3GPP TSG-CN Meeting #22 **NP-030522**

10th - 12th December. Maui, Hawaii.

Source: **3GPP TSG CN2**

Title: **CR on Release 5 WI CAMEL4**

Agenda item: **8.3**

Document for: **APPROVAL**

This document contains 10 CR on Rel-5 WI CAMEL4. These documents were approved by CN2 and are forwarded to CN#22 for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	C_Ver
N2-030487	Correction to MAP SRI between gsmSCF and HLR - Supported CAMEL Phases shall be	23.078	627		F	Rel-5	5.5.1
N2-030494	Correction to TCAP rules for gsmSCF initiated calls	29.078	335		F	Rel-5	5.5.0
N2-030554	CAMEL DP Leg Handling	23.078	624	1	F	Rel-5	5.5.1
N2-030555	Correction to description of "valid CSI" in SCP initiated call	29.078	337	1	F	Rel-5	5.5.0
N2-030556	Removal of Int_Continue from process ICA_MSC	23.078	628	1	F	Rel-5	5.5.1
N2-030557	CAMEL User interaction at alerting and MidCall	23.078	636	1	F	Rel-5	5.5.1
N2-030576	Correction to Disconnect Leg handling – gsmSSF shall send charging reports	23.078	644		F	Rel-5	5.5.1
N2-030578	CAMEL Leg Handling	23.078	619	3	F	Rel-5	5.5.1
N2-030579	Correction to MAP SRI between gsmSCF and HLR - HLR shall use TS11	23.078	631	2	F	Rel-5	5.5.1
N2-030584	Use of Continue With Argument for gsmSCF initiated calls	23.078	642	1	F	Rel-5	5.5.1

3GPP TSG CN WG2 Meeting #31 **N2-030487**
Bangkok, Thailand, 27th – 31st October 2003

CHANGE REQUEST

⌘ **23.078** **CR** **627** ⌘ **rev** ⌘ Current version: 5.5.1 ⌘

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

Title:	⌘	Correction to MAP SRI between gsmSCF and HLR – Supported CAMEL Phases shall be Mandatory
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4
Date:	⌘	13 October 2003
Category:	⌘	F (essential correction)
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	TS 23.078 specifies for MAP SRI between gsmSCF and HLR that the Information Element (IE) "Supported CAMEL Phases" is Contional (C). At the same time, the IE "Suppress T-CSI" is Mandatory (M). In order to include the parameter "suppress-T-CSI" in MAP SRI, the parameter "supportedCamelPhases" shall also be present; reason is that "supportedCamelPhases" is ***Mandatory*** within CamelInfo. Hence, it is not possible to include suppress-T-CSI without including supportedCamelPhases. As a result, the IE "Supported CAMEL Phases" shall be marked "M" in the MAP SRI IF, between gsmSCF and HLR, in TS 23.078. Refer to the "for Information" section of the present CR, for an extract from 3GPP TS 29.002 V5.7.0, indicating the syntactical description of the relevant parameters in MAP SRI.
Summary of change:	⌘	Mark "Supported CAMEL Phases" in MAP SRI IF, between gsmSCF and HLR as "M" instead of "C".
Consequences if not approved:	⌘	Implementation difficulty: - gsmSCF desginers can not omit the "Supported CAMEL Phases" IE from SRI, even though that is allowed; - HLR designers may interpret TS 23.078 such that it would be allowed to receive SRI with suppress-T-CSI but without supportedCamelPhases.

Clauses affected:	⌘	4.6.15.1			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

***** For Information – extracts form 3GPP TS 29.002 V5.7.0 *****

```
SendRoutingInfoArg ::= SEQUENCE {
     < ... >
     networkSignalInfo                  [10] ExternalSignalInfo           OPTIONAL,
     camelInfo                          [11] CamelInfo                    OPTIONAL,
     suppressionOfAnnouncement          [12] SuppressionOfAnnouncement    OPTIONAL,
     < ... >
      }
```

```
CamelInfo ::= SEQUENCE {
     supportedCamelPhases               SupportedCamelPhases,
     suppress-T-CSI                     NULL                              OPTIONAL,
     extensionContainer                 ExtensionContainer                OPTIONAL,
     ... ,
     offeredCamel4CSIs                  [0] OfferedCamel4CSIs             OPTIONAL }
```

```
SupportedCamelPhases ::= BIT STRING {
     phase1 (0),
     phase2 (1),
     phase3 (2),
     phase4 (3)} (SIZE (1..16))
-- A node shall mark in the BIT STRING all CAMEL Phases it supports.
-- Other values than listed above shall be discarded.
```

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

4 Circuit switched Call Control

...

4.6 Description of information flows

...

4.6.15 gsmSCF to HLR information flows

...

4.6.15.1 Send Routeing Info

4.6.15.1.1 Description

This IF is defined in 3GPP TS 23.018 [**Error! Reference source not found.**] and subclause **Error! Reference source not found.**; it is used to request information from the HLR to route a gsmSCF initiated call.

4.6.15.1.2 Information Elements

Send Routeing Info from the gsmSCF contains the following information elements:

Information element name	Status	Description
MSISDN	M	This IE indicates the MSISDN of the called subscriber.
Alerting Pattern	O	This IE indicates the kind of Alerting Pattern to be applied.

Information element name	Status	Description
CUG Interlock	O	For the definition of this IE, see 3GPP TS 23.085 [**Error! Reference source not found.**].
CUG Outgoing Access	O	For the definition of this IE, see 3GPP TS 23.085 [**Error! Reference source not found.**].
Suppression Of Announcement	O	This IE indicates that announcements or tones generated as a result of unsuccessful call establishment shall be suppressed.
Suppress T-CSI	M	This IE indicates that CAMEL subscription information should not be returned in the first Send Routeing Info ack (to avoid the need for a second interrogation).
Supported CAMEL Phases	~~O~~M	This IE indicates the CAMEL Phases supported by the gsmSCF.
Offered CAMEL4 CSIs	S	This IE indicates the CAMEL phase 4 CSIs offered by the gsmSCF. This IE shall be present when the Supported CAMEL Phases IE ~~is present in this IF and~~ indicates support of CAMEL Phase 4. This IE is described in a table below.
Call Reference Number	M	This IE carries the Call Reference Number allocated for the call by the gsmSCF.
GMSC Or gsmSCF Address	M	This IE is the E.164 address of the gsmSCF.
Call Diversion Treatment Indicator	O	This IE indicates whether or not the call is allowed to be forwarded on behalf of the called party using the Call Forwarding supplementary service.
Pre-paging Supported	S	This IE shall be present if the gsmSCF supports pre-paging, otherwise it shall be absent.
Interrogation Type	M	This IE shall contain the value "Basic Call".
Long FTN Supported	O	This IE indicates that the gsmSCF supports Long Forwarded to Numbers.
gsmSCF Initiated Call	M	This IE indicates that the IF was originated by a gsmSCF.
Suppress Incoming Call Barring	O	This IE indicates that Incoming Call Barrings shall be suppressed for the called party.
Suppress VT-CSI	O	This IE indicates that VT-CSI shall be suppressed.

Offered CAMEL4 CSIs contains the following information elements:

Information element name	Status	Description
O-CSI	S	This IE indicates the offer of CAMEL phase 4 O-CSI.
D-CSI	S	This IE indicates the offer of CAMEL phase 4 D-CSI.
T-CSI	S	This IE indicates the offer of CAMEL phase 4 T-CSI.

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

3GPP TSG CN WG2 Meeting #31 **N2-030494**
Bangkok, Thailand, 27th – 31st October 2003

CHANGE REQUEST

⌘ **29.078** **CR** **335** ⌘**rev** ⌘ Current version: **5.5.0** ⌘

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

Title:	⌘	Correction to TCAP rules for gsmSCF initiated calls
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4 ***Date:*** ⌘ 13 October 2003
Category:	⌘	F (essential correction) ***Release:*** ⌘ Rel-5

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

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

Reason for change:	⌘	When gsmSCF uses Initiate Call Attempt to establish a TC dialogue, the TC TC_Begin message may contain additional CAP Operations, besides ICA. The inclusion of multiple CAP Operations in a single TC Message is SS7 signalling efficiency. TS 29.078 is ambiguous with respect to the usage of TC messages to report User Errors for SCP-initiated call set up in cases whereby the TC_Begin contains more CAP Operation(s) than just CAP ICA. Refer to the "for information section" of the present CR for an explanation of the ambiguity.
Summary of change:	⌘	Correct section 14, as described in the "for information section" of the present CR. A new bullet is added to section 14.1.2.2.2; that bullet specifies Error handling when TC_Begin contains more CAP Operation(s) than just CAP ICA.
Consequences if not approved:	⌘	- Incompatibility between vendors (SCP and MSC); TC signalling may fail; - CAMEL Service Logic developers may be compelled to send CAP ICA and CAP RRB (etc.) in separate TC messages, resulting in less optimised SS7 network usage.

Clauses affected:	⌘	14.1.2.2

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

Other comments: ⌘	

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

The following is a valid scenario:

Step	MSC/gsmSSF		gsmSCF
1		TC_Begin[ICA, RRB, CWA]	←
2	→	TC_Continue[ICA-Ack]	
3	→	TC_Continue[RRB-Error]	

Explanation

Step	Description
1	The gsmSCF sends ICA, RRB abd CWA to the gsmSSF; gsmSSF starts processing ICA. - When gsmSCF has sent TC_Begin to gsmSSF, the TC dialogue for the gsmSCF is in the Initiation Sent (IS) state. - When gsmSSF has received TC_Begin from gsmSCF, the TC dialogue for the gsmSSF is in the Initiation Received (IR) state. Refer to ITU-T Recommendation Q.774 for a description of the IS and IR states.
2	When gsmSSF has processed ICA, it sends ICA-Ack to gsmSCF. The gsmSSF does not want to defer the sending of ICA-Ack until all CAP Operations in TC_Begin have been processed. Reason is that that might result in time-out of the ICA Operation timer in gsmSCF. Therefore, gsmSSF sends ICA-Ack as soon as ICA has been processed successfully. - When the gsmSSF has processed ICA and send ICA-Ack, the TC dialogue for the gsmSSF is established; - When the gsmSCF has received and processed ICA-Ack, the TC dialogue for the gsmSCF is established.
3	The gsmSSF starts processing the remaining CAP Operations in TC_Begin. When the processing of RRB results in a User Error, gsmSSF shall send RRB-Error to gsmSCF. Since the TC dialogue is already established, the RRB-Error may be sent on a TC_Continue message.

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

14 Services assumed from lower layers

14.1 Services assumed from TC

< … >

14.1.2 gsmSSF-gsmSCF interfaces

< … >

14.1.2.1 Normal procedures

< … >

14.1.2.2 Abnormal procedures

The following procedures also apply to the gsmSCF-gsmSRF interfaces.

14.1.2.2.1 gsmSCF-to-gsmSSF/gsmSRF messages

Considering that gsmSSF and gsmSRF do not have the logic to recover from error cases detected on the gsmSCF-gsmSSF/gsmSRF interface, the following shall apply:

- Operation errors and rejection of TC components shall be transmitted to the gsmSSF and, respectively, the gsmSRF with a TC-END request primitive, basic end.

If, in violation of the above procedure, an ERROR or REJECT component is received with a TC-CONTINUE indication primitive, then the gsmSSF and, respectively, the gsmSRF shall abort the dialogue with a TC-U-ABORT request primitive.

14.1.2.2.2 gsmSSF/gsmSRF/ -to-gsmSCF messages

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

- The dialogue shall be maintained when the preceding message, which contained the erroneous component, indicated that the dialogue shall be maintained. I.e. the error or reject shall be transmitted with a TC-CONTINUE request primitive if the erroneous component was received with a TC-CONTINUE indication primitive.
  On receipt of an ERROR or REJECT component the gsmSCF decides on further processing. It may either continue, explicitly end or abort the dialogue.

- When the gsmSSF has received and processed InitiateCallAttempt and has acknowledged InitiateCallAttempt with InitiateCallAttempt-RESULT, then a User Error resulting from an erroneous component that is contained in the same TC_Begin message as InitiateCallAttempt, shall be transmitted with a TC-CONTINUE indication primitive.

- In all other situations the dialogue shall no longer be maintained. I.e. the error or reject shall be transmitted with a TC-END request primitive, basic end, if the erroneous component was received with a TC-BEGIN indication primitive.

- on expiration of application timer Tssf or Tsrf, dialogue shall be terminated by means of by TC-U-ABORT primitive with an Abort reason, regardless of TC dialogue is established or not.

If the error processing in the gsmSSF or gsmSRF leads to the case where the gsmSSF or gsmSRF is not able to process further gsmSCF operations while the dialogue is to be maintained, then the gsmSSF or gsmSRF aborts the dialogue

with a TC-END request primitive with basic end or a TC-U-ABORT request primitive, depending on whether any pending ERROR or REJECT component is to be sent or not.

The gsmSSF can end a dialogue with a TC-U-ABORT request primitive in the case that call release is initiated by any other entity then the gsmSCF and the gsmSSF has no pending call information requests (or pending requests which should be treated in the same way, i.e., ApplyCharging nor any armed EDP to notify the gsmSCF of the call release (for alternative way, see subclause 14.1.2.1.1).

14.1.2.2.3 gsmSCF-to-smsSSF SMS related messages

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

- operation errors and rejection of TC components shall be transmitted to the smsSSF with a TC-END request primitive, basic end.

If, in violation of the above procedure, an ERROR or REJECT component is received with a TC-CONTINUE indication primitive, then the smsSSF shall abort the dialogue with a TC-U-ABORT request primitive.

14.1.2.2.4 smsSSF-to-gsmSCF SMS related messages

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

- the dialogue shall be maintained when the preceding message, which contained the erroneous component, indicated that the dialogue shall be maintained. I.e. the error or reject shall be transmitted with a TC-CONTINUE request primitive if the erroneous component was received with a TC-CONTINUE indication primitive;

- on receipt of an ERROR or REJECT component the gsmSCF decides on further processing. It may either continue, explicitly end or abort the dialogue;

If the error processing in the smsSSF leads to the case where the smsSSF is not able to process further gsmSCF operations while the dialogue is to be maintained, then the smsSSF aborts the dialogue with a TC-U-ABORT request primitive.

The smsSSF aborts a dialogue with a TC-U-ABORT request primitive if release is initiated by any other entity than the gsmSCF and the smsSSF has no armed EDPs to notify the gsmSCF.

14.1.2.2.5 Use of dialogue handling services

On receipt of a TC-U-REJECT.ind in the FE, this primitive should be ignored. It is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 14.1.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

A TC-U-REJECT.req should be sent followed by a TC-CONTINUE.req.

On receipt of a TC-R-REJECT.ind in the FE, this primitive should be ignored. It is up to the application process to abort, continue or terminate the dialogue, if not already terminated by the sending application process according to the rules as stated in subclause 14.1.1.2. This is also applicable for invoke problems related to a class 4 linked operation.

On receipt of a TC-L-REJECT indication primitive (i.e. when a protocol error has been detected by the local TC entity) which cannot be related to an active operation, it is up to the application process to continue or to terminate the dialogue and implicitly trigger the transmission of the reject component or to abort the dialogue.

On receipt of a TC-NOTICE indication the TC-USER is informed that a message cannot be delivered by the Network Layer. It occurs if the Return Option has been set (see subclause 14.1.1.3.7). It is for the application process to decide whether to terminate the dialogue or retry.

The application-process is the sole user of the TC-P-ABORT service and TC-NOTICE service.

The receipt of a TC-U-ABORT-Ind or TC-P-ABORT-Ind on a dialogue terminates all request processing.

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

3GPP TSG CN WG2#31 *TDoc N2-030554*
Bangkok, Thailand, 27th - 31st October, 2003 **N2-030478Rev**

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **624** ⌘**rev** **1** ⌘ 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 ☒

Title:	⌘	CAMEL DP Leg Handling
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL4
Date:	⌘	28/10/2003
Category:	⌘	**F (essential correction)**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	In 23.078 it is not clearly specified which leg ID shall be used to continue call handling, i.e. what legID to set ORC (legID) = 0 in the SDLs. Especially the question will arise if that leg has been already released by the call party or the gsmSCF. This CR is proposing to specify in 23.078 which leg ID shall be used for the above issue.
Summary of change:	⌘	This CR specifies in 23.078 which leg ID shall be used to continue call handling.
Consequences if not approved:	⌘	Non working interaction between the gsmSSF and the gsmSCF may induce interworking problems.

Clauses affected:	⌘	4.5.7.4, 4.5.7.5

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

— Information, discussion and proposal—

Information and Discussion

There has been several times the question in CN2 which leg ID will be used to continue call handling, i.e. what legID shall be used to set ORC (legID) = 0 in the SDLs. Especially the question will arise if that leg has been already released by the call party or the gsmSCF.

Call handling ORC (legID) needs to be continued if a EDP-R or TDP-R has to be resumed.

For EDP-R the reporting is requested by the Request Report BCSM Event Information flow. 29.078 v5.5.0 subclause "11.27 RequestReportBCSMEvent procedure" is clearly specifying what legs can be armed by using the RequestReportBCSMEvent procedure. To continue call handling for those events it is proposed to use exactly those leg IDs used for BCSM reporting. The case when these legs are disappeared in the time between reporting and continue call handling is discussed below.

For TDP-R it is not clearly specified on which leg the reporting is done.

Having in mind that:

1) The operation Connect can be used for leg 2 or on a gsmSCF created leg. It will never be used on leg1. After Connect (on leg2) at e.g. TDP Collected_Info the call handling shall continue without any need for a Continue or ContinueWithArgument operation in addition for that leg. So the TDP shall occur on leg2 as well and the ORC shall be incremented for that leg.

2) The Initial DP information flow does not have a parameter indicating on what leg ID it occured. For that reason the leg ID needs to be fixed for each type of TDP. E.g. use always leg ID = 2 for TDP Analysed_Information.

3) A TDP creates always a new dialogue to a possibly new gsmSCF. In general the second gsmSCF does not know anything about the first one. Neither it know if this call is a usual call or if this is just the leg to a gsmSCF initiated new call party (NP call). The leg IDs within each of the dialogues should be independent of each other. E.g. if ICA creates leg 7 and there is a TDP Analysed_Information on this leg we may use leg 7. However this number 7 can not be reported to the new gsmSCF and does not have any meaning within the new dialogue to the other gsmSCF. Even if you would use the same gsmSCF it is not able to correlate this dialogue with the previous one. As all TDPs may occur for a simple call with leg1 and leg2 we shall usee.g. leg 2 always.

4) For a originating call at TDP Analysed_Information similar considerations as above for the TDP Collected_Info are valid. So we shall assume leg 2 for TDP reporting.

5) For an originating call TDP Route_Select_Failure occurs on the outgoing leg. This leg is also used for the EDP reporting via EventReportBCSM. So we shall assume leg 2 for TDP reporting.

6) For a terminating call at TDP Terminating_Attempt_Authorised similar considerations as above for the TDP Collected_Info are valid. So we shall assume leg 2 for TDP reporting.

7) For a terminating call TDP T_Busy and TDP T_No_Answer occurs on the outgoing leg. This leg is also used for the EDP reporting via EventReportBCSM. So we shall assume leg 2 for TDP reporting.

Proposal

In summary the following is proposed.

The following rules for Trigger Detection Points apply:

- TDPs occur on leg2. The same leg ID, i.e. legID2 shall be used to continue the call processing for that DP.

On receipt of a Disconnect Leg the number of resumptions required for the corresponding leg is set to 0.

If Release Call is used, nothing needs to be resumed.

— First modified section —

4.5.7.4 Outstanding Request Counter and Rules for CAMEL

In the following the rules on handling of the 'outstanding requests' variables in the process CS_gsmSSF are given. They are storing the number of required resumptions.

1) There shall be one outstanding requests variable ORC_Leg (legID) per leg to handle TDP-R and EDP-R reports and ICA.

2) In addition there shall be one outstanding requests variable ORC_CS (CSID) per call segment to handle the CPH operations.

3) A leg will only be resumed if the ORC_Leg (legID) variable for this leg and the ORC_CS (CSID) for the call segment containing the leg are 0.

4) Events that cause the suspension of the call processing are signalling events armed as TDP-Rs or EDP-Rs, or the processing of a CPH operation (DisconnectLeg, SplitLeg, MoveLeg or InitiateCallAttempt) sent by the gsmSCF.

   a) For TDP-R or EDP-R events the number of required resumptions relative to the associated leg will be incremented by 1.

   b) For CPH operations the number of required resumptions per call segment will be set to one if it is still 0. Otherwise the number of resumptions remains unchanged. For Split Leg the number of required resumptions for each of the source call segment and the target call segment will be set to one if it is still 0

   c) For ICA the number of required resumptions relative to the associated leg will be set to 1.

5) In addition the CS_gsmSSF stores information about the events (DP with the associated leg, CPH) that require resumption and keep track of the order of events for TDP-Rs and EDP-Rs for each leg . The order of resumptions for a leg shall be the order in which the suspension events occured for that leg.

6) For DP event resumption Continue with Argument with legID or Continue are valid. If not otherwise stated below, for each received resumption the number of required resumption for that leg will be decremented by 1 if it was a valid resumption for the event that has to be handled first. Decrementing of the outstanding requests variables does not go below 0.

7) For CPH resumption Continue with Argument with CSID is valid. On receipt of the resumption the number of required resumptions for that call segment will be set to 0.

8) For ICA resumption Continue with Argument with LegId is valid. On receipt of the resumption the number of required resumptions for that Leg will be set to 0.

9) The processing of a Continue with Argument with neither LegID nor CSID causes the number of all required resumptions for legs to be set to 0. All stored resumption events for legs are discarded.

10) If a Continue is received to resume a DP for O_Disconnect or for T_Disconnect the number of resumptions required for that leg will be decremented by 1. For other DPs the number of resumptions for legs is set to 0 and all stored resumption events for legs are discarded.

11) The processing of a Connect with a LegID causes the number of required resumptions for that leg to be set to 0. The processing of a Connect without a LegID causes the number of resumptions required to be set to 0 and all stored resumption events for legs are discarded.

12) The processing of Tssf expiry and of TC Abort causes the number of resumptions required to be set to 0 and the call processing to be resumed. All stored resumption events are discarded.

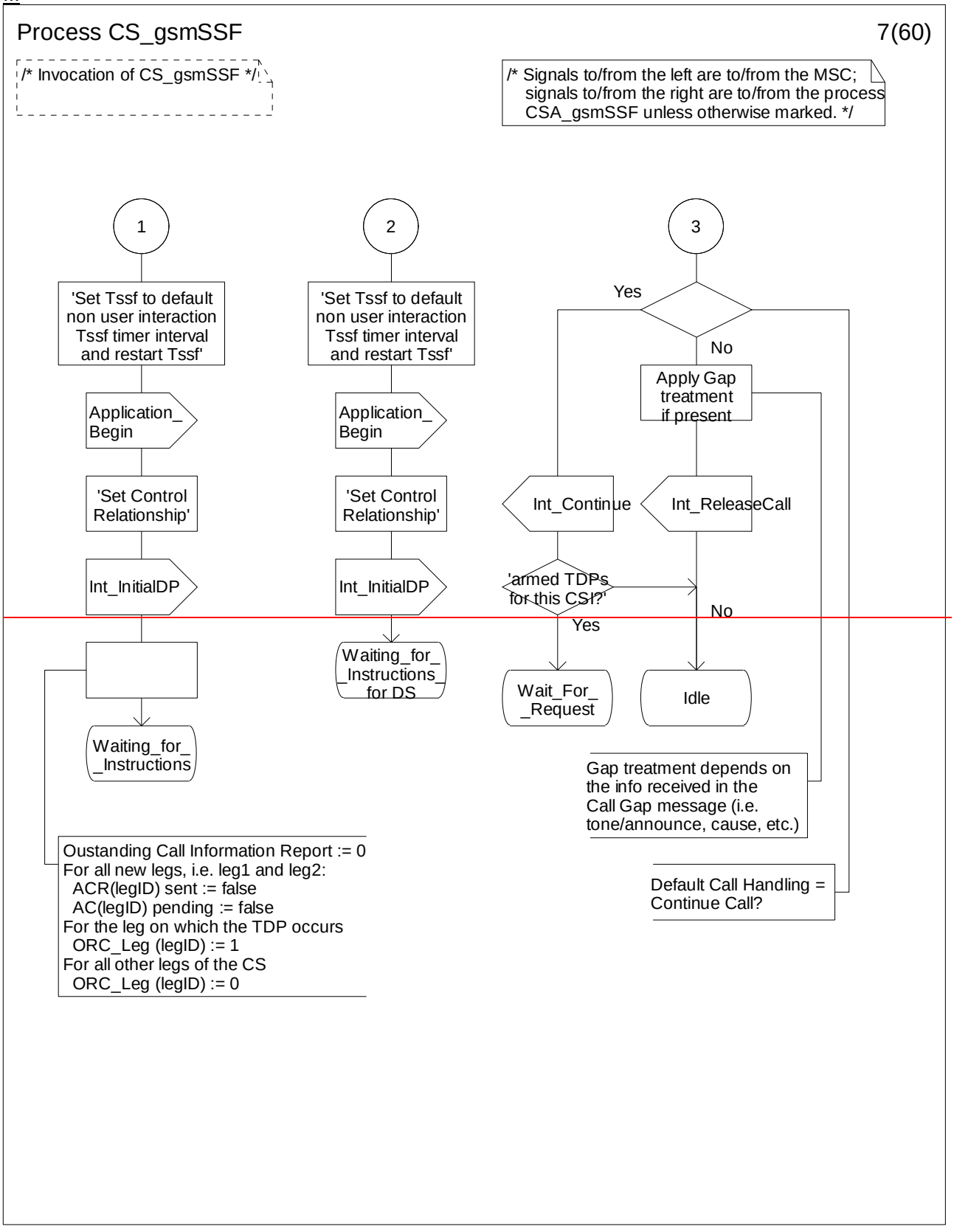
13) On receipt of a Disconnect Leg the number of resumptions required for the corresponding leg is set to 0.

14) If Release Call is used, nothing needs to be resumed.

— Next modified section —

4.5.7.5 Process CS_gsmSSF and procedures

...



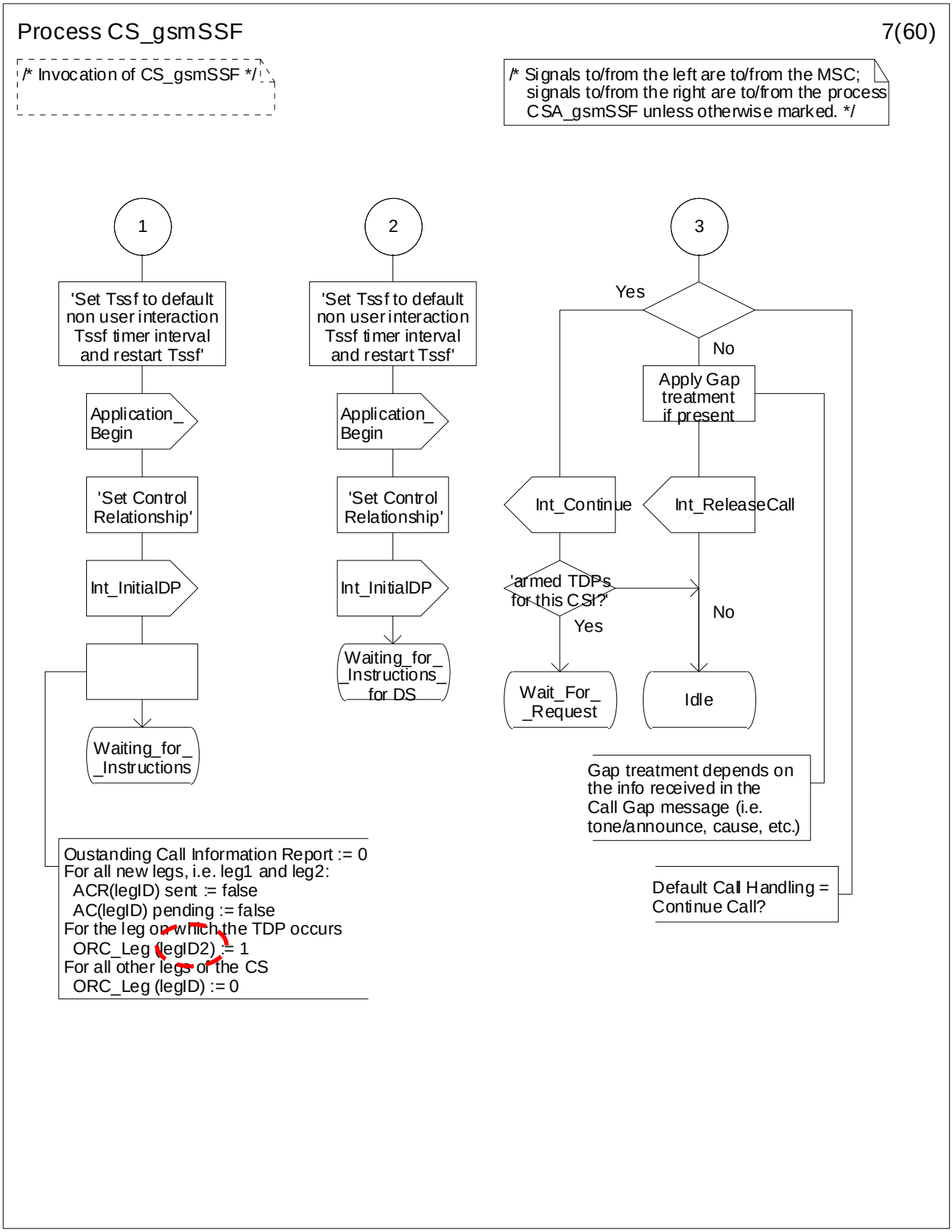
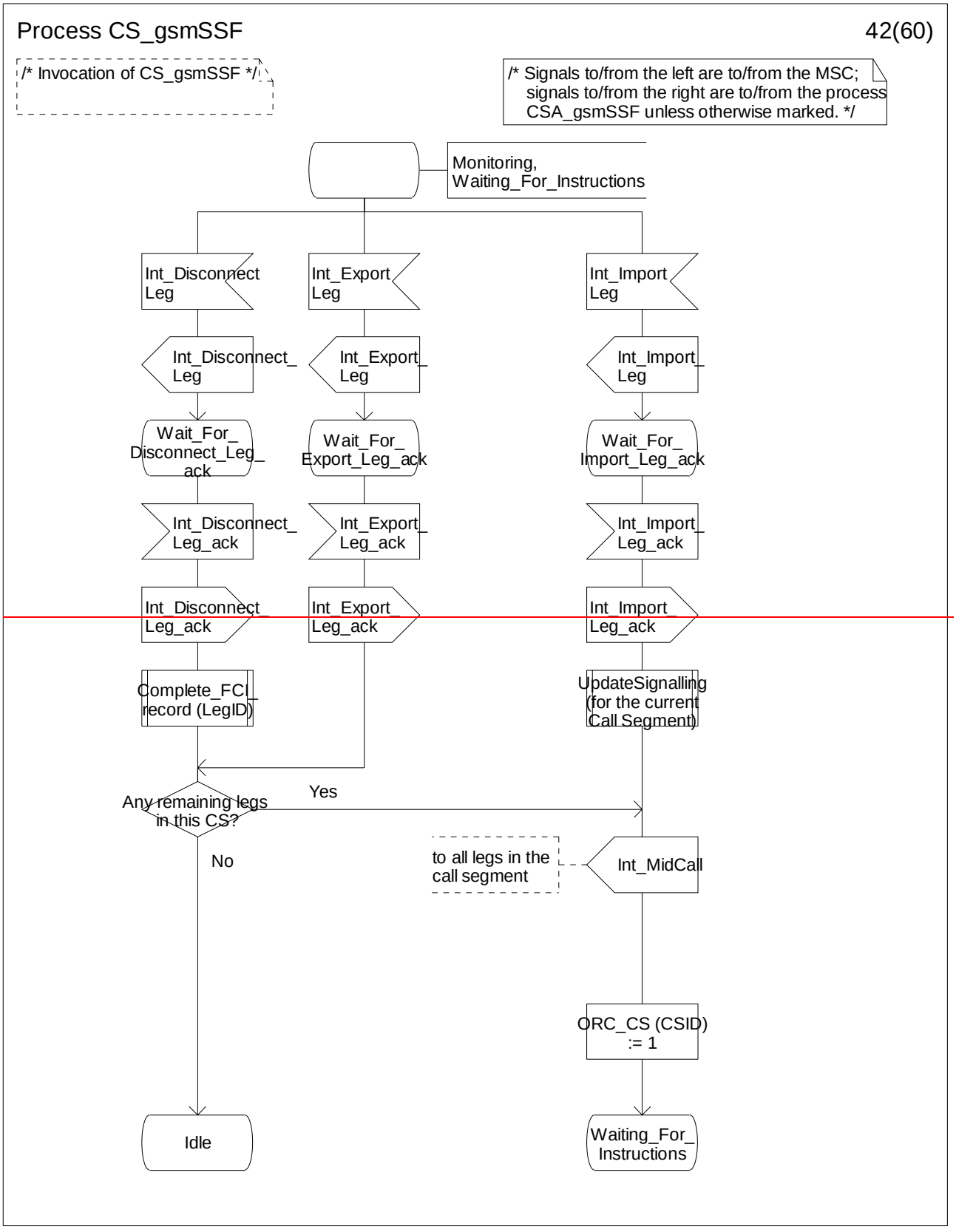


