3GPP TSG CN Plenary Meeting #19   **NP-030091**
12th - 14th March 2003. Birmingham, U.K.

Source:	**CN2**
Title:	**CRs on Rel-5 Work Item IMS-CAMEL, CR Pack 2**
Agenda item:	**8.3**
Document for:	**APPROVAL**

Introduction:

This document contains 5 CRs on Rel-5 WI IMS-CAMEL. These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #19 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.278	032		N2-030082	Rel-5	Sending of provisional response for the INVITE	F	5.1.0
23.278	033		N2-030083	Rel5	Incorrect SIP response when no CAMEL is invoked	F	5.1.0
23.278	035	1	N2-030143	Rel-5	Corrections in CAMEL_IMCN_MO_ANSWER	F	5.1.0
23.278	036		N2-030086	Rel-5	Corrections in the procedures for handling failure SIP response	F	5.1.0
23.278	039		N2-030155	Rel-5	Inconsistency in Call Information Report in Re-Connect Case	F	5.1.0

3GPP TSG-CN WG2 Meeting #27

Dublin, Ireland, 10th - 14th February 2003.

Tdoc ⌘N2-030082

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CHANGE REQUEST

⌘	**23.278** CR **032**	⌘**rev**	**-**	⌘	Current version:	**5.1.0**	⌘

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

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

Title:	⌘	Sending of provisional response for the INVITE
Source:	⌘	Lucent Technologies
Work item code: ⌘	IMS-CAMEL	**Date:** ⌘ 21/01/2003
Category: ⌘	**F**	**Release:** ⌘ Rel-5

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 <u>TR 21.900</u>.

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)*

Reason for change:	⌘	In the current SDL process MO_IM_SSF, the provisional SIP response "100 Trying" is sent after the CAMEL data has been processed and the INVITE request has been forwarded to the destination S-CSCF. Although there is no hard requirements in the IETF specifications that the provisional response be sent immediately after the INVITE request has been received, the elapse time between the receipt of the INVITE and the sending of the provisional response in the IM-SSF is rather too long. SIP INVITE request will potentially timeout before the provisional response is received if the IM-SSF completes CAMEL processing before it sends the 100 Trying provisional response to S-CSCF.
Summary of change: ⌘	In MO_IM_SSF and MT_IM_SSF (sheets 1), send the response "100 Trying" immediately after the "INVITE" is received, and remove the "100 Trying" sent after the INVITE sent to the terminating party.	
Consequences if not approved:	⌘	SIP INVITE request will potentially timeout before the provisional response is received.

Clauses affected:	⌘	4.6.1.3 and 4.6.1.4

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

Other comments:	⌘	

****
**** First modified section ****
****

4.6.1.3   Handling of Mobile Originated Calls in the IM-SSF

...

Process MO_IM_SSF
1(5)

Process in IM-SSF to perform Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the destination S-CSCF via S-CSCF, unless otherwise stated. */

Idle

INVITE

Initialise values

CAMEL_Invocation := False,
Provisional_Respose_Received := False,
Final_Response_Received := False,
Cancel_Received := False

CAMEL_IMCN_ MO_O_IM_ CSI_INIT

Result ?

1 → Pass   Fail   Abort   2

CAMEL_IMCN_ MO_D_IM_ CSI_INIT

Result ?   Fail   Abort

Pass

CAMEL_ Invocation ?

True   False

INVITE   488 Not Acceptable Here   606 Not Acceptable   487 Request Terminated

100 Trying   200 OK

Wait_For_ Answer   To S-CSCF   Release Call Resources

Idle
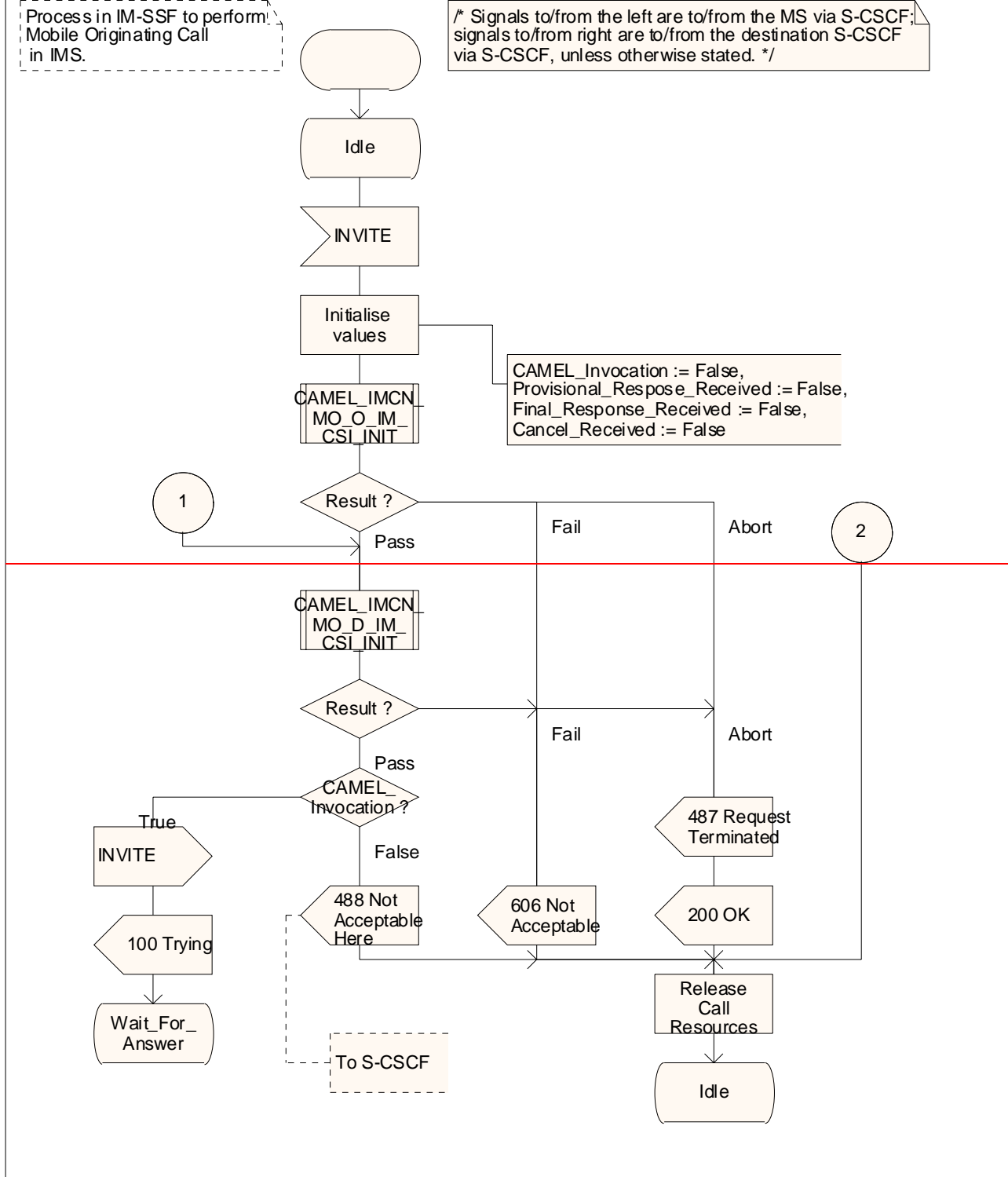
Process MO_IM_SSF   1(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS
via S-CSCF; signals to/from right are to/from
the destination S-CSCF
via S-CSCF, unless otherwise stated. */

Idle

INVITE

100 Trying

Initialise
values

CAMEL_Invocation := False,
Provisional_Response_Received := False,
Final_Response_Received := False,
Cancel_Received := False

1

CAMEL_IMCN_
MO_O_IM_
CSI_INIT

Result ?

Pass   Fail   Abort

CAMEL_IMCN_
MO_D_IM_
CSI_INIT

2

Result ?

Pass   Fail   Abort

CAMEL_
Invocation ?

True

487 Request
Terminated

INVITE

488 Not
Acceptable
Here

606 Not
Acceptable

200 OK

False

Wait_For_
Answer

To S-CSCF

Release
Call
Resources

Idle

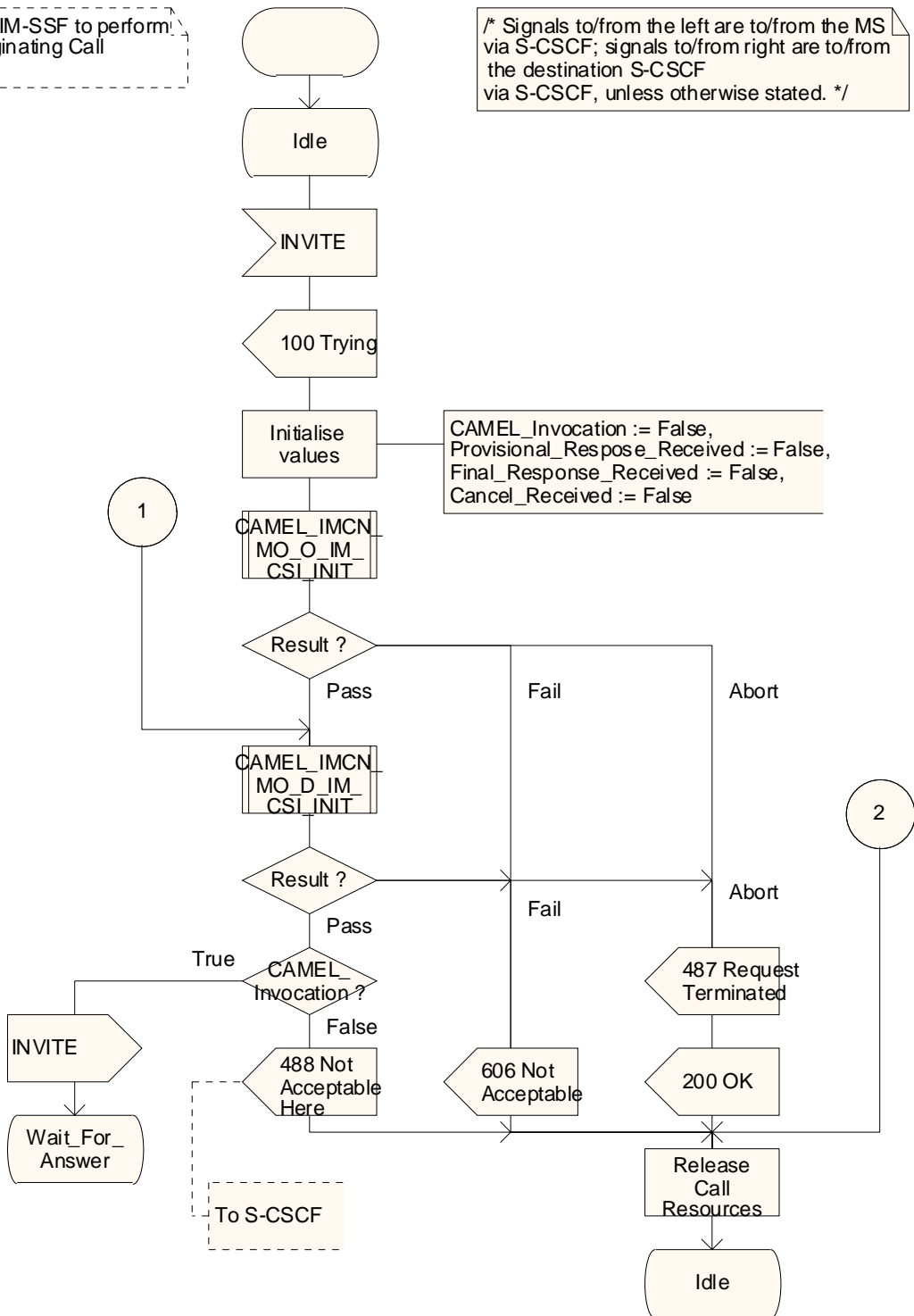**Figure 4.13-1: Process MO_IM_SSF (sheet 1)**

<div style="border:2px solid black; text-align:center;">

**** Next modified section ****

</div>

4.6.1.4   Handling of Mobile Terminated IP Multimedia sessions in the IM-SSF

...

Process MT_IM_SSF 1(5)

Process in IM-SSF to perform Mobile Terminating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the originating S-CSCF via S-CSCF, unless otherwise stated. */

Idle

INVITE

Initialise values

CAMEL_Invocation := False,
Provisional_Respose_Received := False,
Final_Response_Received := False,
Ack_Received := False,
Cancel_Received := False,
Bye_Received := False

Check_ Registration

Result ?

Fail

Pass

488 Not Acceptable Here

To S-CSCF

1

CAMEL_IMCN_ MT_VT_IM_ CSI_INIT

Result ?

Pass

Reconnect

Fail

CAMEL_IMCN_ MT_RECONNECT

2

Result ?

Fail

Pass

INVITE

606 Not Acceptable

100 Trying

Establish Through Connection

Release Call Resources

Wait_For_ MT_Answer

Idle

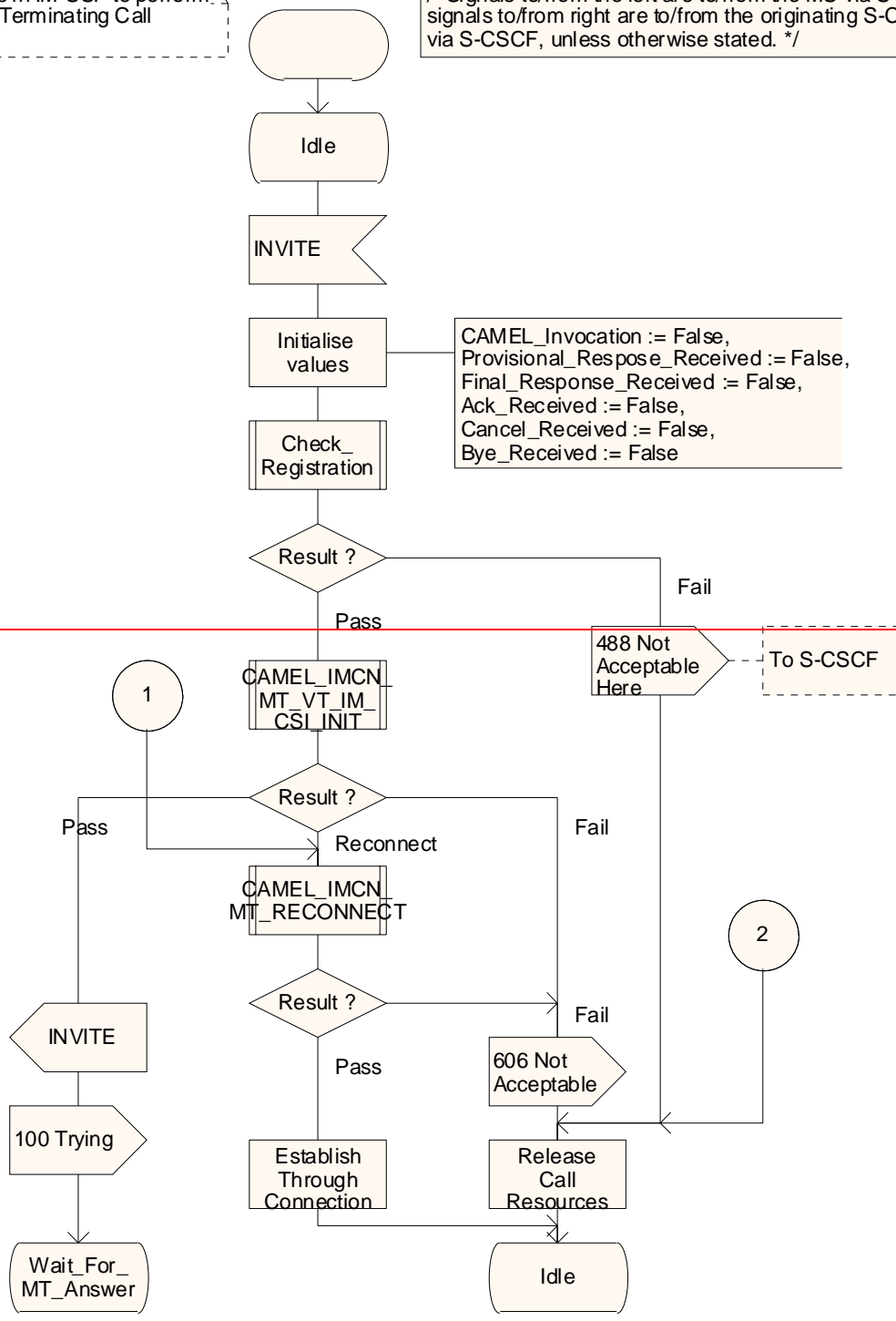Process MT_IM_SSF   1(5)

Process in IM-SSF to perform
Mobile Terminating Call
in IMS.

