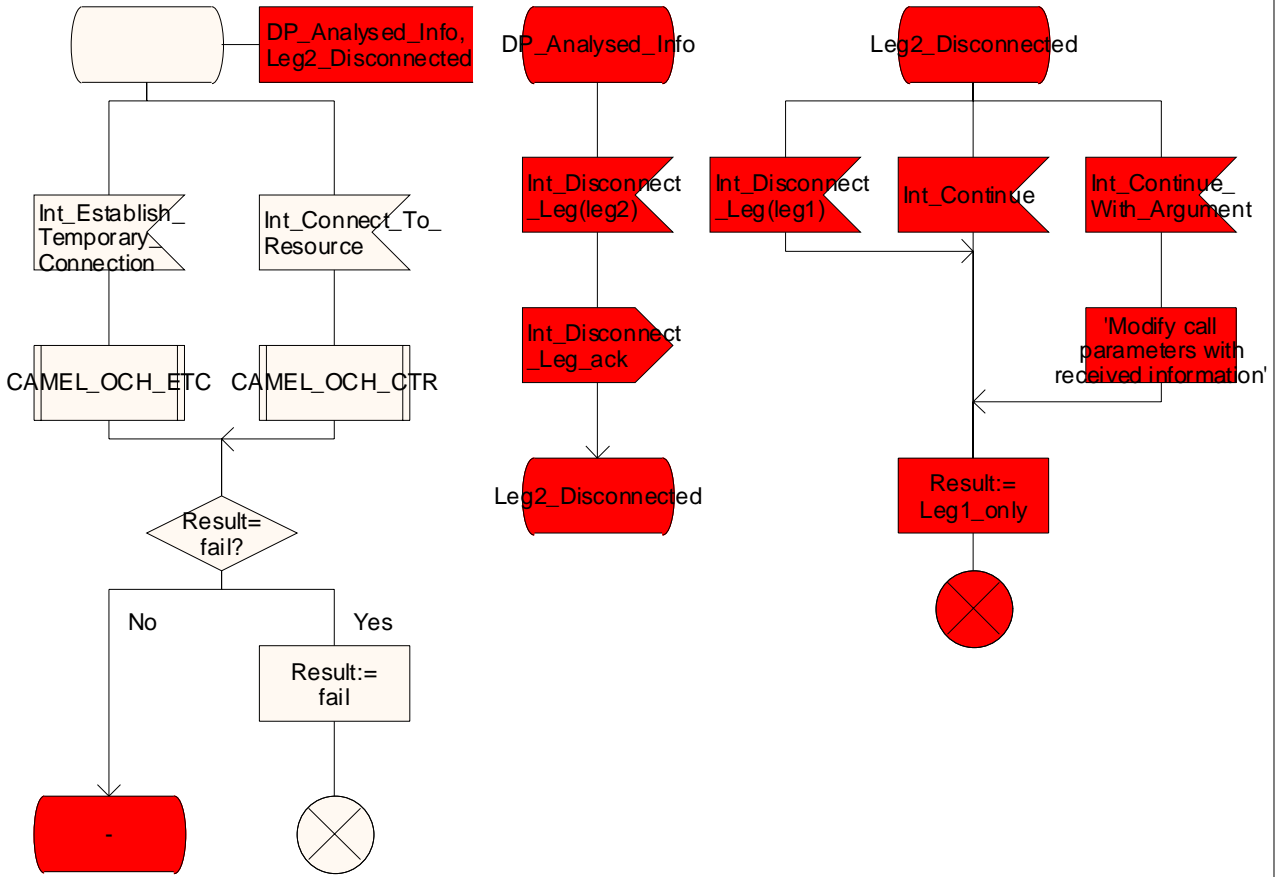


Figure 4.76-34: Procedure CAMEL\_SDS\_CF\_INIT (sheet 34)

Procedure CAMEL\_NDS\_CF\_INIT

1(3)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls \*/

/\* Signals to/from the left are to/from parent process; signals to/from the right are to/from the gsmSSF. \*/

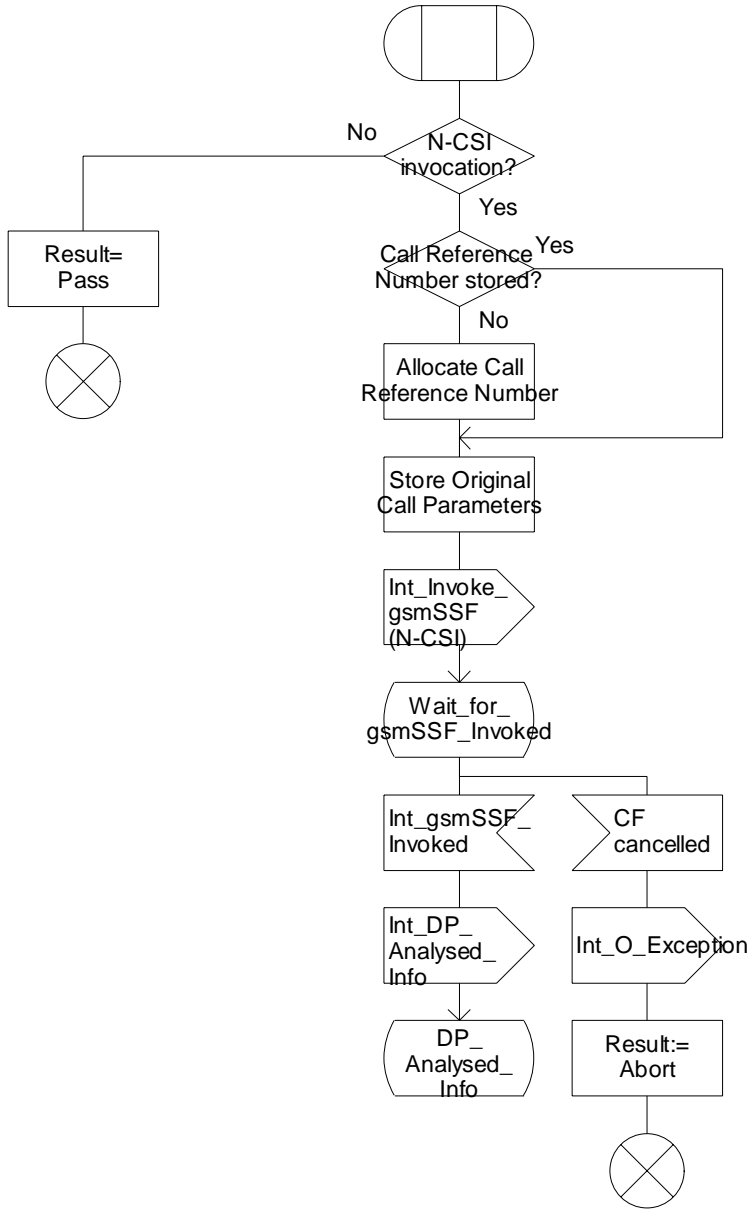


Figure 4.77-1: Procedure CAMEL\_NDS\_CF\_INIT (sheet 1)