Figure 4.95-7: Process CS_gsmSSF (sheet 7)


Process CS_gsmSSF
42(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. */
Monitoring, Waiting_For_Instructions
Int_Disconnect Leg
Int_Export Leg
Int_Import Leg
Int_Disconnect_ Leg
Int_Export_ Leg
Int_Import_ Leg
Wait_For_ Disconnect_Leg_ ack
Wait_For_ Export_Leg_ack
Wait_For_ Import_Leg_ack
Int_Disconnect_ Leg_ack
Int_Export_ Leg_ack
Int_Import_ Leg_ack
Int_Disconnect_ Leg_ack
Int_Export_ Leg_ack
Int_Import_ Leg_ack
Complete_FCI_ record (LegID)
UpdateSignalling (for the current Call Segment)
Any remaining legs in this CS?
Yes
No
to all legs in the call segment
Int_MidCall
ORC_CS (CSID) := 1
Idle
Waiting_For_ Instructions

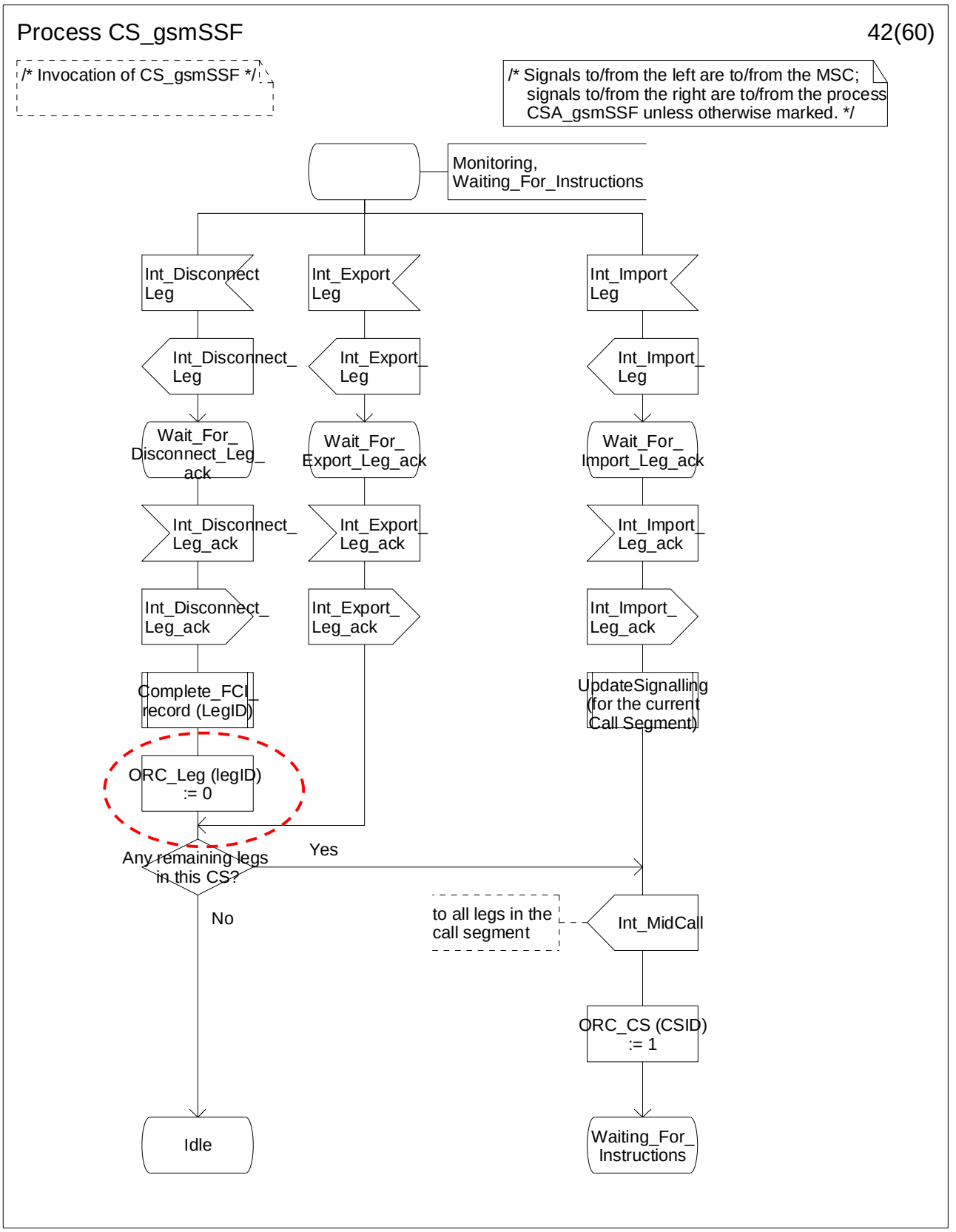


Figure 4.95-42: Process CS_gsmSSF (sheet 42)

...

— END —

3GPP TSG CN WG2 Meeting #31 **N2-030555**
Bangkok, Thailand, 27th – 31st October 2003 (revision of N2-030486)

CHANGE REQUEST

⌘ **29.078** **CR** **337** ⌘ **rev** **1** ⌘ Current version: **5.5.0** ⌘

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

Title:	⌘	Correction to description of "valid CSI" in SCP initiated call			
Source:	⌘	Ericsson			
Work item code:	⌘	CAMEL4	***Date:***	⌘	13 October 2003
Category:	⌘	F (agreed by concensus)	***Release:***	⌘	Rel-5

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

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

Reason for change: ⌘

The procedure descriptions of the CAP Operation EventReportBCSM refers to "valid CSI". The CSI that is used for the invocation of the CAMEL Service within which EventReportBCSM may be used, contains the Default Call Handling (DCH) parameter. DCH is used by gsmSSF to determine the action to take when Tssf expires.
The CSI, from which the DCH parameter is obtained, may be any of O-CSI, T-CSI, VT-CSI, D-CSI or N-CSI. For N-CSI, the value of the DCH parameter is defined by the serving network operator.

In an SCP-initiated call, there is no CSI, so the term "valid CSI" is out of context for SCP-initiated calls. For those calls, gsmSSF shall always use value "Release Call" for DCH.

The term "valid CSI" is also used in various CAP Error descriptions. These descriptions need to be refined as well.

For SMS and GPRS CAMEL dialogue, no change is needed, as these dialogues are always started as a result of a CSI, so the DCH parameter is always obtained from the valid CSI.

The description of CallGap Operation does not require correction, w.r.t. the reference to "valid CSI", since CallGAP can not be used within a gsmSCF initiated CAMEL dialogue (the Operation Package "trafficManagementPackage" is not conrtained in the Application Context "capScfToSsfGeneric").

The description of MissingCustomerRecord does not require correction, w.r.t. the reference to "valid CSI", since this CAP Error is used for InitialDP Operation only, so is not applicable for a gsmSCF initiated CAMEL dialogue.

Summary of change:	⌘	- Replace “Default Call Handling parameter of the valid CSI” by “Default Call Handling valid for this CAMEL dialogue”. - In section 10.2.1 (Expiration of Tssf), clarify that for gsmSCF initiated calls, the Default Call Handling shall be ReleaseCall.
Consequences if not approved:	⌘	Implementation difficulty for EventReportBCSM; for SCP-initiated calls, it is unclear what actions the gsmSSF shall take when Tssf expires.

Clauses affected:	⌘	10.1.6, 10.1.12, 10.2.1, 11.18			
		Y	**N**		
Other specs Affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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

10.1.6 MissingParameter

10.1.6.1 General description

10.1.6.1.1 Error description

The gsmSCF, gsmSSF, gsmSRF, smsSSF or gprsSSF uses this Error to indicate that there is an error in the received CAP Operation argument. The responding entity cannot start the execution of the requested CAP Operation because the argument is incorrect: an expected optional parameter which is essential for the application is not included in the CAP Operation argument.

10.1.6.2 Operations gsmSCF→gsmSSF

Procedures at responding entity (gsmSSF)

Precondition: (1) gsmSSF FSM appropriate state
(2) gsmSSF FSM Call associated CAP Operation received, appropriate event occurred
(3) gsmSSME FSM appropriate state
(4) gsmSSME FSM Non call associated CAP Operation received, appropriate event

Postcondition: (1) No gsmSSF FSM transition
(2) gsmSSME FSM transition to the initial state (i.e., before receiving the erroneous CAP Operation)

The gsmSSF detects the error in the received CAP Operation. The Error parameter "MissingParameter" is returned to inform the gsmSCF of this situation.

10.1.6.3 Operations gsmSSF→gsmSCF

Procedures at invoking entity (gsmSSF)

A) Sending CAP Operation

Precondition: gsmSSF FSM appropriate state

Postcondition: gsmSSF FSM appropriate state as result of the transfer of the CAP Operation

B) gsmSSF receives Error "MissingParameter"

Precondition: gsmSSF FSM appropriate state as result of the transfer of any of the CAP Operation

Postcondition: gsmSSF FSM state "Idle"

After receiving this Error, the gsmSSF FSM shall return to the state "Idle". The GMSC or VMSC shall handle the call in accordance with the Default Call Handling parameter ~~of the valid CSI~~, valid for this CAMEL dialogue. In the case of an assisting gsmSSF, the temporary connection shall be released by the assisting gsmSSF.

10.1.6.4 Operations gsmSCF→gsmSRF

Procedures at responding entity (gsmSRF)

Precondition: SRSM FSM state "Connected"; or
SRSM FSM state "User Interaction".

Postcondition: SRSM FSM state "User Interaction".

The SRSM detects that a required parameter is not present in the CAP Operation argument. The Error parameter "MissingParameter" is returned to inform the gsmSCF of this situation.

10.1.6.5 Operations gsmSRF→gsmSCF

Procedures at invoking entity (gsmSRF)

A) Sending CAP Operation

Precondition: SRSM FSM state "Connected".

Postcondition: SRSM FSM state "Connected".

B) Receiving Error

Precondition: SRSM FSM state "Connected".

Postcondition: SRSM FSM state "Idle".

The gsmSCF detects the error in the received CAP Operation. The Error parameter "MissingParameter" is used to inform the gsmSRF of this situation. The SL and maintenance functions are informed. The gsmSCF might try another gsmSRF, route the call or release the call (SL dependent).

10.1.6.6 Operations smsSSF→gsmSCF

Procedures at invoking entity (smsSSF)

A) Sending CAP Operation

Precondition: smsSSF FSM state "WaitingForInstructions".

Postcondition: smsSSF FSM state "WaitingForInstructions".

B) Receiving Error

Precondition: smsSSF FSM state "WaitingForInstructions".

Postcondition: smsSSF FSM state "Idle".

After receiving this error, the smsSSF FSM shall transit to the state "Idle". The SGSN or VMSC shall handle the Short Message in accordance with the Default SMS Handling parameter of the valid CSI.

10.1.6.7 Operations gsmSCF → smsSSF

Procedures at responding entity (smsSSF)

precondition:

(1) smsSSF appropriate state.

(2) smsSSF SMS associated CAP Operation received, appropriate event occurred.

postcondition:

(1) smsSSF transition to the same state.

The smsSSF detects the error in the received CAP Operation. The Error parameter "MissingParameter" is returned to inform the gsmSCF of this situation.

10.1.6.8 Operations gprsSSF→gsmSCF

Procedures at invoking entity (gprsSSF)

A) Sending CAP Operation

Precondition: gprsSSF FSM state "Waiting_for_Instructions".

Postcondition: gprsSSF FSM state "Waiting_for_Instructions".

B) Receiving Error

Precondition: gprsSSF FSM state "Waiting_for_Instructions".

Postcondition: gprsSSF FSM state "Idle".

After receiving this error, the gprsSSF FSM shall transits to the state "Idle". The SGSN shall handle the GPRS Session or PDP Context in accordance with the Default GPRS Handling parameter of the valid CSI.

10.1.6.9 Operations gsmSCF→gprsSSF

Procedures at responding entity (gprsSSF)

precondition:

(1) gprsSSF appropriate state.

(2) gprsSSF CAP Operation received, appropriate event occurred.

postcondition:

(1) gprsSSF transition to the same state.

The gprsSSF detects the error in the received CAP Operation. The Error parameter "MissingParameter" is returned to inform the gsmSCF of this situation.

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

10.1.12 UnexpectedComponentSequence

10.1.12.1 General description

10.1.12.1.1 Error description

The gsmSCF, gsmSSF, gsmSRF, smsSSF or gprsSSF uses this Error to indicate that it cannot start the execution of the requested CAP Operation because a SACF or MACF rule is violated, or the CAP Operation cannot be executed in the current state of the FSM.

10.1.12.2 Operations gsmSCF→gsmSSF

In this case the gsmSSF detects the erroneous situation, sends the Error "UnexpectedComponentSequence" and remains in the same state.

10.1.12.3 Operations gsmSSF→gsmSCF

If the CAP Operation is sent by an "initiating" gsmSSF in the context of an existing relationship, then the gsmSCF returns the Error parameter. On receiving the error the gsmSSF FSM shall transit to the state "Idle". The VMSC or GMSC shall handle the call in accordance with the Default Call Handling parameter ~~of the valid CSI~~, valid for this CAMEL dialogue.

10.1.12.4 Operations gsmSCF→gsmSRF (applicable for direct gsmSCF-gsmSRF case only)

In this case the gsmSRF detects the erroneous situation, sends the Error "UnexpectedComponentSequence" and remains in the same state.

10.1.12.5 Operations gsmSRF→gsmSCF

In this case, an error occurs if the gsmSRF has already an established relationship with the gsmSCF and sends the CAP Operation AssistRequestInstructions. The gsmSCF detects the erroneous situation, informs SL and maintenance functions and returns the error parameter. On receiving the Error parameter, the gsmSRF FSM shall transit to the state "Idle" and releases the temporary connection.

10.1.12.6 Operations smsSSF →gsmSCF

If the CAP Operation is sent by the smsSSF in the context of an existing relationship, then the gsmSCF returns the Error parameter. On receiving the error, the smsSSF FSM shall transit to the state "Idle". The SGSN or VMSC shall handle the Short Message in accordance with the Default SMS Handling parameter of the valid CSI.

10.1.12.7 Operations gsmSCF→smsSSF

In this case the smsSSF detects the erroneous situation, sends the Error "UnexpectedComponentSequence" and remains in the same state.

10.1.12.8 Operations gprsSSF →gsmSCF

If the CAP Operation is sent by the gprsSSF in the context of an existing relationship, then the gsmSCF returns the Error parameter. On receiving the error, the gprsSSF FSM shall transit to the state "Idle". The SGSN shall handle the GPRS Session or PDP Context in accordance with the Default GPRS Handling parameter of the valid CSI.

10.1.12.9 Operations gsmSCF→gprsSSF

In this case the gprsSSF detects the erroneous situation, sends the Error "UnexpectedComponentSequence" and remains in the same state.

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

10.2.1 Expiration of Tssf

10.2.1.1 General description

10.2.1.1.1 Error description

A timeout has occurred in the gsmSSF, gprsSSF, smsSSF or assisting gsmSSF on the response from the gsmSCF.

10.2.1.2 Procedures gsmSSF→gsmSCF

Procedure at the invoking entity (gsmSSF or assisting gsmSSF)

Timeout occurs in gsmSSF on Tssf.

Precondition:	gsmSSF FSM state	"Waiting_for_Instructions"; or
	gsmSSF FSM state	"Waiting_for_end_of_User_Interaction"; or
	gsmSSF FSM state	"Waiting_for_end_of_Temporary_Connection".
Postcondition:	gsmSSF FSM state	"Idle".

The gsmSSF shall abort the TS dialogue and shall transit to the state "Idle". The GMSC or VMSC shall handle the call in accordance with the Default Call Handling parameter ~~of the valid CSI~~, valid for this CAMEL dialogue. For CAMEL dialogues that are established as a result of a CSI, the Default Call Handling parameter is obtained from the CSI. For gsmSCF initiated CAMEL dialogues, the Default Call Handling parameter shall be “ReleaseCall”.

The assisting gsmSSF shall abort the TC dialogue and shall transit to the state "Idle". The assisting gsmSSF shall release the temporary connection.

10.2.1.3 Procedures gprsSSF→gsmSCF

Procedure at the invoking entity (gprsSSF)

Timeout occurs in gprsSSF on Tssf.

Precondition: gprsSSF FSM state "Waiting_for_Instructions".

Postcondition: gprsSSF FSM state "Idle".

The gprsSSF shall abort the TC dialogue and and the GPRS dialogue and shall transit to the state "Idle". The SGSN shall handle the PDP Context in accordance with the Default GPRS Handling parameter of the valid CSI.

10.2.1.4 Procedures smsSSF→gsmSCF

Procedure at the invoking entity (smsSSF)

Timeout occurs in smsSSF on Tssf.

Precondition: smsSSF FSM state "Waiting_for_Instructions".

Postcondition: smsSSF FSM state "Idle".

The smsSSF shall abort the TC dialogue and shall transit to the state "Idle". The MSC or SGSN shall handle the Short Message in accordance with the Default SMS Handling parameter of the valid CSI.

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

11.18 EventReportBCSM procedure

11.18.1 General description

The gsmSSF uses this operation to notify the gsmSCF of a call related event previously requested by the gsmSCF in a "RequestReportBCSMEvent" operation.

11.18.1.1 Parameters

- eventTypeBCSM:
  This parameter specifies the type of event that is reported.

- eventSpecificInformationBCSM:
  This parameter indicates the call related information specific to the event.

  For Route_Select_Failure it shall contain the "FailureCause", if available.

  For O_Busy it shall contain the "BusyCause", if available.

- If the busy event is triggered by an ISUP release message, then the BusyCause is a copy of the ISUP release cause, for example: Subscriber absent, 20 or User busy, 17.

- If the busy event is trigerred by a MAP error, for example: Absent subscriber, received from the HLR, then the MAP cause is mapped to the corresponding ISUP release cause.

NOTE 1: If no BusyCause is received, then the gsmSCF shall assume busy.

For T_Busy it may contain the following parameters, if available.

- CallForwarded:
  This parameter indicates that the busy event is triggered by call forwarding at the GMSC or VMSC.

- ForwardingDestinationNumber:
  This parameter indicates the forwarding destination.

- RouteNotPermitted:
  This parameter indicates that the busy event is triggered because call forwarding was not invoked in this GMSC due to the rules of Basic Optimal Routeing.

- BusyCause:

  - If the busy event is triggered by an ISUP release message, then the BusyCause is a copy of the ISUP release cause, for example: Subscriber absent, 20 or User busy, 17.

  - If the busy event is triggered by a MAP error, for example: Absent subscriber, received from the HLR, then the MAP cause is mapped to the corresponding ISUP release cause.

  - If the busy event is triggered by call forwarding or call deflection invocation in the GMSC or VMSC, then the BusyCause will refer to the release cause in accordance with the mapping table in 3GPP TS 23.078 [7].

NOTE 2: If no BusyCause is received, then the gsmSCF shall assume busy.

- If the busy event is triggered by call forwarding at the GMSC, then the BusyCause reflects the forwarding reason (Subscriber Absent, 20 or User busy, 17). The eventSpecificInformationBCSM shall in that case also contain the CallForwarded indication.

For O_No_Answer it shall be empty.

For T_No_Answer it may contain the CallForwarded indication and the ForwardingDestinationNumber.

- If the No_Answer event is triggered by an ISUP release message or expiry of the CAMEL timer TNRy, then the eventSpecificInformationBCSM shall be empty.

- If the No_Answer event is triggered by call forwarding at the GMSC or VMSC, then the eventSpecificInformationBCSM shall contain the CallForwarded indication and the ForwardingDestinationNumber.

For O_Answer or T_Answer it shall contain the following information, if available:

- The destination address for the call;

- The OR indicator, in the case that the call was subject to Basic Optimal Routeing, as specified in 3GPP TS 23.079 [8];

- The forwarding indicator, in the case that the Call Forwarding Supplementary Service was invoked;

- The charge indicator.

For O_Mid_Call and T_Mid_Call it shall contain the detected digit string, in accordance with the criterion defined in the RequestReportBCSMEvent operation.

For Call_Accepted, O_Term_Seized, O_Change_Of_Position and T_Change_Of_Position it shall contain the following information:

- locationInformation:
  This parameter indicates the location of the MS.

For O_Disconnect and T_Disconnect it shall contain the "releaseCause", if available.

For O_Abandon" it may contain the following parameter, if available.

- routeNotPermitted:
  This parameter indicates that the O-Abondon event is triggered because call set up shall not be invoked in this MSC due to the rules of Basic Optimal Routeing.

- legID:
  This parameter indicates the party in the call for which the event is reported. The gsmSSF shall use the option "receivingSideID" only.

- receivingSideID:
  If not included, then the following defaults are assumed:

  "legID" = 1 for the events O_Abandon and T_Abandon,

  "legID" = 2 for the events Route_Select_Failure, O_Busy, O_No_Answer, O_Answer, T_Busy, O_Term_Seized, Call_Accepted, T_No_Answer and T_Answer.

The "legID" parameter shall always be included for the events O_Disconnect and T_Disconnect.

- miscCallInfo:
  This parameter indicates Detection Point (DP) related information.

- messageType:
  This parameter indicates whether the message is a request, i.e. resulting from a "RequestReportBCSMEvent" with monitorMode = interrupted, or a notification, i.e. resulting from a "RequestReportBCSMEvent" with "monitorMode" = "notifyAndContinue".

11.18.2 Invoking entity (gsmSSF)

11.18.2.1 Normal procedure

gsmSSF preconditions:

(1) A control relationship or a monitoring relationship exists between the gsmSSF and the gsmSCF.

(2) For the O_Disconnect DP, T_Disconnect DP, O_Answer DP and T_Answer DP, the gsmSSF FSM is in the state "Monitoring" or in the state "Waiting_for_Instructions". For the O_Abandon DP and T_Abandon DP, the gsmSSF FSM is in any state, except "Idle".

(3) The BCSM proceeds to an EDP that is armed.

gsmSSF postconditions:

(1) If the message type was notification and there are still armed EDPs or pending reports, then the gsmSSF FSM stays in the state "Monitoring".

(2) If the message type was notification and there are neither any armed EDPs nor pending reports, then the gsmSSF FSM transits to the state "Idle".

(3) If the message type was request, then the gsmSSF FSM transits to the state "Waiting_for_Instructions". Call processing is interrupted.

11.18.2.2 Error handling

If the message type is "request" and the Tssf timer expires, then the gsmSSF shall abort the TC dialogue and shall instruct the MSC to treat the call in accordance with the Default Call Handling ~~of the valid CSI~~, valid for this CAMEL dialogue. ~~If the TC dialogue was established by the gsmSCF, then the gsmSSF shall use 'Release Call' for Default Call Handling.~~

Operation related error handling is not applicable, due to class 4 operation.

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

3GPP TSG CN WG2 Meeting #31 **N2-030556**
Bangkok, Thailand, 27th – 31st October 2003 (revision of N2-030488)

CHANGE REQUEST

⌘ **23.078** **CR** **628** ⌘ **rev** **1** ⌘ Current version: **5.5.1** ⌘

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

Title:	⌘	Removal of Int_Continue from process ICA_MSC
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4
Date:	⌘	28 October 2003
Category:	⌘	F (agreed by concensus)
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	When the gsmSCF establishes a new call leg, then the gsmSCF uses CAP Intitiate Call Attempt (ICA). ICA contains the Call Segment Id and Leg Id of the new leg. The Leg Id that may be used for ICA legs may be 3 or higher. The CAP Operation Continue may not be used to continue the processing of call legs which have a leg number in excess of 2. Hence, CAP Continue may never be used for ICA legs. The gsmSCF shall always use CAP Continue With Argument for this purpose. As a result, the process CAMEL_ICA_MSC, which handles the creation of new call legs, can't receive Int_Continue from CS_gsmSSF, in the state DP_Collected_Info. Refer to the "for information" section of the present CR for a deduction why CAP Continue can not be used for SCP-initiated call legs.
Summary of change:	⌘	Remove the input signal Int_Continue from Process CAMEL_ICA_MSC, sheet 2.
Consequences if not approved:	⌘	Incorrect specification of process CAMEL_ICA_MSC; process CAMEL_ICA_MSC needs to implement a signal which it can not receive.

Clauses affected:	⌘	4.5.6

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

Other comments:	⌘	The CR does not remove the Int_Continue for the states DP_O_MidCall_Alerting and DP_O_MidCall_Active. These states may be reached when a follow-on call is created for an ICA leg, whereby the follow-on call is subjected to an Enhanced Dialed Service (CAMEL Phase 4, 3GPP Rel-6).

****** For Information – extract from TS 23.078 V5.5.0 ******

4.6.2.8 Continue

4.6.2.8.1 Description

This IF requests the gsmSSF to proceed with call processing at the DP at which it previously suspended call processing to await gsmSCF instructions. The gsmSSF completes DP processing, and continues basic call processing (i.e. proceeds to the next point in call in the BCSM) without substituting new data from the gsmSCF.

The gsmSCF may send this operation only when there is a CSA with a single call segment which includes:

- **only leg 1, or**
- **only leg 2, or**
- **leg 1 and leg 2 but no other legs.**

< … >

4.6.2.15 Initiate Call Attempt

4.6.2.15.1 Description

This IF is used to request the gsmSSF to create a new party in an existing call (NP), or to create a completely new call (NC). The created leg is an originating call. The address information provided by the gsmSCF is used.

4.6.2.15.2 Information Elements

Information element name	NC	NP	Description
Destination Routeing Address	M	M	This IE contains the called party number towards which the call is to be routed. For calls to an MS this can e.g. be (but shall not be limited to) the MSISDN (for routeing via a GMSC) or the MSRN received from the HLR (for routeing direct to the VMSC).
Calling Party Number	M	-	This IE identifies which number shall be regarded as the calling party for the created call.
Leg To Be Created	M	M	This IE indicates the legID to be assigned to the newly created party. **The leg ID shall be 3 or higher.**
New Call Segment	M	M	This IE indicates the CS ID to be assigned to the newly created call segment.
Call Reference Number	M	-	This IE may be used by the gsmSCF for inclusion in a network optional gsmSCF call record. The call reference number is included by the MSC in the call record.
gsmSCF Address	M	-	This IE contains the address of the gsmSCF which initiated the new call. This IE is required for a unique Call Reference.
Suppress T-CSI	O	-	This IE indicates that T-CSI shall be suppressed on the terminating leg.