/* Signals to/from the left are to/from the MS
via S-CSCF; signals to/from right are to/from the
originating S-CSCF
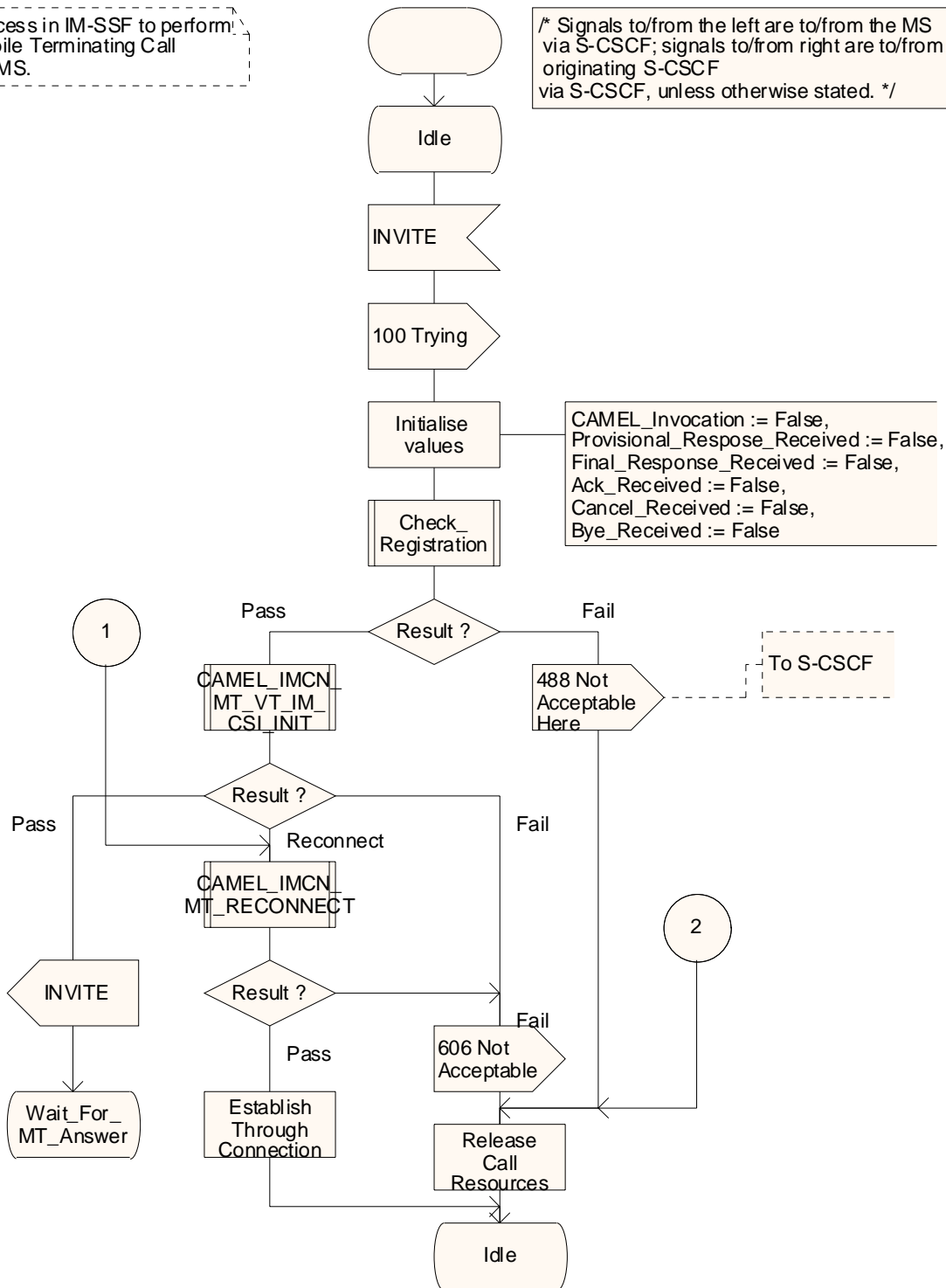via S-CSCF, unless otherwise stated. */

Idle

> INVITE

100 Trying

Initialise
values

CAMEL_Invocation := False,
Provisional_Respose_Received := False,
Final_Response_Received := False,
Ack_Received := False,
Cancel_Received := False,
Bye_Received := False

Check_
Registration

Pass | Result ? | Fail

1

CAMEL_IMCN_
MT_VT_IM_
CSI_INIT

488 Not
Acceptable
Here

To S-CSCF

Result ?

Pass

Reconnect   Fail

CAMEL_IMCN_
MT_RECONNECT

2

INVITE

Result ?

Pass   Fail

Wait_For_
MT_Answer

606 Not
Acceptable

Establish
Through
Connection

Release
Call
Resources

Idle

Figure 4.22-1: Process MT_IM_SSF (sheet 1)

**** End of modified section ****

3GPP TSG-CN WG2 Meeting #27   *Tdoc* ⌘*N2-030083*
Dublin, Ireland, 10th - 14th February 2003.

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CHANGE REQUEST

⌘	**23.278 CR 033**	⌘**rev**	**-**	⌘	Current version:	**5.1.0**	⌘

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

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

Title: ⌘	Incorrect SIP response when no CAMEL is invoked		
Source: ⌘	Lucent Technologies		
Work item code:⌘	IMS-CAMEL	***Date:*** ⌘	21/01/2003
Category: ⌘	**F**	***Release:*** ⌘	Rel-5

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 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)

Reason for change: ⌘	In SDL Process MO_IM_SSF, the IM-SSF sends a SIP 488 Not Acceptable Here response for the case when no CAMEL processing has been invoked. However, the 488 would be more appropriate if the IM-SSF server itself that does not have the capability to support CAMEL service. Since the error is specific to the subscriber's CAMEL service information i.e. no CAMEL data available for the subscriber, it would be more appropriate to send the "606 Not Acceptable" response instead. Similarly, in Process MT_IM_SSF, when the procedure "Check_Registration" returns with a failure because no IM CSI data is available for the subscriber, the IM-SSF returns the "488 Not Acceptable Here" response. The SIP 488 response should also be replaced with "606 Not Acceptable" for the same reason that the error is specific to the subscriber's data. Note that the absence of the subscriber's CSI data in the IM-SSF is not an error by itself. It is considered an error because of the conflicting information between the subscriber's initial filter criteria in the S-CSCF and the subscriber's data in the IM-SSF.
Summary of change:⌘	Replace SIP 488 Not Acceptable Here response with SIP 606 Not Acceptable in both MO_IM_SSF and MT_IM_SSF.
Consequences if not approved: ⌘	Misuse of SIP 488 response may lead to an incorrect handling in the client server since the SIP 488 response indicates that the request may succeed if sent to a different server.
Clauses affected: ⌘	4.6.1.3 (Figure 4.13-1), 4.6.1.4 (Figure 4.22-1)

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

**** First modified section ****

4.6.1.3 Handling of Mobile Originated Calls in the IM-SSF

…

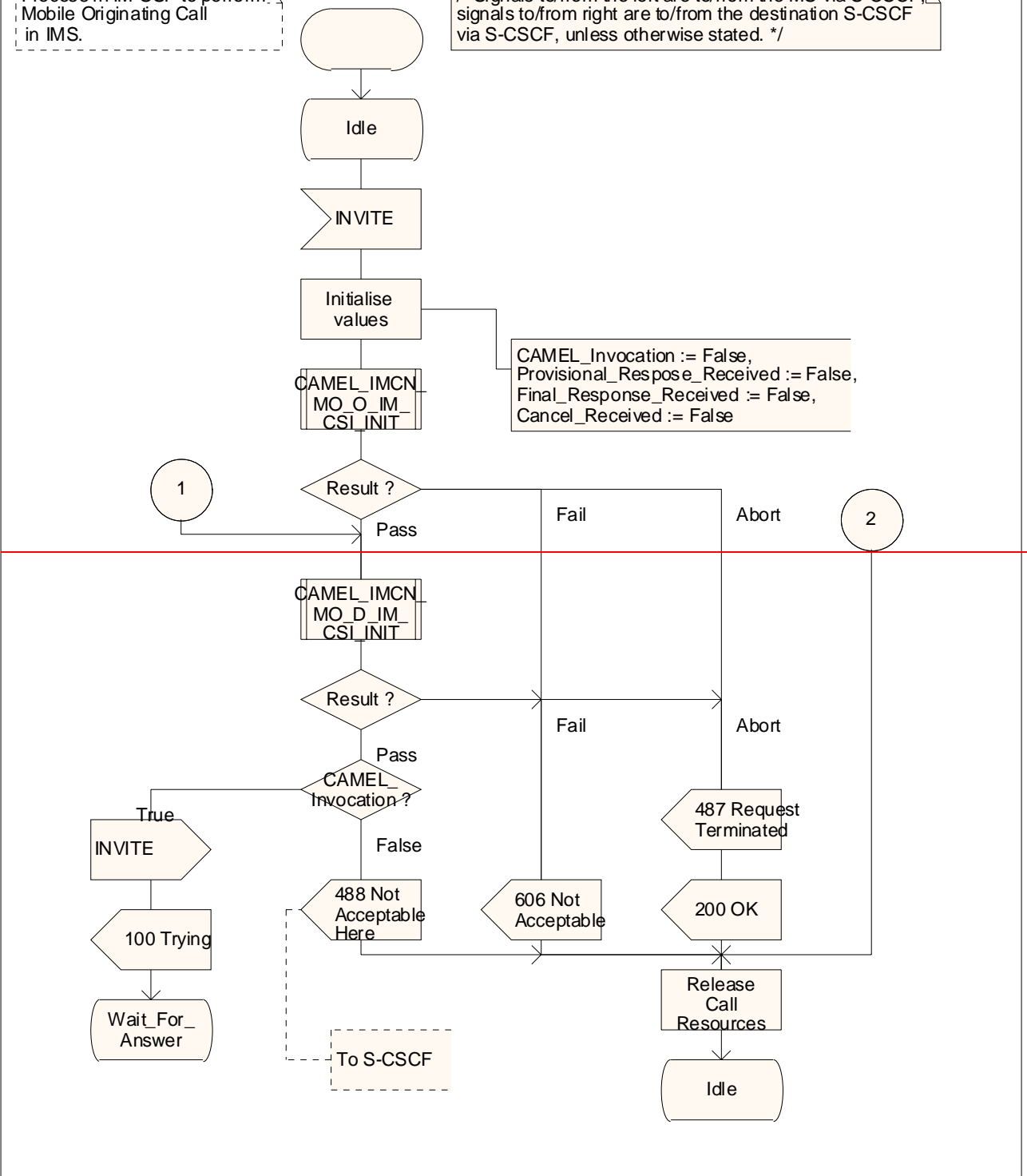## Process MO_IM_SSF   1(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
via S-CSCF, unless otherwise stated. */

Idle

INVITE

Initialise
values

CAMEL_Invocation := False,
Provisional_Respose_Received := False,
Final_Response_Received := False,
Cancel_Received := False

CAMEL_IMCN_
MO_O_IM_
CSI_INIT

(1)   Result ?   (2)
             Pass   Fail   Abort

CAMEL_IMCN_
MO_D_IM_
CSI_INIT

Result ?
                              Fail   Abort
Pass

CAMEL_
Invocation ?

True
                              487 Request
INVITE   Terminated

                 488 Not   606 Not   200 OK
100 Trying   Acceptable   Acceptable
                 Here

Wait_For_   Release
Answer   Call
                                              Resources

                 To S-CSCF

                                              Idle

Process MO_IM_SSF 1(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
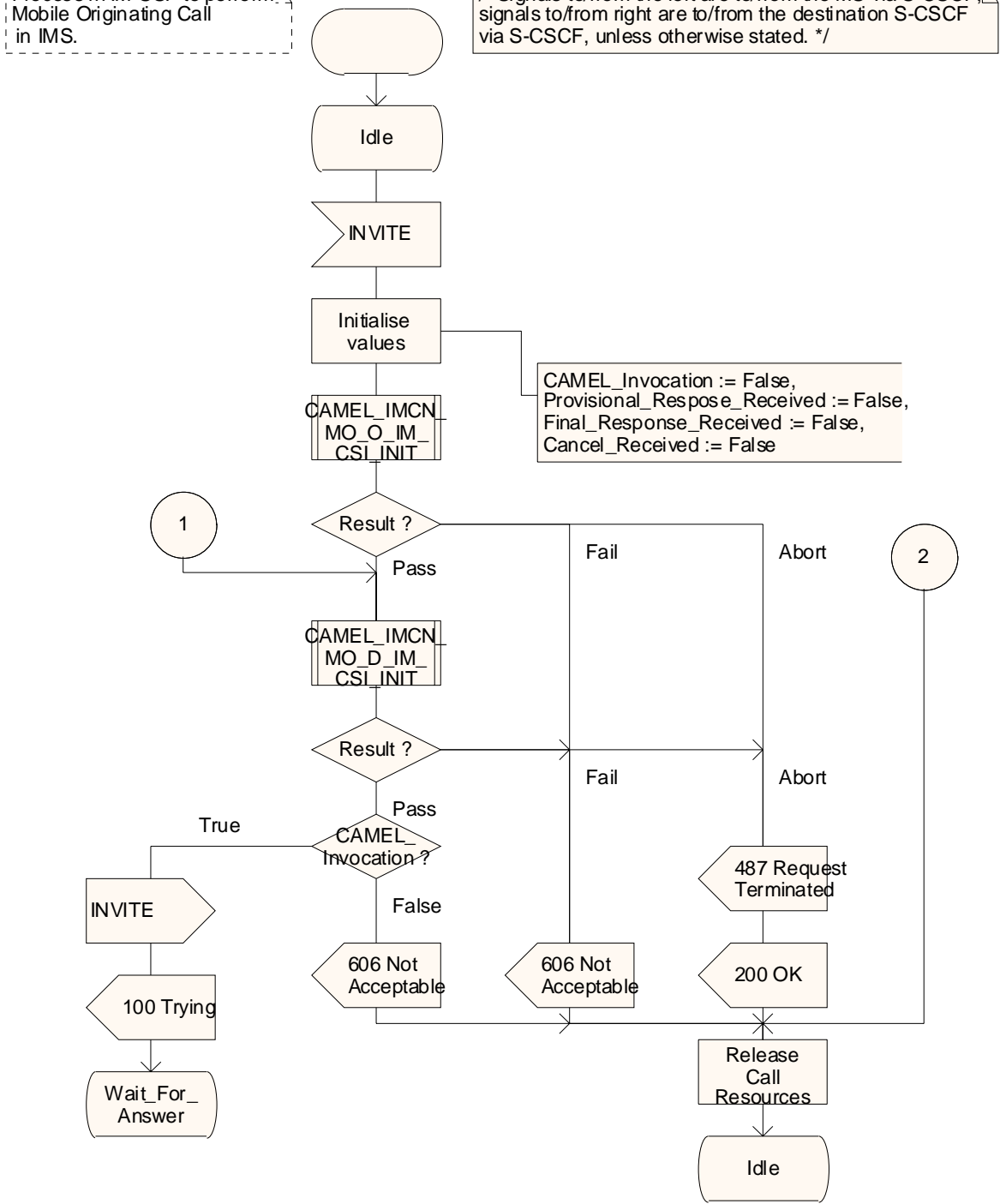via S-CSCF, unless otherwise stated. */

Idle

INVITE

Initialise
values

CAMEL_Invocation := False,
Provisional_Response_Received := False,
Final_Response_Received := False,
Cancel_Received := False

CAMEL_IMCN_
MO_O_IM_
CSI_INIT

1

Result ?

Pass

Fail

Abort

2

CAMEL_IMCN_
MO_D_IM_
CSI_INIT

Result ?

Pass

Fail

Abort

True

CAMEL_
Invocation ?