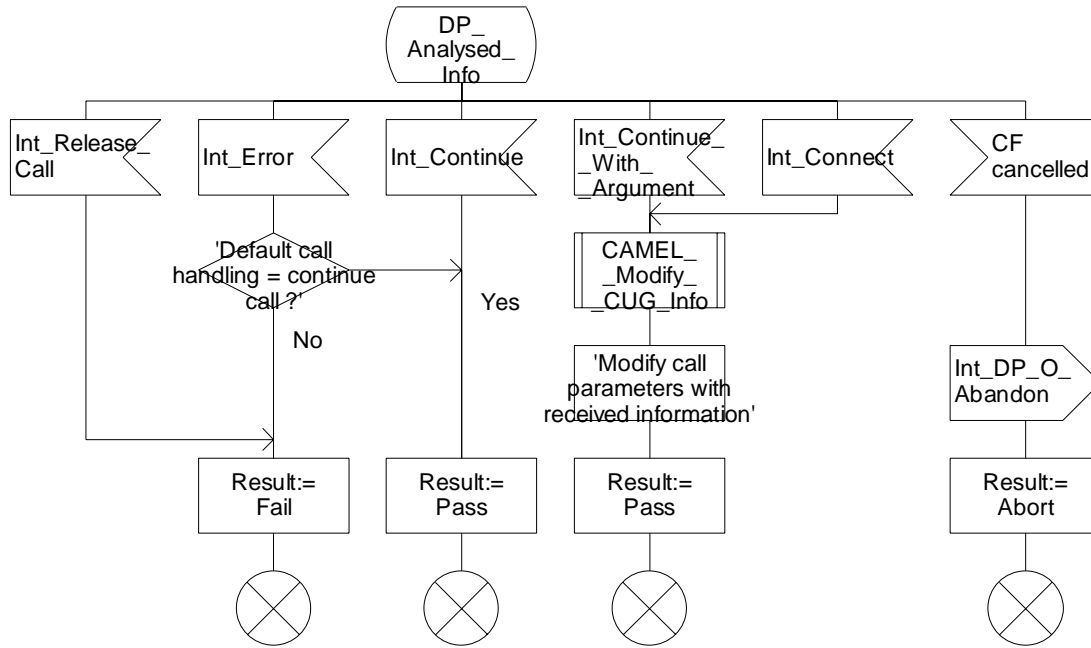


### Procedure CAMEL\_NDS\_CF\_INIT

2(3)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls \*/

/\* Signals to/from the left are to/from parent process; signals to/from the right are to/from the gsmSSF. \*/



Procedure CAMEL\_NDS\_CF\_INIT

2(4)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls \*/

/\* Signals to/from the left are to/from parent process; signals to/from the right are to/from the gsmSSF. \*/

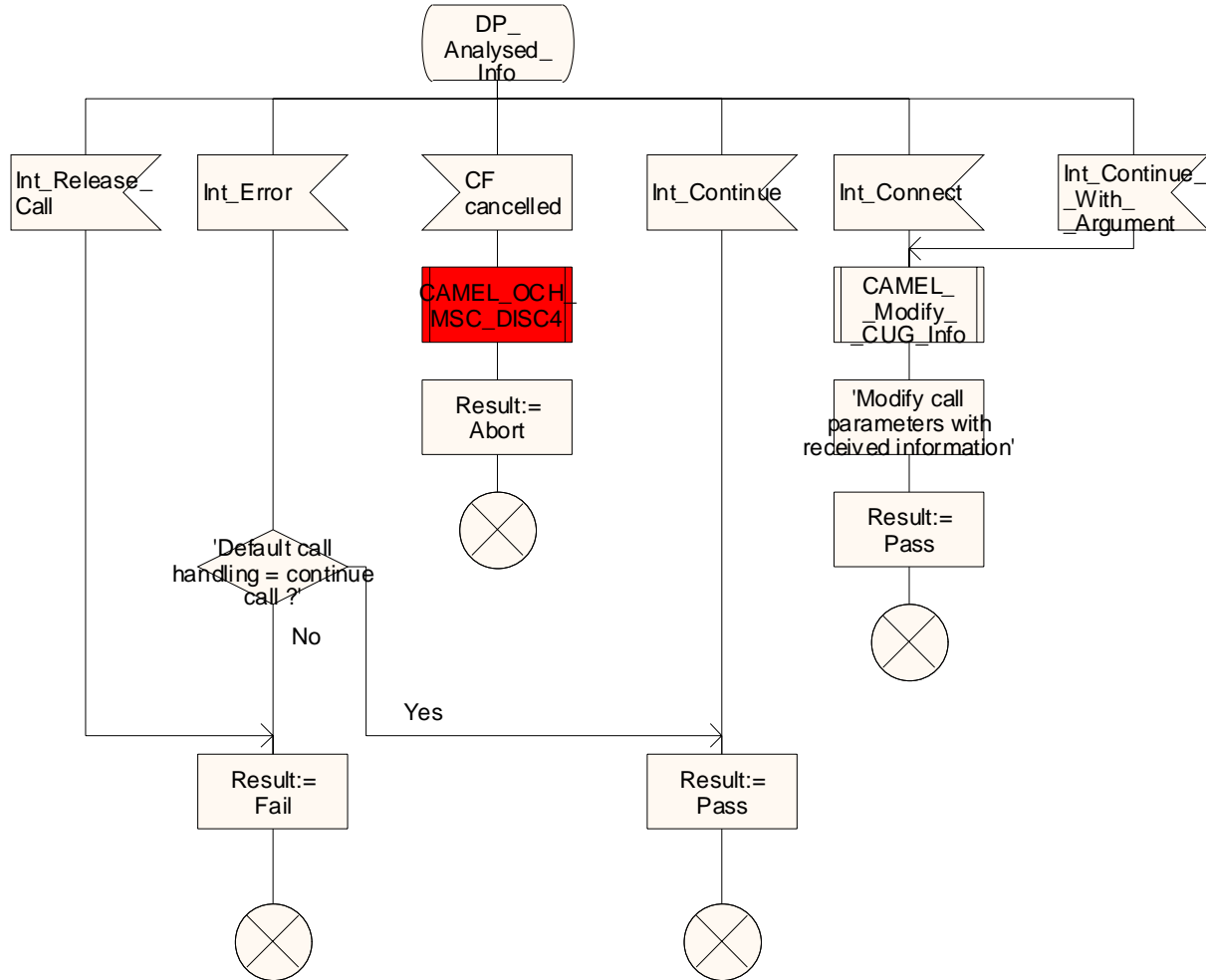


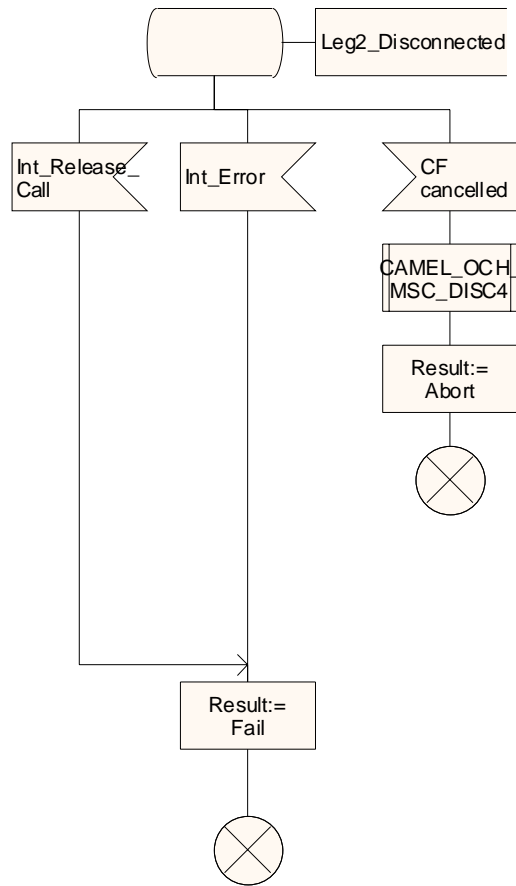
Figure 4.77-2: Procedure CAMEL\_NDS\_CF\_INIT (sheet 2)

Procedure CAMEL\_NDS\_CF\_INIT

3(4)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls \*/

/\* Signals to/from the left are to/from parent process; signals to/from the right are to/from the gsmSSF. \*/



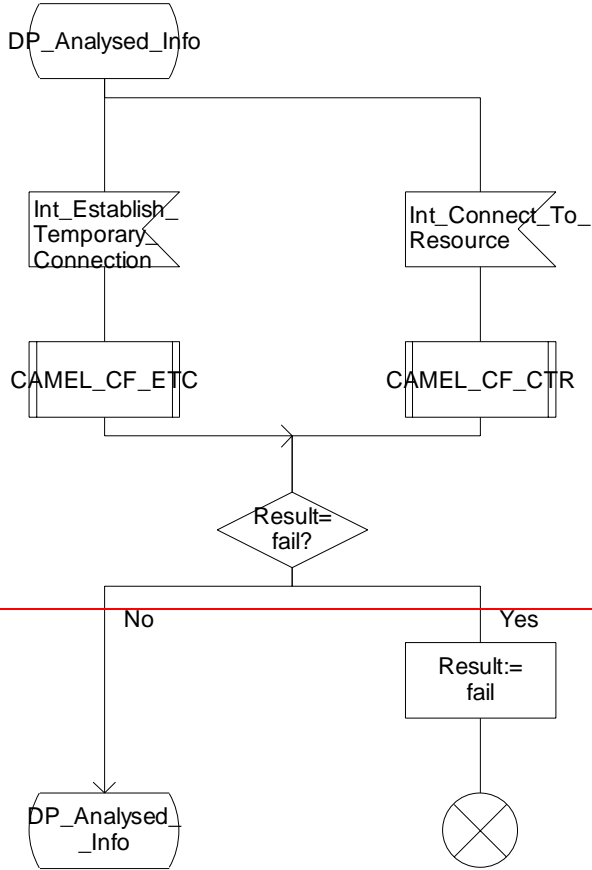
<new sheet>Figure 4.77-3: Procedure CAMEL\_NDS\_CF\_INIT (sheet 3)