< … >

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

4.5.6 Handling of gsmSCF initiated calls

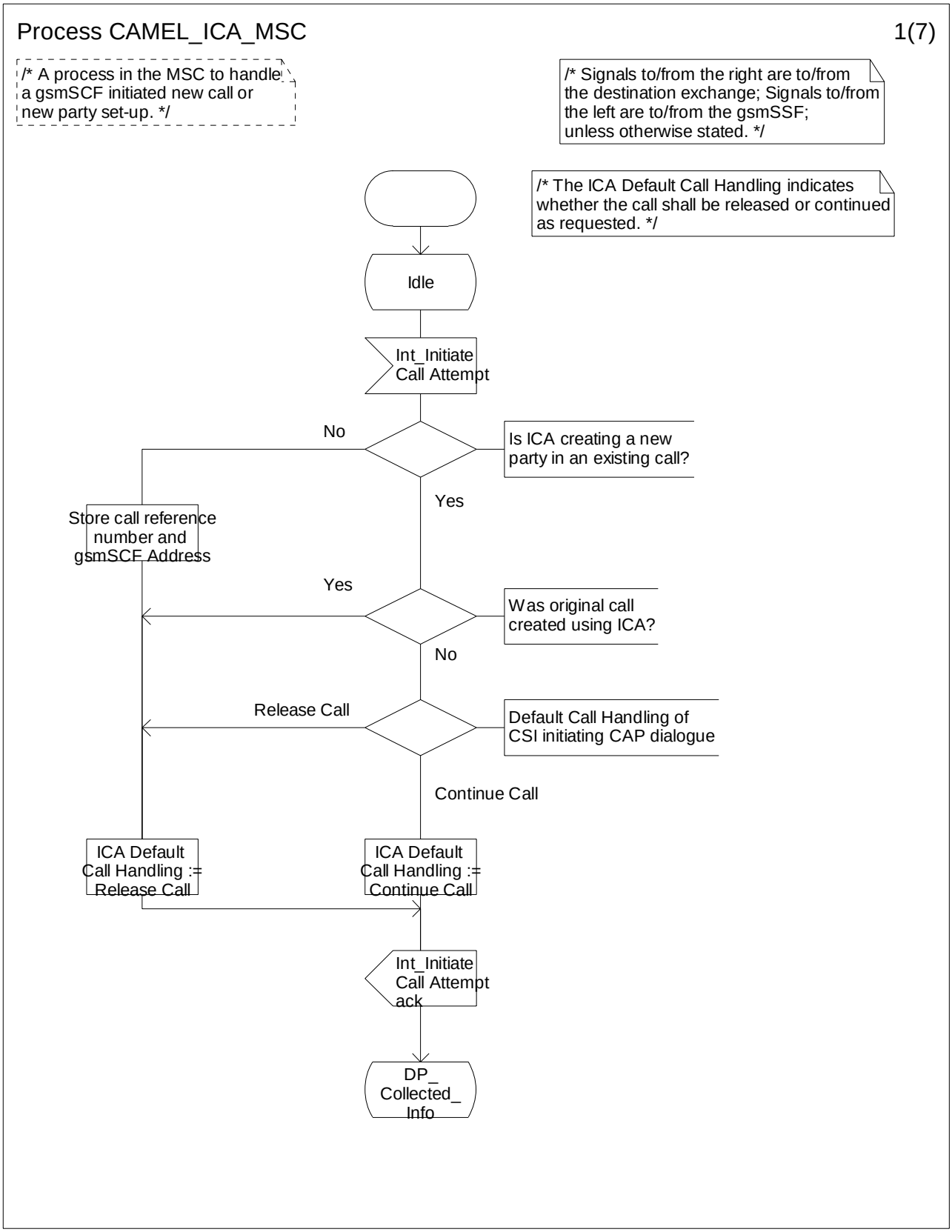
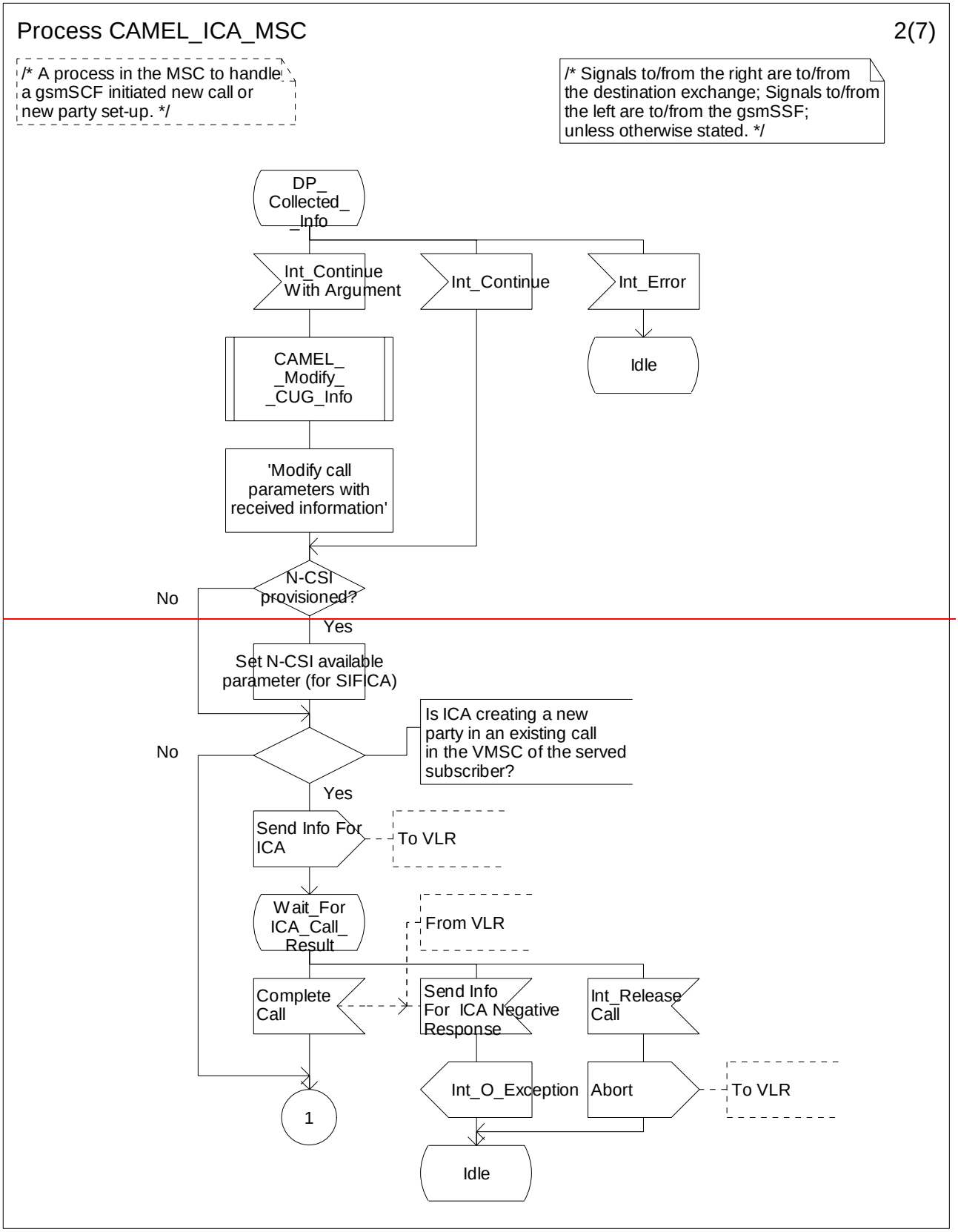


Figure Error! Reference source not found.**.1-1: Process CAMEL_ICA_MSC (sheet 1)**



~~Figure 4.85-2: Process CAMEL_ICA_MSC (sheet 2)~~

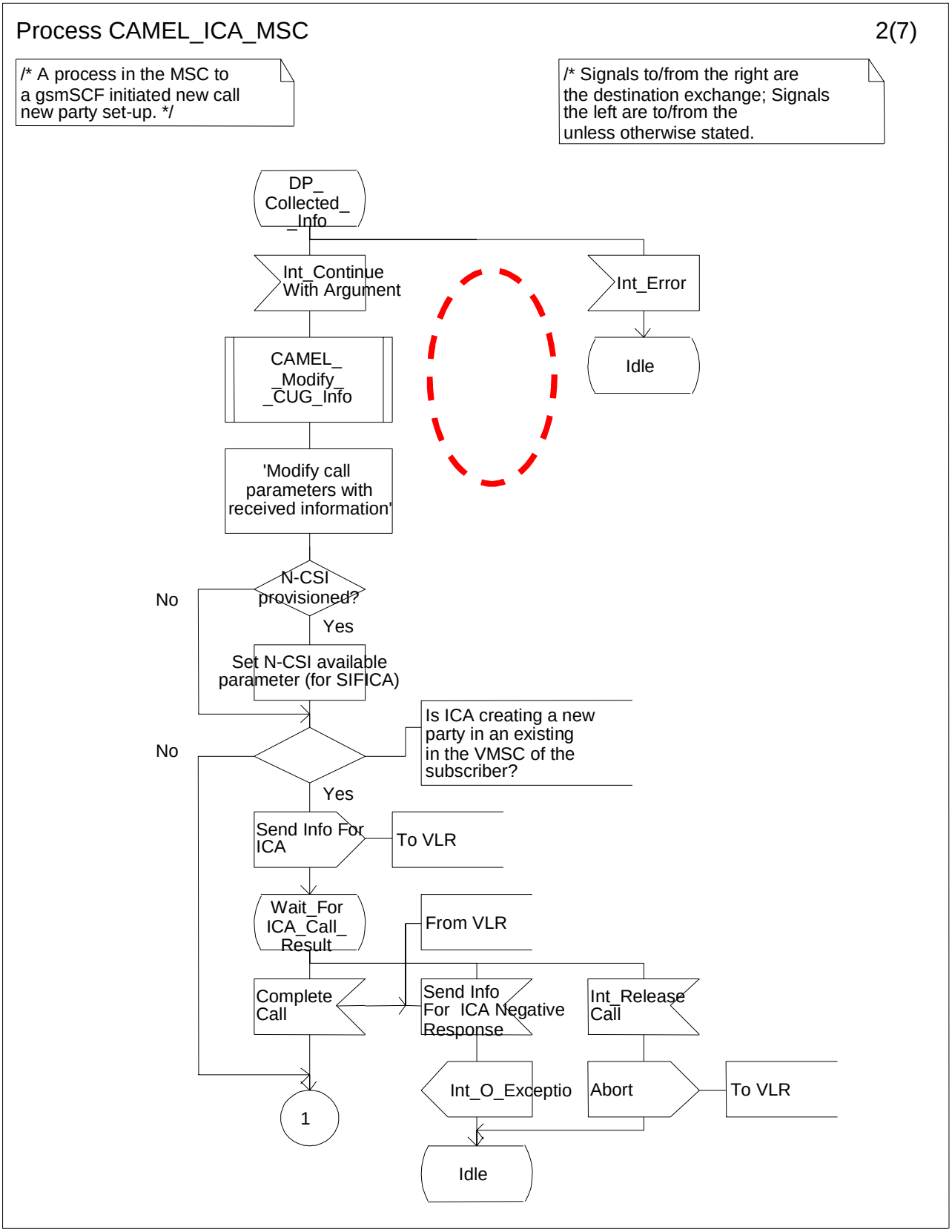


Figure Error! Reference source not found..1-3: Process CAMEL_ICA_MSC (sheet 3)

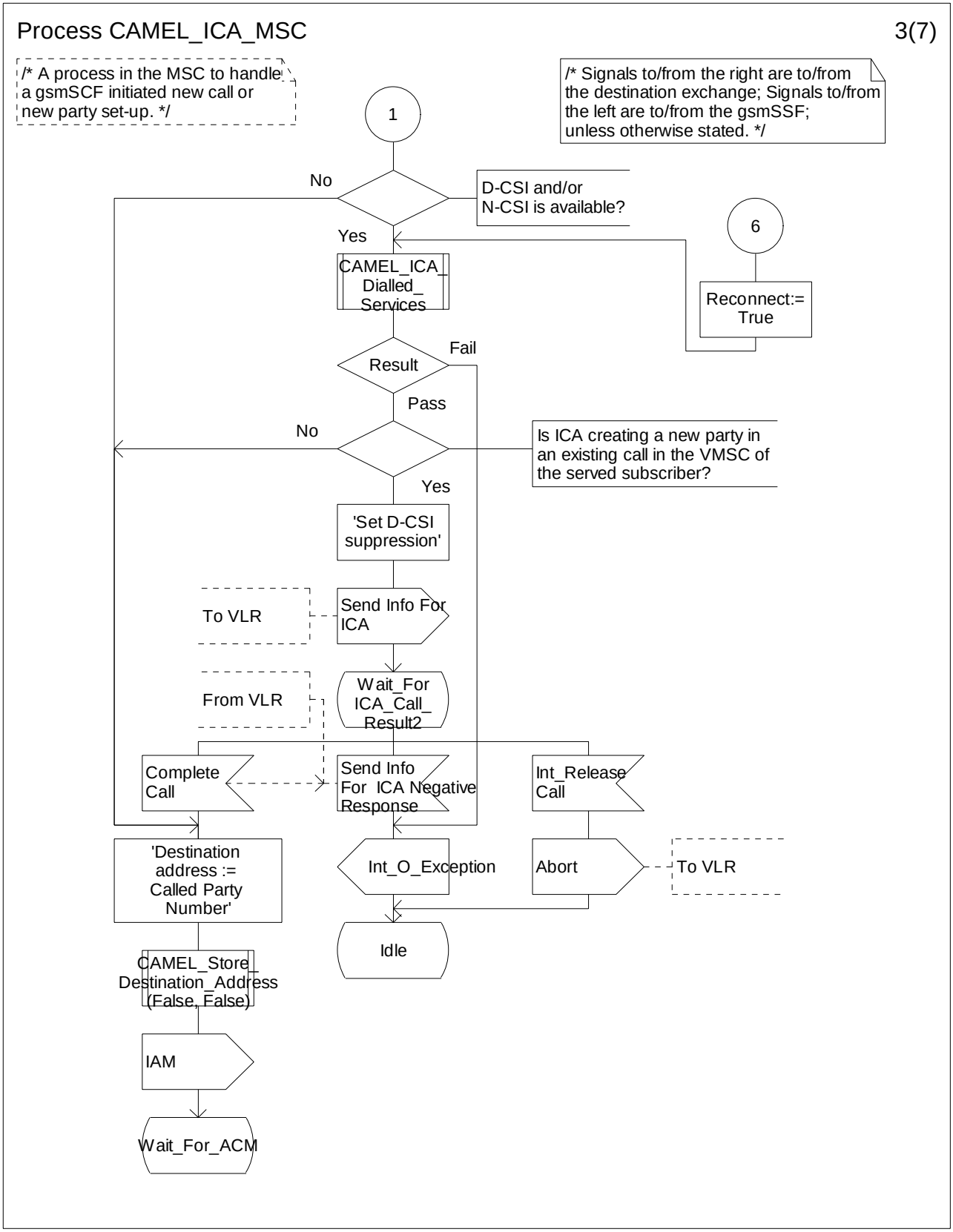


Figure Error! Reference source not found..1-**4: Process CAMEL_ICA_MSC (sheet 4)**

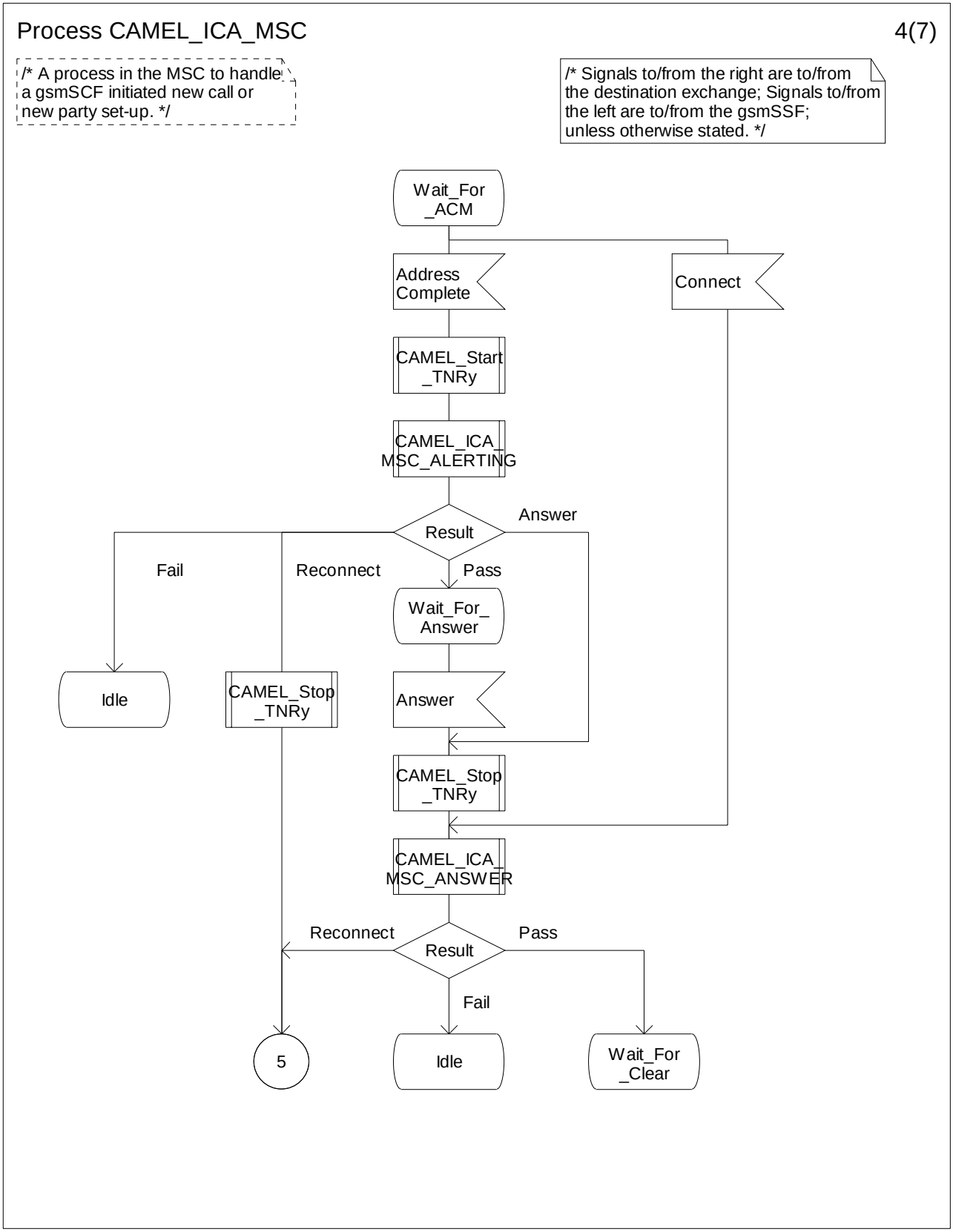


Figure Error! Reference source not found..1**-5: Process CAMEL_ICA_MSC (sheet 5)**

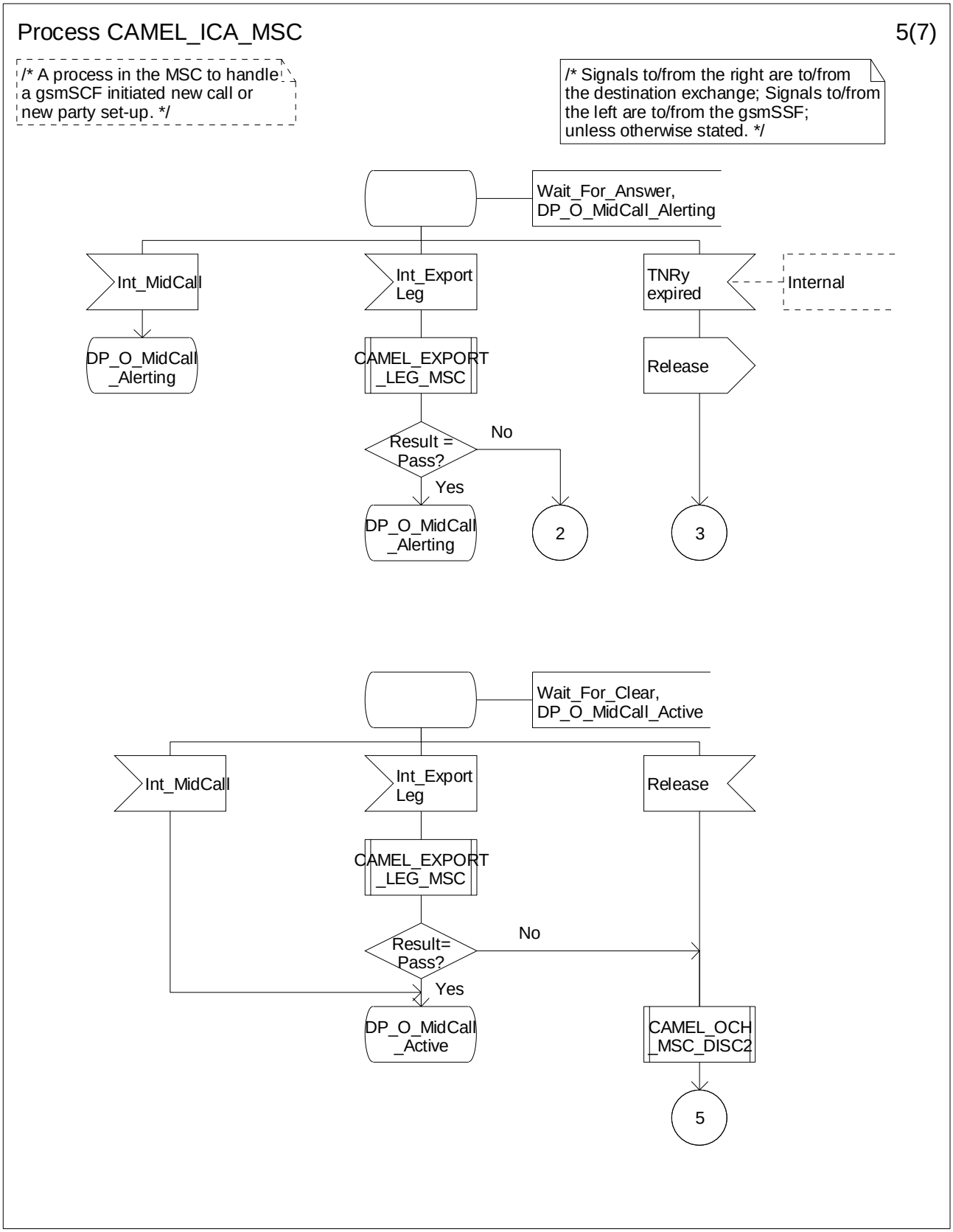


Figure Error! Reference source not found..1**-6: Process CAMEL_ICA_MSC (sheet 6)**

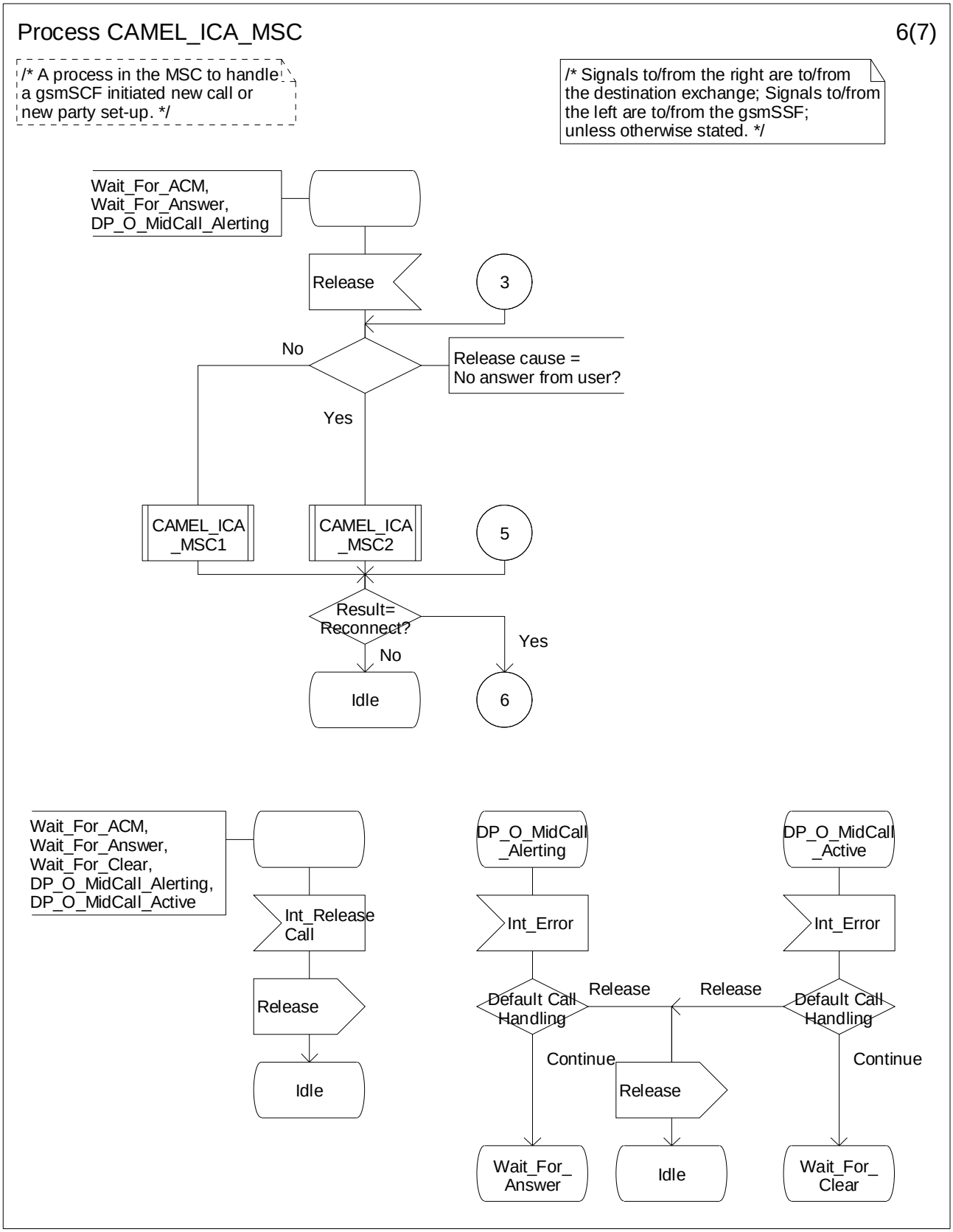


Figure Error! Reference source not found..1**-7: Process CAMEL_ICA_MSC (sheet 7)**

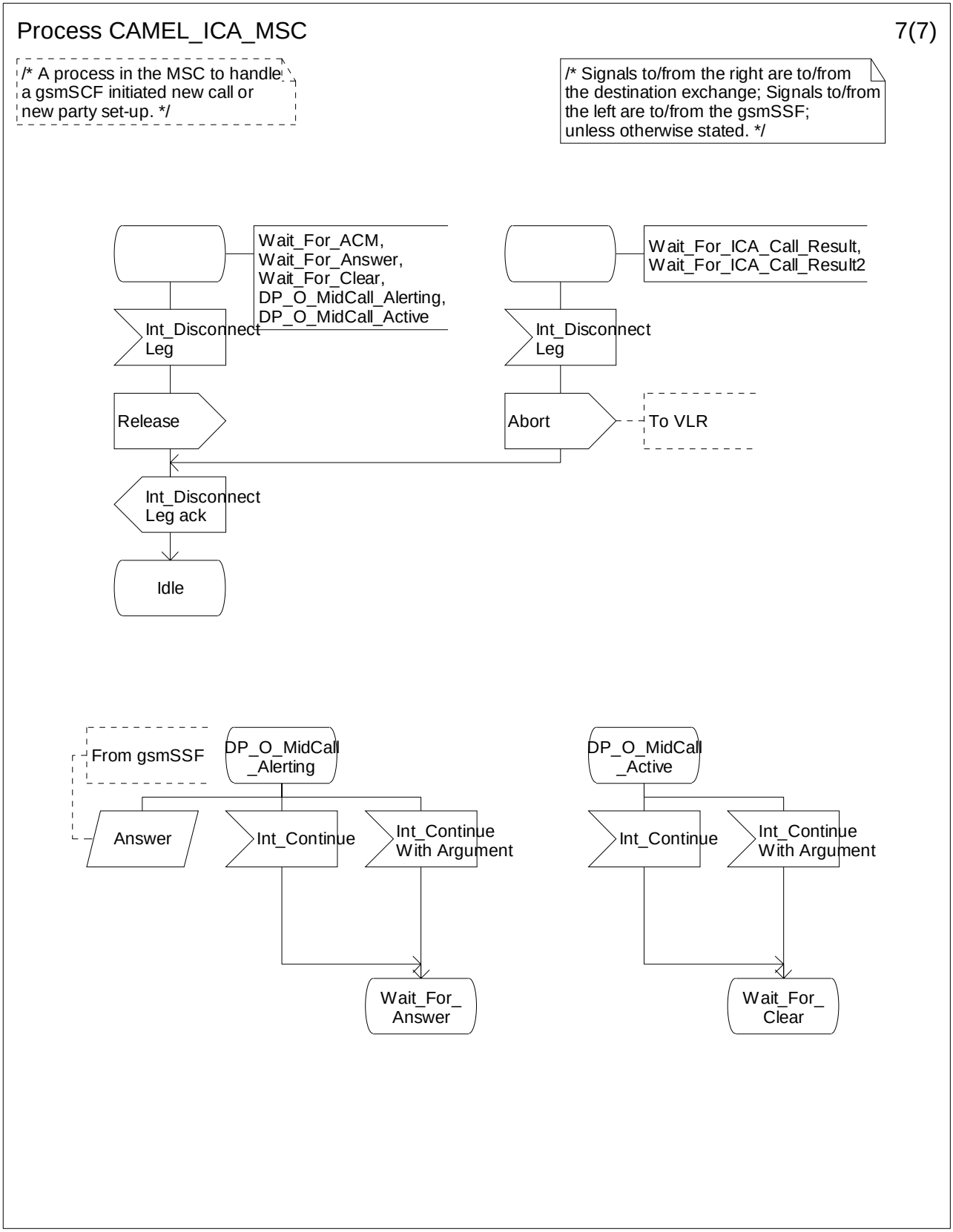


Figure Error! Reference source not found..1**-8: Process CAMEL_ICA_MSC (sheet 8)**

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

3GPP TSG CN WG2 Meeting #31 **N2-030557**
Bangkok, Thailand, 27th – 31st Oct 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **636** ⌘**rev** **1** ⌘ 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 **X**

Title:	⌘	CAMEL User Interaction at alerting and MidCall
Source:	⌘	Nokia
Work item code:	⌘	CAMEL4
Date:	⌘	29.10.2003
Category:	⌘	**F** **(essential correction)**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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:	⌘	22.078 requires CAMEL user interaction at alerting and MidCall detection points. This requirement is not yet implemented in Stage 2s.
Summary of change:	⌘	- 23.078 CS_gsmSSF generated input are added to appropriate places. If outgoing leg answers during UI at alerting phase or DP then UI is interrupted, and gsmSSF goes to answer DP. Answer DP is reported to gsmSSF (if armed). O/T_Answer should be EDP-R if UI at alerting DP. If the UI is not released automatically by MSC at B-Answer then - Connecting the announcement to both parties might be very difficult. Still the joined party would hear partial announcement. - If the announcment would be connected only to the calling party then it would disturb the speech and the joined party will not know why the CG party does not hear it… - More difficult CAMEL service and the service originated relese is not enough in this case since we are talking about the speech quality. The signalling sequence is change when calling party releases after answer has been received. The OCH/ETC procedures do not wait anymore for Int_Disconnect_Forward_Connection signal. At least in EDP-N and no-EDP cases that signal was never received. In the EDP-R case the SCP could use it.
Consequences if not approved:	⌘	No user interaction at alerting or MidCall DP. Stage 2 misaligned with Stage 1 requirement.

Clauses affected:	⌘	

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

		X	O&M Specifications
Other comments:	⌘	-	Calling party release during UI before answer is not modified. Should it also generate ACR(SRF) in all cases?
		-	ETC procedures do not wait ackknowledgement from external SRF, whereas CTR procedures do. This is not changed. To maintain this a new procedure was added.

-- First modified section --

4.5.2 Handling of mobile originated calls

4.5.2.1 Handling of mobile originated calls in the originating MSC

The functional behaviour of the originating VMSC is specified in 3GPP TS 23.018 [12]. The procedures specific to CAMEL are specified in this subclause:

- Procedure CAMEL_OCH_MSC_INIT;
- Procedure CAMEL_MO_Dialled_Services;
- Procedure CAMEL_OCH_MSC_ALERTING;
- Procedure CAMEL_OCH_MSC_ANSWER;
- Procedure CAMEL_OCH_MSC1;
- Procedure CAMEL_OCH_MSC2;
- Procedure CAMEL_OCH_MSC_DISC1;
- Procedure CAMEL_OCH_MSC_DISC2;
- Procedure CAMEL_OCH_MSC_DISC3;
- Procedure CAMEL_OCH_MSC_DISC4;
- Procedure CAMEL_Disconnect_CTR_SRF;
- Procedure CAMEL_OCH_ETC;
- Procedure CAMEL_OCH_CTR;
- Procedure CAMEL_Start_TNRy;
- Procedure CAMEL_Stop_TNRy;
- Procedure CAMEL_Store_Destination_Address;
- Procedure CAMEL_Modify_CUG_Info;
- Procedure CAMEL_N_CSI_CHECK_MSC;
- Procedure CAMEL_OCH_LEG1_MSC;
- Procedure CHECK_DIGIT_STRING_MSC;
- Process CAMEL_OCH_LEG2_MSC;
- Process CAMEL_OCH_RECONNECT_MSC;
- Procedure CAMEL_EXPORT_LEG_MSC;
- Process CAMEL_O_CHANGE_OF_POSITION_MSC.

NOTE: Procedure CAMEL_OCH_MSC_DISC3 applies to CAMEL Phase 1 only.

The procedure Send_Access_Connect_If_Required is specified in 3GPP TS 23.018 [12].

The procedure CAMEL_OCH_LEG1_MSC supervises the originating party only. The process CAMEL_OCH_LEG2_MSC supervises the terminating party only. Hence, signals from the BSS are received by the procedure CAMEL_OCH_LEG1_MSC and signals from the destination exchange are received by the process CAMEL_OCH_LEG2_MSC.

The following paragraphs give details on the behaviour of the MSC in the procedures CAMEL_OCH_MSC_INIT, CAMEL_OCH_ETC, CAMEL_OCH_ANSWER and CAMEL_Store_Destination_Address.