487 Request
Terminated

INVITE

False

100 Trying

606 Not
Acceptable

606 Not
Acceptable

200 OK

Wait_For_
Answer

Release
Call
Resources

Idle

Figure 4.13-1: Process MO_IM_SSF (sheet 1)

<table>
<tr><td>**** Next modified section ****</td></tr>
</table>

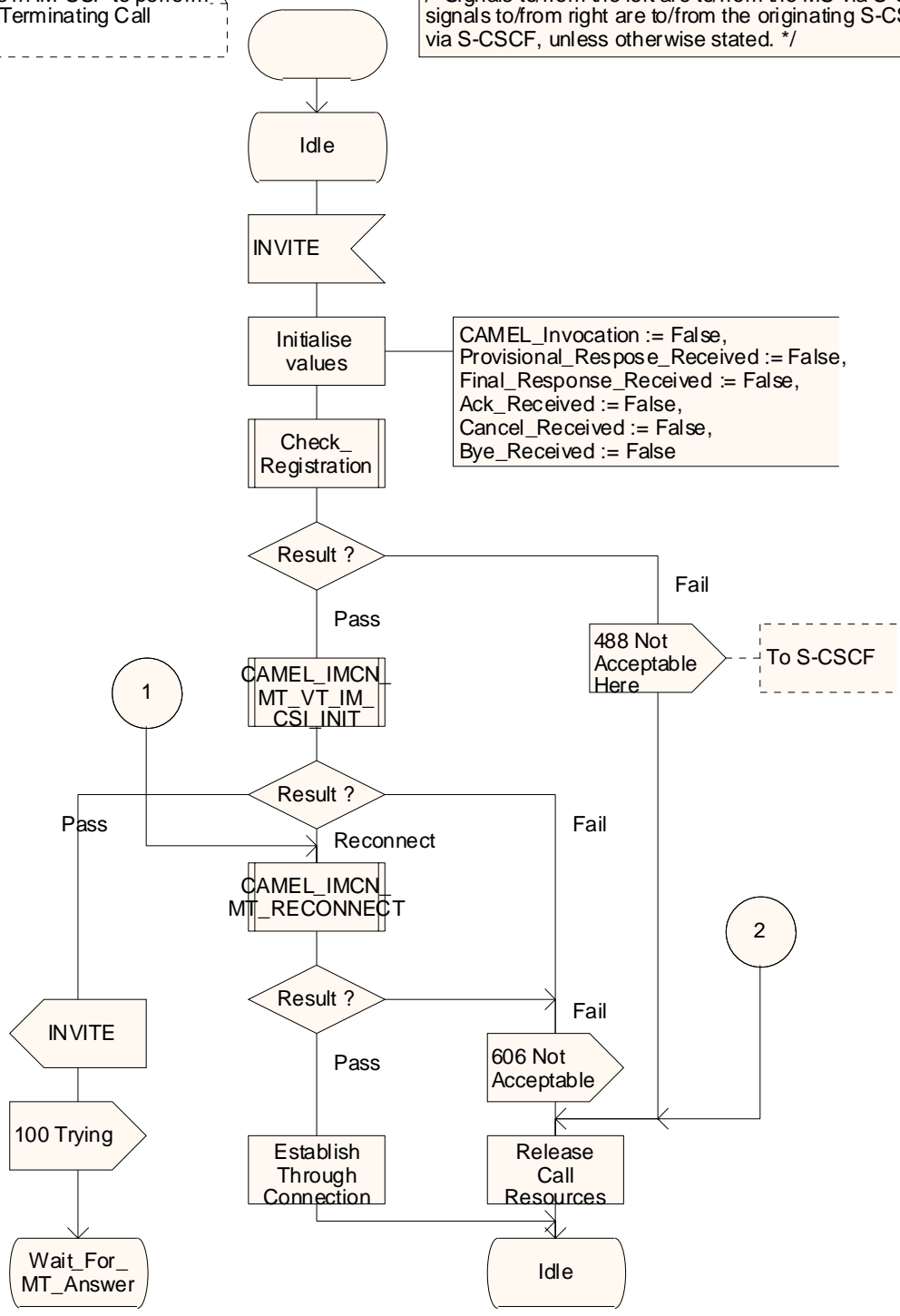4.6.1.4   Handling of Mobile Terminated IP Multimedia sessions in the IM-SSF

…

Process MT_IM_SSF   1(5)

Process in IM-SSF to perform
Mobile Terminating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the originating S-CSCF
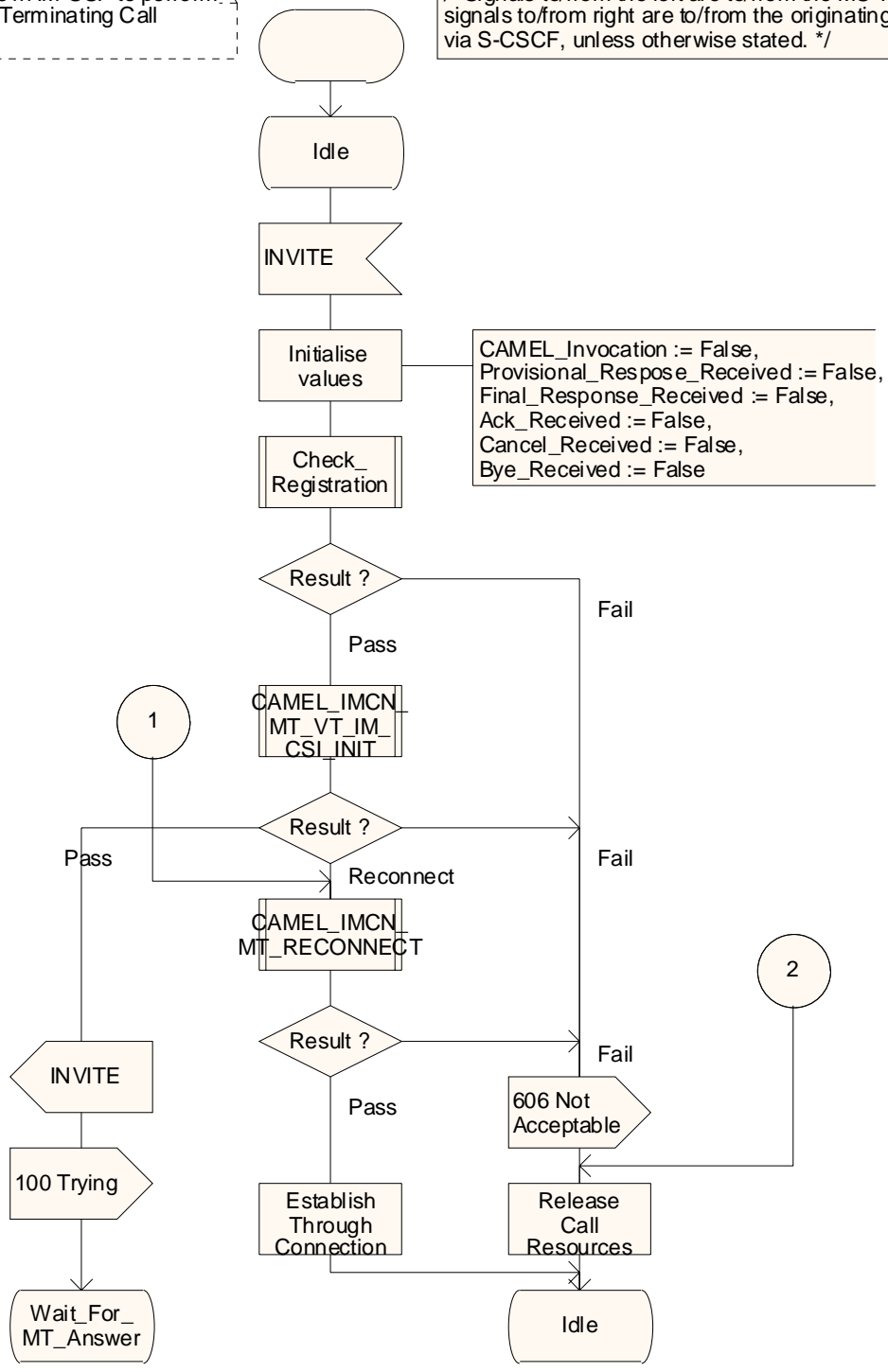via S-CSCF, unless otherwise stated. */

Idle

INVITE

Initialise
values

CAMEL_Invocation := False,
Provisional_Respose_Received := False,
Final_Response_Received := False,
Ack_Received := False,
Cancel_Received := False,
Bye_Received := False

Check_
Registration

Result ?

Pass

Fail

488 Not
Acceptable
Here

To S-CSCF

1

CAMEL_IMCN_
MT_VT_IM_
CSI_INIT

Result ?

Pass

Reconnect

Fail

CAMEL_IMCN_
MT_RECONNECT

2

Result ?

Pass

Fail

INVITE

606 Not
Acceptable

100 Trying

Establish
Through
Connection

Release
Call
Resources

Wait_For_
MT_Answer

Idle

Process MT_IM_SSF 1(5)

Process in IM-SSF to perform Mobile Terminating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the originating S-CSCF via S-CSCF, unless otherwise stated. */

Idle

INVITE

Initialise values

CAMEL_Invocation := False,
Provisional_Respose_Received := False,
Final_Response_Received := False,
Ack_Received := False,
Cancel_Received := False,
Bye_Received := False

Check_ Registration

Result ?

Fail

Pass

1

CAMEL_IMCN_ MT_VT_IM_ CSI_INIT

Result ?

Fail

Pass

Reconnect

CAMEL_IMCN_ MT_RECONNECT

INVITE

Result ?

2

Fail

100 Trying

Pass

606 Not Acceptable

Establish Through Connection

Release Call Resources

Wait_For_ MT_Answer

Idle

Figure 4.22-1: Process MT_IM_SSF (sheet 1)

**** End of modified section ****

3GPP TSG-CN WG2 Meeting #27
Dublin, Ireland, 10th - 14th February 2003.

Tdoc ⌘*N2-030086*

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CHANGE REQUEST

⌘	**23.278** CR	**036**	⌘**rev**	**-**	⌘	Current version:	**5.1.0**	⌘		

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

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

Title: ⌘	Corrections in the procedures for handling failure SIP response	
Source: ⌘	Lucent Technologies	
Work item code: ⌘	IMS-CAMEL	***Date:*** ⌘ 05/02/2003
Category: ⌘ **F**		***Release:*** ⌘ Rel-5

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

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

Reason for change: ⌘	The handling of the IM-SSF when a 4xx/5xx/6xx final response is received is incorrect. In the current SDLs for Process MO_IM_SSF, when a non-2xx final response is received while at the Wait_For_Answer state, the IM-SSF immediately sends the error response to the originating S-CSCF. Once the error response is sent to the originating S-CSCF, this basically kills the call. The IM-SSF should defer sending of the error response to the originating S-CSCF untl after it has determined that there is no other treatment that can be provided by CAMEL.
	Also, the IM-SSF's handling of unsuccessful call attempt due to timer expiry for the INVITE is incorrect. In the current SDLs, the IM-SSF, as a client, sends a BYE to the terminating S-CSCF when the internal timer for receiving a final response for the INVITE has expired. In addition, the IM-SSF, as a server, sends a BYE request to the originating S-CSCF. However, it is indicated in RFC3261 that a client should send a CANCEL if the timer for the INVITE expires before the final response is received. It is also indicated that a server can only send a BYE after the ACK for the INVITE has been received. Since the IM-SSF has not yet received the ACK from the originating S-CSCF, the sending of the BYE is not allowed in this case.
Summary of change: ⌘	The Process MO_IM_SSF is modified to
	- (sheet 3) Remove the sending of the 4xx/5xx/6xx response to the originating S-CSCF.
	- (sheet 3) Replace "BYE" with "CANCEL" for timer expiry condition. The CANCEL is more appropriate because there is no final response received yet for the INVITE. Also, it is also indicated in RFC3261 that a UAC shall send a CANCEL in the case where the timer for the INVITE final response

has expired.

In Procedure CAMEL_IMCN_MO_UNSUCCESSFUL, the following changes are done:

- (sheet 1) Moved event 480 to procedure tagged "3" and event for Busy response should go to "2"
- For sheets 2- 5, handling of the SIP final responses 4xx/5xx/6xx to the originating S-CSCF are added.
- (sheet 4) Removed sending of "BYE". After the 4xx response was received and the ACK sent, there is no more dialog between the IM-SSF and the terminating S-CSCF.
- (sheet 4) Removed unnecessary "6xx" response – the same 4xx response received from the terminating S-CSCF is sent to the originating S-CSCF.
- (sheet 5) Replaced "BYE" with "487 Request Terminated" for timer expiry event. The 487 response is used for a server that has received the optional Expires header field in the INVITE and the timer expired before a final response is sent to the client. This seems more appropriate than the other option which is to just wait for a CANCEL from the originating side when the timer expires.
- In sheet 6, sending of the CANCEL to the terminating party is removed. There is no more dialog between the IM-SSF and the terminating party at this point.

This CR also include corrections for the following minor errors found in sheet 4 in Process MO_IM_SSF:

- The receipt and sending of the ACK message are in backwards directions. The inbound "ACK" message should be coming from the originating MS. ACK is sent by the UA that requested the INVITE. Likewise, the outbound ACK should be sent from the IM-SSF to the terminating S-CSCF.
- The receipt of BYE from the terminating S-CSCF is an erroneous event that should not happen. Accdg to the SIP specification, the callee can only send a BYE after the ACK for the INVITE is received. Hence, the BYE event from the terminating S-CSCF is removed.

Consequences if not approved:	⌘	Incorrect processing of unsuccessful MO call session attempt.

Clauses affected:	⌘	4.6.1.3 (Figures 4.13 and 4.18)

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

Other comments:	⌘	

<div style="border: 2px solid black; padding: 10px; text-align: center;">

**** First modified section ****

</div>

4.6.1.3   Handling of Mobile Originated Calls in the IM-SSF

...

Process MO_IM_SSF   1(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
via S-CSCF, unless otherwise stated. */

Idle

INVITE

Initialise
values

CAMEL_Invocation := False,
Provisional_Respose_Received := False,
Final_Response_Received := False,
Cancel_Received := False

CAMEL_IMCN_
MO_O_IM_
CSI_INIT

1   Result ?   Fail   Abort   2

Pass

CAMEL_IMCN_
MO_D_IM_
CSI_INIT

Result ?   Fail   Abort

Pass

CAMEL_
Invocation ?