### Procedure CAMEL\_NDS\_CF\_INIT

3(3)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls \*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/



### Procedure CAMEL\_NDS\_CF\_INIT

4(4)

/\* Procedure in the MSC to perform CAMEL handling for a network Dialed Service for mobile originated calls \*/

/\* Signals to/from the right are to/from the gsmSSF if not otherwise stated. \*/

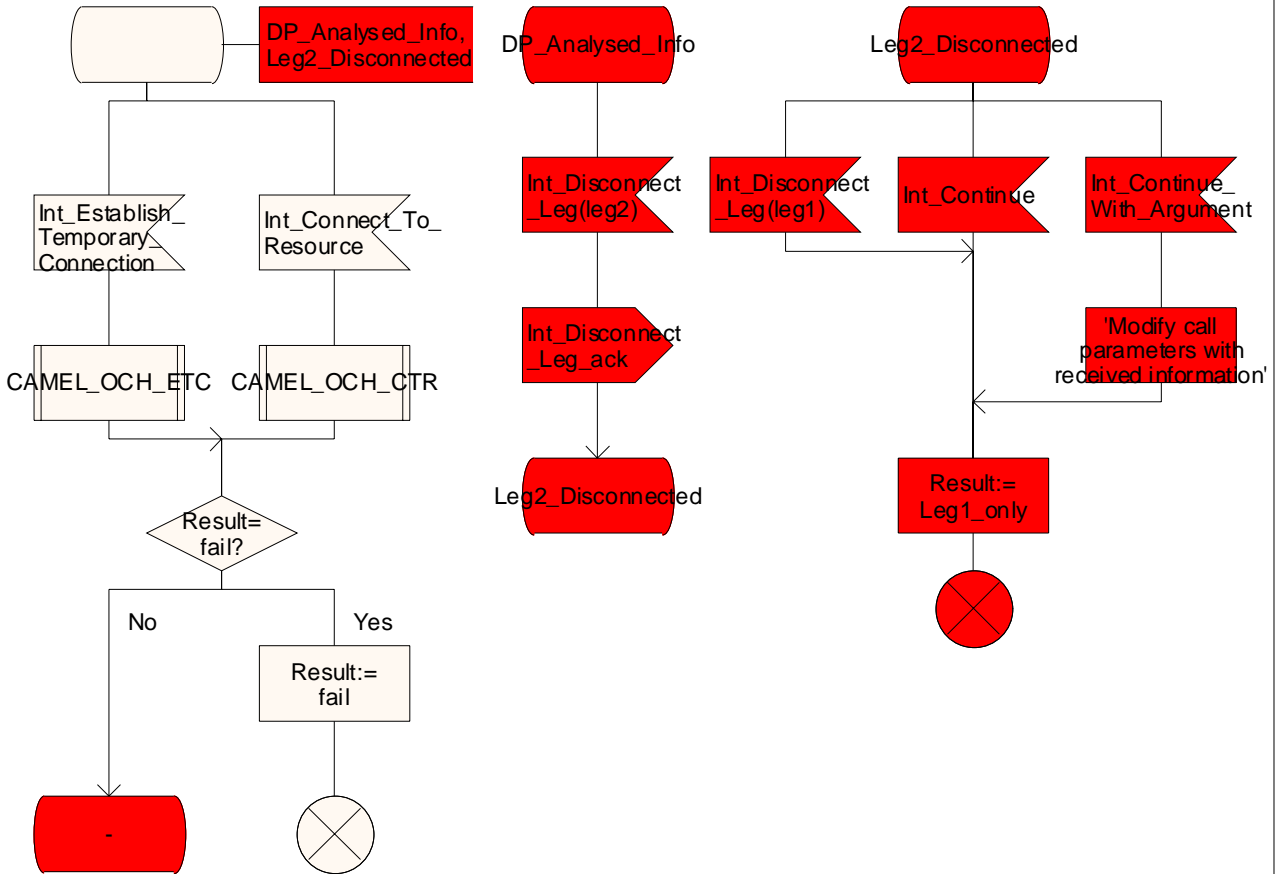


Figure 4.77-43: Procedure CAMEL\_NDS\_CF\_INIT (sheet 34)

### Procedure CAMEL\_ICA\_Dialled\_Services

1(1)

/\* Procedure in the MSC to process CAMEL dialled services for gsmSCF initiated calls \*/

/\* Signals to/from the right are to/from the VLR. \*/

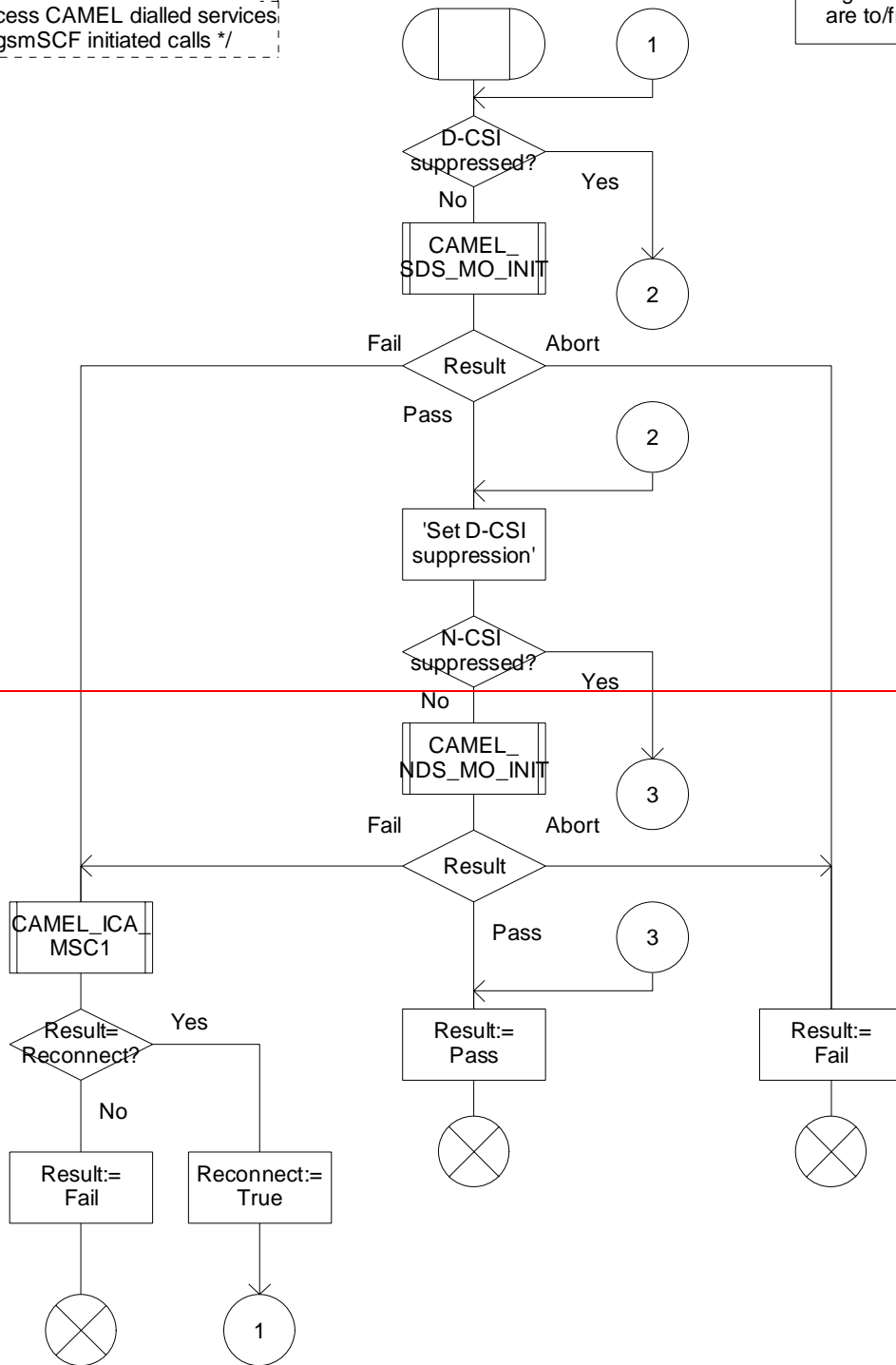


Figure 4.90-1: Procedure CAMEL\_ICA\_Dialled\_Services (sheet 1)