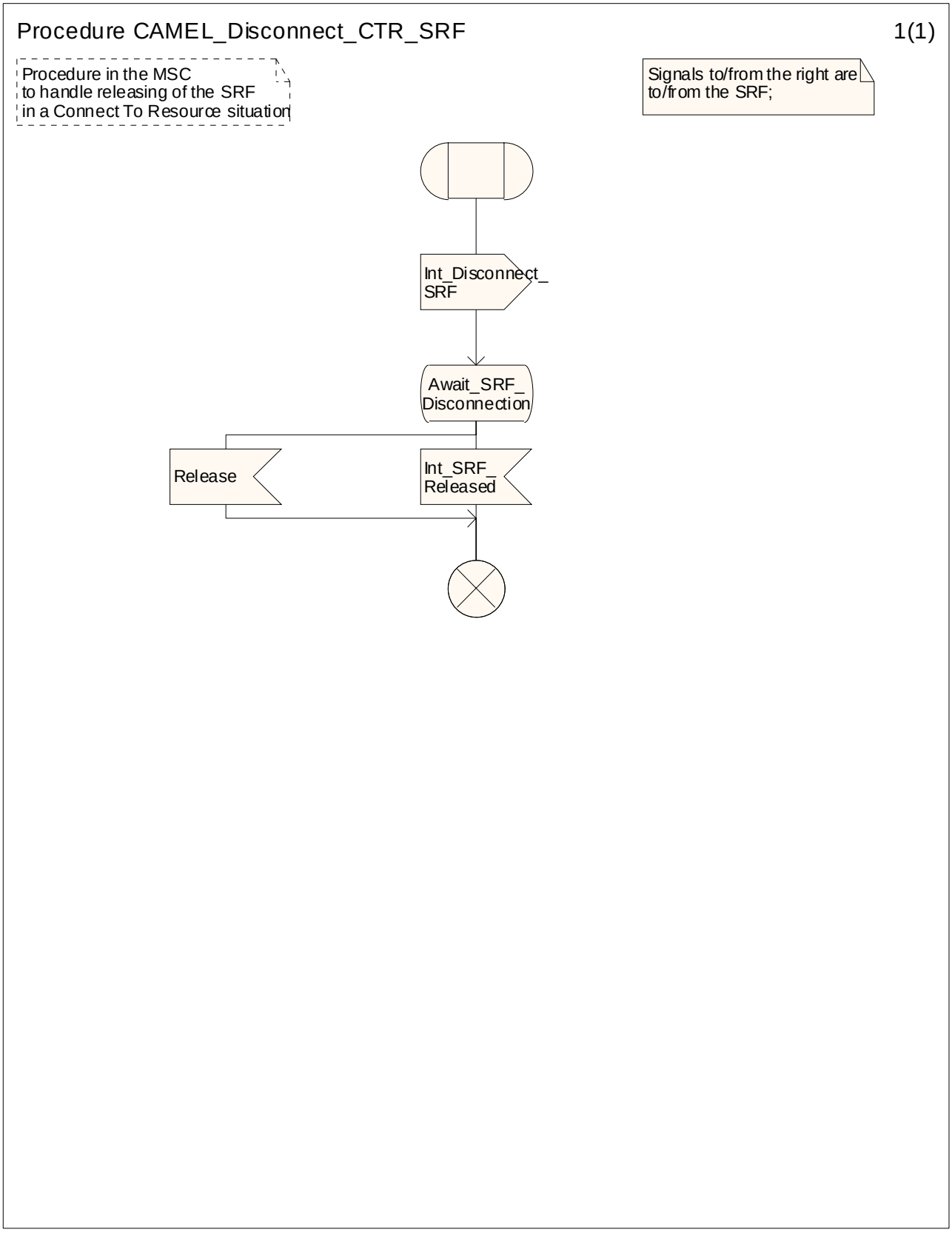


Figure 4.xx-1: Procedure CAMEL_Disconnect_CTR_SRF (sheet 1)

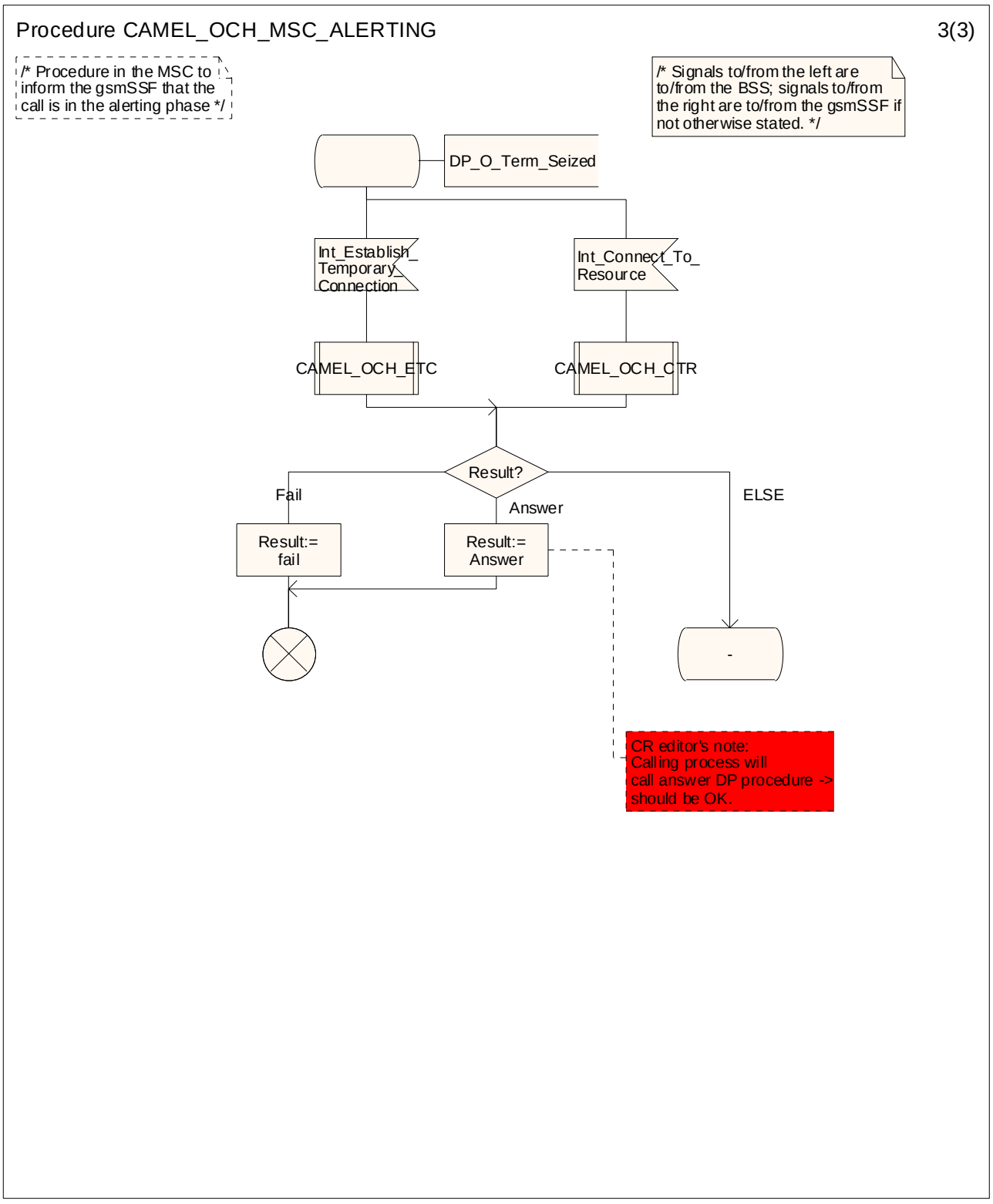
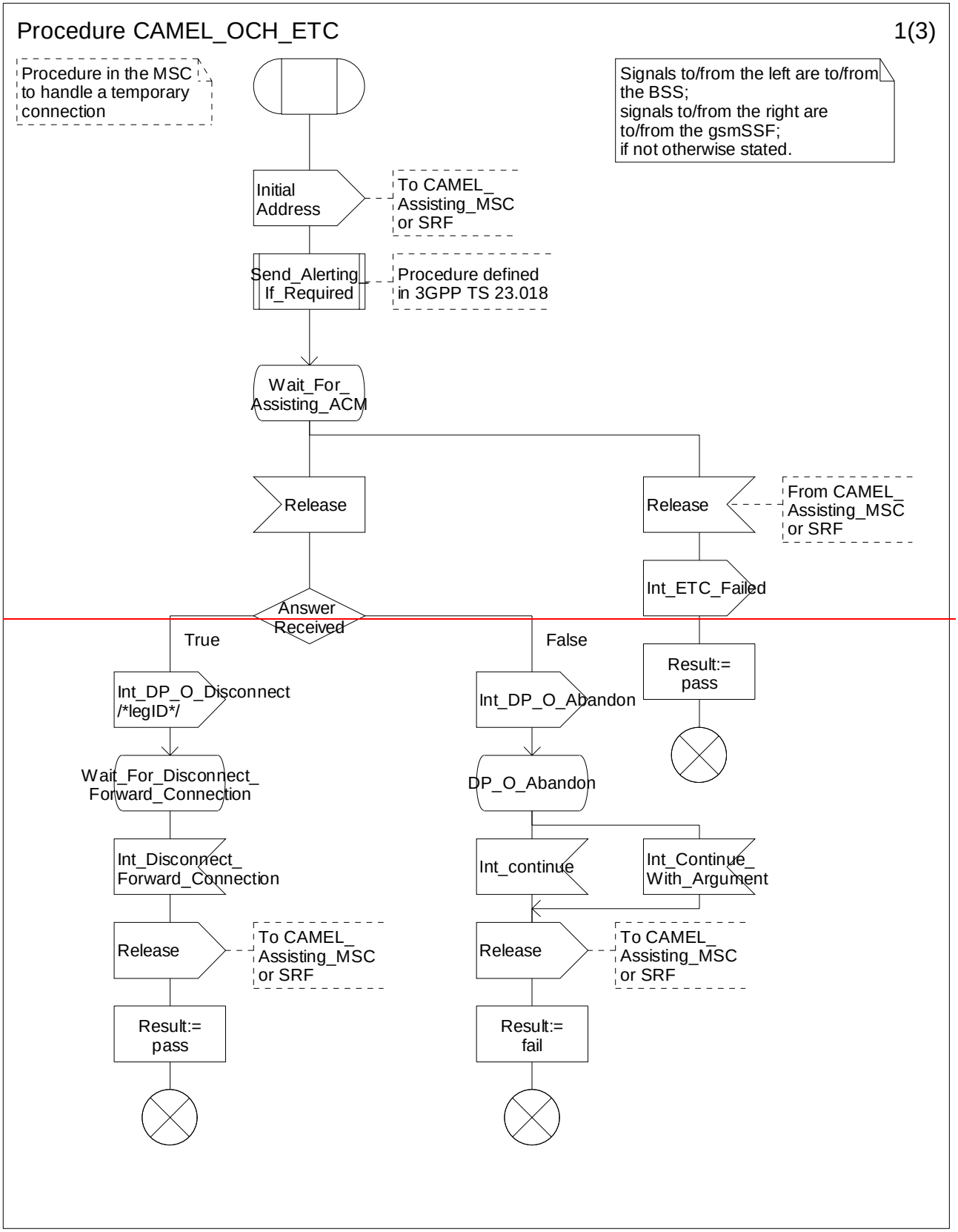


Figure 4.14-3: Procedure CAMEL_OCH_MSC_ALERTING (sheet 3)


Procedure CAMEL_OCH_ETC
1(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.
Initial Address
To CAMEL_ Assisting_MSC or SRF
Send_Alerting_ If_Required
Procedure defined in 3GPP TS 23.018
Wait_For_ Assisting_ACM
Release
Release
From CAMEL_ Assisting_MSC or SRF
Int_ETC_Failed
Answer Received
True
False
Result:= pass
Int_DP_O_Disconnect /*legID*/
Int_DP_O_Abandon
Wait_For_Disconnect_ Forward_Connection
DP_O_Abandon
Int_Disconnect_ Forward_Connection
Int_continue
Int_Continue_ With_Argument
Release
To CAMEL_ Assisting_MSC or SRF
Release
To CAMEL_ Assisting_MSC or SRF
Result:= pass
Result:= fail

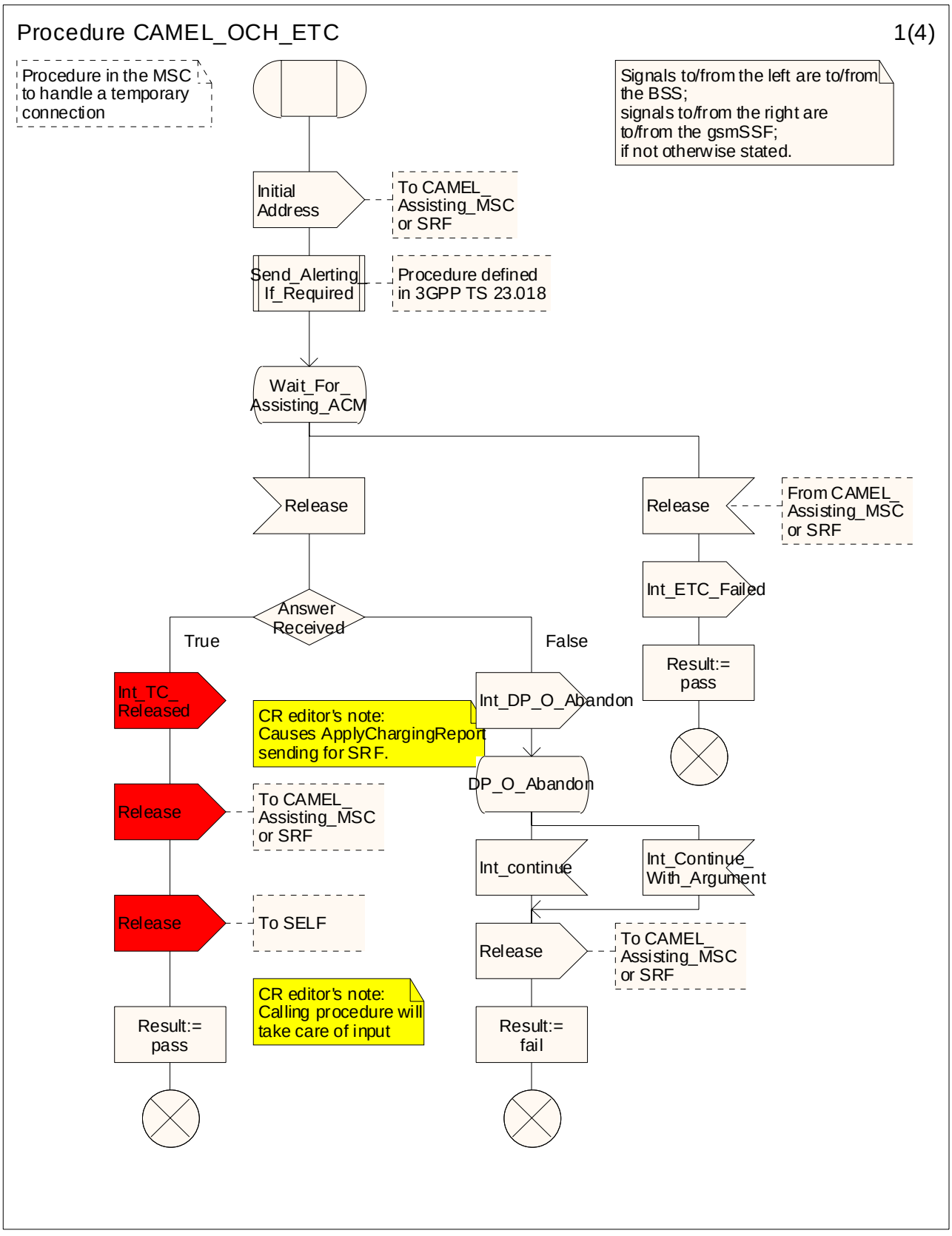


Figure 4.22-1: Procedure CAMEL_OCH_ETC (sheet 1)

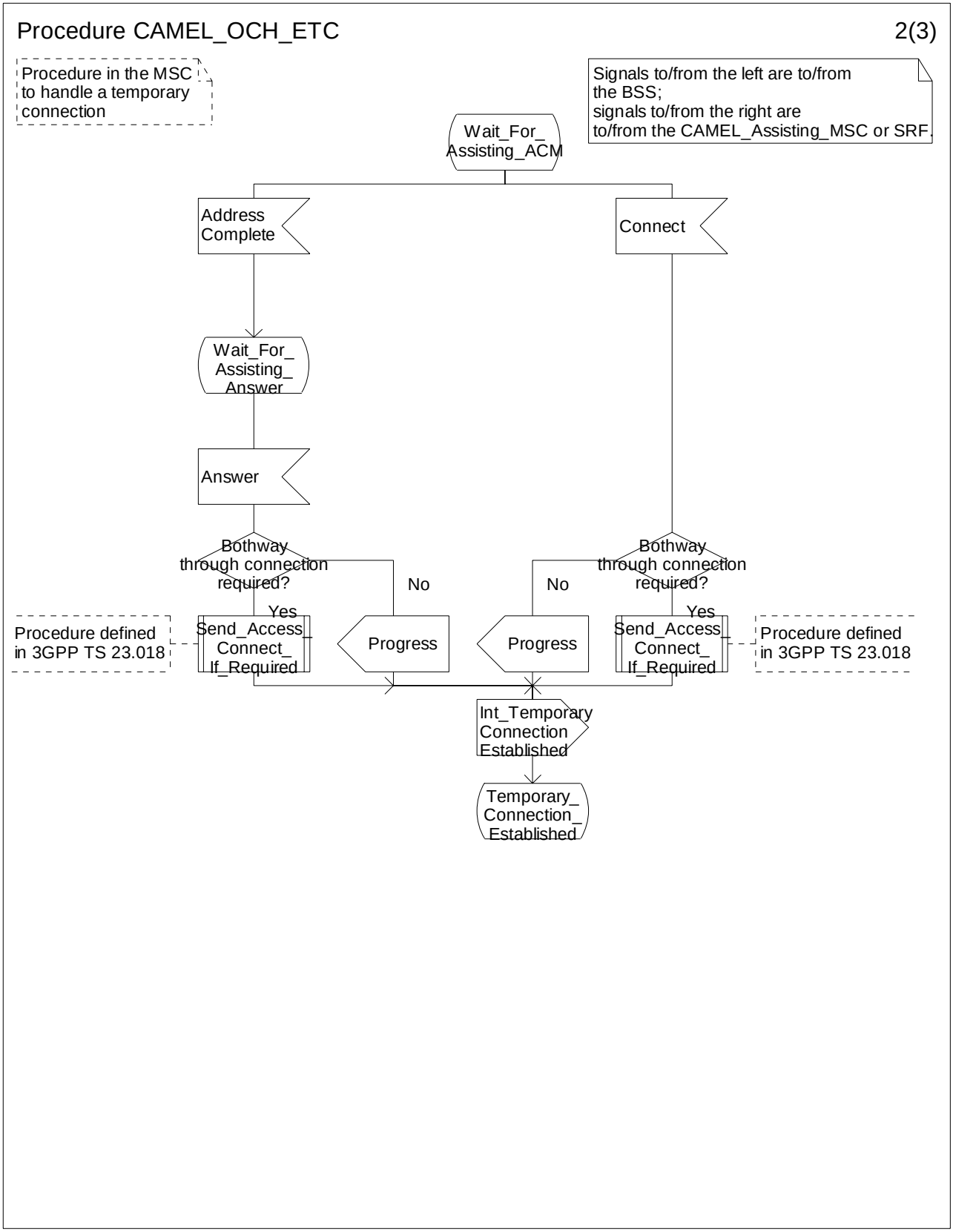
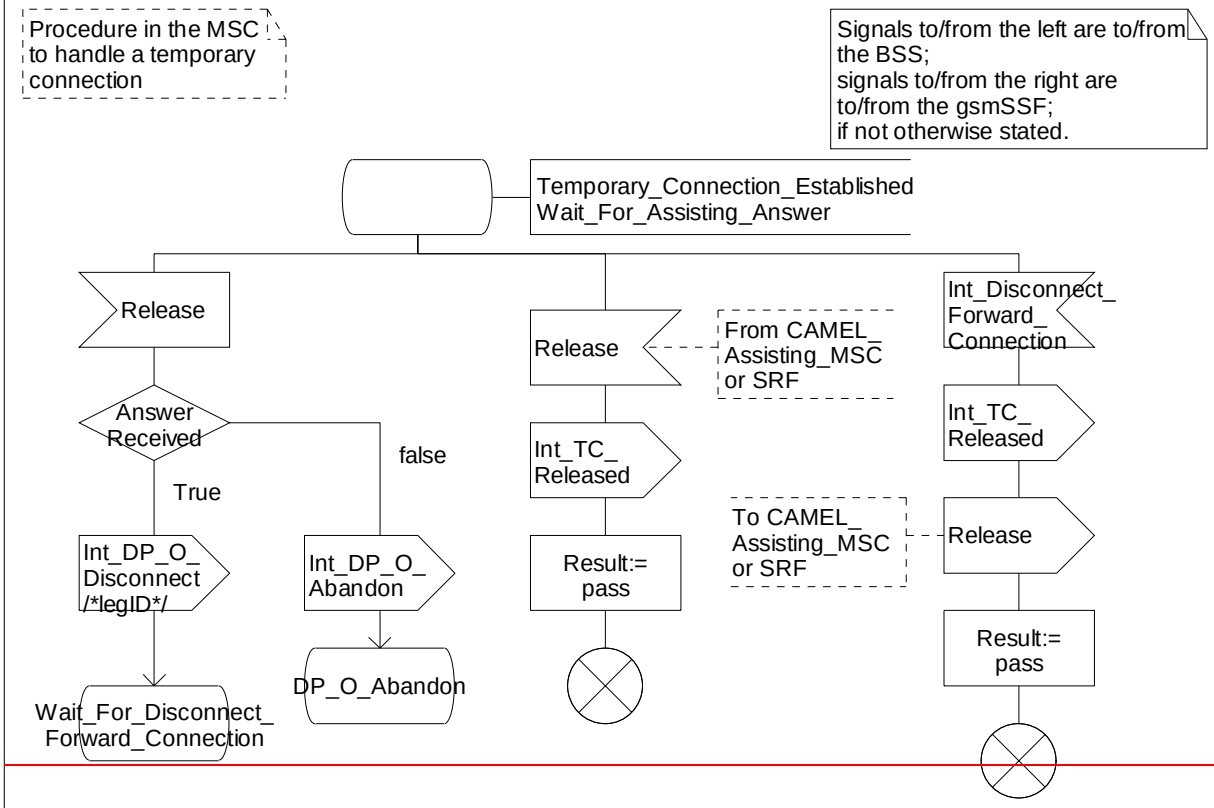


Figure 4.22-2: Procedure CAMEL_OCH_ETC (sheet 2)

Procedure CAMEL_OCH_ETC 3(3)



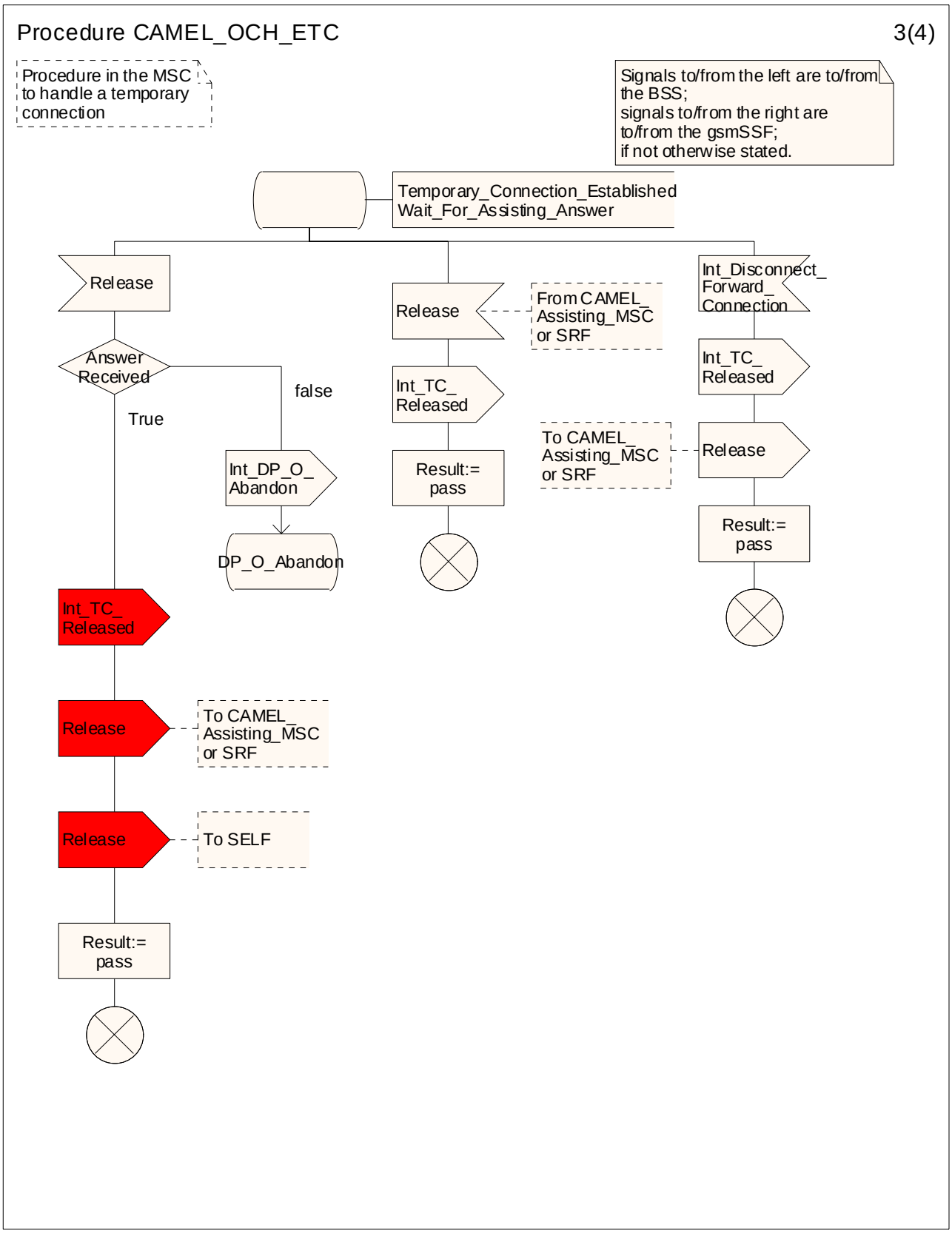


Figure 4.22-3: Procedure CAMEL_OCH_ETC (sheet 3)

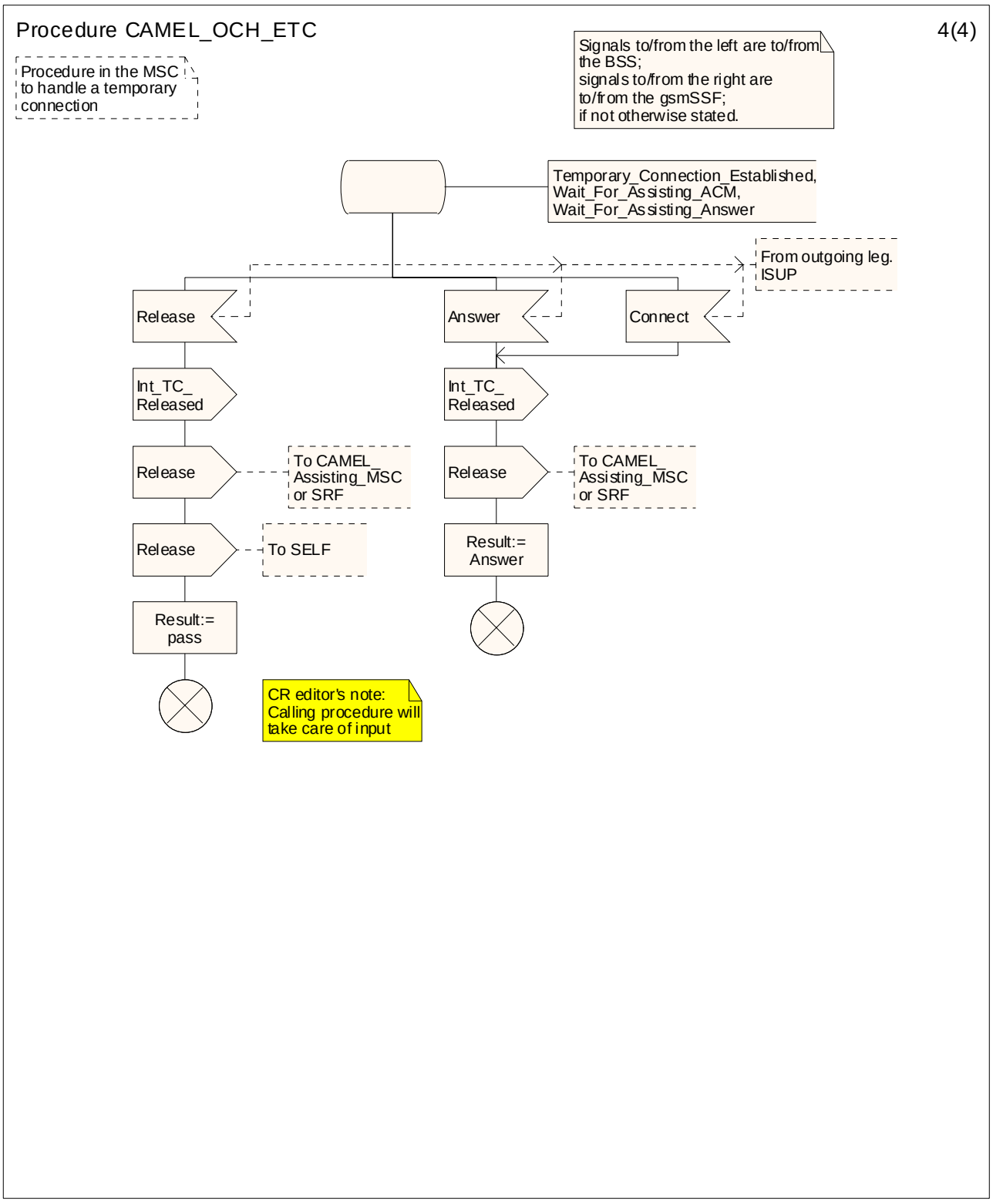


Figure 4.22-4: Procedure CAMEL_OCH_ETC (sheet 4)