True   False

INVITE   488 Not   606 Not   487 Request
                         Acceptable   Acceptable   Terminated
                         Here

100 Trying   200 OK

Wait_For_   To S-CSCF   Release
Answer   Call
                                                           Resources

                                                           Idle

Figure 4.13-1: Process MO_IM_SSF (sheet 1)

Process MO_IM_SSF 2(5)

Process in IM-SSF to perform Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the destination S-CSCF via S-CSCF, unless otherwise stated. */
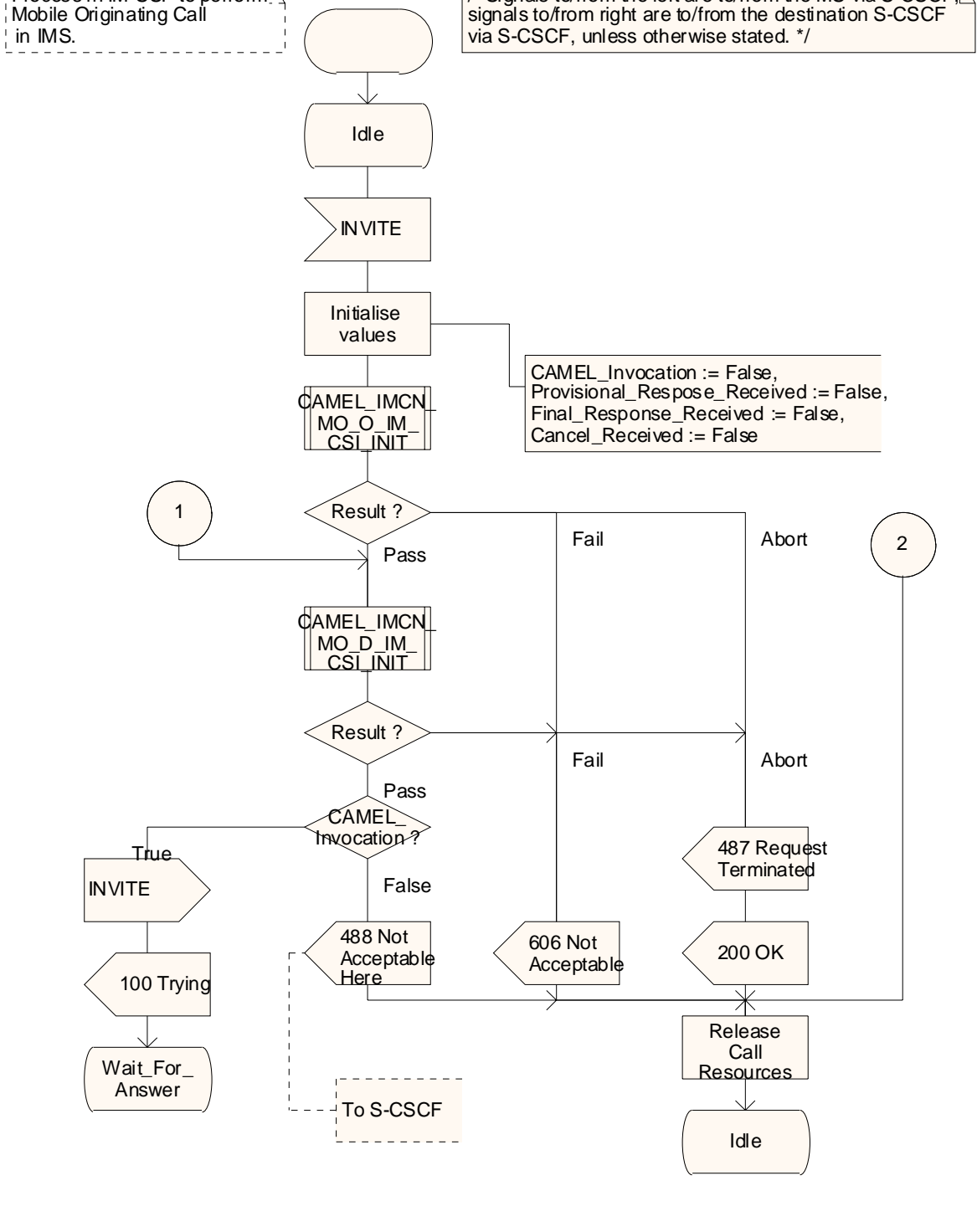
Wait_For_Answer

100 Trying   1xx except 100   200 OK

200 OK   200 OK   Final_Response_Received := True

1xx   CAMEL_IMCN_MO_ANSWER

Cancel_Received ?   Result ?   Reconnect   Fail

False   True   Pass   (1)   (2)

Provisional_Response_Received := True   CANCEL   200 OK

Wait_For_Answer   CAMEL_IMCN_MO_CANCEL   Wait_For_ACK

487 Request Terminated   Same Response Code

200 OK

(2)

Figure 4.13-2: Process MO_IM_SSF (sheet 2)

Process MO_IM_SSF   3(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
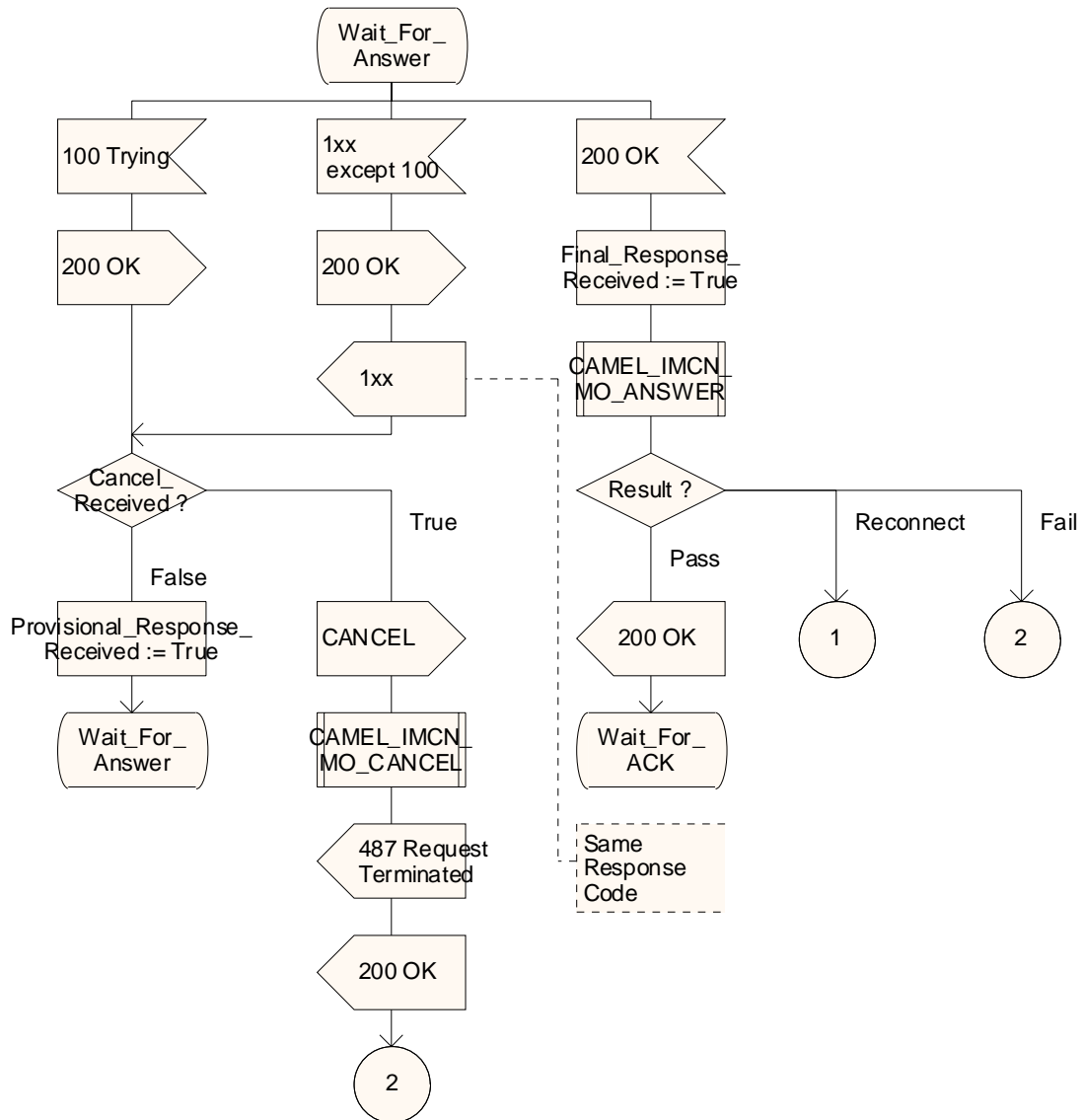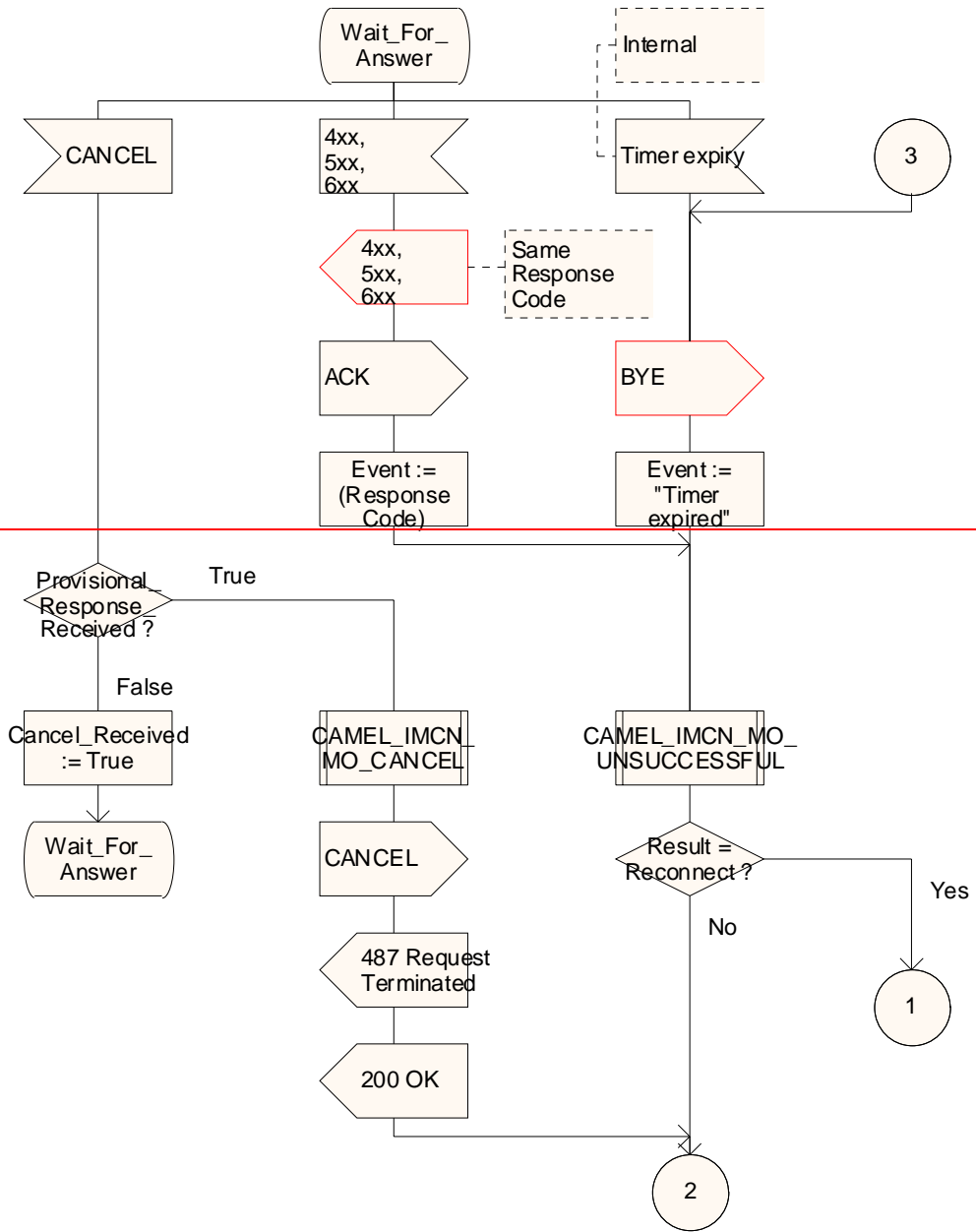via S-CSCF, unless otherwise stated. */

Wait_For_
Answer

Internal

CANCEL

4xx,
5xx,
6xx

Timer expiry

3

4xx,
5xx,
6xx

Same
Response
Code

ACK

BYE

Event :=
(Response
Code)

Event :=
"Timer
expired"

Provisional_
Response
Received ?

True

False

Cancel_Received
:= True

CAMEL_IMCN_
MO_CANCEL

CAMEL_IMCN_MO_
UNSUCCESSFUL

Wait_For_
Answer

CANCEL

Result =
Reconnect ?

Yes

No

487 Request
Terminated

1

200 OK

2

Process MO_IM_SSF   3(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
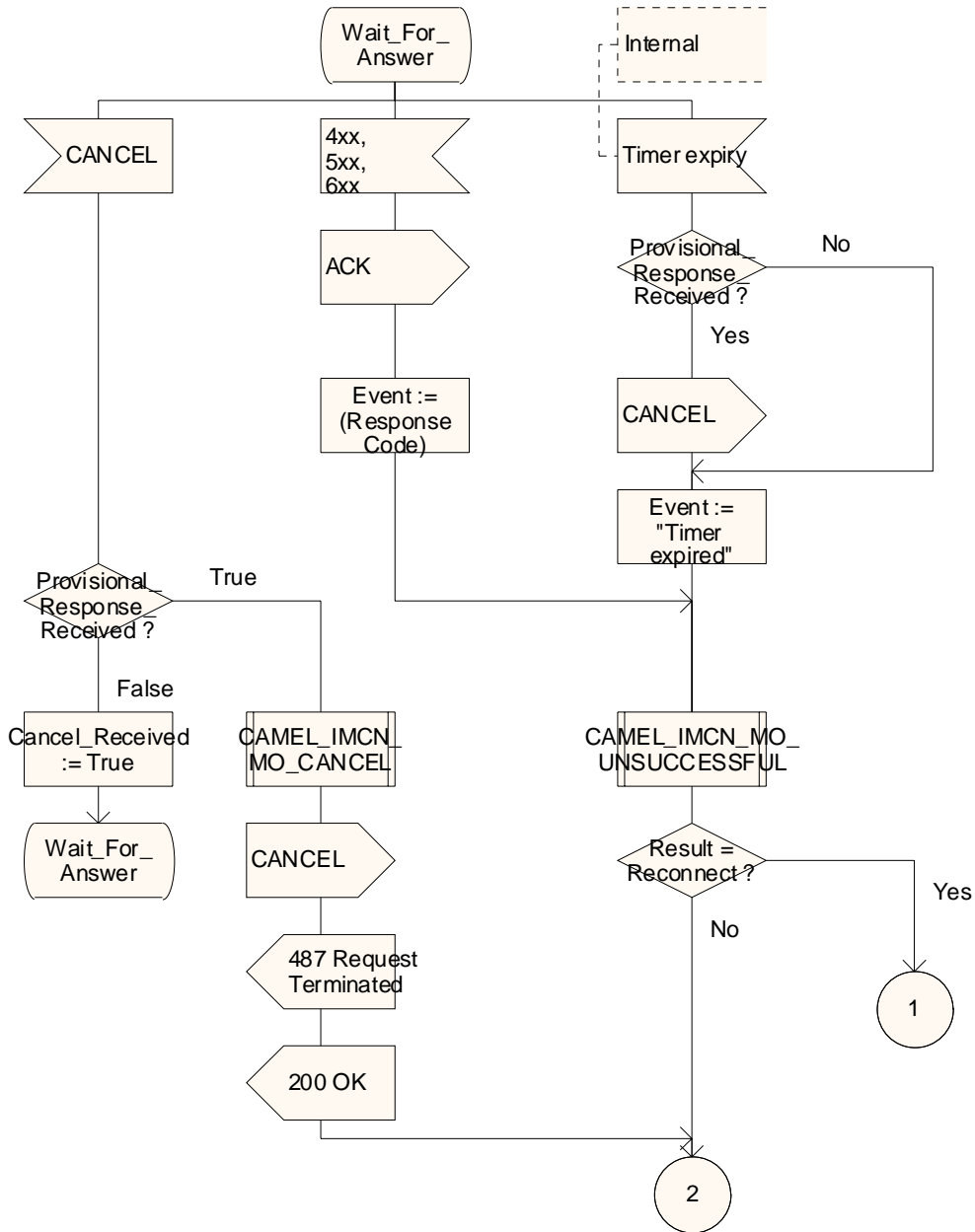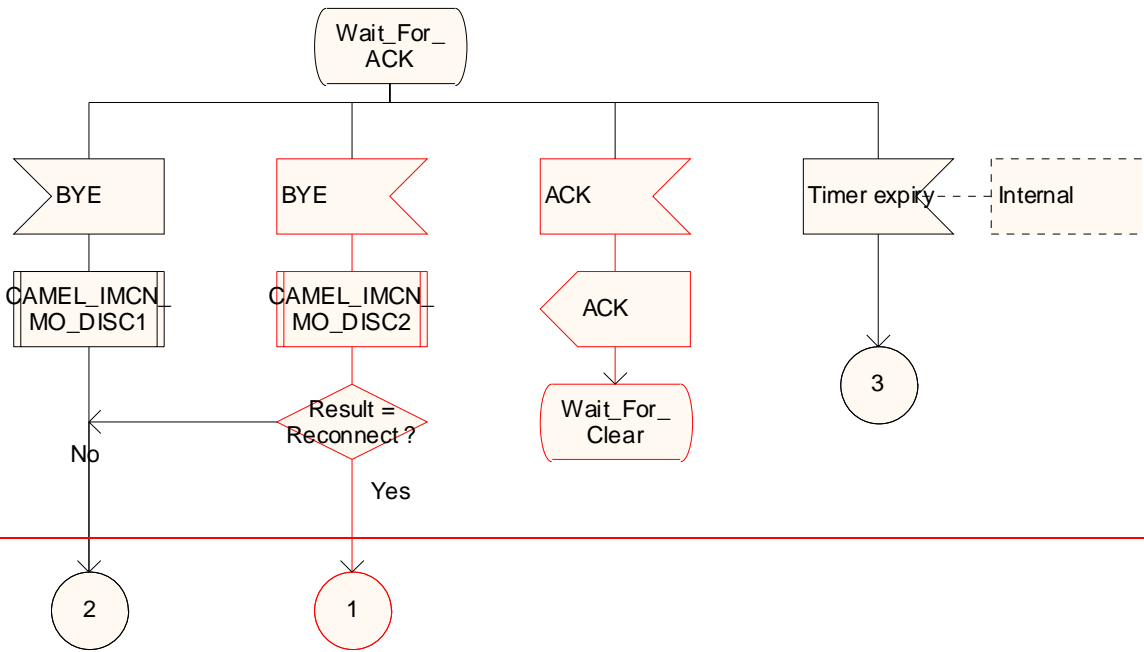via S-CSCF, unless otherwise stated. */

Wait_For_
Answer

Internal

CANCEL

4xx,
5xx,
6xx

Timer expiry

ACK

Provisional_
Response_
Received ?   No

Yes

Event :=
(Response
Code)

CANCEL

Event :=
"Timer
expired"

Provisional_
Response_
Received ?   True

False

Cancel_Received
:= True

CAMEL_IMCN_
MO_CANCEL

CAMEL_IMCN_MO_
UNSUCCESSFUL

Wait_For_
Answer

CANCEL

Result =
Reconnect ?