Procedure CAMEL\_ICA\_Dialled\_Services

1(1)

*/\* Procedure in the MSC to process CAMEL dialled services for gsmSCF initiated calls \*/*

*/\* Signals to/from the right are to/from the VLR. \*/*

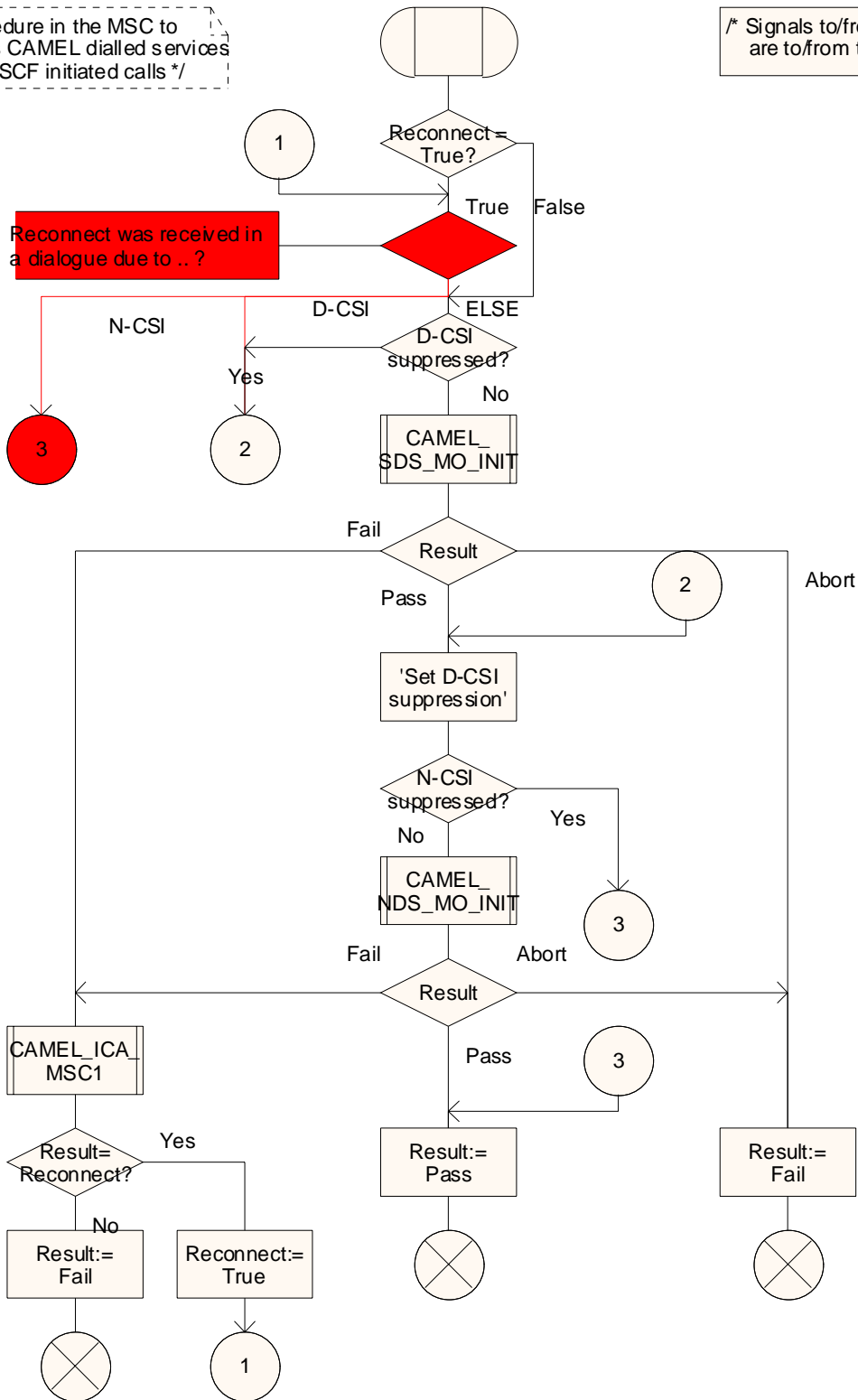
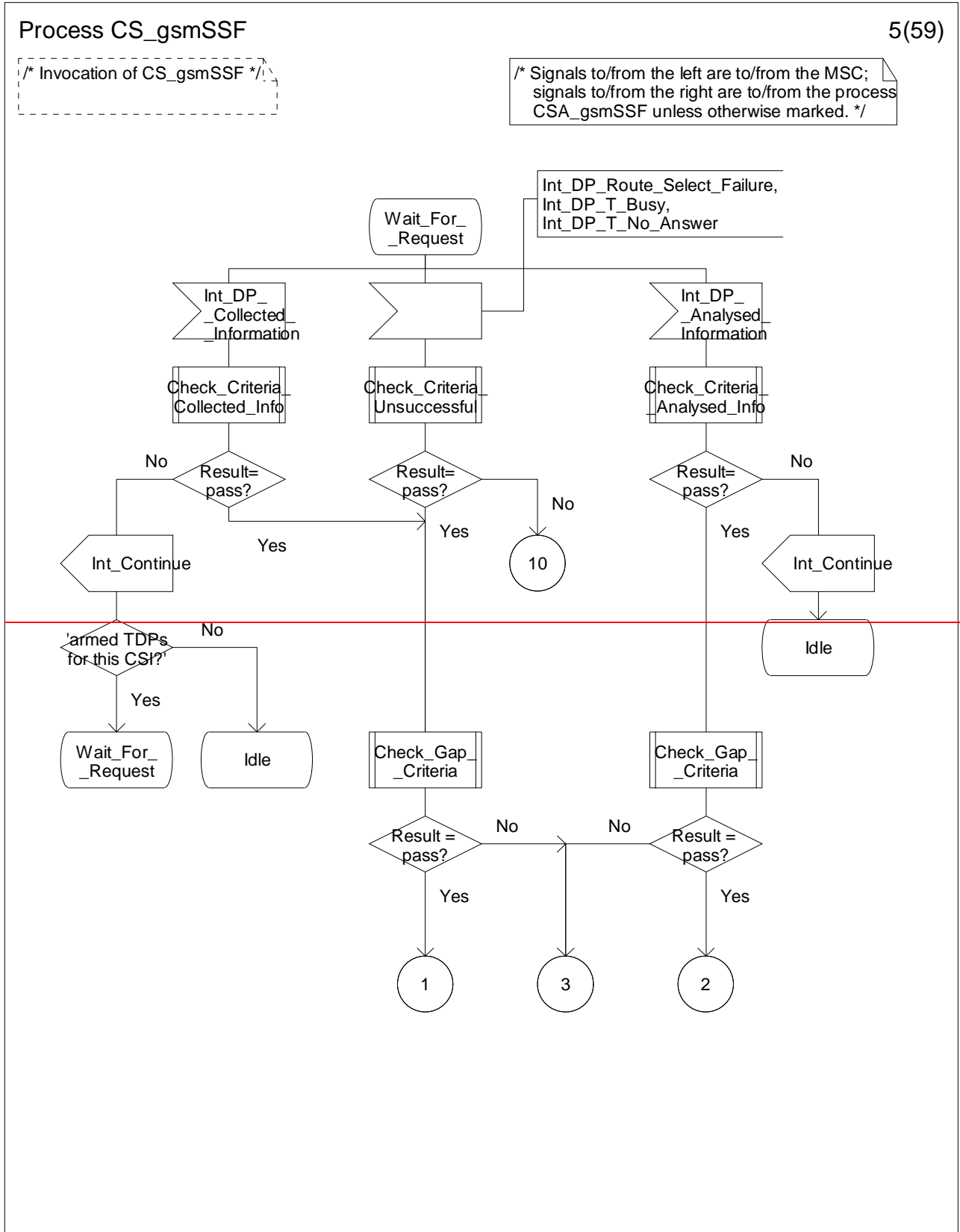


Figure 4.90-1: Procedure CAMEL\_ICA\_Dialled\_Services (sheet 1)

— Next Modified section —

4.5.7.4 Process CS\_gsmSSF and procedures

...