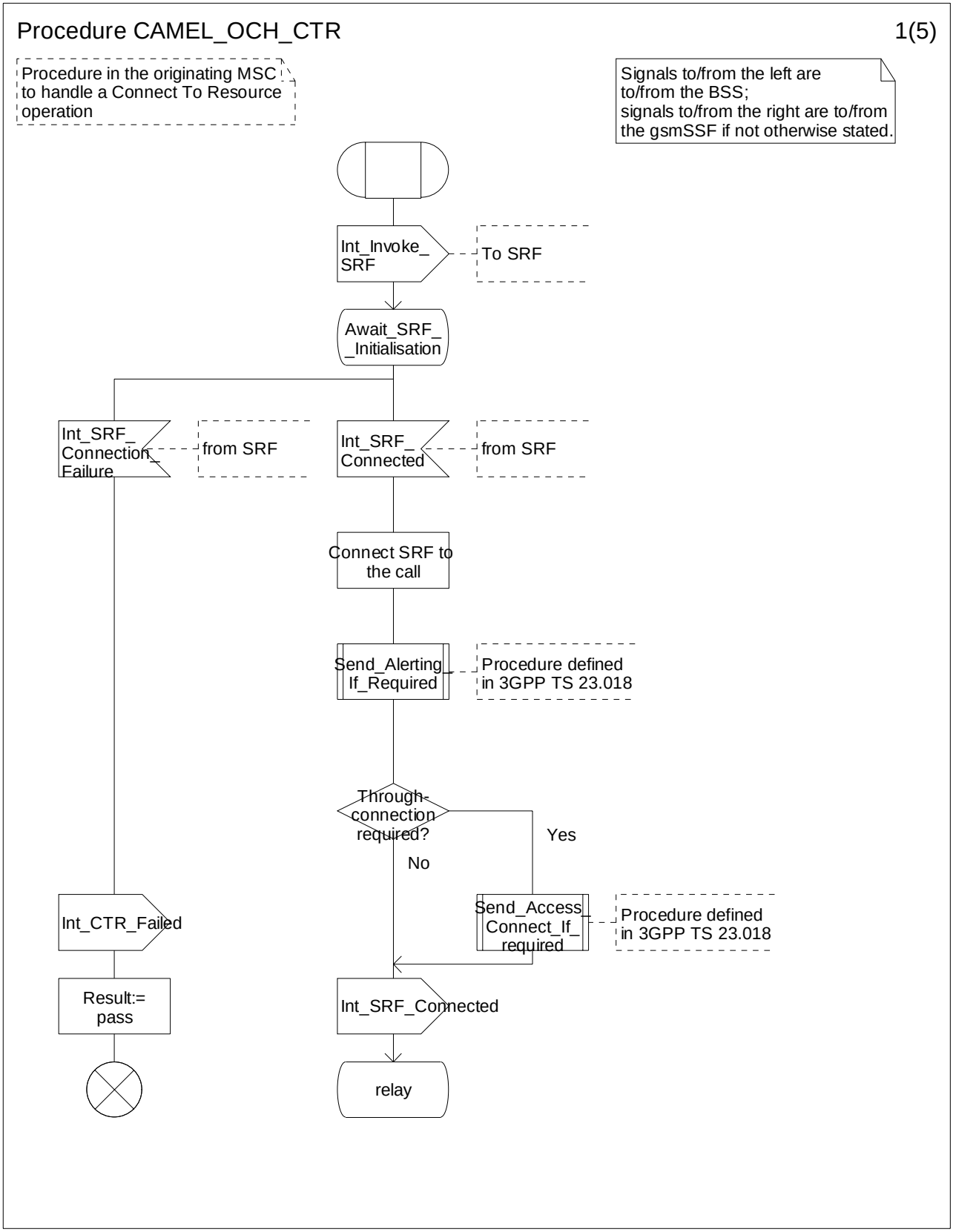
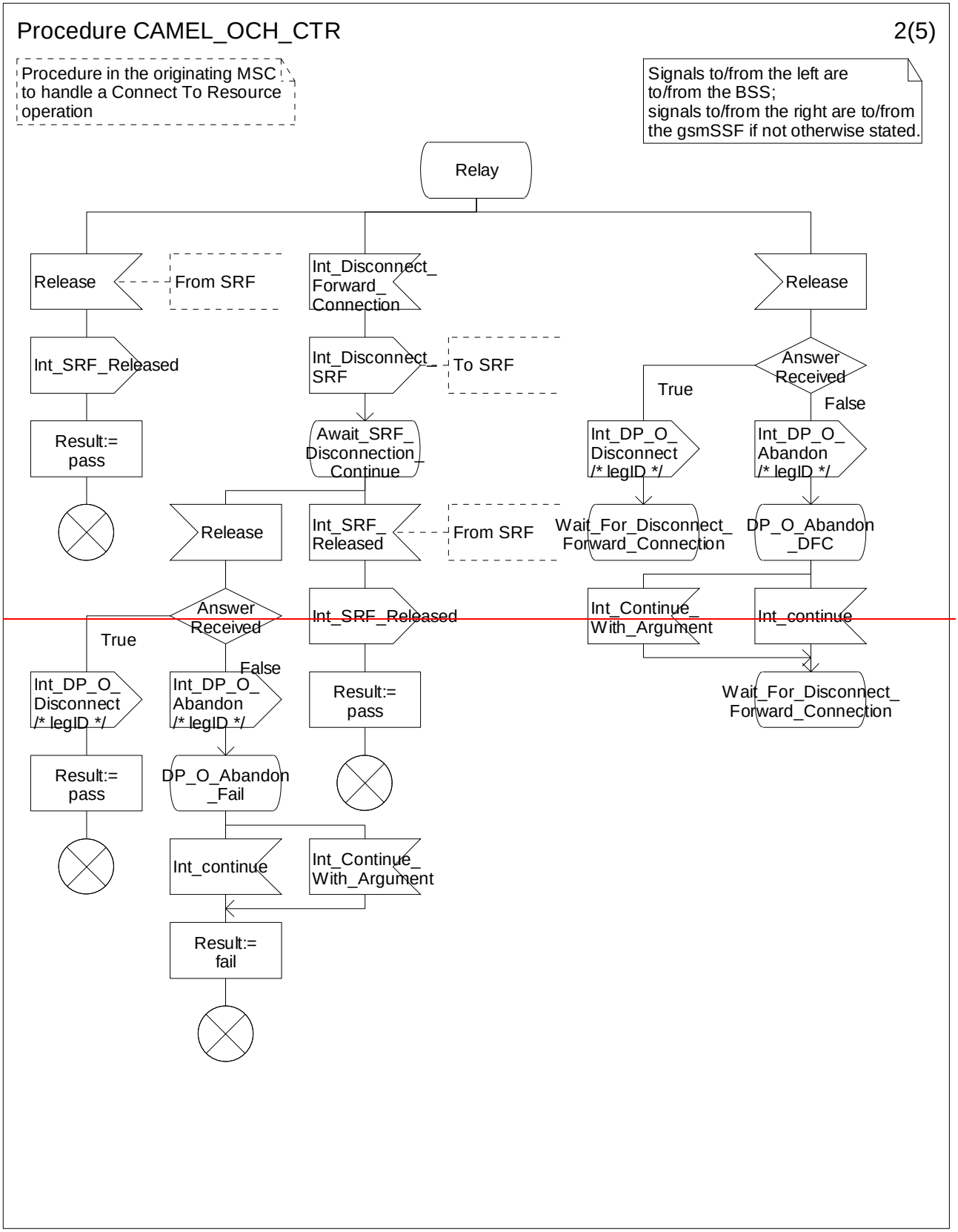


Figure 4.23-1: Procedure CAMEL_OCH_CTR (sheet 1)

Procedure CAMEL_OCH_CTR 2(5)



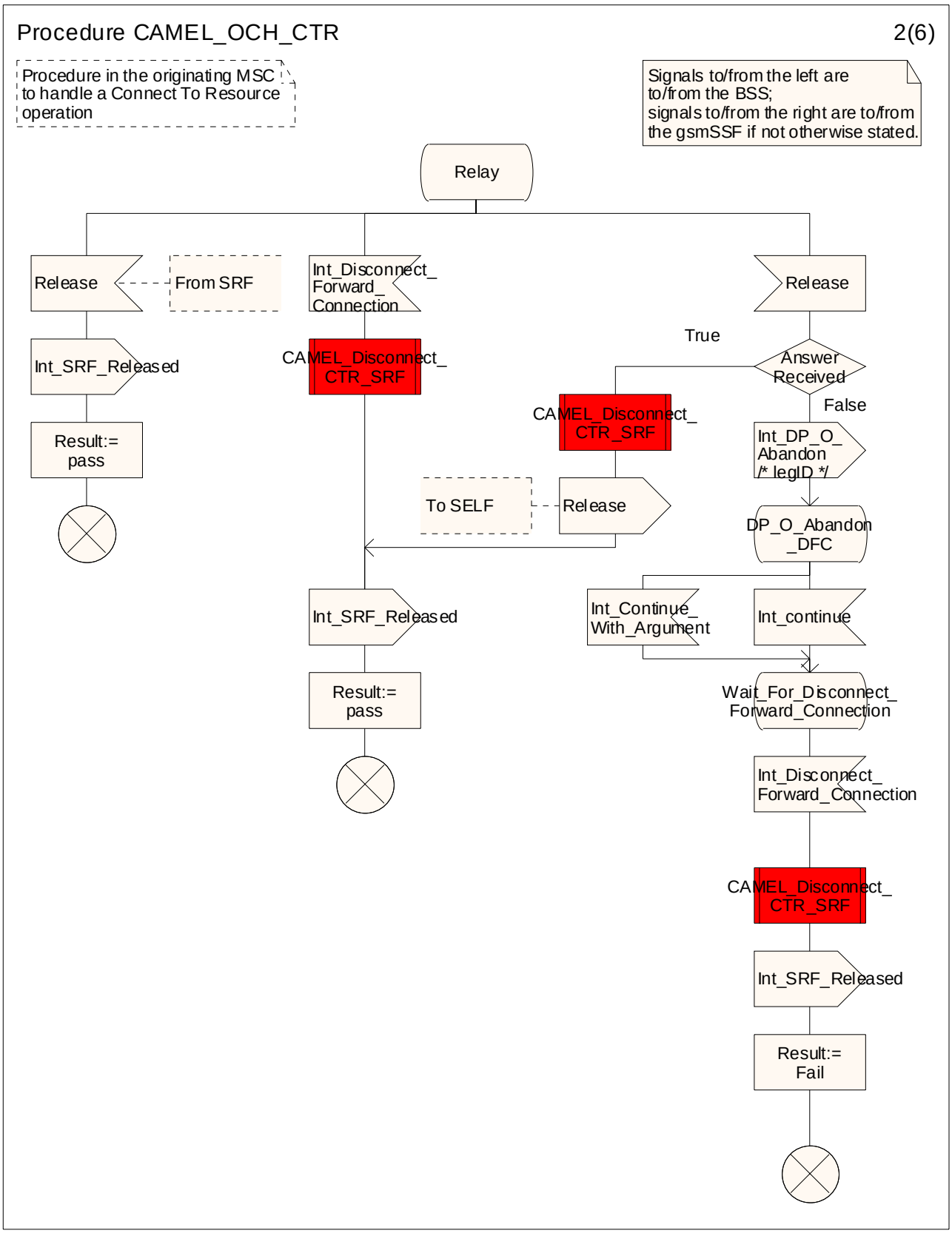


Figure 4.23-2: Procedure CAMEL_OCH_CTR (sheet 2)

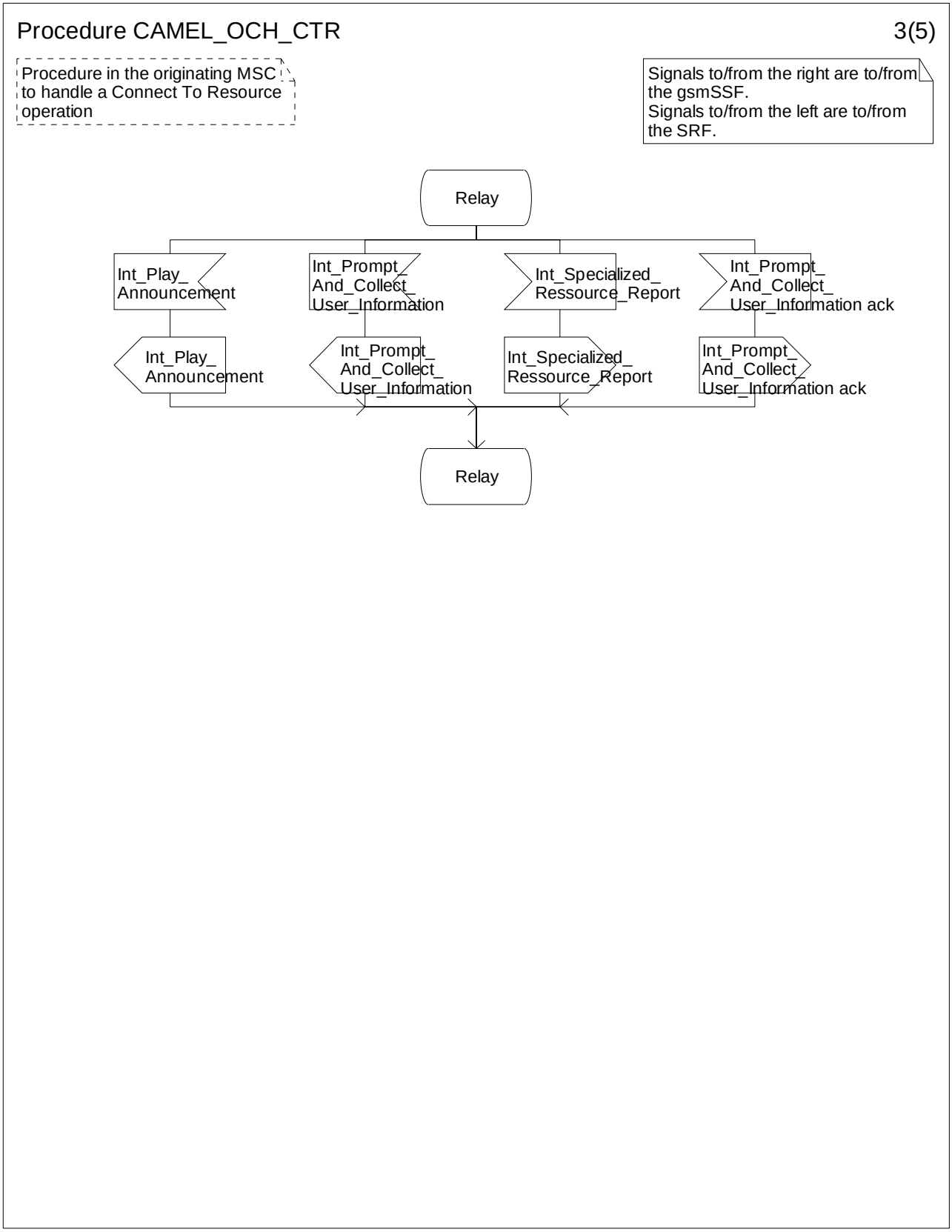
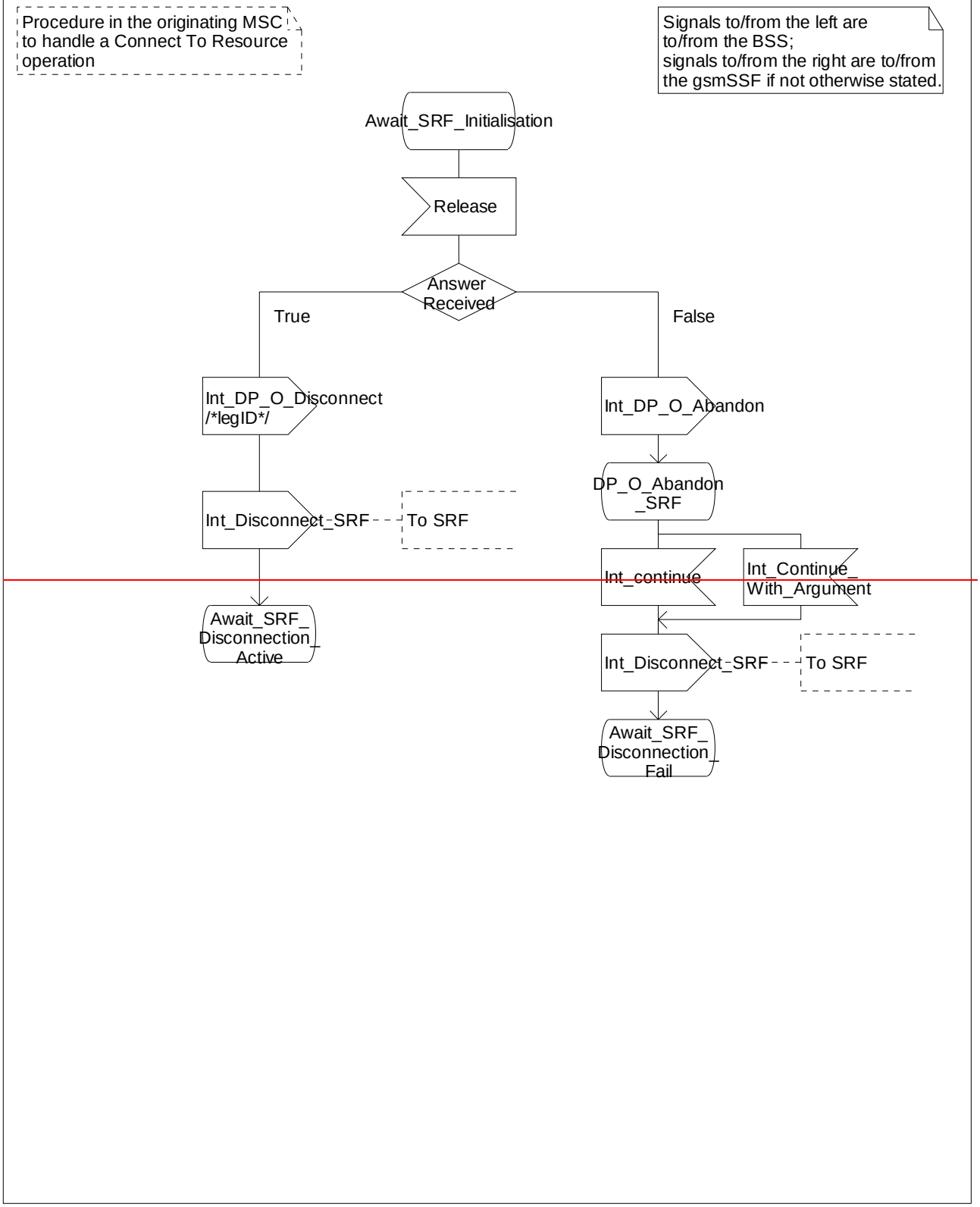


Figure 4.23-3: Procedure CAMEL_OCH_CTR (sheet 3)

Procedure CAMEL_OCH_CTR 4(5)



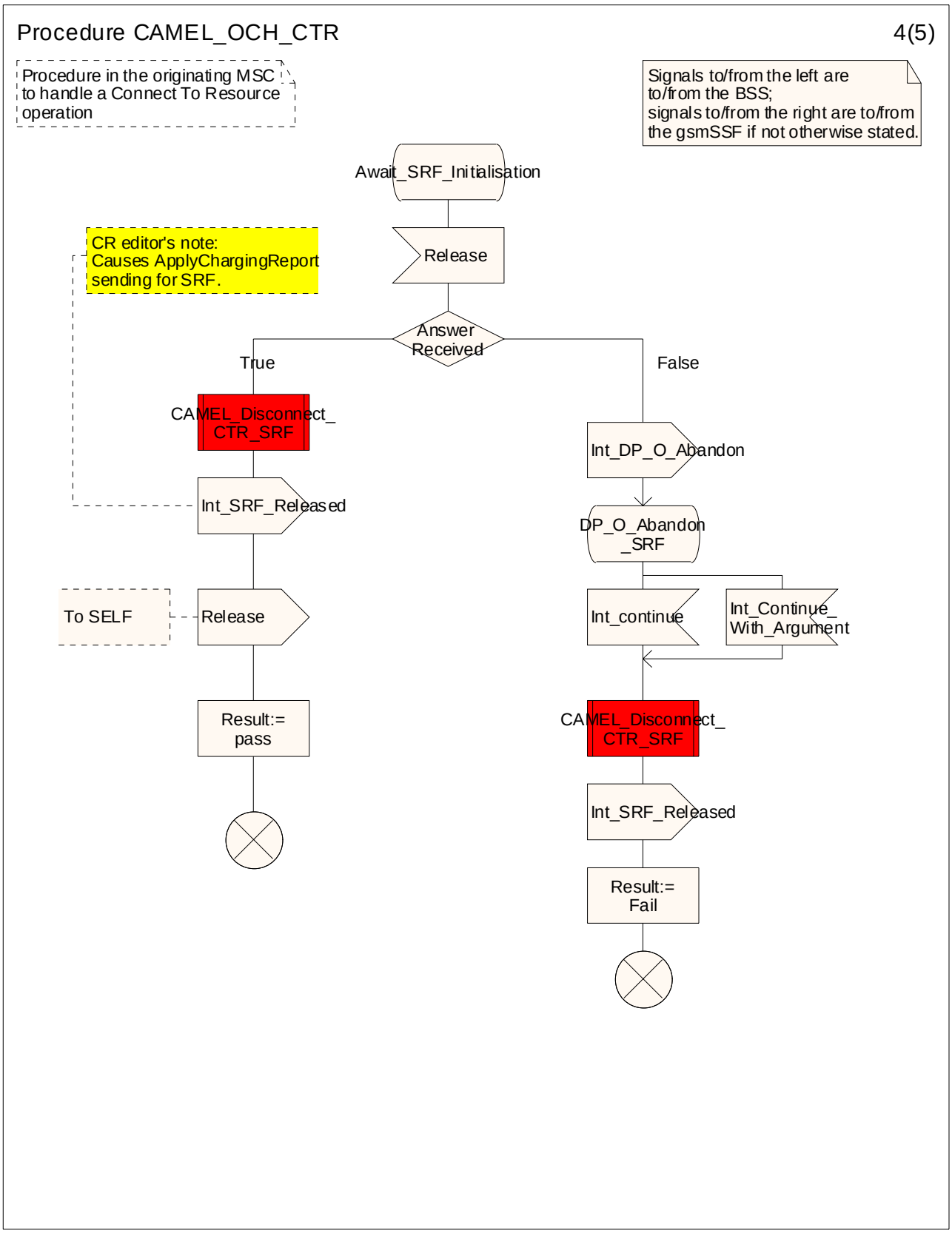
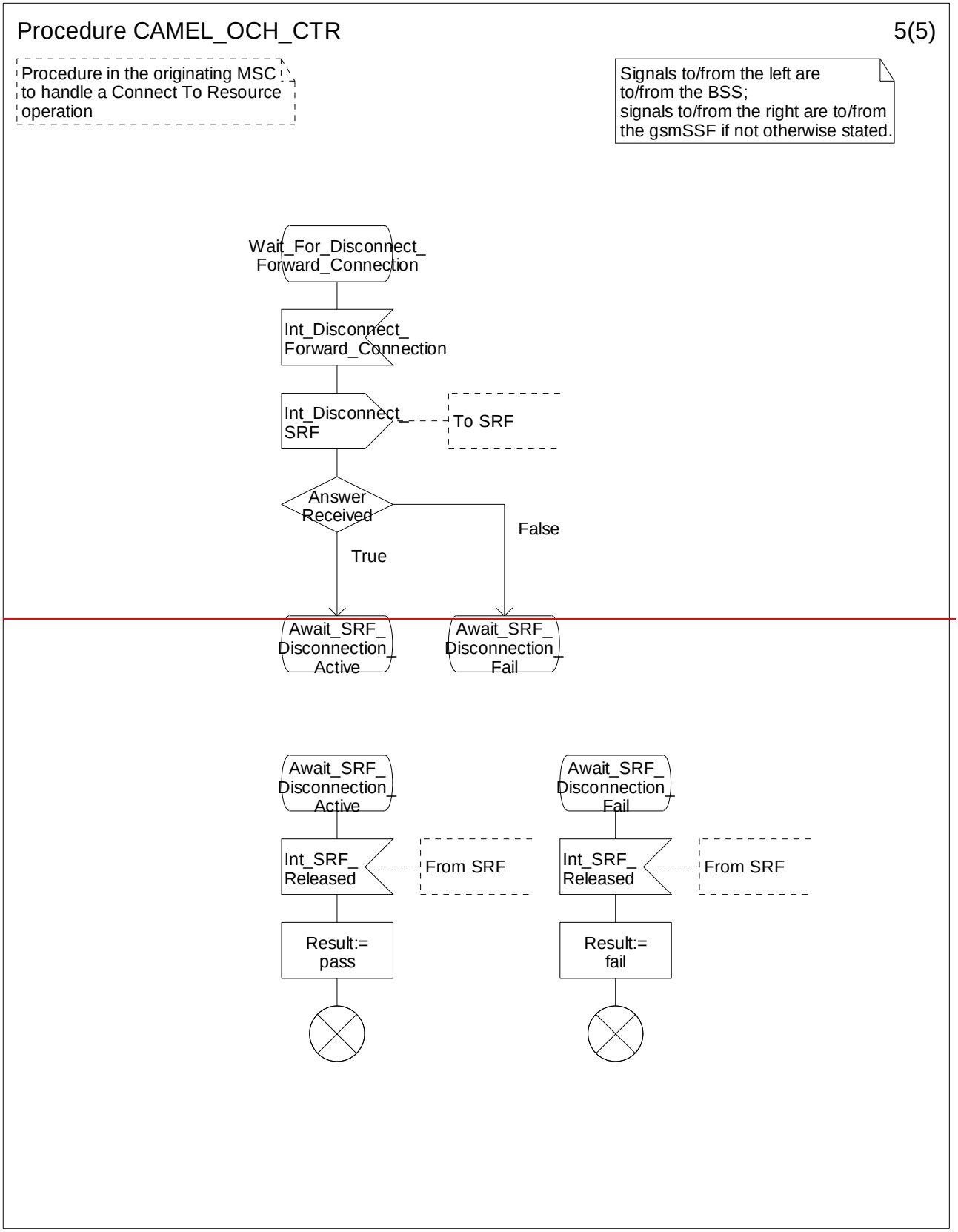


Figure 4.23-4: Procedure CAMEL_OCH_CTR (sheet 4)



~~Figure 4.23-5: Procedure CAMEL_OCH_CTR (sheet 5)~~

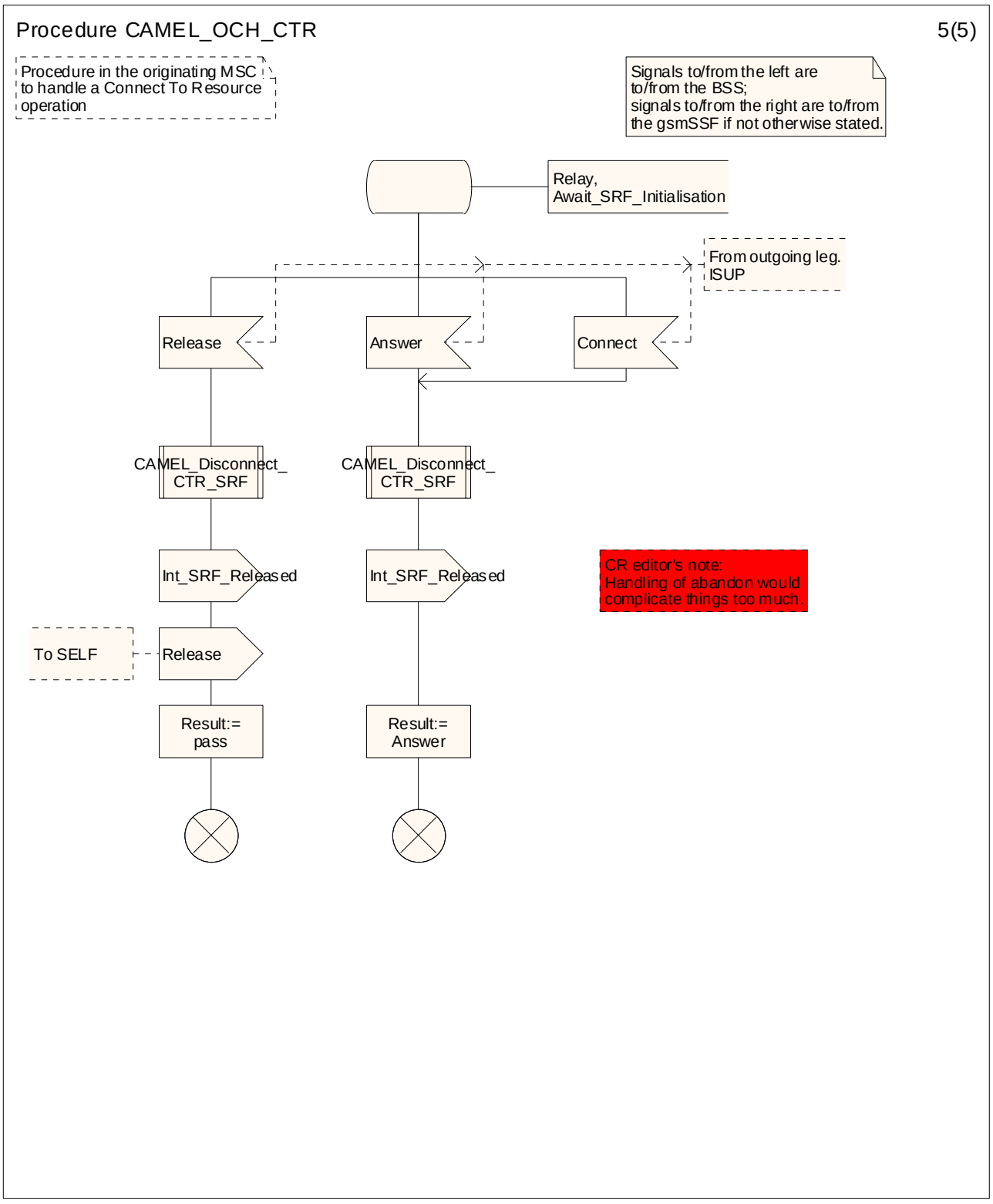


Figure 4.23-5: Procedure CAMEL_OCH_CTR (sheet 5)

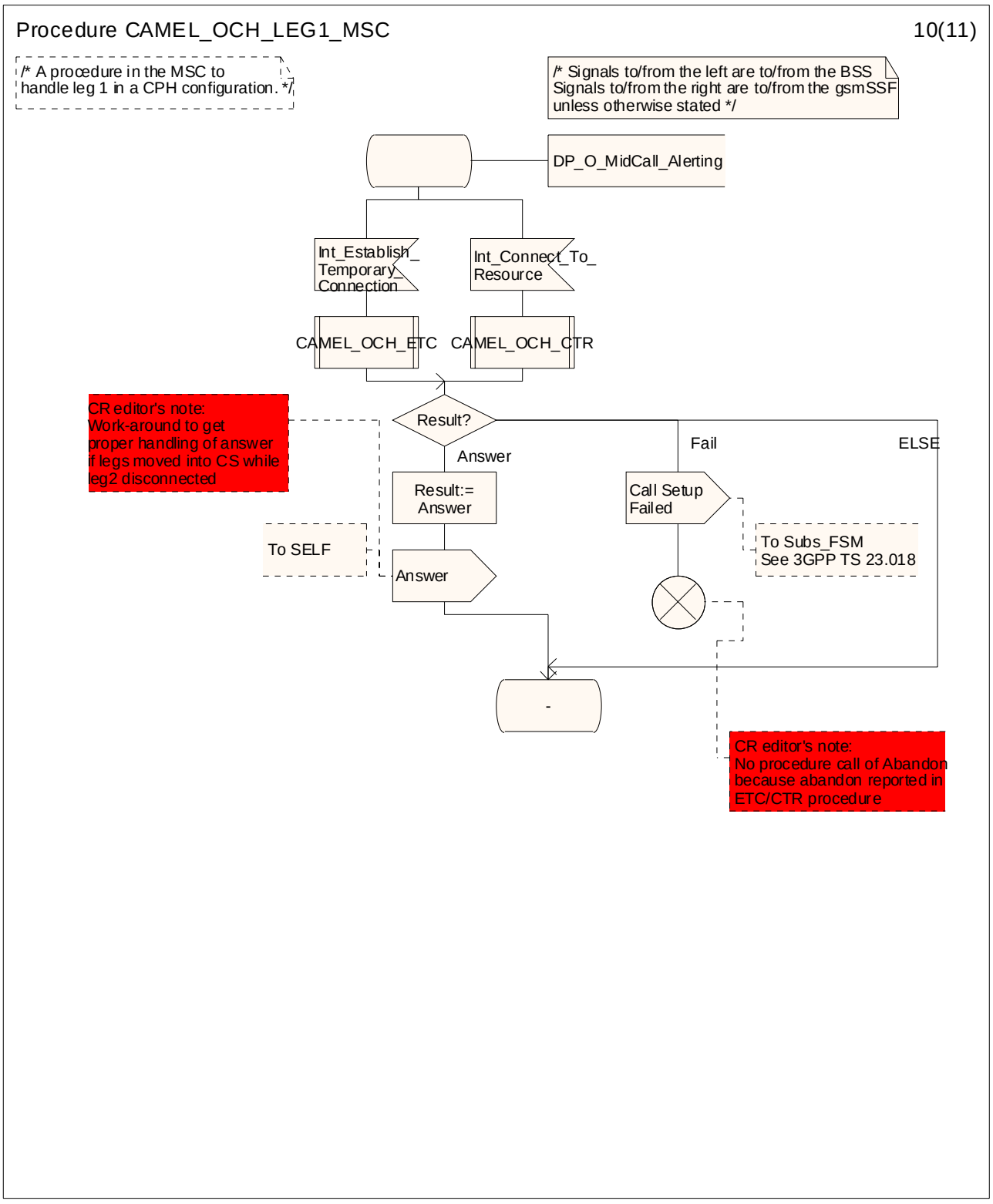


Figure 4.29-10: Procedure CAMEL_OCH_LEG1_MSC (sheet 10)