Yes

487 Request
Terminated

No

1

200 OK

2

Figure 4.13-3: Process MO_IM_SSF (sheet 3)

Process MO_IM_SSF   4(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
via S-CSCF, unless otherwise stated. */

Wait_For_
ACK

| BYE | BYE | ACK | Timer expiry | Internal |

CAMEL_IMCN_
MO_DISC1

CAMEL_IMCN_
MO_DISC2

ACK

Result =
Reconnect ?

Wait_For_
Clear

No

Yes

3

2

1

Process MO_IM_SSF   4(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
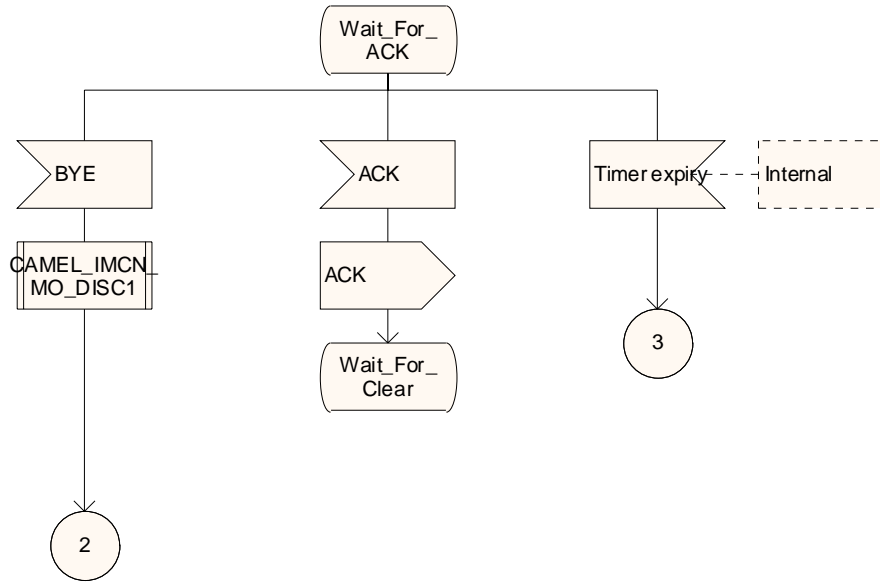via S-CSCF, unless otherwise stated. */

Wait_For_
ACK

BYE

CAMEL_IMCN_
MO_DISC1

2

ACK

ACK

Wait_For_
Clear

Timer expiry --- Internal

3

Figure 4.13-4: Process MO_IM_SSF (sheet 4)

Process MO_IM_SSF   5(5)

Process in IM-SSF to perform
Mobile Originating Call
in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the destination S-CSCF
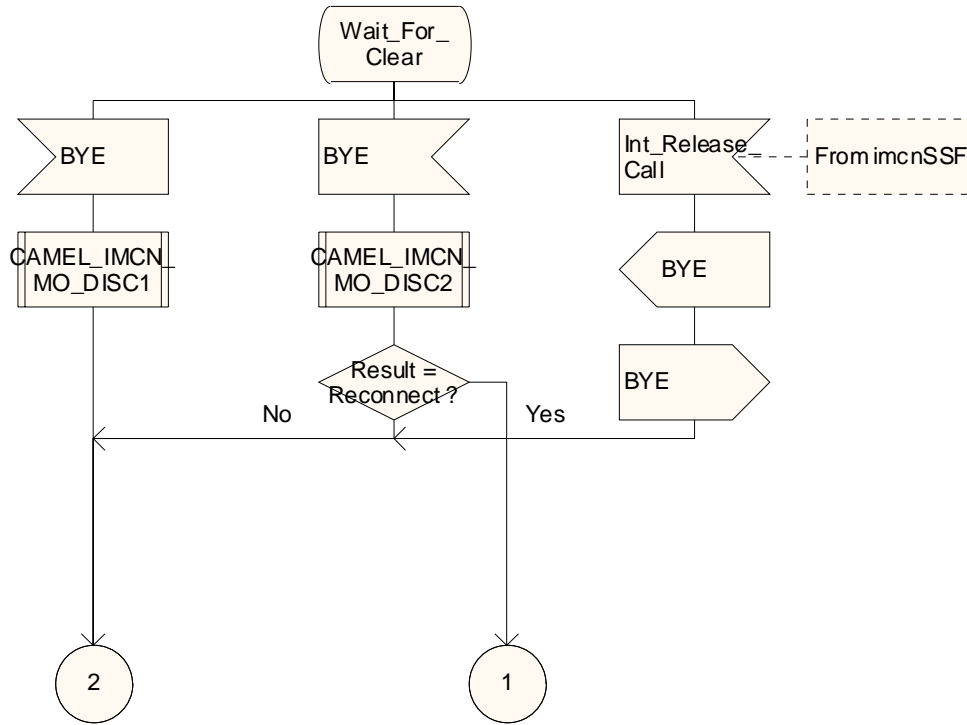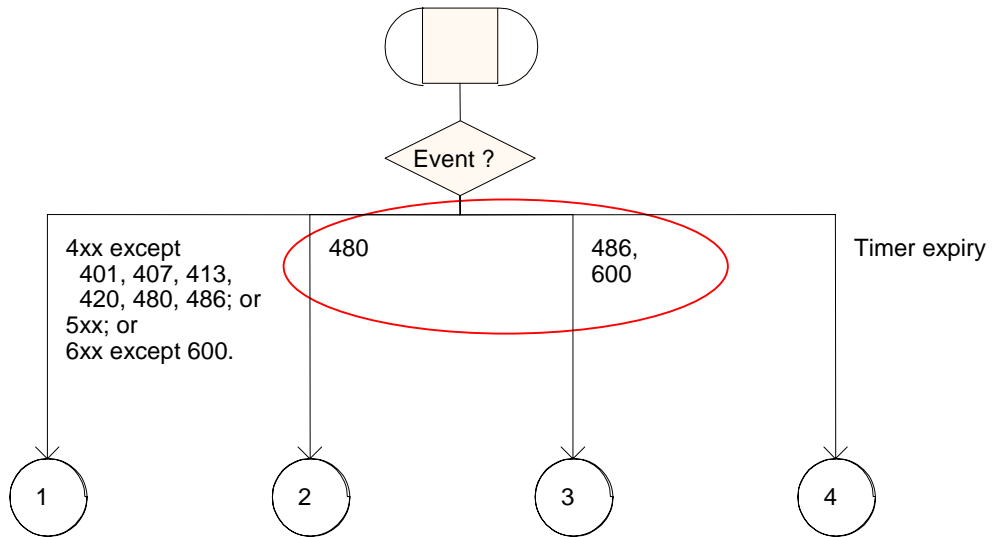via S-CSCF, unless otherwise stated. */

Wait_For_
Clear

BYE

BYE

Int_Release_
Call   From imcnSSF

CAMEL_IMCN_
MO_DISC1

CAMEL_IMCN_
MO_DISC2

BYE

Result =
Reconnect ?

BYE

No   Yes

2   1

Figure 4.13-5: Process MO_IM_SSF (sheet 5)

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   1(6)

Procedure in IM-SSF to handle unsuccessful
events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the imcnSSF,
unless otherwise stated. */

Event ?

4xx except
  401, 407, 413,
  420, 480, 486; or
5xx; or
6xx except 600.

480

486,
600

Timer expiry

1

2

3

4

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   1(6)

Procedure in IM-SSF to handle unsuccessful events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the imcnSSF, unless otherwise stated. */
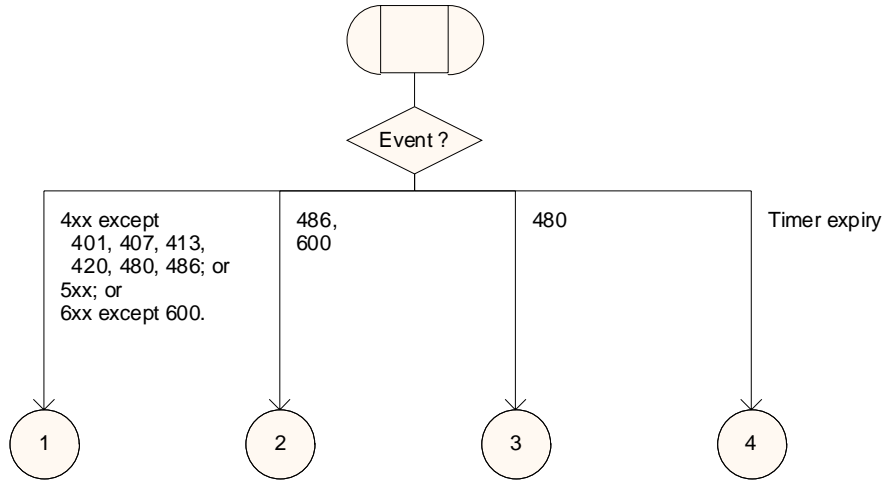
Event ?

4xx except
  401, 407, 413,
  420, 480, 486; or
5xx; or
6xx except 600.

486,
600

480

Timer expiry

(1)   (2)   (3)   (4)

Figure 4.18-1: Procedure CAMEL_IMCN_MO_UNSUCCESSFUL (sheet 1)

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL　　　　　　　　　　2(6)

Procedure in IM-SSF to handle unsuccessful
events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the imcnSSF,
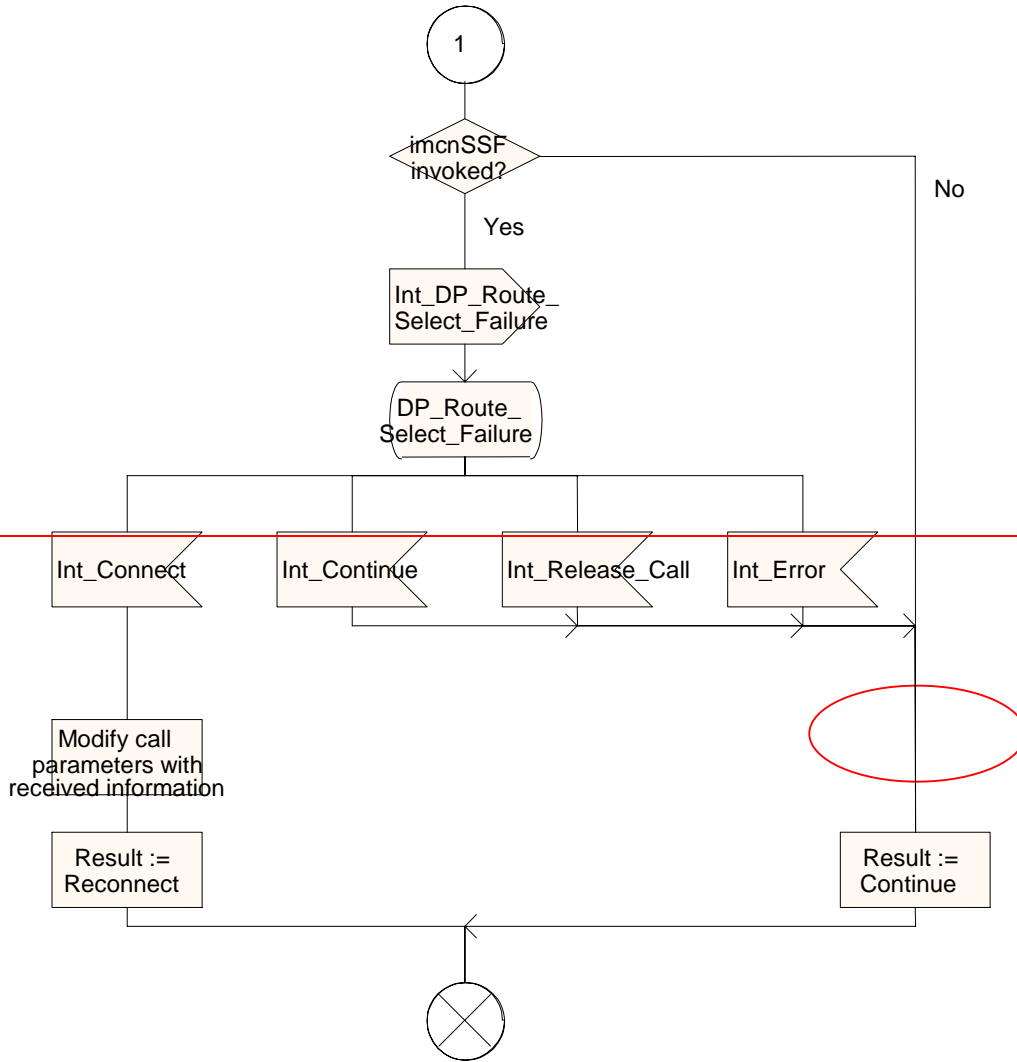unless otherwise stated. */

```
                              ( 1 )
                                |
                          < imcnSSF >──────────────────────┐
                          < invoked? >                No   │
                                |                           │
                               Yes                          │
                                |                           │
                      ┌─────────────────┐                   │
                      │ Int_DP_Route_   │                   │
                      │ Select_Failure  │                   │
                      └─────────────────┘                   │
                                |                           │
                        ( DP_Route_   )                     │
                        ( Select_Failure )                  │
                                |                           │
        ┌───────────┬───────────┼───────────┬──────────────┤
  Int_Connect   Int_Continue  Int_Release_Call  Int_Error   │
        │            └──────────────┼───────────────┘       │
        │                                                    │
  ┌───────────┐                                              │
  │ Modify call │                                           ⬭
  │ parameters with │                                        │
  │ received information │                                   │
  └───────────┘                                              │
        │                                          ┌──────────────┐
  ┌───────────┐                                    │ Result :=    │
  │ Result :=  │                                    │ Continue     │
  │ Reconnect  │                                    └──────────────┘
  └───────────┘                                              │
        └──────────────────┬──────────────────────────────┘
                           ⊗
```

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   2(6)