Process CS\_gsmSSF

5(59)

/\* Invocation of CS\_gsmSSF \*/

/\* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA\_gsmSSF unless otherwise marked. \*/

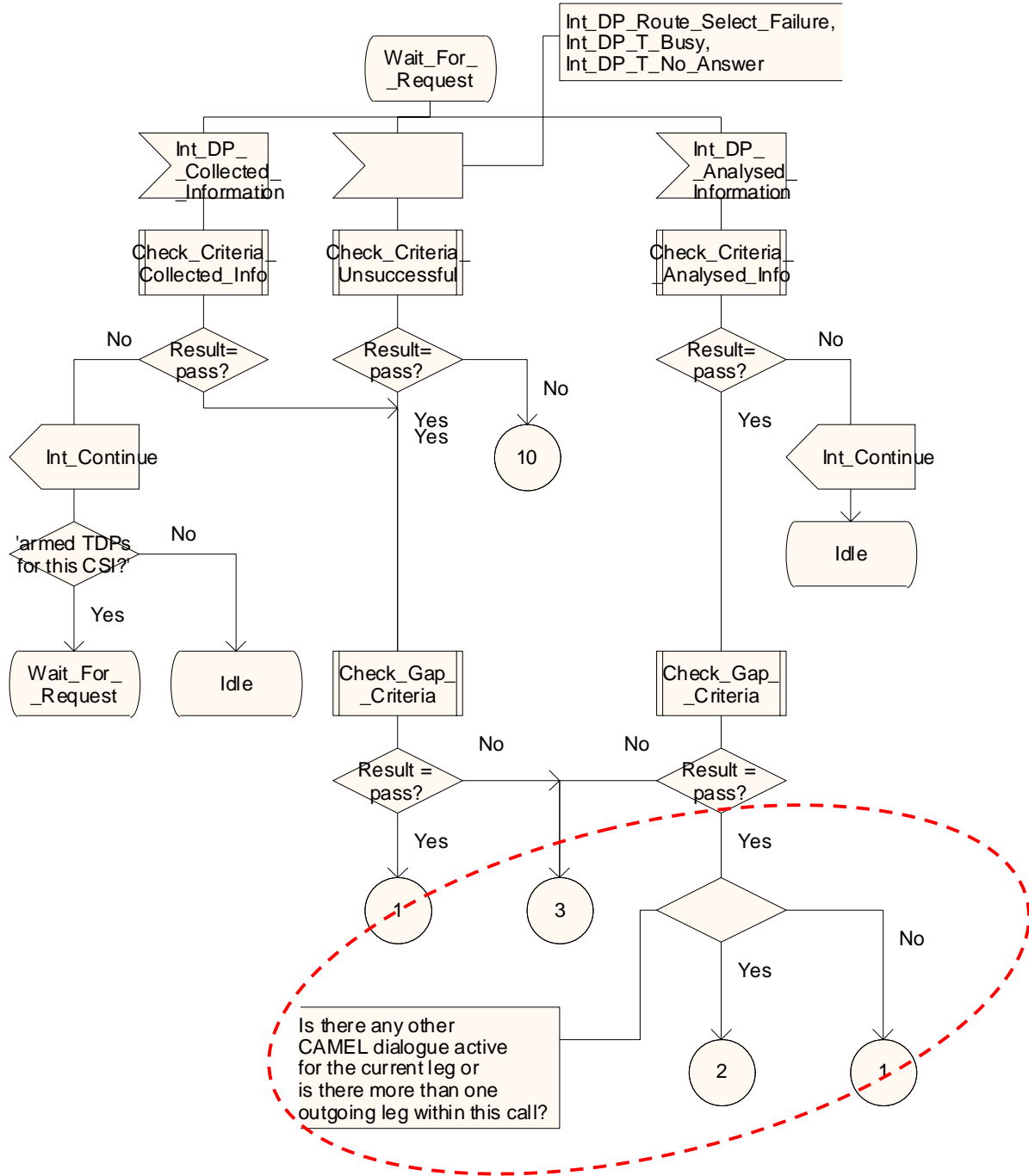


Figure 4.95-5: Process CS\_gsmSSF (sheet 5)

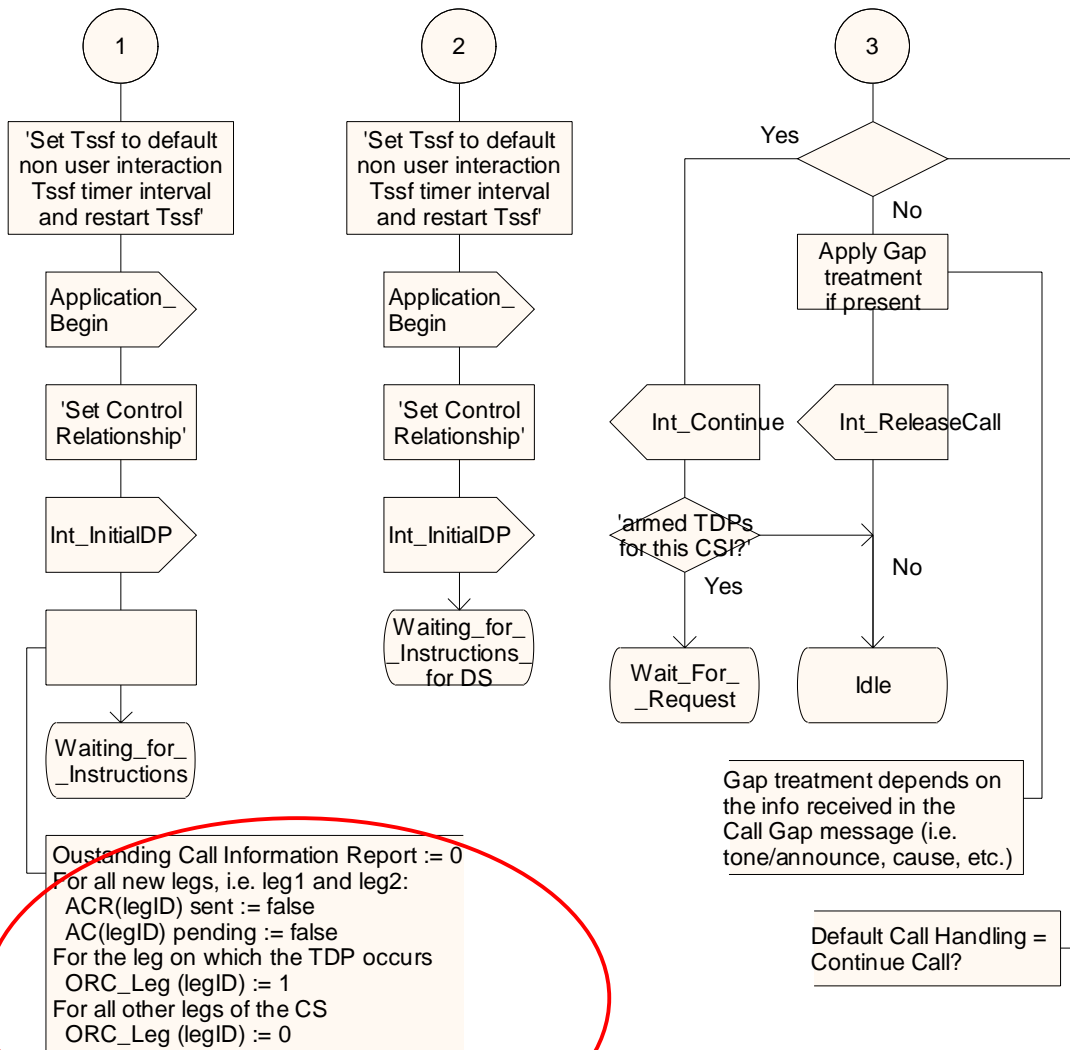
— For information —

Process CS\_gsmSSF

7(60)