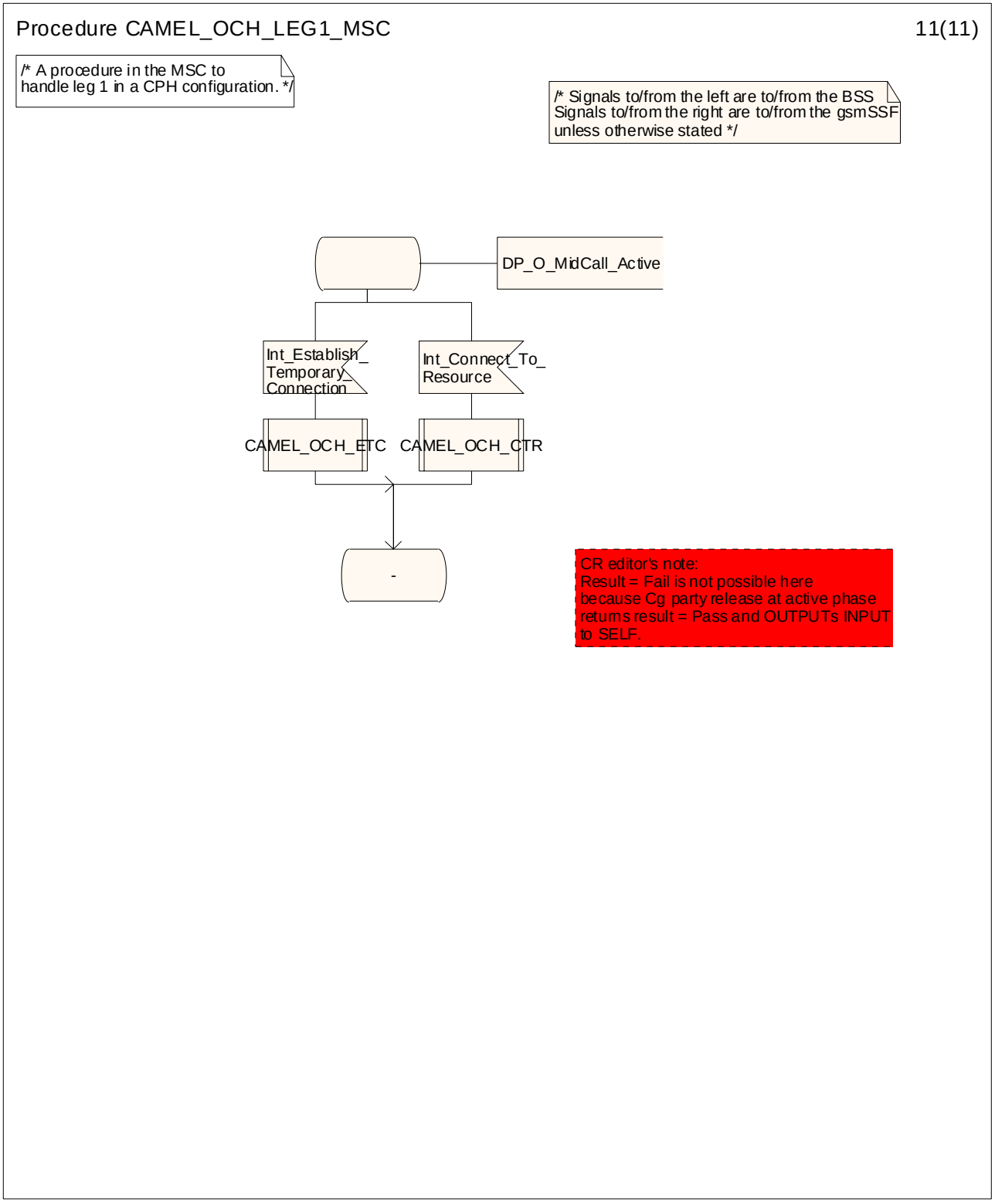


Figure 4.29-11: Procedure CAMEL_OCH_LEG1_MSC (sheet 11)

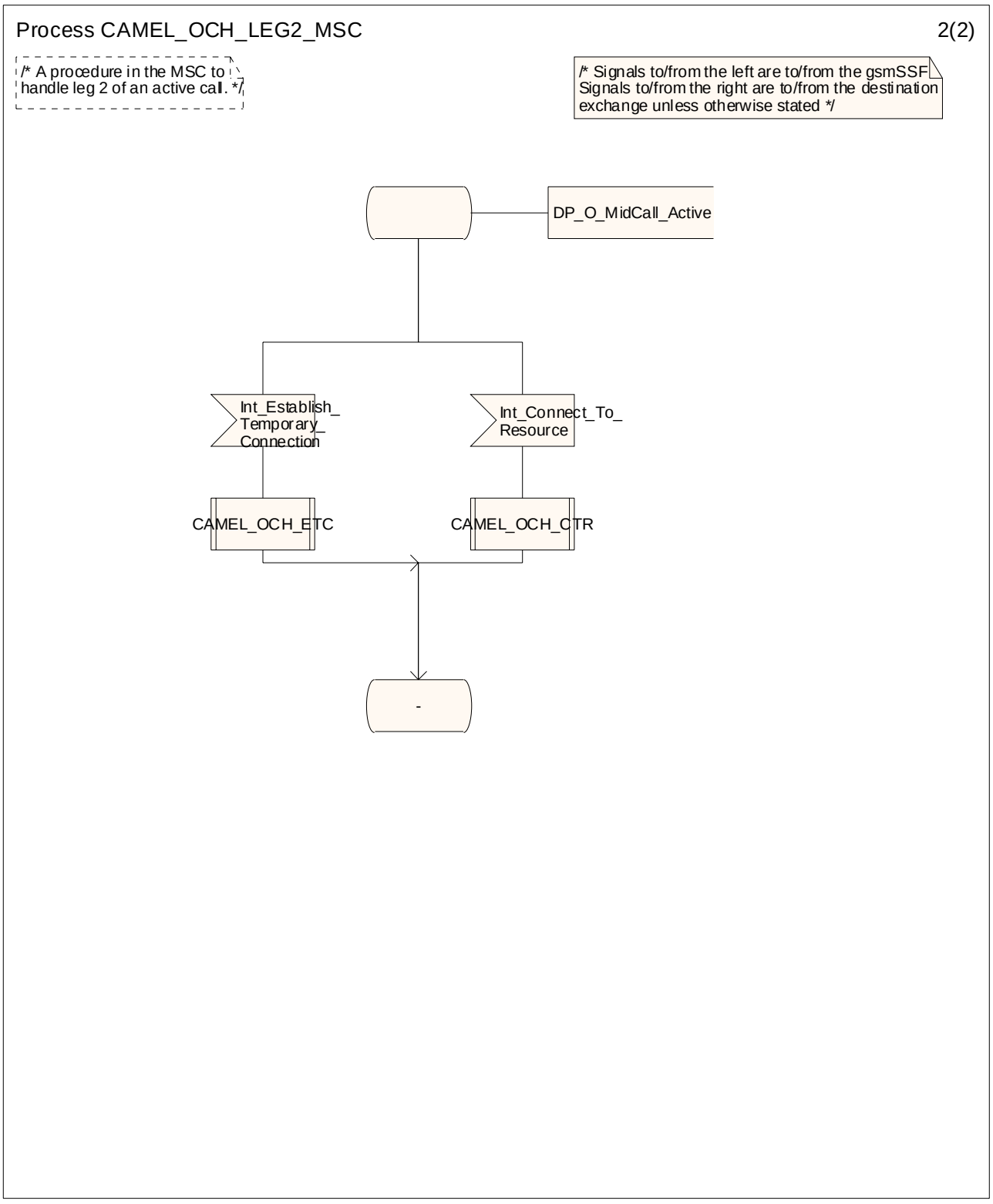


Figure 4.31-2: Process CAMEL_OCH_LEG2_MSC (sheet 2)

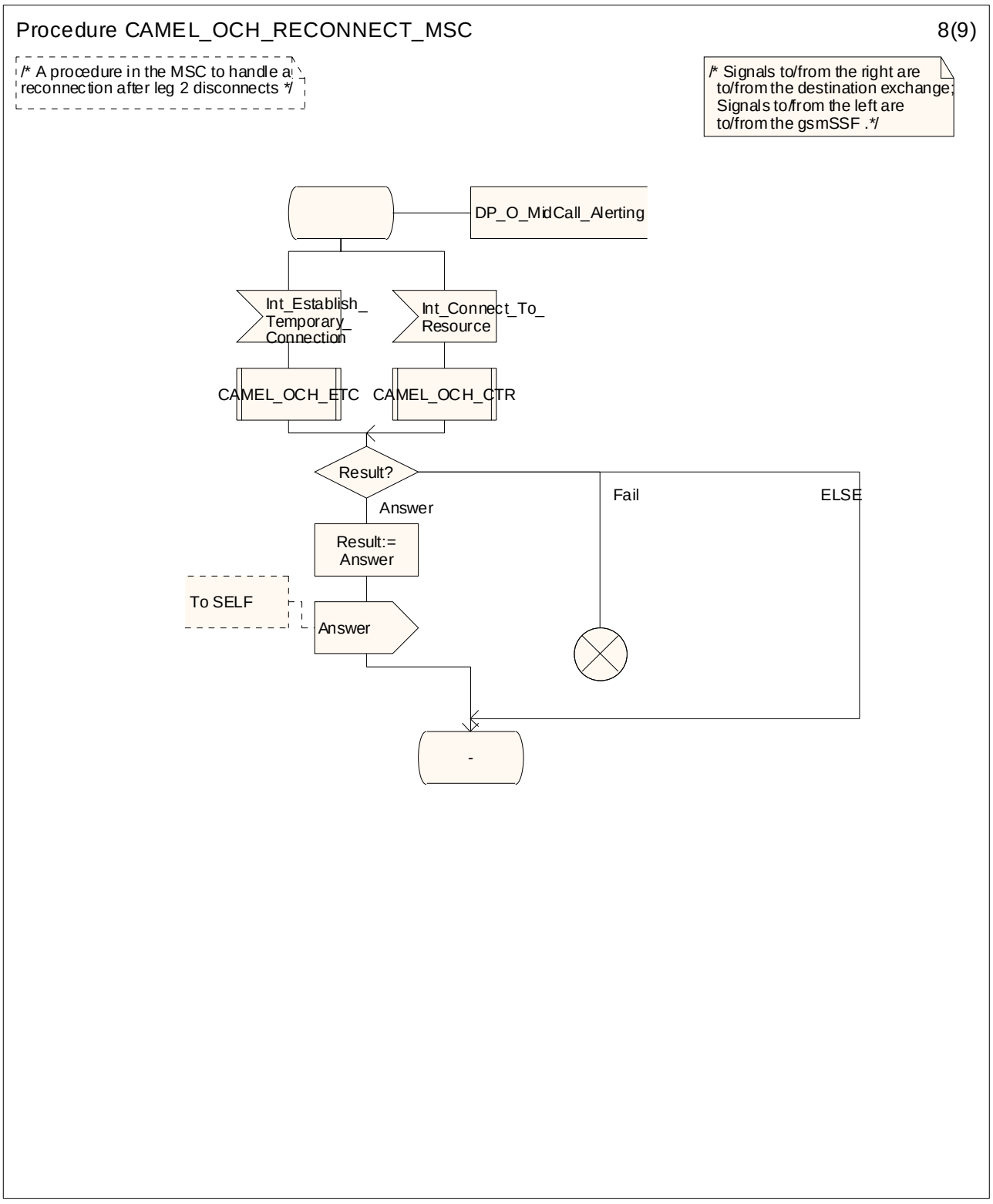


Figure 4.32-8: Procedure CAMEL_OCH_RECONNECT_MSC (sheet 8)

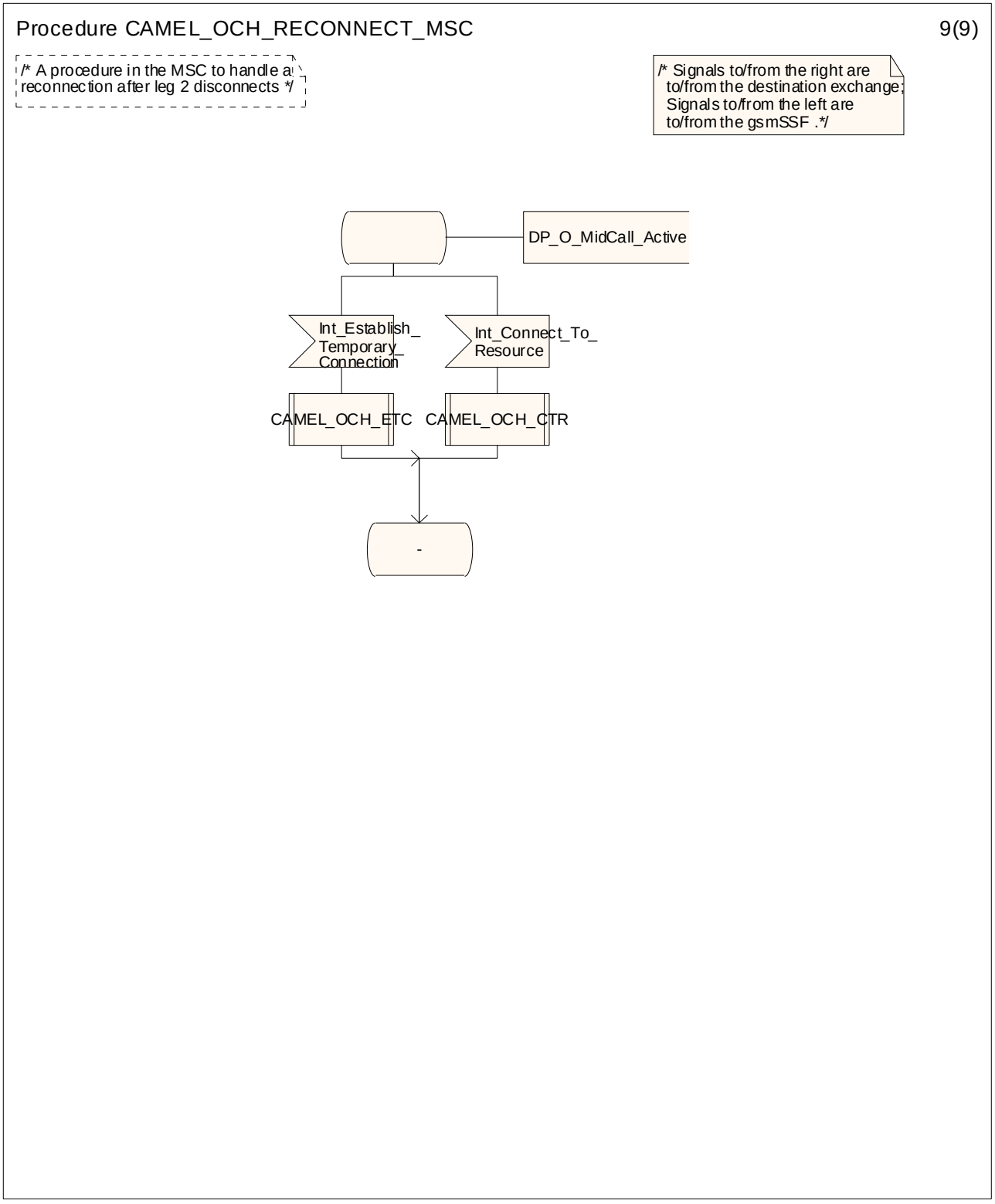


Figure 4.32-9: Procedure CAMEL_OCH_RECONNECT_MSC (sheet 9)

-- Next modified section --

4.5.3 Retrieval of routeing information

4.5.3.1 Retrieval of routeing information in the GMSC

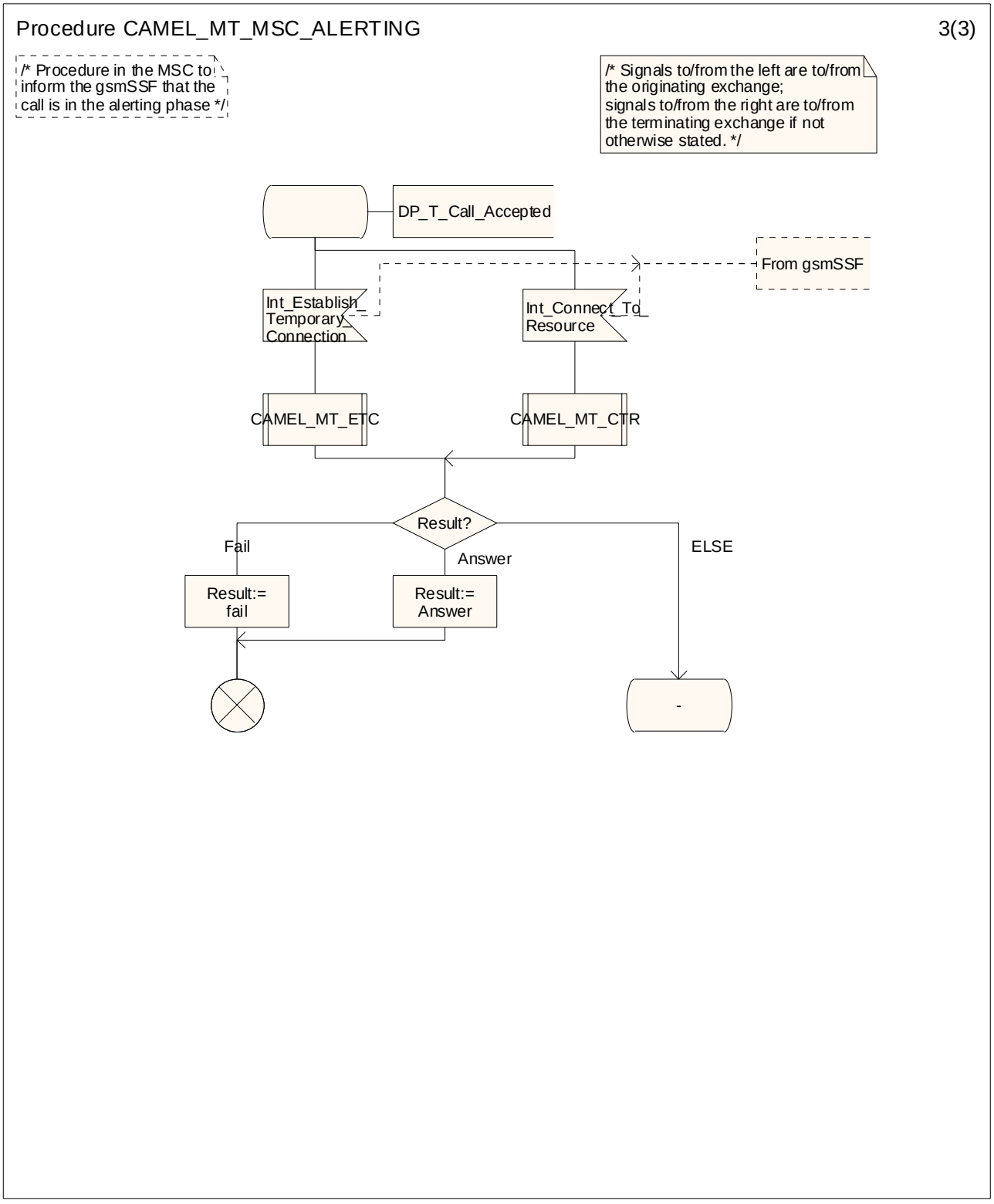
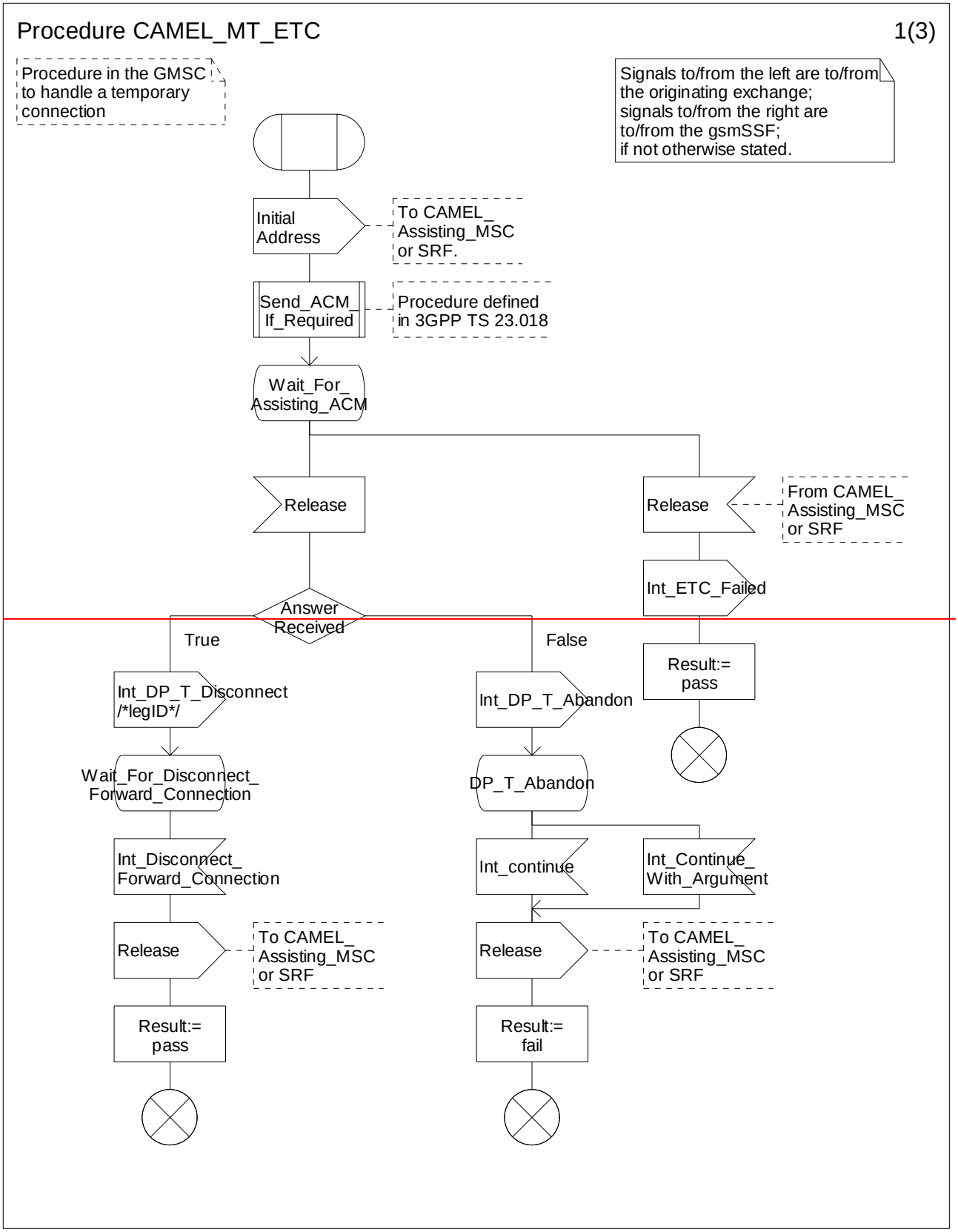


Figure 4.40-3: Procedure CAMEL_MT_MSC_ALERTING (sheet 3)


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.
Initial Address
To CAMEL_ Assisting_MSC or SRF.
Send_ACM_ If_Required
Procedure defined in 3GPP TS 23.018
Wait_For_ Assisting_ACM
Release
Release
From CAMEL_ Assisting_MSC or SRF
Int_ETC_Failed
Answer Received
True
False
Result:= pass
Int_DP_T_Disconnect /*legID*/
Int_DP_T_Abandon
Wait_For_Disconnect_ Forward_Connection
DP_T_Abandon
Int_Disconnect_ Forward_Connection
Int_continue
Int_Continue_ With_Argument
Release
To CAMEL_ Assisting_MSC or SRF
Release
To CAMEL_ Assisting_MSC or SRF
Result:= pass
Result:= fail

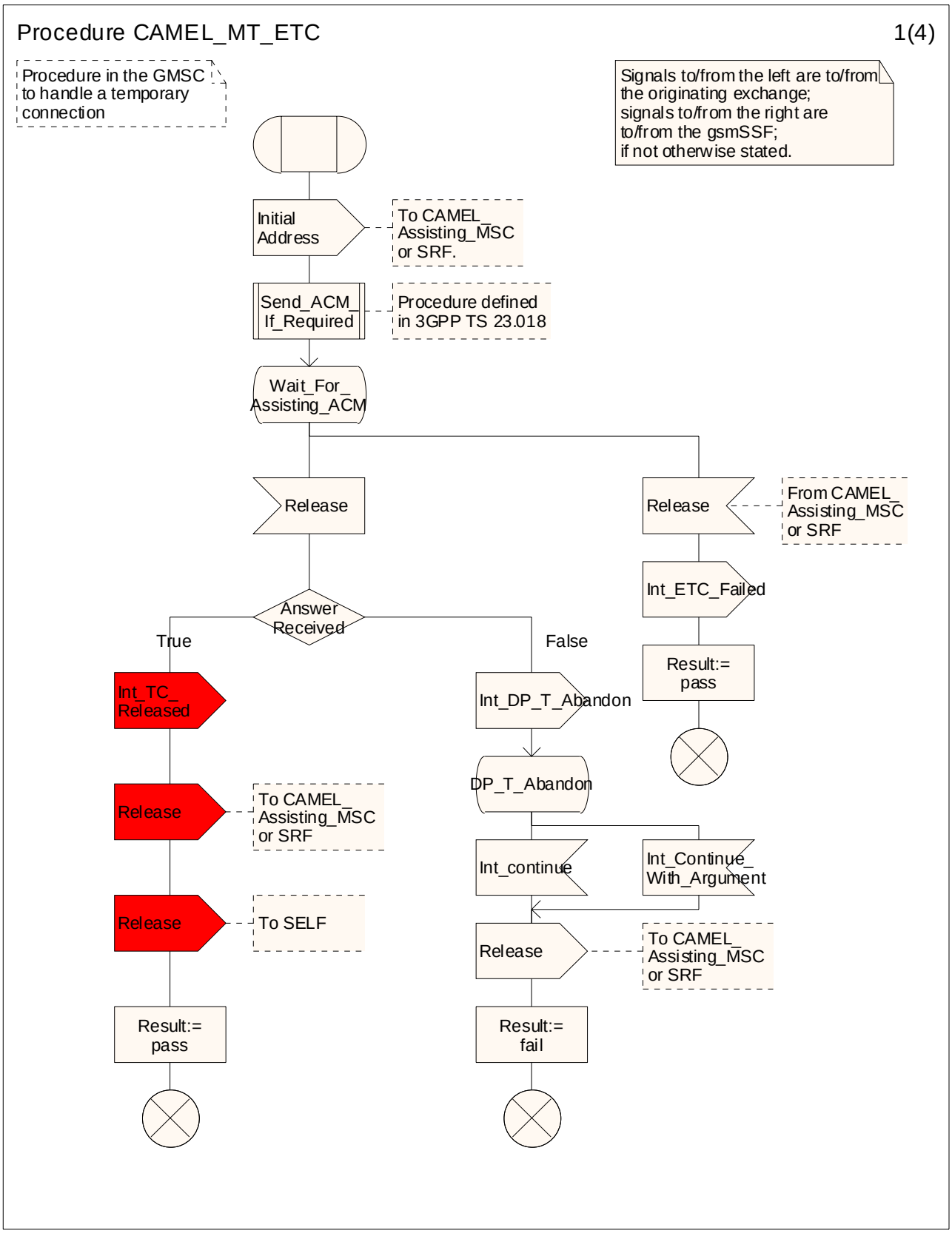
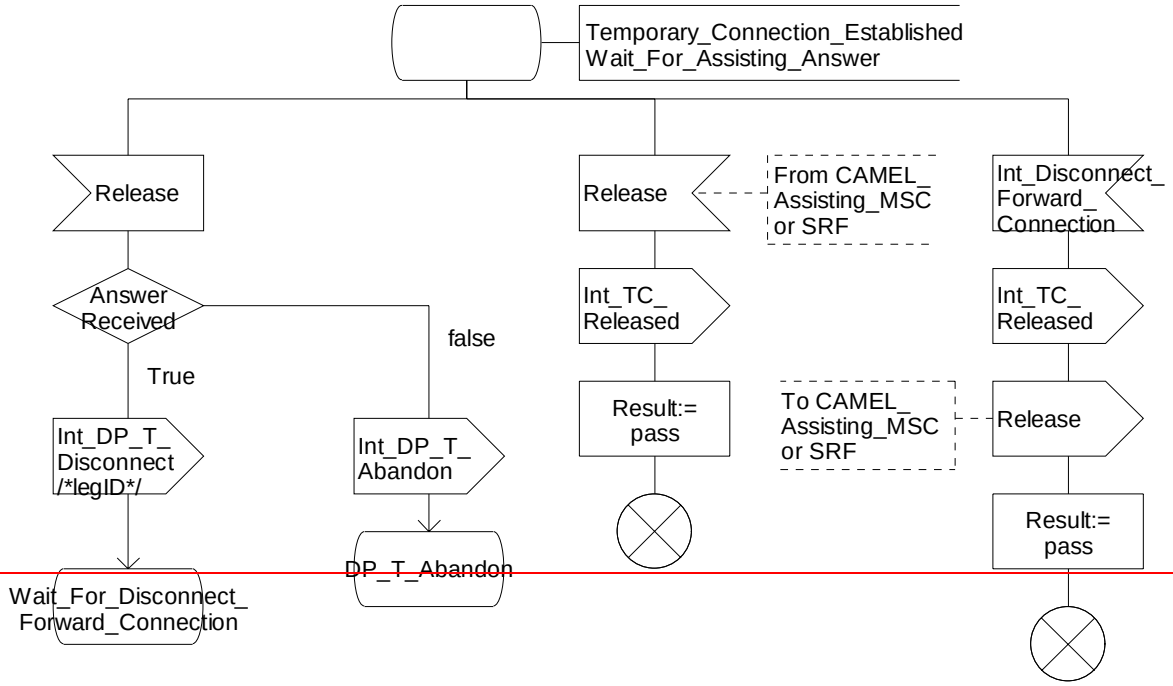


Figure 4.48-1: Procedure CAMEL_MT_ETC (sheet 1)

Procedure CAMEL_MT_ETC 3(3)