Procedure in IM-SSF to handle unsuccessful
events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
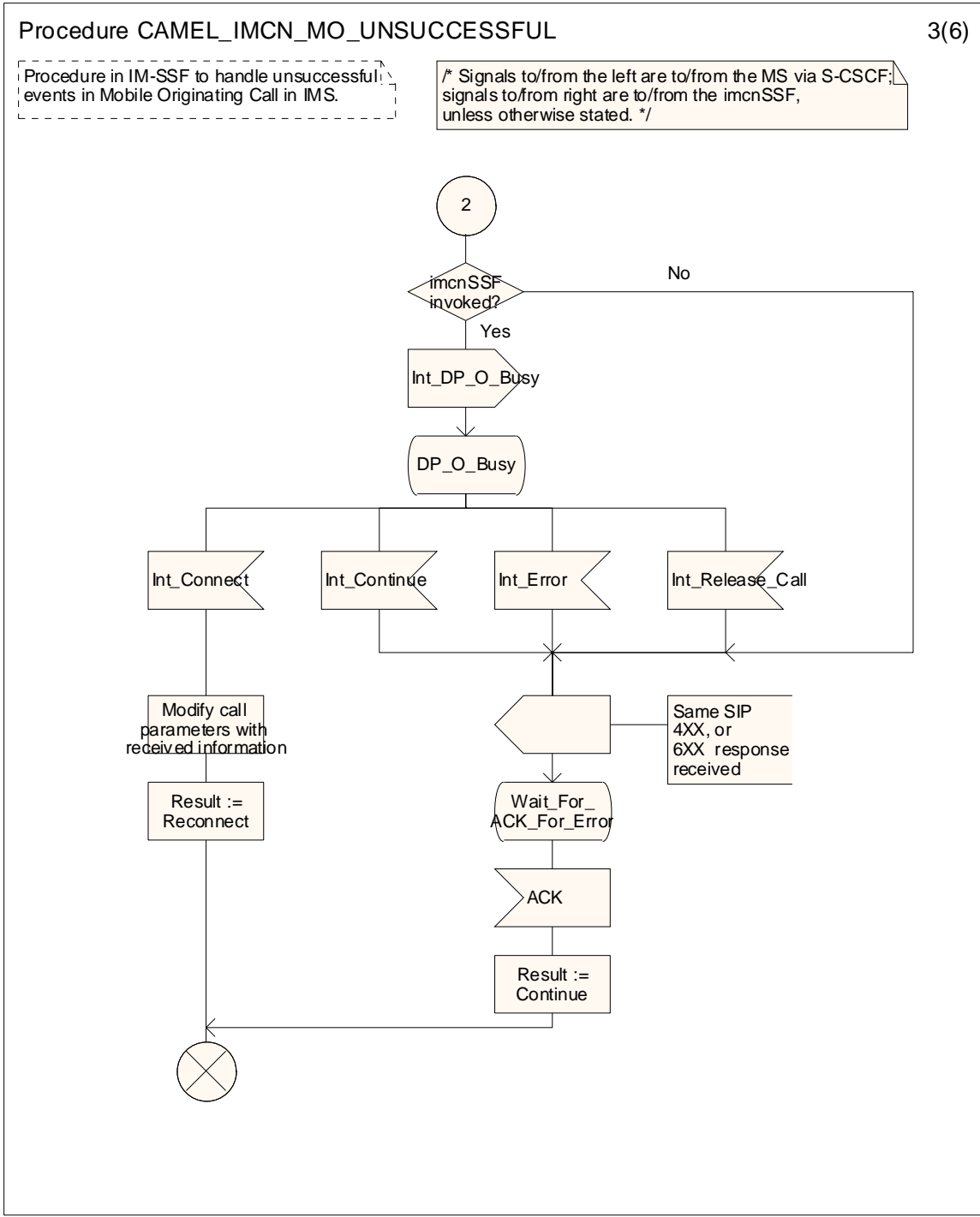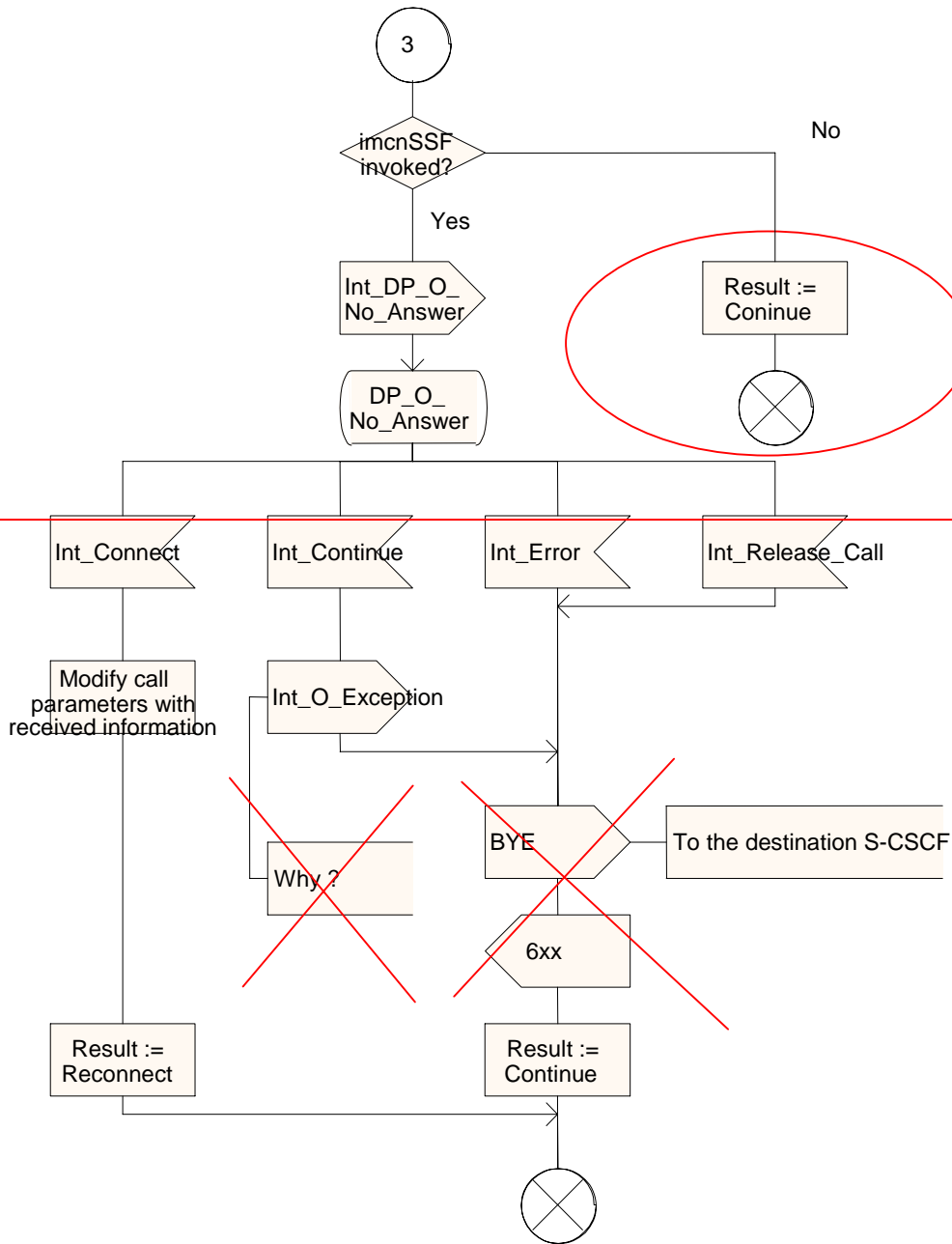signals to/from right are to/from the imcnSSF,
unless otherwise stated. */
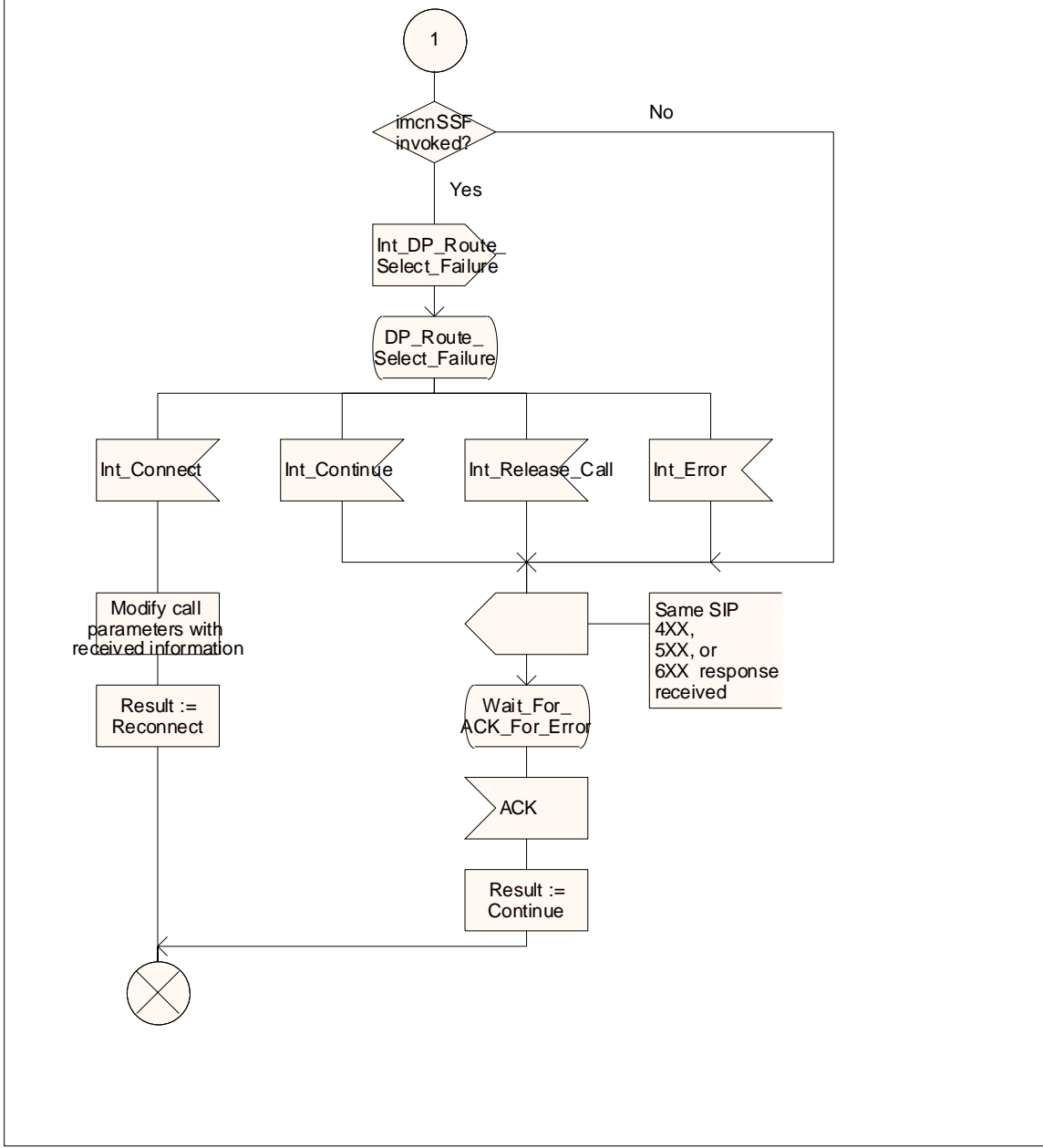
Figure 4.18-2: Procedure CAMEL_IMCN_MO_UNSUCCESSFUL (sheet 2)

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL 3(6)

Procedure in IM-SSF to handle unsuccessful events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the imcnSSF, unless otherwise stated. */

2

imcnSSF invoked?

No

Yes

Int_DP_O_Busy

DP_O_Busy

Int_Connect | Int_Continue | Int_Error | Int_Release_Call

Modify call parameters with received information

Result := Reconnect

Result := Continue

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   3(6)

Procedure in IM-SSF to handle unsuccessful
events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
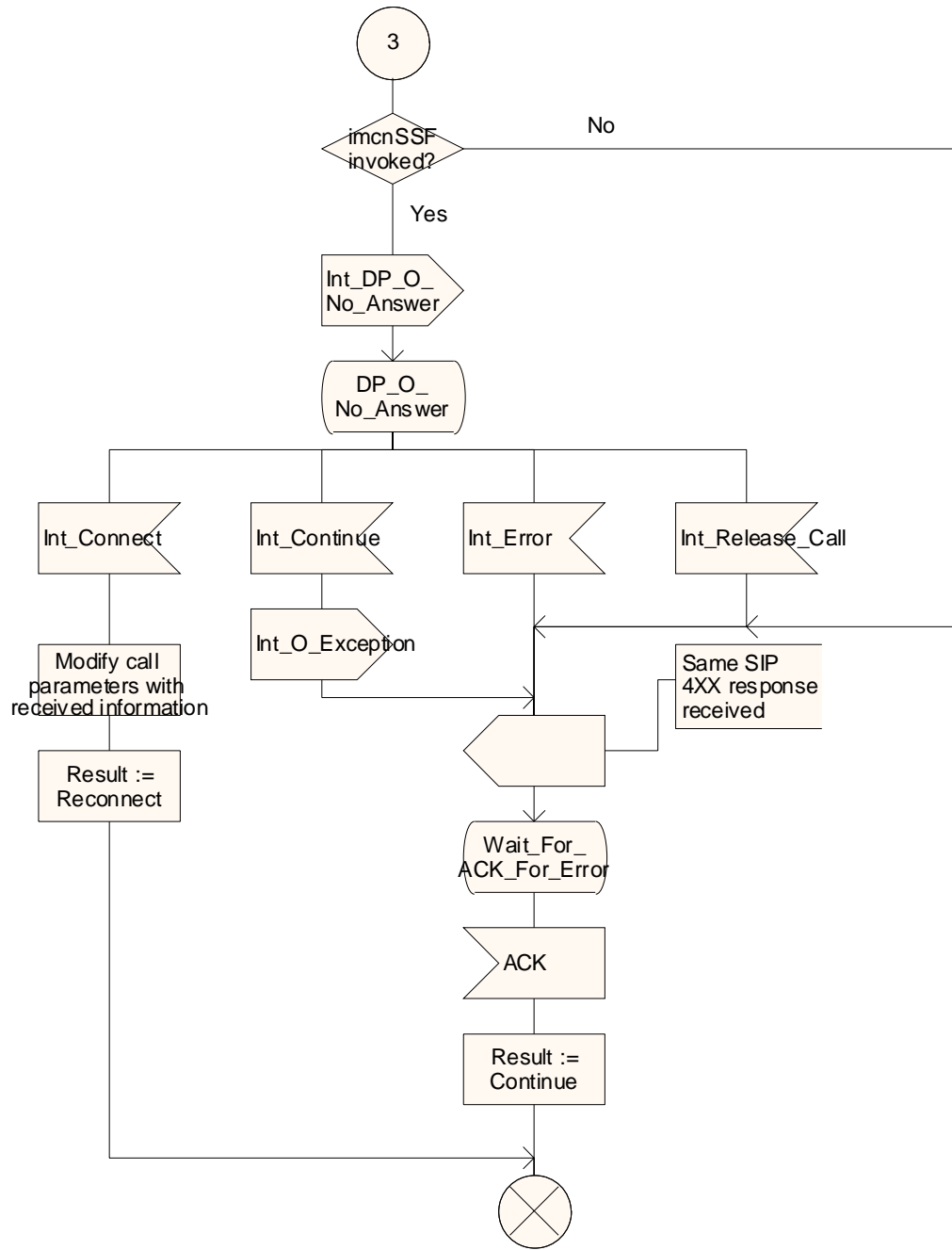signals to/from right are to/from the imcnSSF,
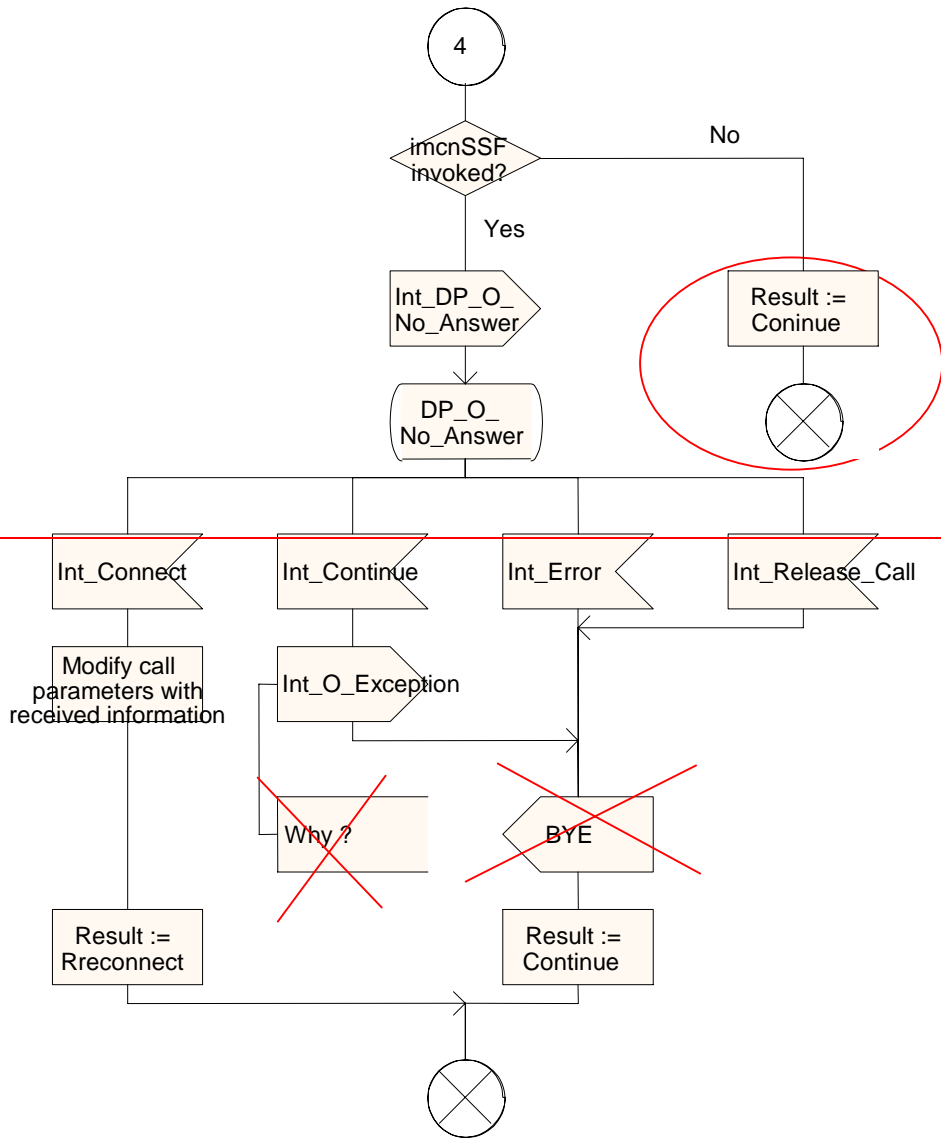unless otherwise stated. */
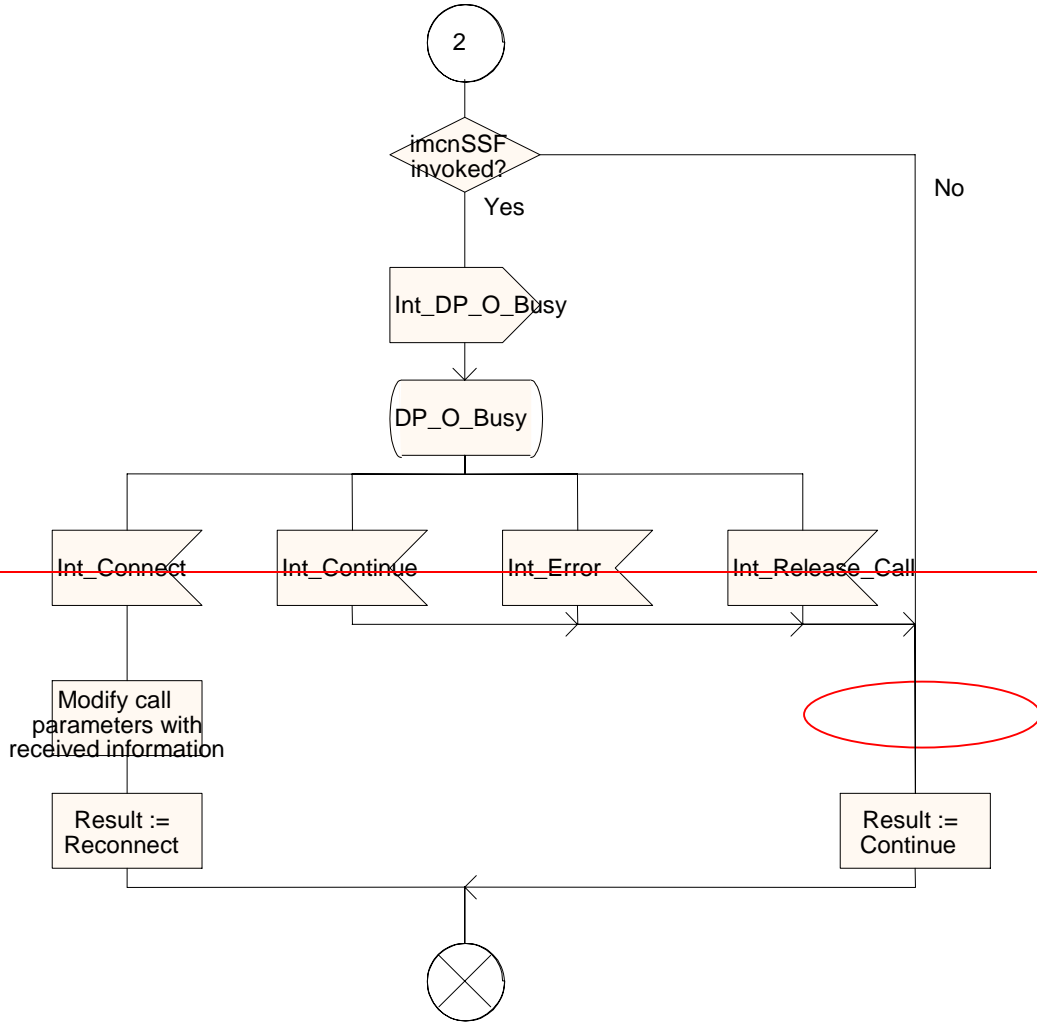
Figure 4.18-3: Procedure CAMEL_IMCN_MO_UNSUCCESSFUL (sheet 3)