/\* Invocation of CS\_gsmSSF \*/

/\* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA\_gsmSSF unless otherwise marked. \*/

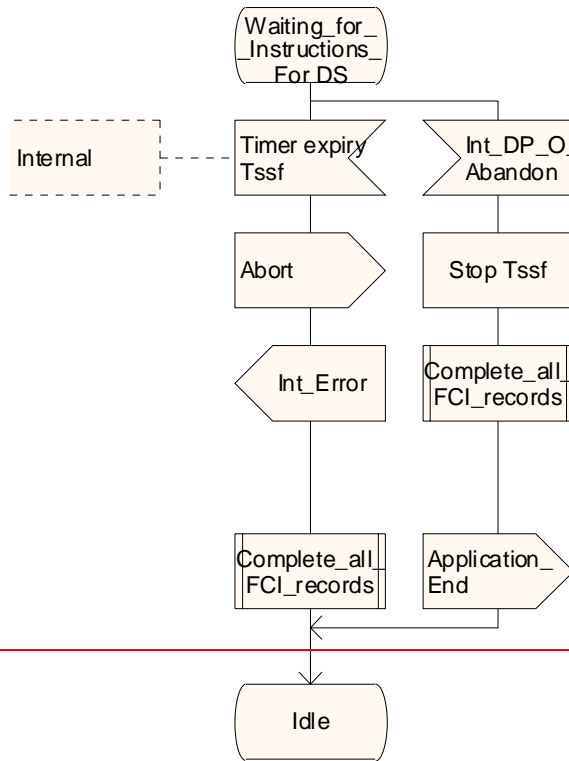


### Process CS\_gsmSSF

54(59)

*/\* Invocation of CS\_gsmSSF \*/*

*/\* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA\_gsmSSF unless otherwise marked. \*/*



### Process CS\_gsmSSF

54(59)

/\* Invocation of CS\_gsmSSF \*/

/\* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA\_gsmSSF unless otherwise marked. \*/

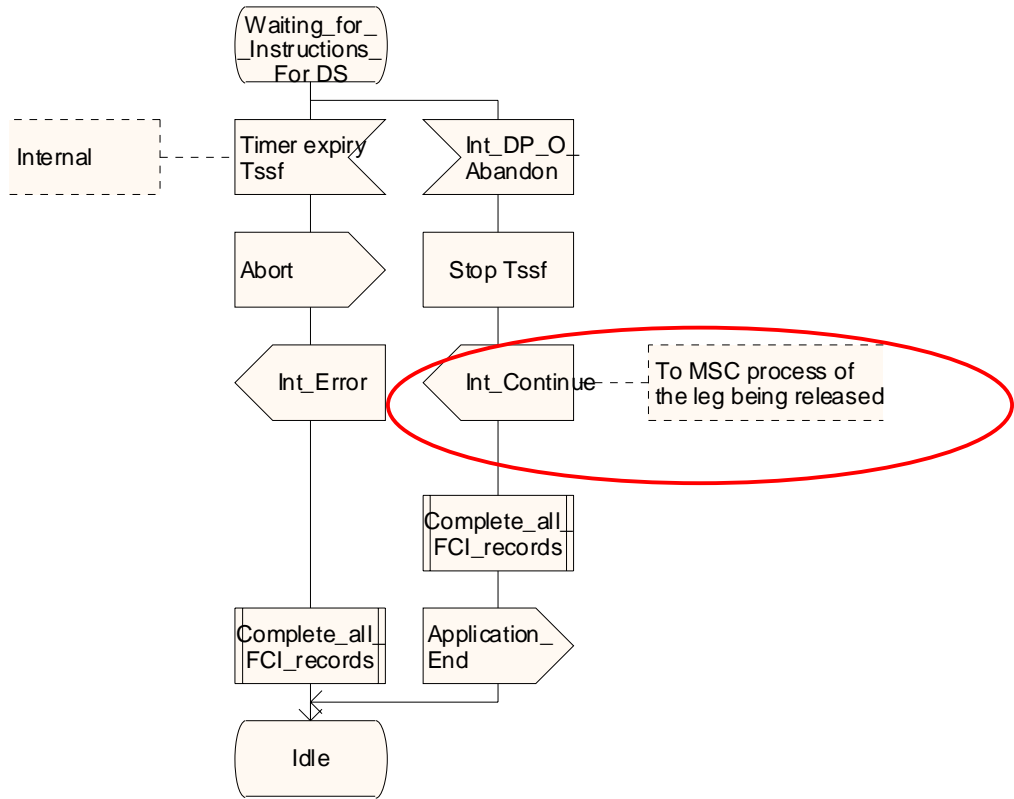


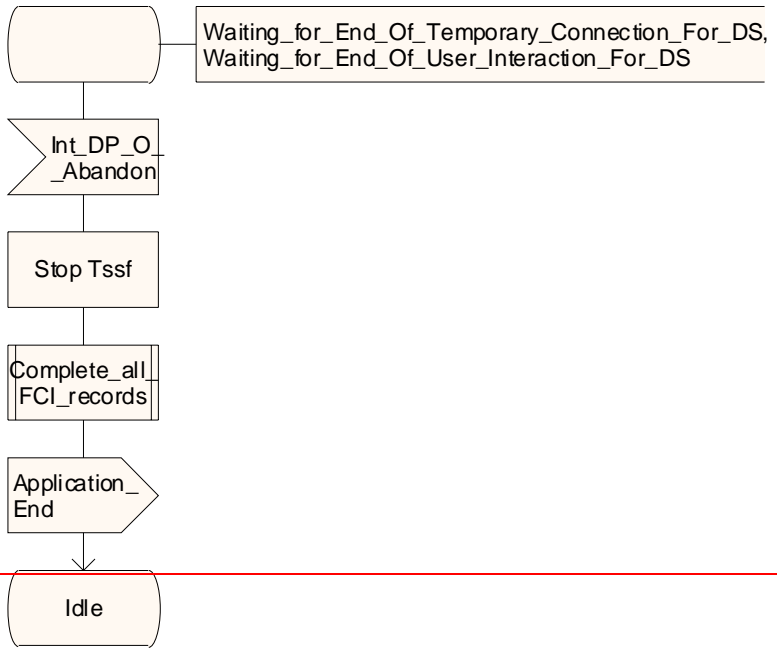
Figure 4.95-54: Process CS\_gsmSSF (sheet 54)

### Process CS\_gsmSSF

58(59)

*/\* Invocation of CS\_gsmSSF \*/*

*/\* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA\_gsmSSF unless otherwise marked. \*/*



### Process CS\_gsmSSF

58(59)

*/\* Invocation of CS\_gsmSSF \*/*

*/\* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA\_gsmSSF unless otherwise marked. \*/*

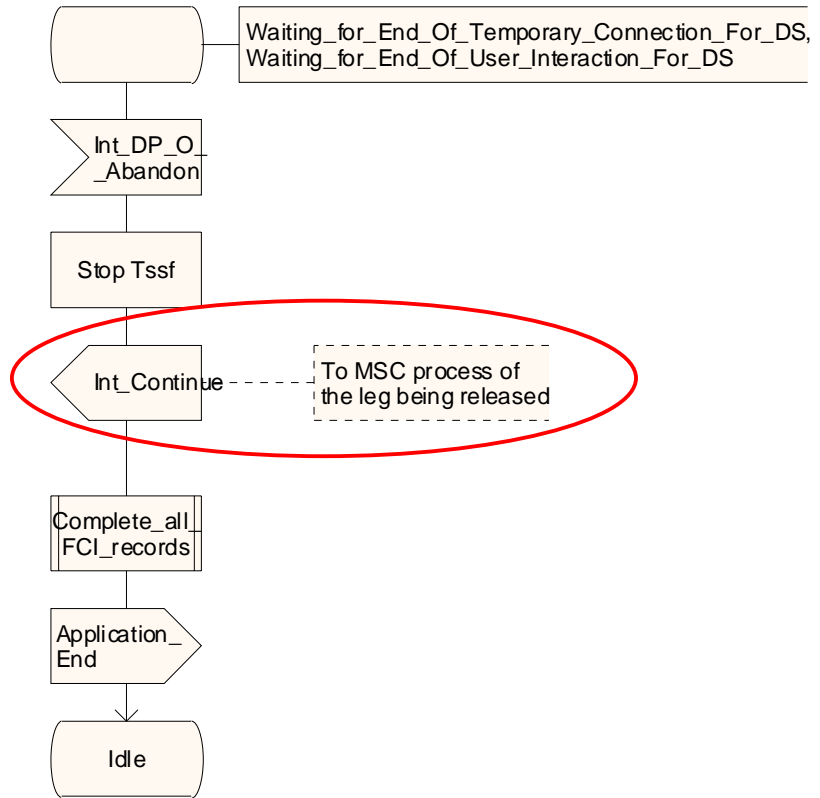


Figure 4.95-58: Process CS\_gsmSSF (sheet 58)

— Next modified section —

#### 4.6.1.8 Initial DP

##### 4.6.1.8.1 Description

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

##### 4.6.1.8.2 Information Elements

(Note: IEs in the NC columns in this IF may need further study.)