Procedure in the GMSC to handle a temporary connection

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



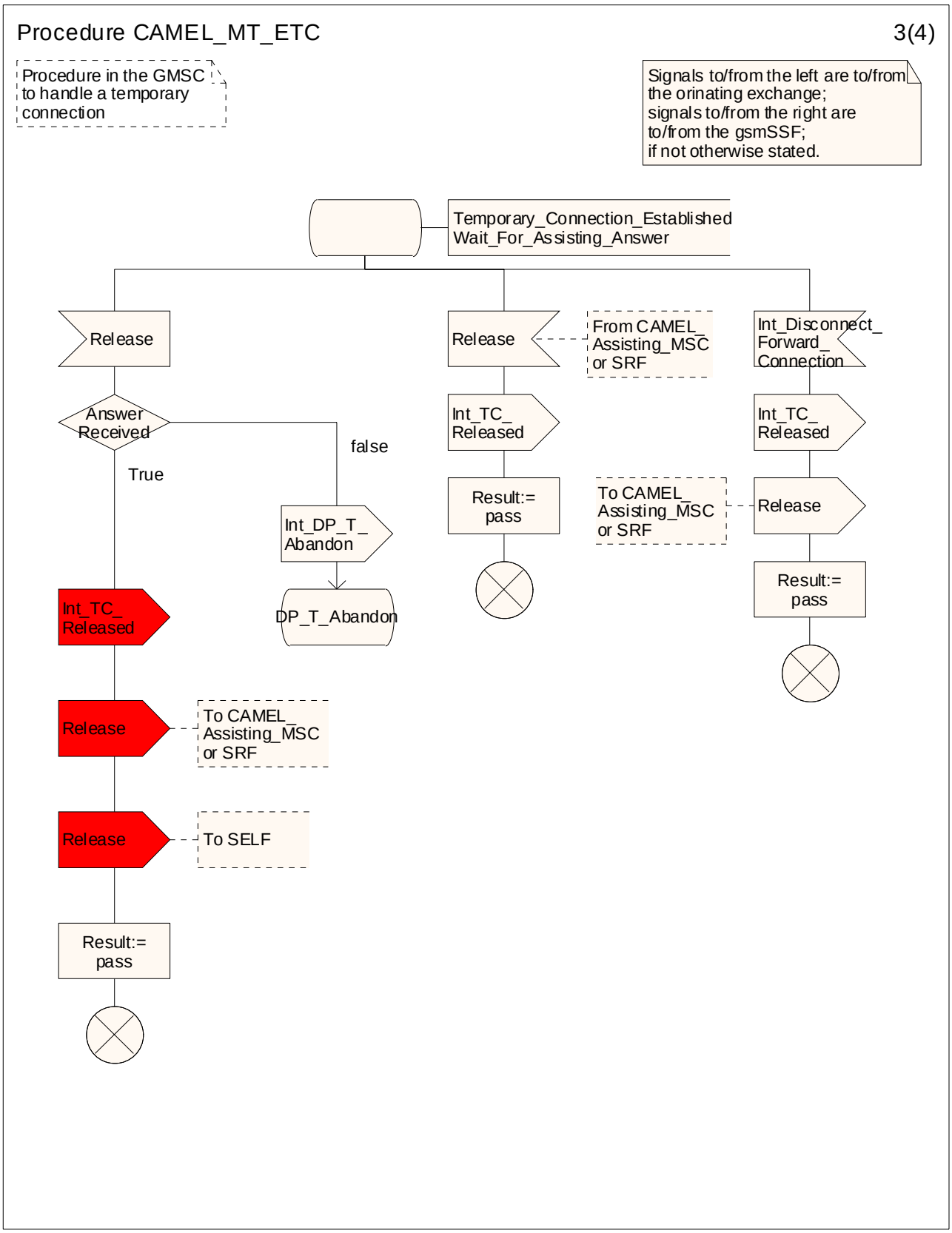


Figure 4.48-3: Procedure CAMEL_MT_ETC (sheet 3)

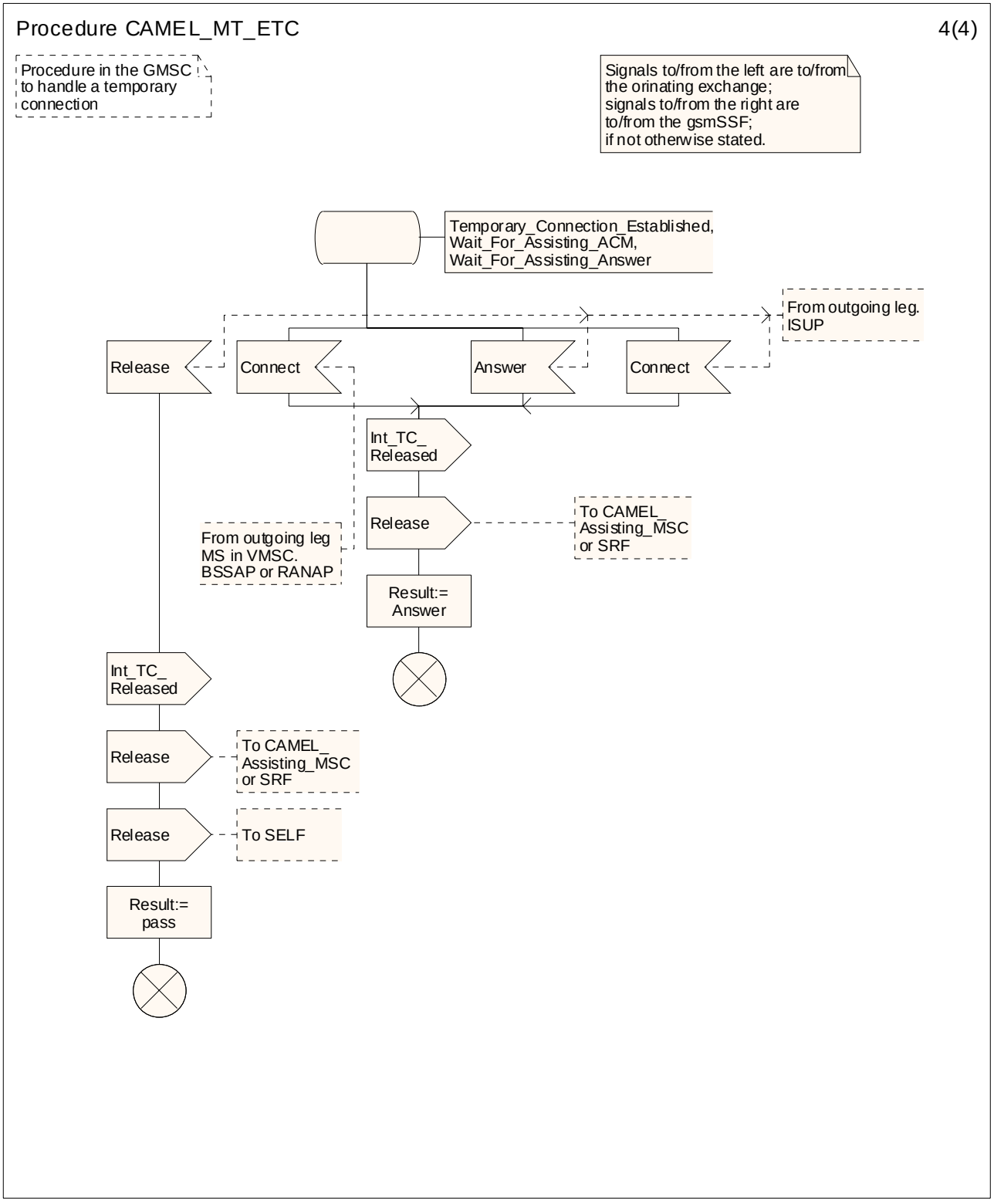
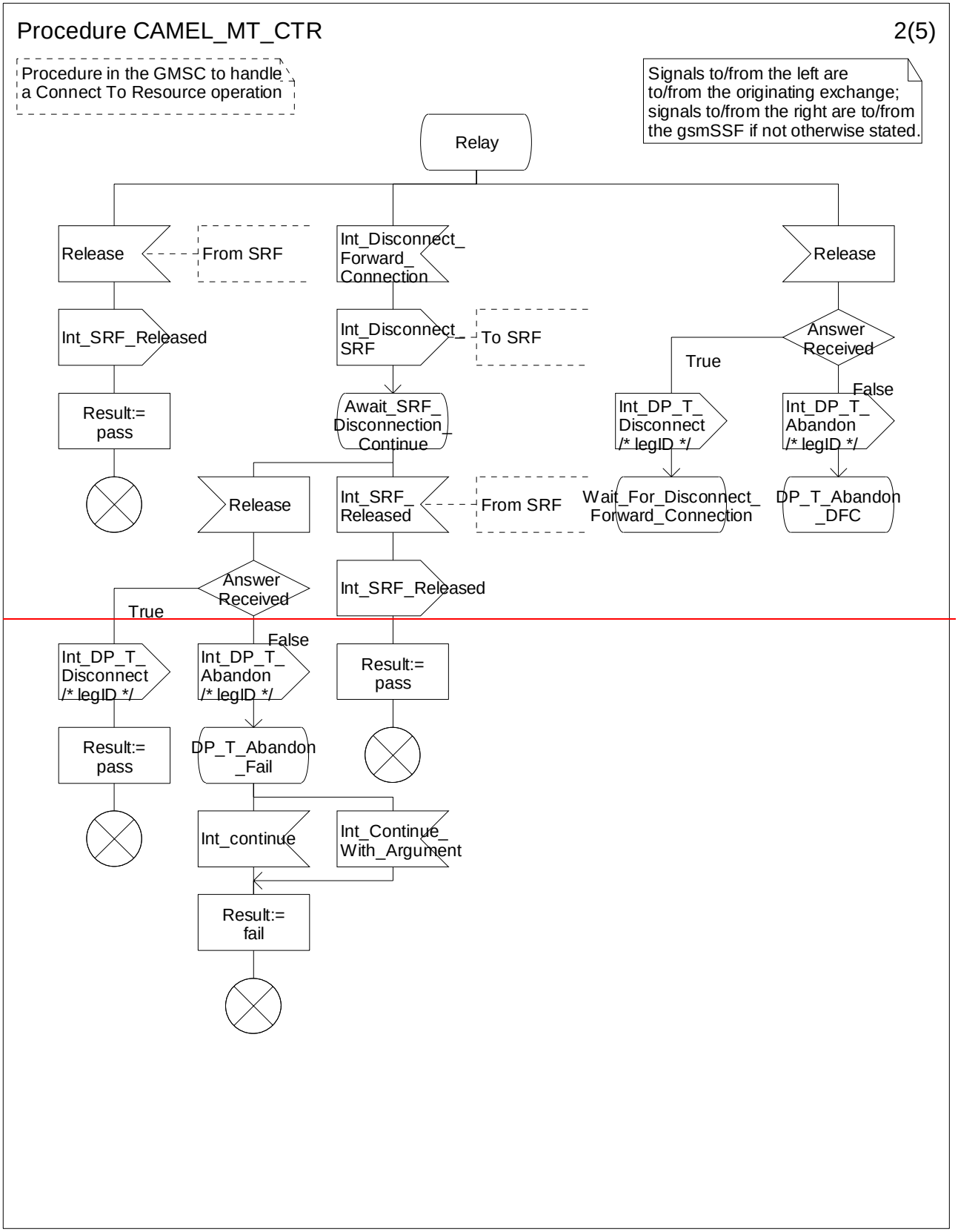


Figure 4.48-4: Procedure CAMEL_MT_ETC (sheet 4)


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.
Relay
Release
From SRF
Int_Disconnect_ Forward_ Connection
Release
Int_SRF_Released
Int_Disconnect_ SRF
To SRF
Answer Received
True
False
Result:= pass
Await_SRF_ Disconnection_ Continue
Int_DP_T_ Disconnect /* legID */
Int_DP_T_ Abandon /* legID */
Release
Int_SRF_ Released
From SRF
Wait_For_Disconnect_ Forward_Connection
DP_T_Abandon _DFC
Answer Received
Int_SRF_Released
True
False
Int_DP_T_ Disconnect /* legID */
Int_DP_T_ Abandon /* legID */
Result:= pass
Result:= pass
DP_T_Abandon _Fail
Int_continue
Int_Continue_ With_Argument
Result:= fail

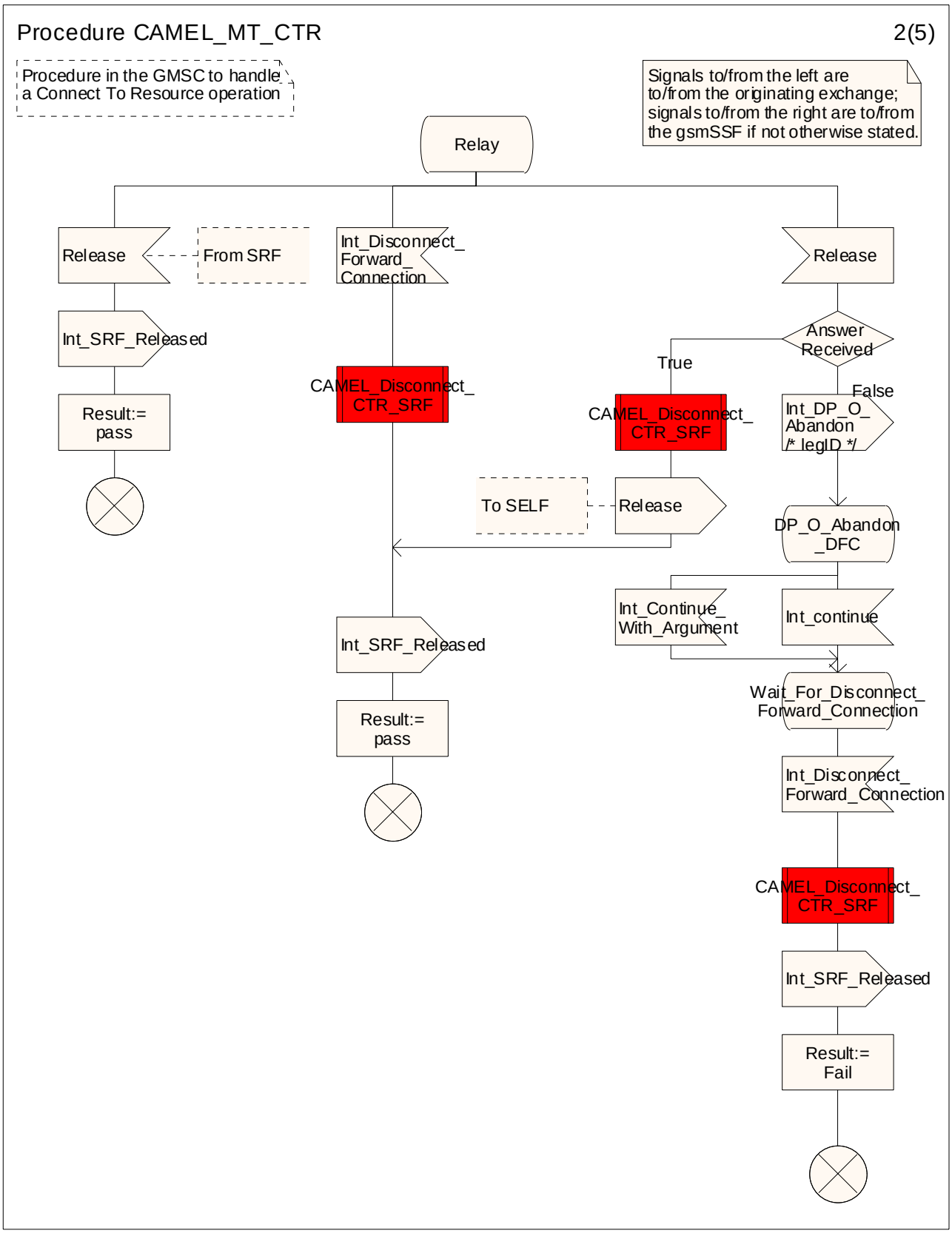
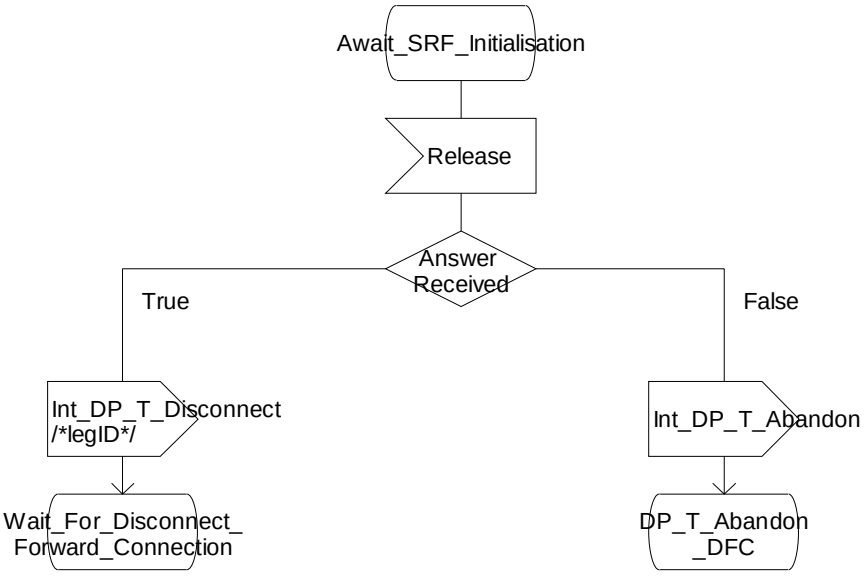


Figure 4.49-2: Procedure CAMEL_MT_CTR (sheet 2)

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.



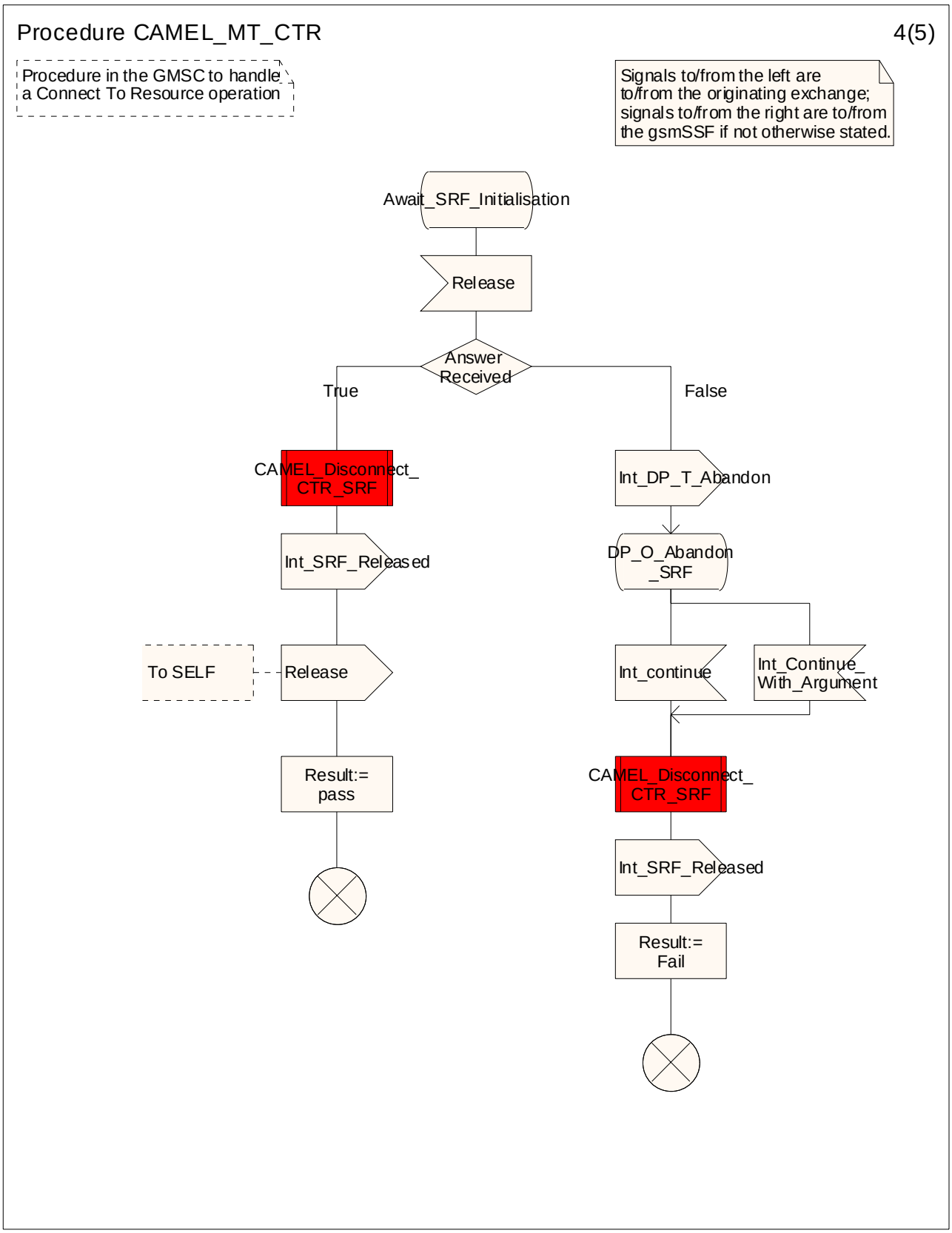
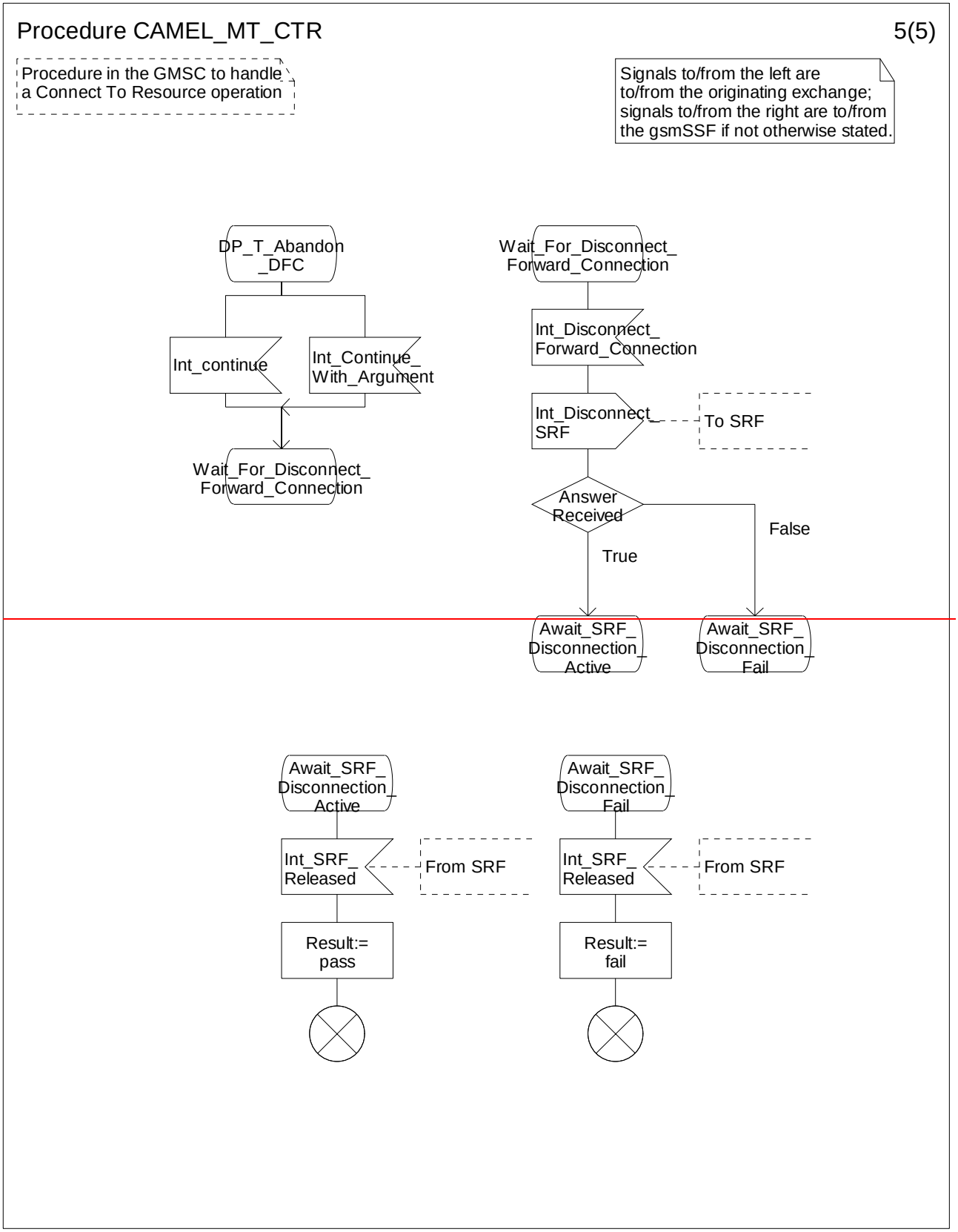


Figure 4.49-4: Procedure CAMEL_MT_CTR (sheet 4)



~~Figure 4.49-5: Procedure CAMEL_MT_CTR (sheet 5)~~

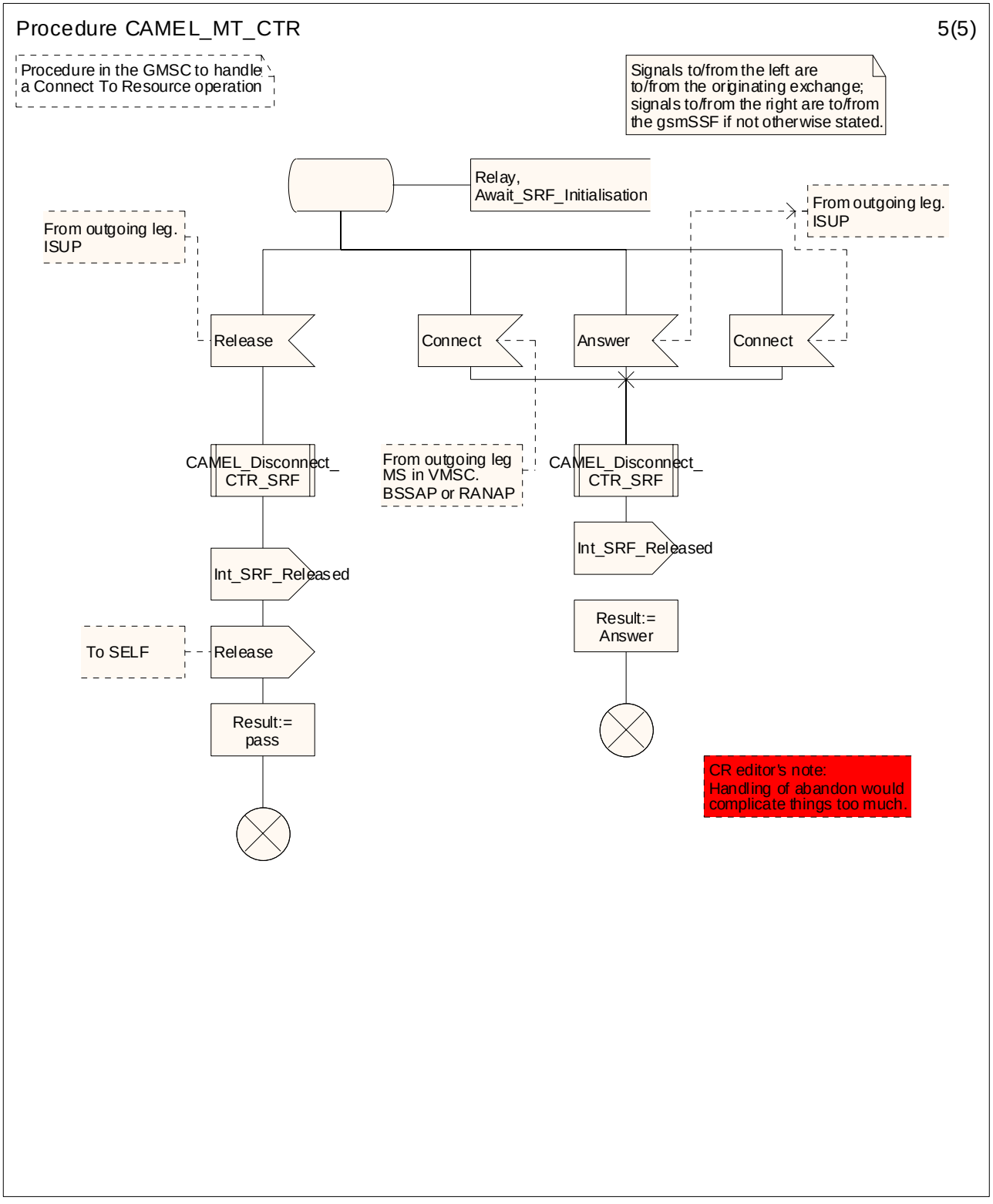


Figure 4.49-5: Procedure CAMEL_MT_CTR (sheet 5)

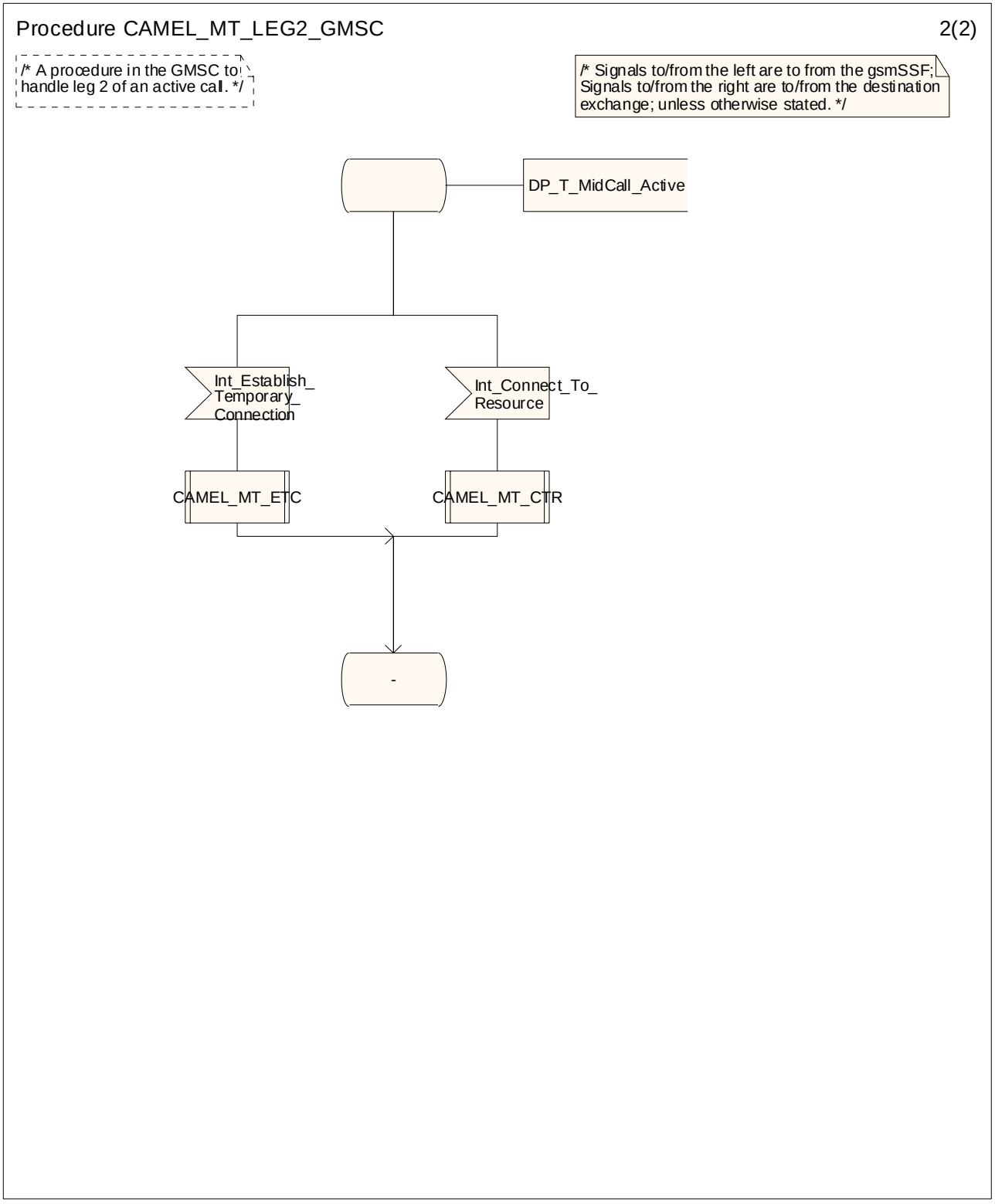


Figure 4.51-2: Procedure CAMEL_MT_LEG2_GMSC (sheet 2)