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL 4(6)

Procedure in IM-SSF to handle unsuccessful events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the imcnSSF, unless otherwise stated. */

3

imcnSSF invoked?

No

Yes

Int_DP_O_No_Answer

Result := Coninue

DP_O_No_Answer

Int_Connect

Int_Continue

Int_Error

Int_Release_Call

Modify call parameters with received information

Int_O_Exception

BYE

To the destination S-CSCF

Why ?

6xx

Result := Reconnect

Result := Continue

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   4(6)

Procedure in IM-SSF to handle unsuccessful
events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
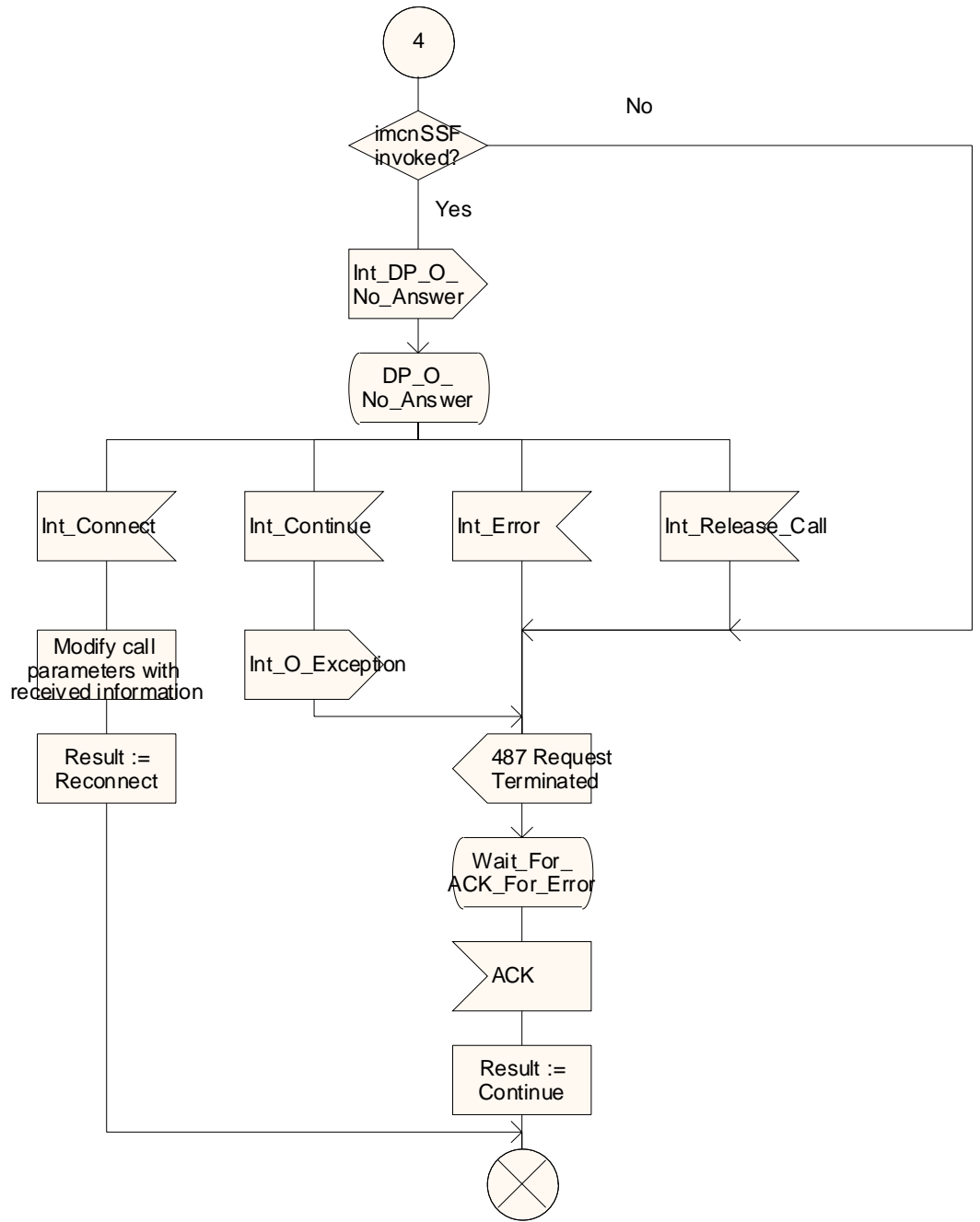signals to/from right are to/from the imcnSSF,
unless otherwise stated. */

Figure 4.18-4: Procedure CAMEL_IMCN_MO_UNSUCCESSFUL (sheet 4)

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   5(6)

Procedure in IM-SSF to handle unsuccessful
events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the imcnSSF,
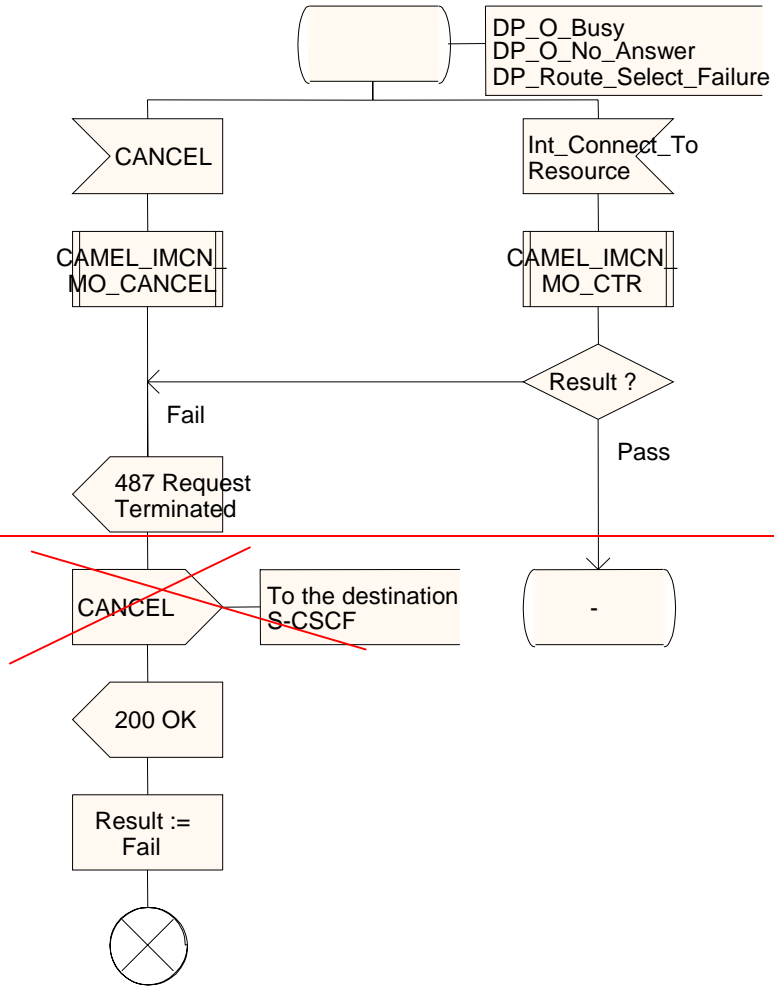unless otherwise stated. */

(4)

imcnSSF
invoked?   No

Yes

Int_DP_O_   Result :=
No_Answer   Coninue

DP_O_
No_Answer   ⊗

Int_Connect   Int_Continue   Int_Error   Int_Release_Call

Modify call   Int_O_Exception
parameters with
received information

Why ?   BYE

Result :=   Result :=
Rreconnect   Continue

⊗

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   5(6)

Procedure in IM-SSF to handle unsuccessful
events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF;
signals to/from right are to/from the imcnSSF,
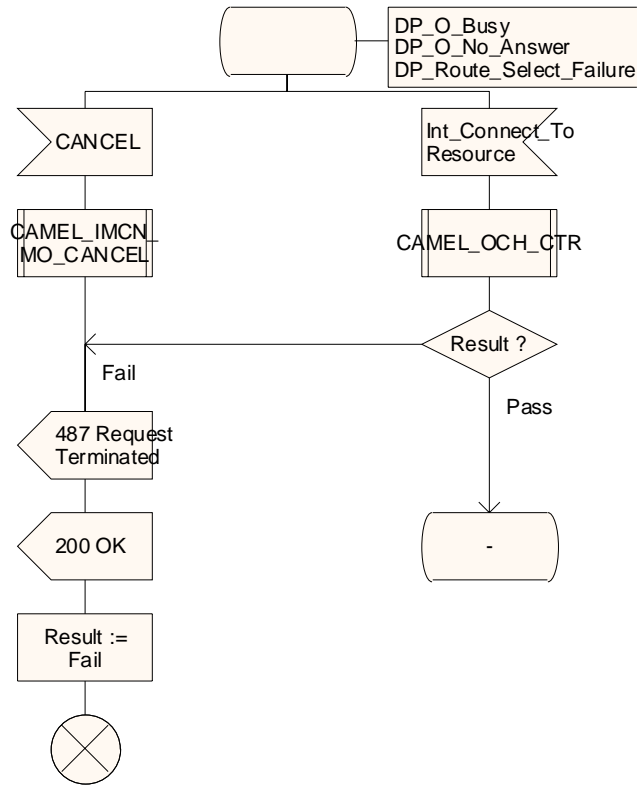unless otherwise stated. */

(4)

imcnSSF
invoked?   No

Yes

Int_DP_O_
No_Answer

DP_O_
No_Answer

Int_Connect   Int_Continue   Int_Error   Int_Release_Call

Modify call   Int_O_Exception
parameters with
received information

Result :=   487 Request
Reconnect   Terminated

Wait_For_
ACK_For_Error

ACK

Result :=
Continue

⊗

Figure 4.18-5: Procedure CAMEL_IMCN_MO_UNSUCCESSFUL (sheet 5)

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL   6(6)

| Procedure in IM-SSF to handle unsuccessful events in Mobile Originating Call in IMS. | /* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the imcnSSF, unless otherwise stated. */ |

DP_O_Busy
DP_O_No_Answer
DP_Route_Select_Failure

CANCEL   Int_Connect_To
                                                    Resource

CAMEL_IMCN_   CAMEL_IMCN_
MO_CANCEL   MO_CTR

                                                    Result ?

Fail

487 Request
Terminated

CANCEL   To the destination   -
                    S-CSCF

200 OK

Result :=
Fail

Pass

Procedure CAMEL_IMCN_MO_UNSUCCESSFUL 6(6)

Procedure in IM-SSF to handle unsuccessful events in Mobile Originating Call in IMS.

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the imcnSSF, unless otherwise stated. */

DP_O_Busy
DP_O_No_Answer
DP_Route_Select_Failure

CANCEL

Int_Connect_To Resource

CAMEL_IMCN_ MO_CANCEL

CAMEL_OCH_CTR

Result ?

Fail

487 Request Terminated

200 OK

Result := Fail

Pass

-

Figure 4.18-6: Procedure CAMEL_IMCN_MO_UNSUCCESSFUL (sheet 6)

**** Next modified section ****

3GPP TSG-CN WG2 Meeting #27   *Tdoc* ⌘ *N2-030143*

Dublin, Ireland, 10th - 14th February 2003.   Revision of *N2-030085*

CR-Form-v7

CHANGE REQUEST

⌘	**23.278 CR 035**	⌘ **rev**	**1**	⌘	Current version:	**5.1.0**	⌘

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

Proposed change affects: UICC apps⌘ [ ]   ME [ ]   Radio Access Network [ ]   Core Network [X]

Title: ⌘	Corrections in CAMEL_IMCN_MO_ANSWER	
Source: ⌘	Lucent Technologies	
Work item code: ⌘	IMS-CAMEL	***Date:*** ⌘ 12/02/2003

Category: ⌘ **F**	***Release:*** ⌘ Rel-5

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

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

Reason for change: ⌘	Procedure CAMEL_IMCN_MO_ANSWER uses "Int_Release" while all other procedures use "Int_Release_Call".
Summary of change: ⌘	Change "Int_Release" to "Int_Release_Call".
Consequences if not approved: ⌘	Inconsistent name used may caused confusion to designers.