Information element name	MO	MF	MT	VT	NC	NP	Description
Additional Calling Party Number	C	C	C	C	-	C	This IE contains the calling party number provided by the access signalling system of the calling user or received from the gsmSCF due to the previous CAMEL processing.
Bearer Capability	M	C	C	C	-	C	This IE indicates the type of the bearer capability connection to the user.
Called Party Number	C	M	M	M	-	M	This IE contains the number used to identify the called party in the forward direction. For MO and MF calls this IE is used in the case of TDP Route_Select_Failure (this is the destination number used to route the call) and in the case of TDP Busy and TDP No Reply (this is the MSISDN when the destination number used for the call is an MSRN, or in the case of unsuccessful call establishment received from the HLR via the MAP interface, otherwise it is the number used to route the call). For VT calls when there is no forwarding pending this is the MSISDN received in the Provide Roaming Number; if the MSISDN is not available, the basic MSISDN is used. For the MT and VT call case when there is call forwarding or call deflection pending, this is the MSISDN, i.e. not the forwarded-to or deflected-to number. If the Initial DP IF is sent at TDP Route_Select_Failure or TDP Analysed_Information then the <i>NatureOfAddress indicator</i> may contain a national-specific value. For some national-specific <i>NatureOfAddress indicator</i> values the length of the digit part of the destination address may be zero.

Information element name	MO	MF	MT	VT	NC	NP	Description
Called Party BCD Number	C	-	-	-	-	-	This IE contains the number used to identify the called party in the forward direction. It is used for an MO call in all cases except in the case of TDP Route_Select_Failure. For the TDP Collected_Information, the number contained in this IE shall be identical to the number received over the access network. It may e.g. include service selection information, such as * and # digits, or carrier selection information dialled by the subscriber. For the TDP Analysed_Information, the number contained in this IE shall be the dialled number received over the network access or received from a gsmSCF in a Connect IF, Service selection information, such as * and # digits may be present (see subclause 4.2.1.2.2); carrier selection information dialled by the subscriber is not present.
Calling Party Number	M	C	C	C	-	C	This IE carries the calling party number to identify the calling party or the origin of the call.
Calling Partys Category	M	C	C	C	-	C	This IE indicates the type of calling party (e.g., operator, pay phone, ordinary subscriber).
CallGap Encountered	C	C	C	C	-	C	This IE indicates the type of gapping which has been applied to the related call. This IE shall be present only if a call gapping context is applicable to the Initial DP IF.
Call Reference Number	M	M	M	M	-	M	This IE may be used by the gsmSCF for inclusion in a network optional gsmSCF call record. It has to be coupled with the identity of the MSC which allocated it in order to define unambiguously the identity of the call. For MO calls, the call reference number is set by the serving VMSC and included in the MO call record. For MT calls, the call reference number is set by the GMSC and included in the RCF call record in the GMSC and in the MT call record in the terminating MSC. For VT calls, the call reference number is set by the GMSC and included in the RCF call record in the GMSC and in the MT call record in the terminating MSC. For CF calls, the call reference number is set by the GMSC and included in the CF record in the forwarding MSC.
Cause	C	C	C	C	-	-	This IE indicates the cause specific to the armed BCSM DP event. This IE is applicable to DP Route_Select_Failure and DP T_Busy. The cause may be used by the gsmSCF to decide how to continue the call handling.
Event Type BCSM	M	M	M	M	-	M	This IE indicates the armed BCSM DP event, resulting in the Initial DP IF.
Ext-Basic Service Code	C	C	C	C	-	C	This IE indicates the type of basic service i.e., teleservice or bearer service.
High Layer Compatibility	C	C	C	C	-	C	This IE indicates the type of the high layer compatibility, which will be used to determine the ISDN-teleservice of a connected ISDN terminal.
IMSI	M	M	M	M	-	S	This IE identifies the mobile subscriber. For the NP case, the IMSI is mandatory if the new party is initiated in an MO, MF, MT, or VT call, otherwise it shall be absent.



Information element name	MO	MF	MT	VT	NC	NP	Description
IP SSP Capabilities	C	C	C	C	-	C	This IE indicates which SRF resources are supported within the gsmSSF and are available. If this IE is absent, it indicates that no gsmSRF is attached and available.
Location Information	M	-	C	M	-	-	This IE is described in a table below.
Location Number	M	C	C	C	-	-	For mobile originated calls this IE represents the location of the calling party. For all other call scenarios this IE contains the location number received in the incoming ISUP signalling.
MSC Address	M	M	M	M	-	M	For MO calls, the MSC Address carries the international E.164 address of the serving VMSC. For MT calls, the MSC Address carries the international E.164 address of the GMSC. For VT calls, the MSC Address carries the international E.164 address of the serving VMSC. For MF calls, the MSC Address carries the international E.164 address of the forwarding MSC. For the NP case, the MSC address carries the international E.164 address of the serving VMSC (the NP case in the GMSC will not cause an Initial DP IF).
GMSC Address	-	M	-	M	-	S	For CF calls, the GMSC Address carries the international E.164 address of the GMSC. For VT calls, the GMSC Address carries the international E.164 address of the GMSC. For NP case, the GMSC Address is mandatory if the new party is initiated in an MF call or in a VT call, otherwise it shall be absent. The GMSC Address carries the international E.164 address of the GMSC.
Carrier	S	S	S	S	-	S	This IE is described in a table below. This IE may be present when the VPLMN and the HPLMN of the subscriber are both North American. For MO calls, this IE shall identify any carrier that was explicitly selected by the calling subscriber. If no carrier was explicitly selected, this IE shall contain the calling subscriber's subscribed carrier. For MT and VT calls, the IE shall contain the carrier subscribed to by the called subscriber. For MF calls, the IE shall contain the carrier subscribed to by the forwarding subscriber.
Original Called Party ID	C	C	C	C	-	-	This IE carries the dialled digits if the call has met call forwarding on the route to the gsmSSF. This IE shall also be sent if it was received from the gsmSCF due to previous CAMEL processing.
Redirecting Party ID	C	C	C	C	-	-	This IE indicates the directory number the call was redirected from. This IE shall also be sent if it was received from the gsmSCF due to previous CAMEL processing.
Redirection Information	C	C	C	C	-	-	This IE contains forwarding related information, such as the redirection counter.
Service Key	M	M	M	M	-	M	This IE indicates to the gsmSCF the requested CAMEL Service. It is used to address the required application within the gsmSCF.