Clauses affected: ⌘	4.6.1.3 (Figure 4.17-1 & 4.17-2)

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

Other comments: ⌘	

**** First modified section ****

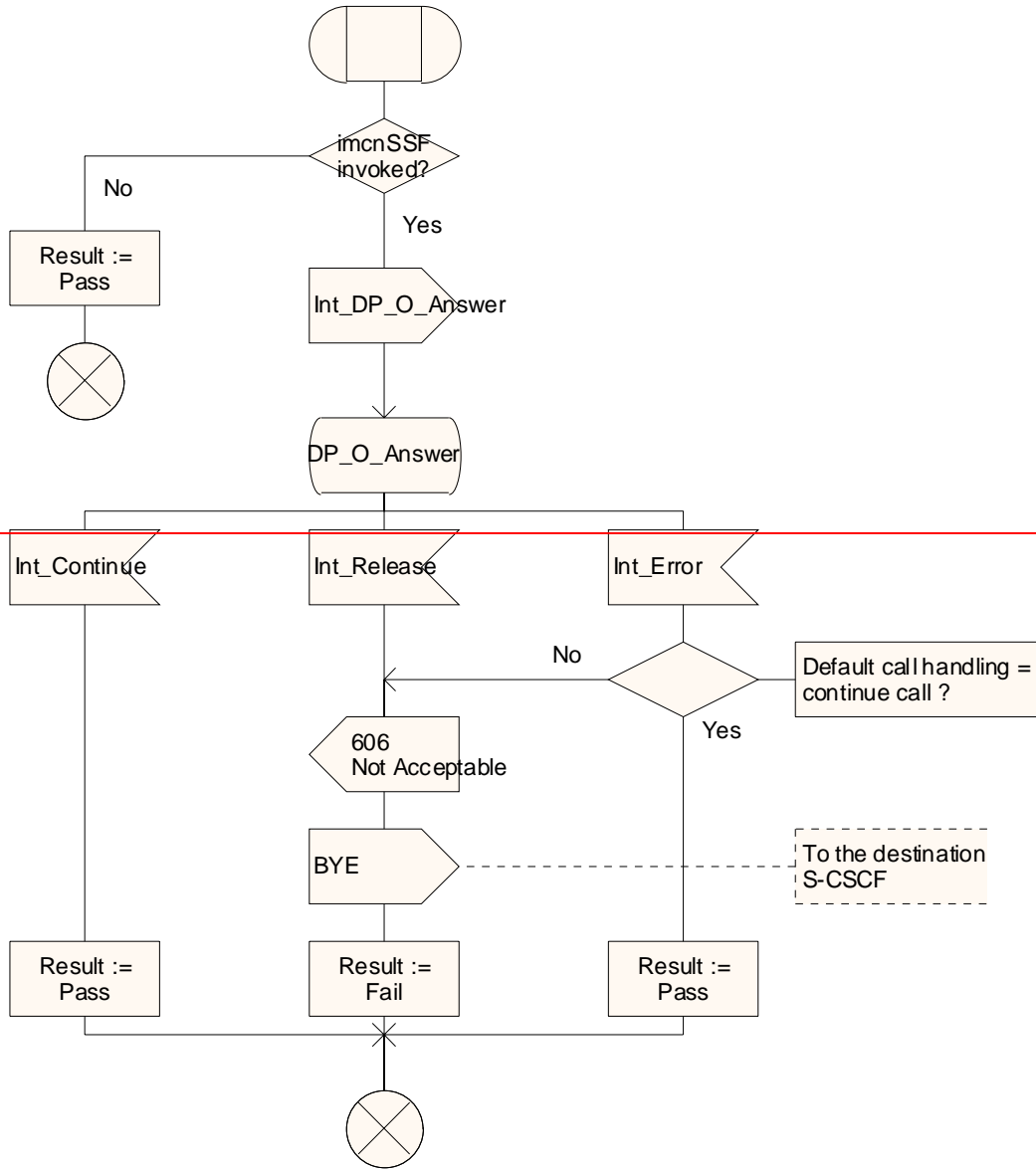4.6.1.3   Handling of Mobile Originated Calls in the IM-SSF

…

Procedure CAMEL_IMCN_MO_ANSWER

1(2)

/* Procedure in the IM-SSF to handle
an outgoing call Answer (200 OK)
response from the terminating subscriber */

/* Signals to/from the left are to/from the MS via S-CSCF;
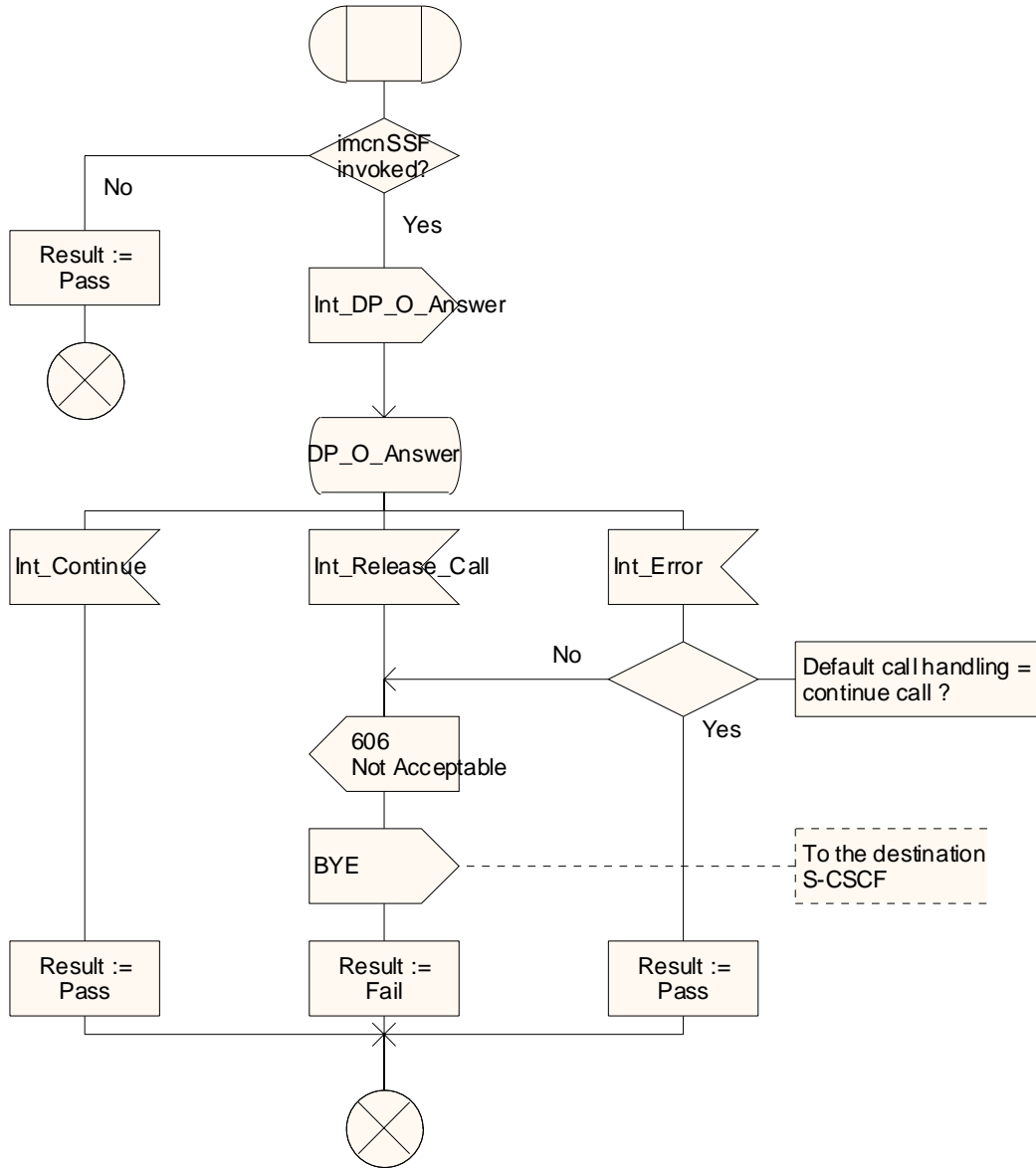signals to/from right are to/from the imcnSSF,
unless otherwise stated. */

imcnSSF
invoked?

No

Yes

Result :=
Pass

Int_DP_O_Answer

DP_O_Answer

Int_Continue

Int_Release

Int_Error

No

Default call handling =
continue call ?

Yes

606
Not Acceptable

BYE

To the destination
S-CSCF

Result :=
Pass

Result :=
Fail

Result :=
Pass

Procedure CAMEL_IMCN_MO_ANSWER   1(2)

/* Procedure in the IM-SSF to handle an outgoing call Answer (200 OK) response from the terminating subscriber */

/* Signals to/from the left are to/from the MS via S-CSCF; signals to/from right are to/from the imcnSSF, unless otherwise stated. */

imcnSSF invoked?

No

Yes

Result := Pass

Int_DP_O_Answer

DP_O_Answer

Int_Continue

Int_Release_Call

Int_Error

No

Default call handling = continue call ?

Yes

606 Not Acceptable

BYE

To the destination S-CSCF

Result := Pass

Result := Fail

Result := Pass

Figure 4.17-1: Procedure CAMEL_IMCN_MO_ANSWER (sheet 1)

**** End of modified section ****

									CR-Form-v7

CHANGE REQUEST

⌘	**23.278** CR **039**	⌘**rev**		⌘	Current version:	**5.1.0**	⌘

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

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

Title:	⌘	Inconsistency in Call Information Report in Re-Connect Case

Source:	⌘	Alcatel

Work item code:⌘	IMS-CAMEL		**Date:** ⌘	13/02/2003

Category:	⌘	**F**			**Release:** ⌘	Rel-5

	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)*
	Detailed explanations of the above categories can	*Rel-4 (Release 4)*
	be found in 3GPP TR 21.900.	*Rel-5 (Release 5)*
		Rel-6 (Release 6)

Reason for change:	⌘	29.278 V5.1.0 (2002-12) specifies in "9.5 CallInformationReport procedure" that "The report is sent at the end of a call party connection which is indicated by one of the events specified below.". The fact that the report is send at the end of the connection / in faliure cases is re-confirmed also in the "9.5.2.1 Normal procedure" for the Invoking entity (IM-SSF):
		" If the IM-SSF FSM executes a state transition caused by one of the following events:
		- release for the indicated or default leg;
		- abandon for the indicated or default leg;
		- Called party busy or Not Reachable for the indicated or default leg;
		- IM-SSF no answer timer expiration for the indicated or default leg;
		- route select failure for the indicated or default leg;
		- release of call initiated by the gsmSCF (ReleaseCall),
		and "CallInformationRequest" is pending for the indicated or default legs then one "CallInformationReport" operation is sent to the gsmSCF containing all information requested for that leg.".
		In contrary " Figure 4.34-6: Process imcnSSF (sheet 6)" implies to have an Call Information Report for leg 1 if CAP_Connect is received in the state "Waiting for Instruction" and "Int_Connect" is issued. However in that case leg1 continues to exsist and no Call Information Report shall apply for leg1.
		This is also independent on wether or not the Destination Number was modified. Also the decission box "DP was due to Call Forwarding" would not be necessary.

Summary of change:	⌘	Process imcnSSF, sheet 14: The decision boxes "DP was due to Call Forwarding" and "destination number changed" will be removed. The box "Handle_CIR_leg (leg 1)" will be removed. This is necessary because a CIR for leg 1 is only sent if leg 1 is released. This is not the case if the outgoing leg is re-connected.
		Delete in the above mentioned SDL the Call Information Report sending for leg1.

Consequences if not approved:	⌘	23.278 and 29.278 are inconsistent and different handling of the Call Information Report will exist in various handlings in the imcnSSFs and gsmSCFs and the services will not work.

Clauses affected:	⌘	4.6.1.5.1 Process imcnSSF		

		Y	**N**			
Other specs affected:	⌘	**X**		Other core specifications	⌘	R99 23.078-CR539r1
			X	Test specifications		
			X	O&M Specifications		

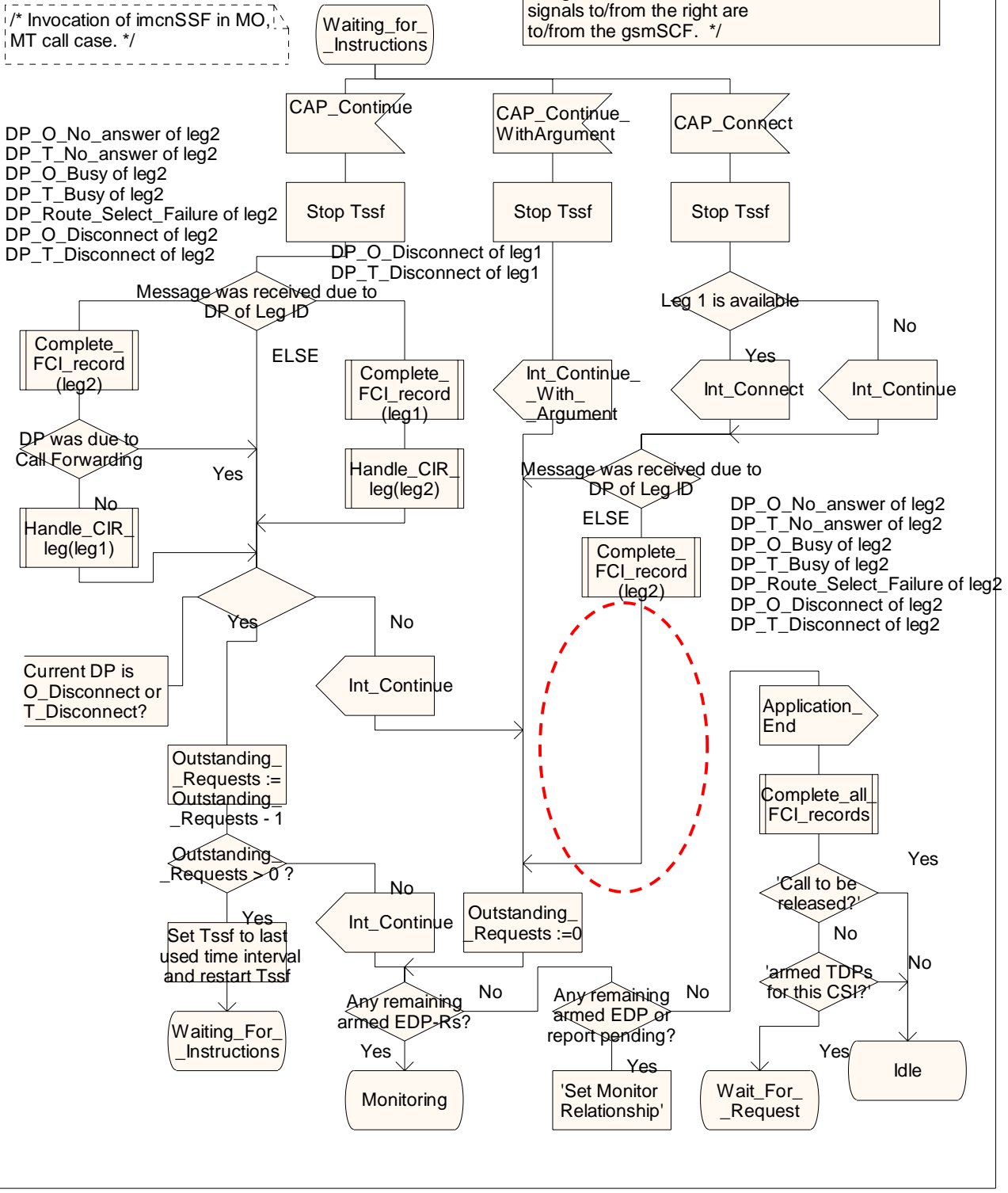| *Other comments:*	⌘	

— Modified section —

4.6.1.5.1   Process imcnSSF

...

Figure 4.34-6: Process imcnSSF (sheet 6)

— END —