Information element name	MO	MF	MT	VT	NC	NP	Description
Subscriber State	-	-	C	C	-	-	This IE indicates the status of the MS. The states are: - CAMEL Busy: The MS is engaged on a transaction for a mobile originating or terminated circuit-switched call. - Network Determined Not Reachable: The network can determine from its internal data that the MS is not reachable. - Assumed Idle: The state of the MS is neither "CAMEL Busy" nor "Network Determined Not Reachable". - Not provided from VLR.
Time And Timezone	M	M	M	M	-	M	This IE contains the time that the gsmSSF was triggered, and the time zone in which gsmSSF resides.
Call Forwarding SS Pending	-	-	C	C	-	-	If the Initial DP IF is sent from the GMSC, then this IE shall be present in the following cases: - The GMSC has received an FTN in the 1st Send Routeing Info ack IF from the HLR. - The GMSC has received an FTN in the 2nd Send Routeing Info ack IF from the HLR and no relationship with the gsmSCF exists at that moment. - The GMSC has received the Resume Call Handling IF from the VMSC and no relationship with the gsmSCF exists at that moment. If the Initial DP IF is sent from the VMSC, then this IE shall be present in the following cases: - Conditional call forwarding is invoked and no relationship with the gsmSCF exists at that moment. - Call Deflection is invoked and no relationship with the gsmSCF exists at that moment.
Forwarding Destination Number	-	-	C	C	-	-	This IE contains the Forwarded-to-Number or the Deflected-to-Number. It shall be present if the Call Forwarding SS Pending IE is present, otherwise it shall be absent.
Service Interaction Indicators Two	C	C	C	C	-	C	The IE is described in a table below. This IE is present if it is received in the ISUP message or due to previous CAMEL processing.
CUG Index	C	-	-	-	-	C	See 3GPP TS 23.085 [21] for details of this IE.
CUG Interlock Code	C	C	C	C	-	C	This IE shall be set according to 3GPP TS 23.085 [21] unless modified by the gsmSCF via the Connect or Continue With Argument IFs.
Outgoing Access Indicator	C	C	C	C	-	C	This IE shall be set according to the 3GPP TS 23.085 [21] unless modified by the gsmSCF via the Connect or Continue With Argument IFs.
MS Classmark 2	C	-	-	-	-	-	This IE contains the MS classmark 2, which is sent by the MS when it requests access to setup the MO call or responds to paging in the CS domain.
IMEI (with software version)	C	-	-	-	-	-	This IE contains the IMEISV (as defined in 3GPP TS 23.003 [7]) of the ME in use by the served subscriber.
Supported CAMEL Phases	M	M	M	M	M	M	This IE indicates the CAMEL Phases supported by the GMSC or the VMSC.

Information element name	MO	MF	MT	VT	NC	NP	Description
Offered CAMEL4 Functionalities	M	M	M	M	M	M	This IE is described in a table below. This IE indicates the CAMEL phase 4 functionalities offered by the GMSC or the VMSC.
<a href="#">Enhanced Dialed Services allowed</a>	<u>S</u>	<u>S</u>	-	-	<u>S</u>	<u>S</u>	<a href="#">This IE indicates that the gsmSCF may use the Enhanced Dialed Services (EDS). This IE shall be included if and only if all of following four conditions are fulfilled:</a> <a href="#">- this IF is sent due to triggering on DP Analysed Information; and</a> <a href="#">- the EDS functionality is offered for this call (as indicated in the Offered CAMEL4 Functionalities); and</a> <a href="#">- there is no more than one outgoing leg within this call; and</a> <a href="#">- there is no other CAMEL dialogue active for the leg for which this IF is sent.</a>

Offered CAMEL4 Functionalities contains the following information elements:

Information element name	Status	Description
Initiate Call Attempt	S	This IE indicates that the gsmSCF may send to the gsmSSF the Initiate Call Attempt IF.
Split Leg	S	This IE indicates that the gsmSCF may send to the gsmSSF the Split Leg IF.
Move Leg	S	This IE indicates that the gsmSCF may send to the gsmSSF the Move Leg IF.
Disconnect Leg	S	This IE indicates that the gsmSCF may send to the gsmSSF the Disconnect Leg IF.
Entity Released	S	This IE indicates that the gsmSSF shall send to the gsmSCF the.
DFC With Argument	S	This IE indicates that the gsmSCF may send to the gsmSSF Disconnect Forward Connection With Argument IF.
Play Tone	S	This IE indicates that the gsmSCF may send to the gsmSSF the Play Tone IF.
DTMF Mid Call	S	This IE indicates that the gsmSCF may instruct the gsmSSF to arm the O_MidCall or T_MidCall DPs. The gsmSCF may instruct the gsmSSF to automatically re-arm the DPs.
Charging Indicator	S	This IE indicates that the Charge Indicator IE may be present in the Event Report BCSM IF reporting the O_Answer or T_Answer DP.
Alerting DP	S	This IE indicates that the gsmSCF may instruct the gsmSSF to arm the O_Term_Seized or Call_Accepted DPs.
Location At Alerting	S	This IE indicates that the Location Information IE shall be present (if available) in the Event Report BCSM IF reporting the Call_Accepted DP.
Change Of Position DP	S	This IE indicates that the gsmSCF may instruct the gsmSSF to arm the O_Change_Of_Position or T_Change_Of_Position DPs. The gsmSCF may instruct the gsmSSF to automatically re-arm the DPs.
OR Interactions	S	This IE indicates that the gsmSCF may send to the gsmSSF the Basic OR Interrogation Requested IE in the Connect or Continue With Argument IFs. This IE indicates the Route Not Permitted IE may be present in the Event Report BCSM IF reporting the O_Abandon DP.
Warning Tone Enhancements	S	This IE indicates that the gsmSCF may send to the gsmSSF the Play Burstlist IE (within the Audible Indicator IE) in an Apply Charging IF.
CF Enhancements	S	This IE indicates that the Forwarding Destination Number IE may be present in the Event Report BCSM IF reporting the T_Busy or T_No_Answer DP.
<a href="#">Subscribed Enhanced Dialed Services</a>	<u>S</u>	<a href="#">This IE indicates that Subscribed Enhanced Dialed Services is offered.</a>
<a href="#">Serving Network Enhanced Dialed Services</a>	<u>S</u>	<a href="#">This IE indicates that Serving Network Enhanced Dialed Services is offered.</a>

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

Information element name	MO	MF	MT	VT	NC	NP	Description
Location Number	-	-	C	C	-	-	See 3GPP TS 23.018 [12].
Service area ID	C,E	-	C,E	C,E	-	-	See 3GPP TS 23.018 [12].
Cell ID	C,E	-	C,E	C,E	-	-	See 3GPP TS 23.018 [12].
Geographical information	C	-	C	C	-	-	See 3GPP TS 23.018 [12].

Information element name	MO	MF	MT	VT	NC	NP	Description
Geodetic information	C	-	C	C	-	-	See 3GPP TS 23.018 [12].
VLR number	M	-	C	M	-	-	See 3GPP TS 23.018 [12].
Age Of location information	M	-	C	C	-	-	See 3GPP TS 23.018 [12].
Current Location Retrieved	-	-	-	-	-	-	Not applicable
Location area ID	C,E	-	C,E	C,E	-	-	See 3GPP TS 23.003 [7].
Selected LSA Identity	S	-	S	S	-	-	This IE indicates the LSA identity associated with the current position of the MS. It shall be present if the LSA ID in the subscriber data matches the LSA ID of the current cell. In the case of multiple matches the LSA ID with the highest priority shall be present. See 3GPP TS 23.073 [17]. This IE shall be present if available and SoLSA is supported, otherwise it shall be absent.

Carrier contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Carrier Identification Code	M	M	M	M	-	M	This IE uniquely identifies a North American long distance carrier.
Carrier Selection Information	M	M	M	M	-	M	This IE indicates the way the carrier was selected i.e.: - dialled - subscribed

Service Interaction Indicators Two contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Forward Service Interaction Indicator	C	C	C	C	-	C	This IE is described in a table below.
HOLD Treatment Indicator	C	-	-	C	-	C	This IE indicates whether the CAMEL subscriber can invoke HOLD for the call.
CW Treatment Indicator	C	-	-	C	-	C	This IE indicates whether CW can be applied for a call to the CAMEL subscriber whilst this call is ongoing.
ECT Treatment Indicator	C	-	-	C	-	C	This IE indicates whether the call leg can become part of an ECT call initiated by the CAMEL subscriber.

Forward Service Interaction Indicator contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Conference Treatment Indicator	C	C	C	C	-	C	This IE indicates whether the call leg can become part of a MPTY call initiated by the called subscriber.
Call Diversion Treatment Indicator	C	C	C	C	-	C	This IE indicates whether the call can be forwarded using the Call Forwarding or Call Deflection supplementary services.

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