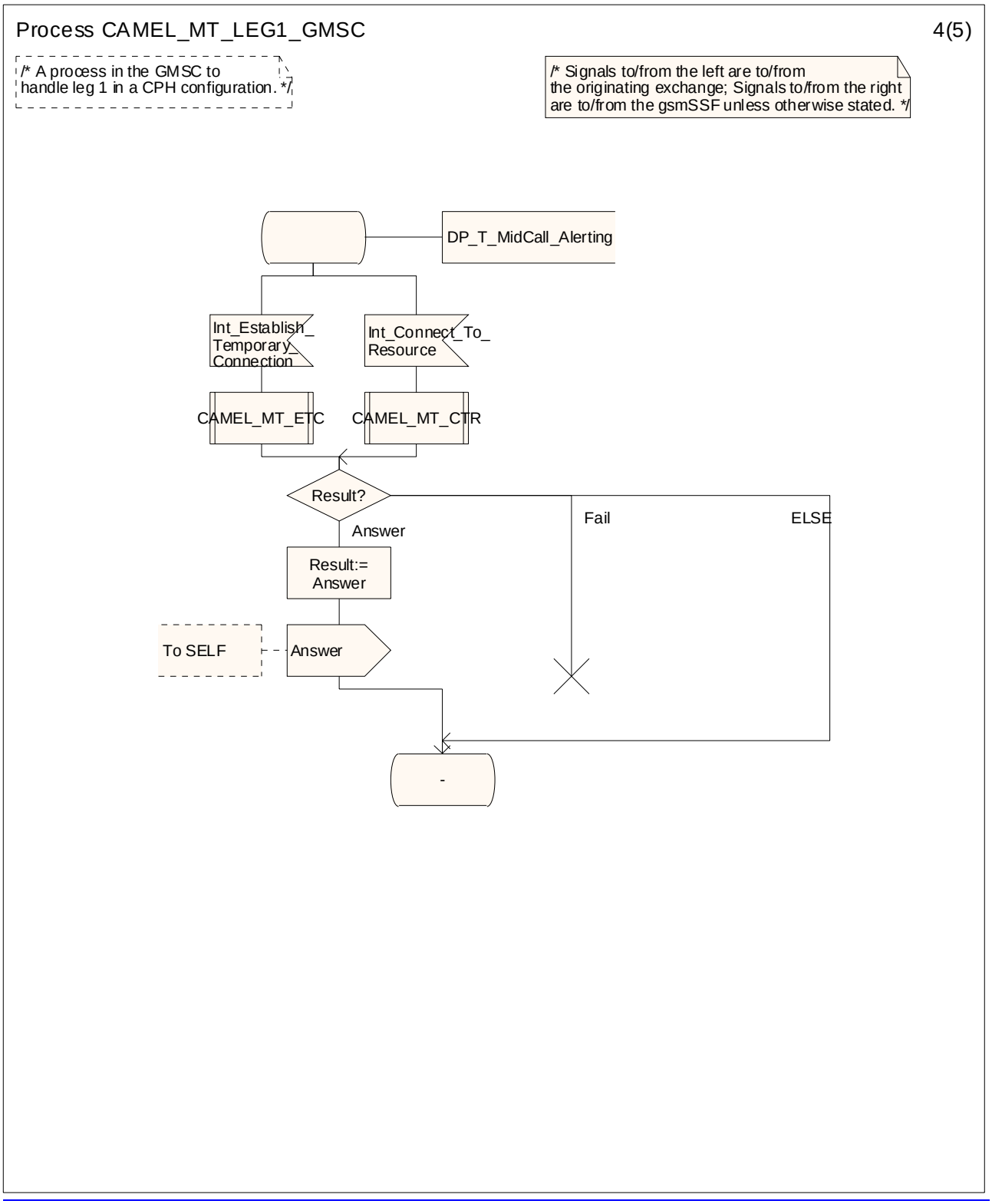


Figure 4.52-4: Process CAMEL_MT_LEG1_GMSC (sheet 4)

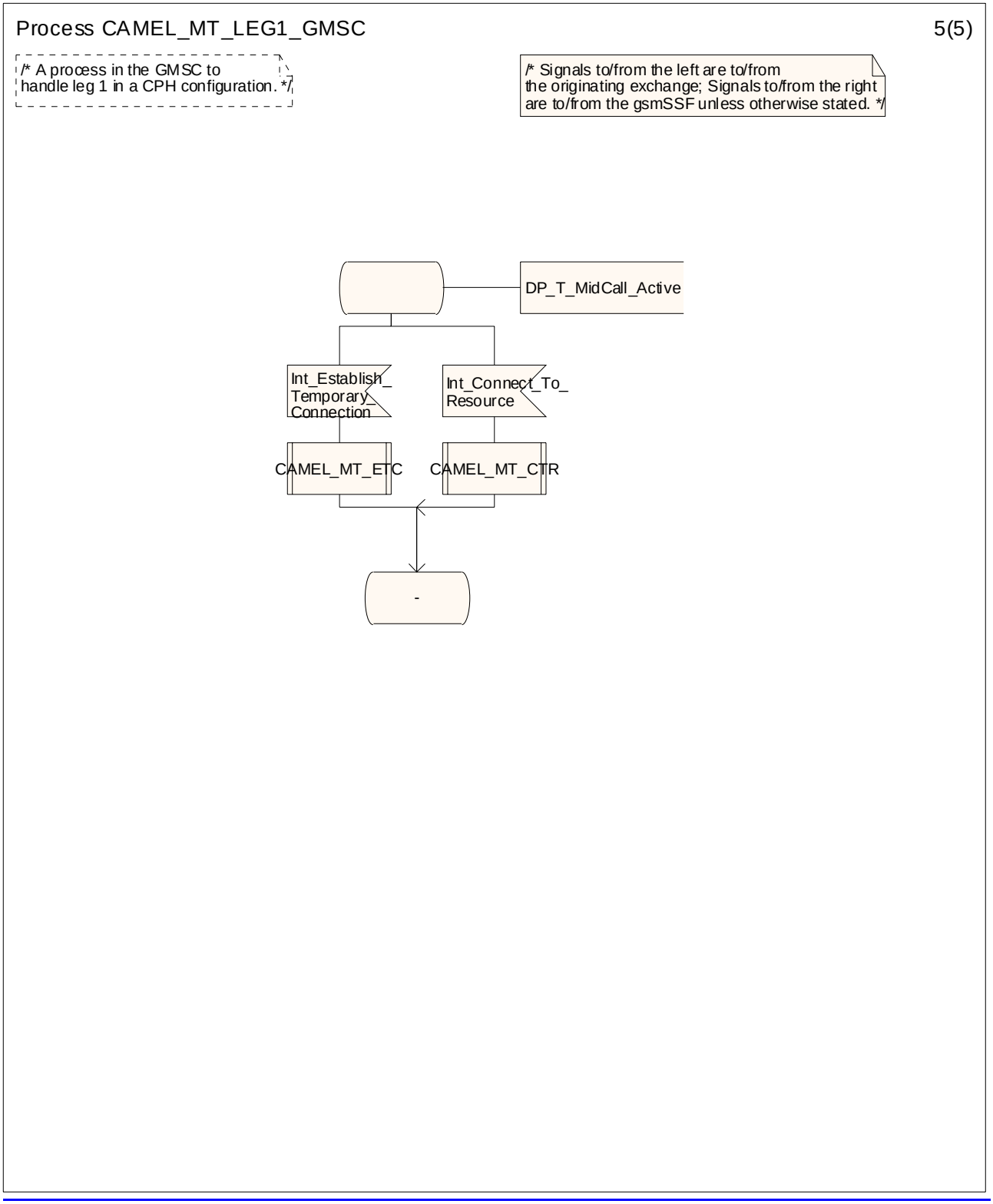


Figure 4.52-5: Process CAMEL_MT_LEG1_GMSC (sheet 5)

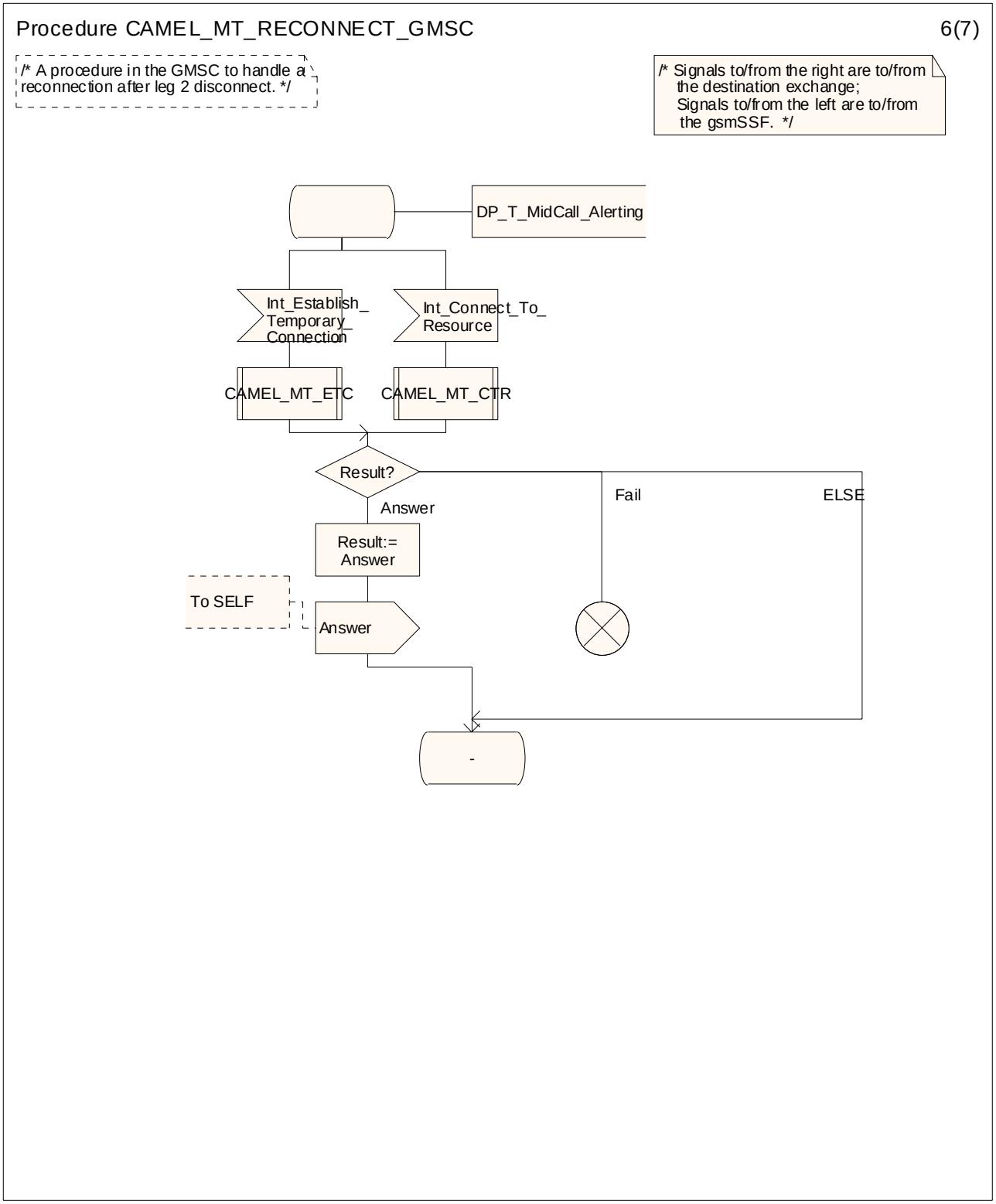


Figure 4.53-6: Procedure CAMEL_MT_RECONNECT_GMSC (sheet 6)

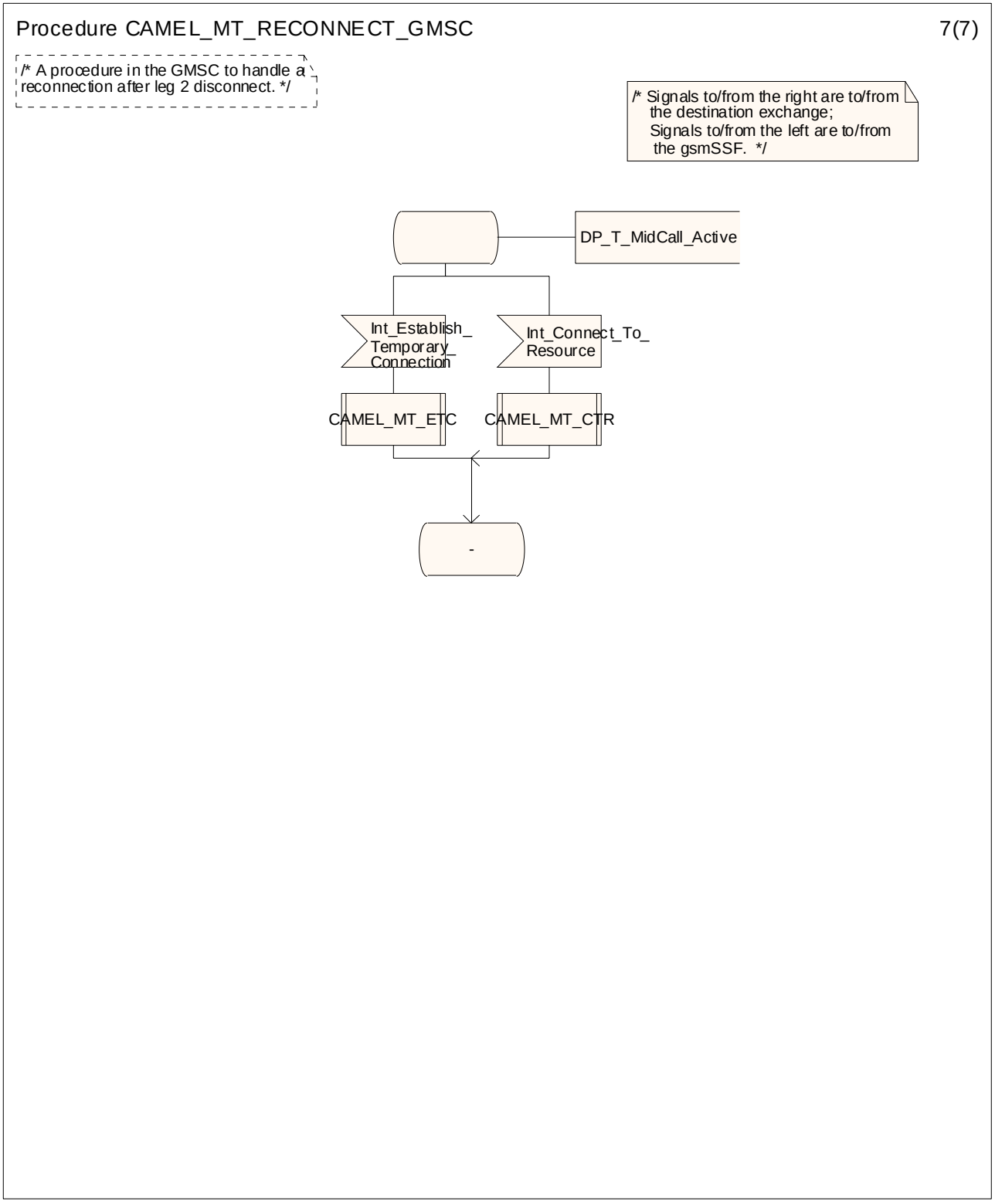


Figure 4.53-7: Procedure CAMEL_MT_RECONNECT_GMSC (sheet 7)

-- Next modified section --

4.5.4 Handling of mobile terminating calls

4.5.4.1 Handling of mobile terminating calls in the terminating VMSC

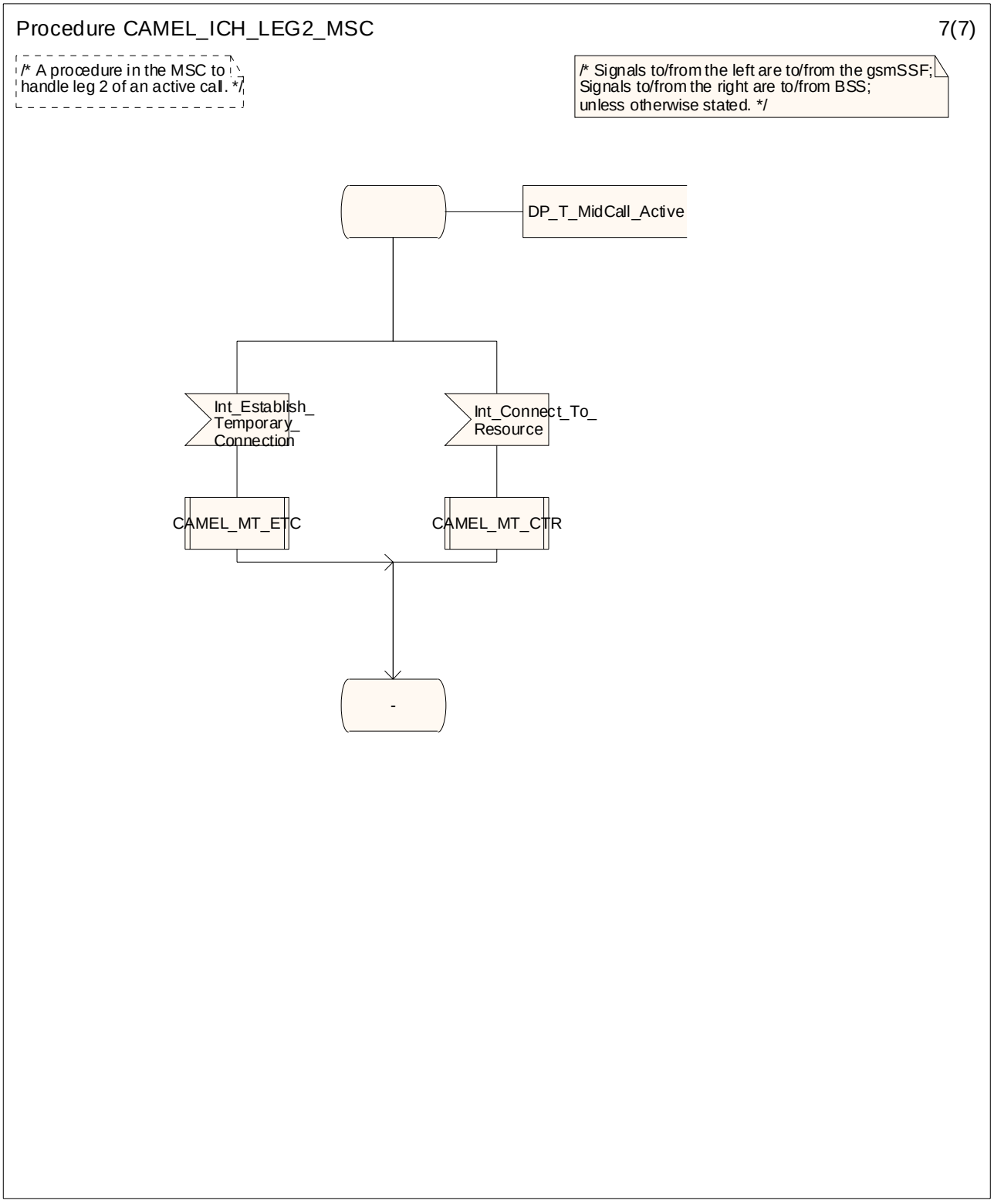


Figure 4.67-7: Procedure CAMEL_ICH_LEG2_MSC (sheet 7)

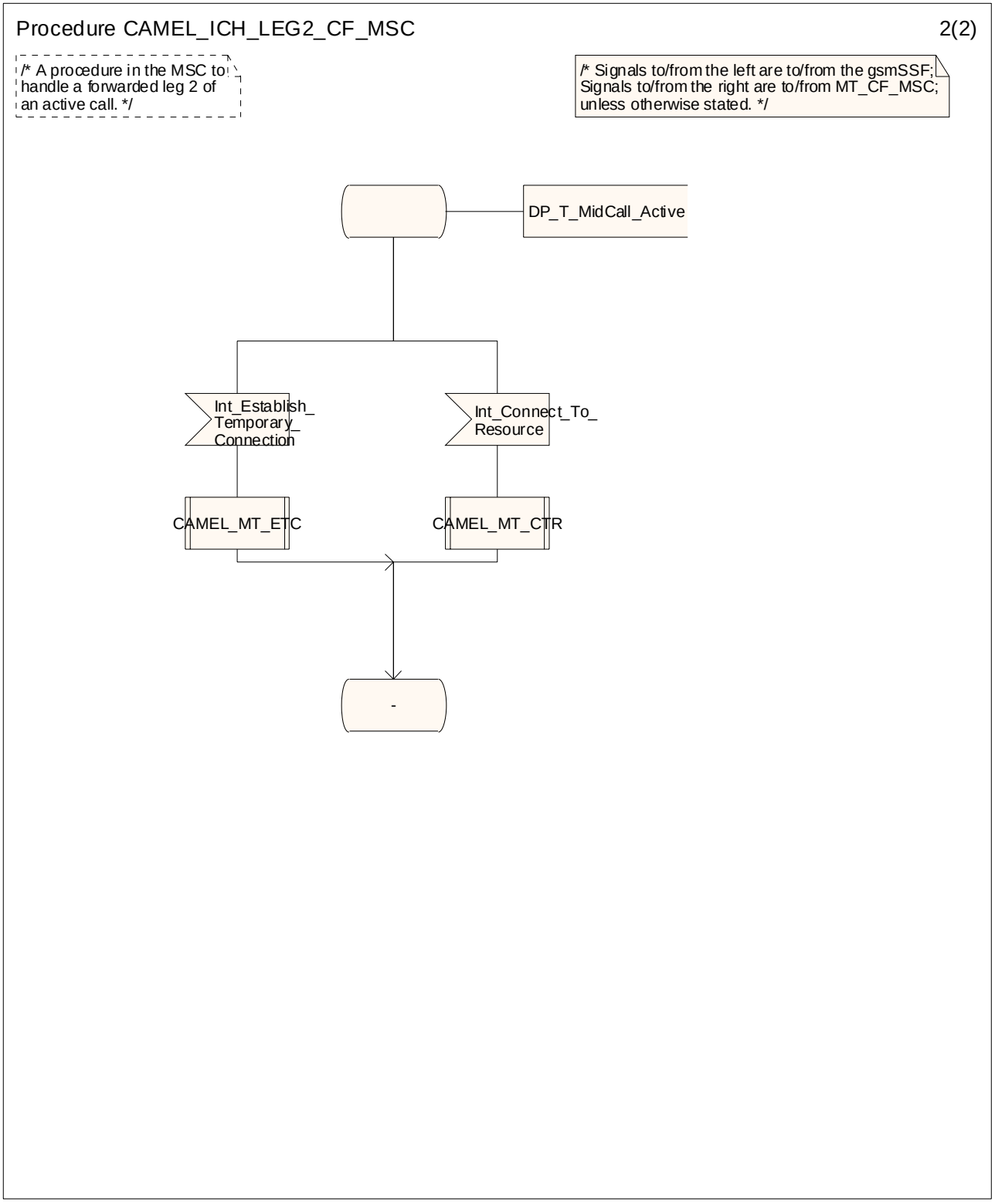


Figure 4.68-2: Process CAMEL_ICH_LEG2_CF_MSC (sheet 2)

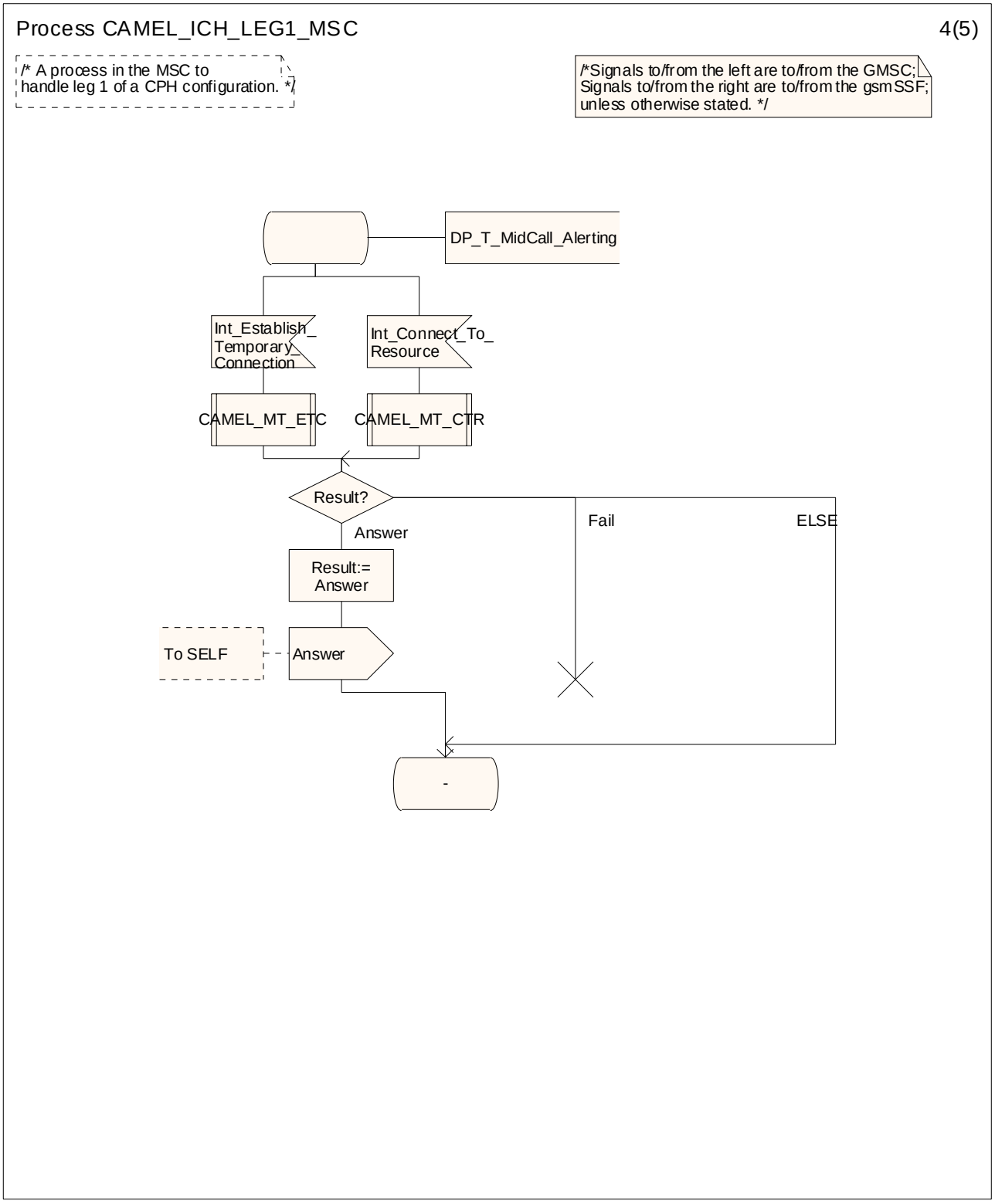


Figure 4.69-4: Process CAMEL_ICH_LEG1_MSC (sheet 4)

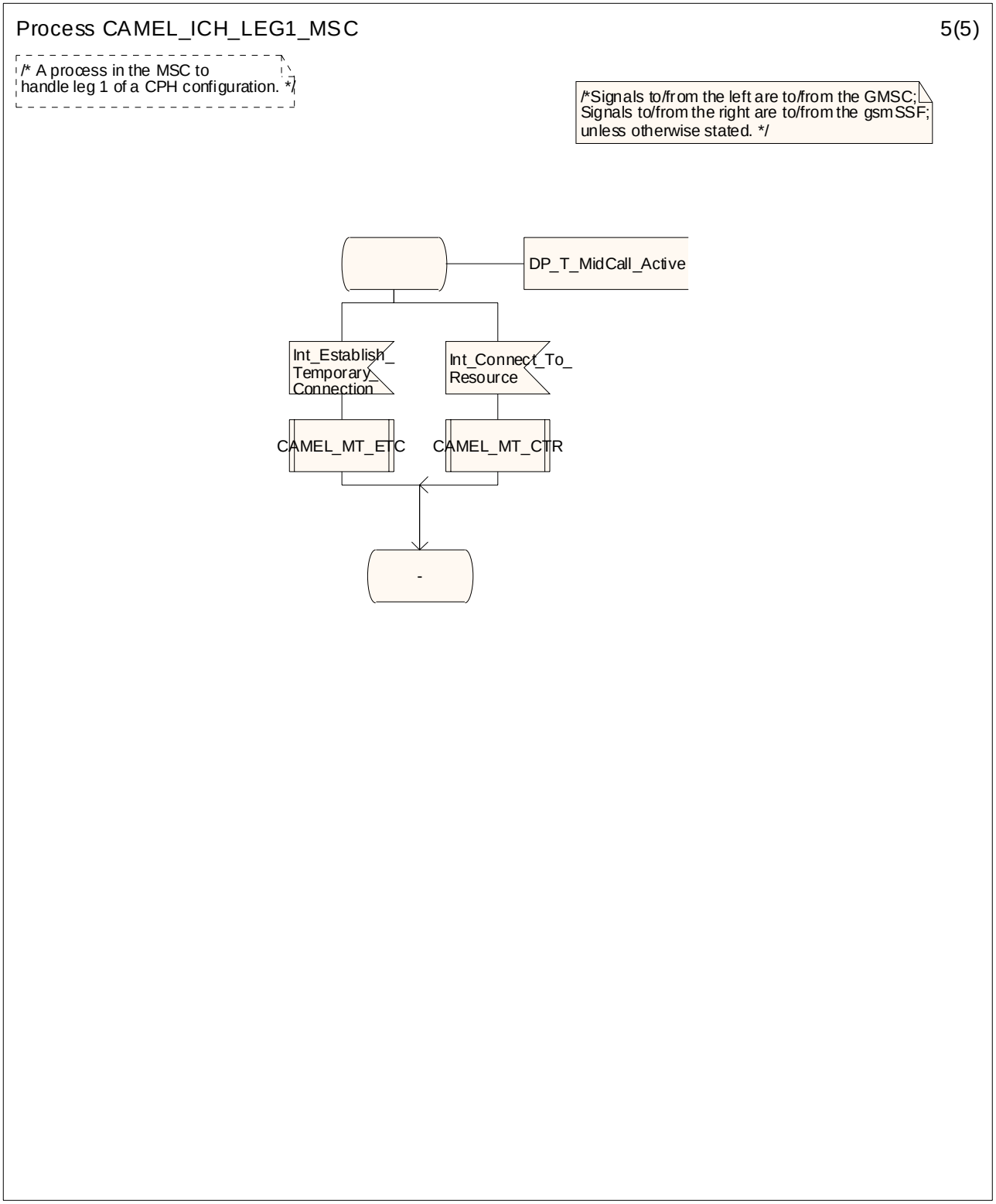


Figure 4.69-5: Process CAMEL_ICH_LEG1_MSC (sheet 5)

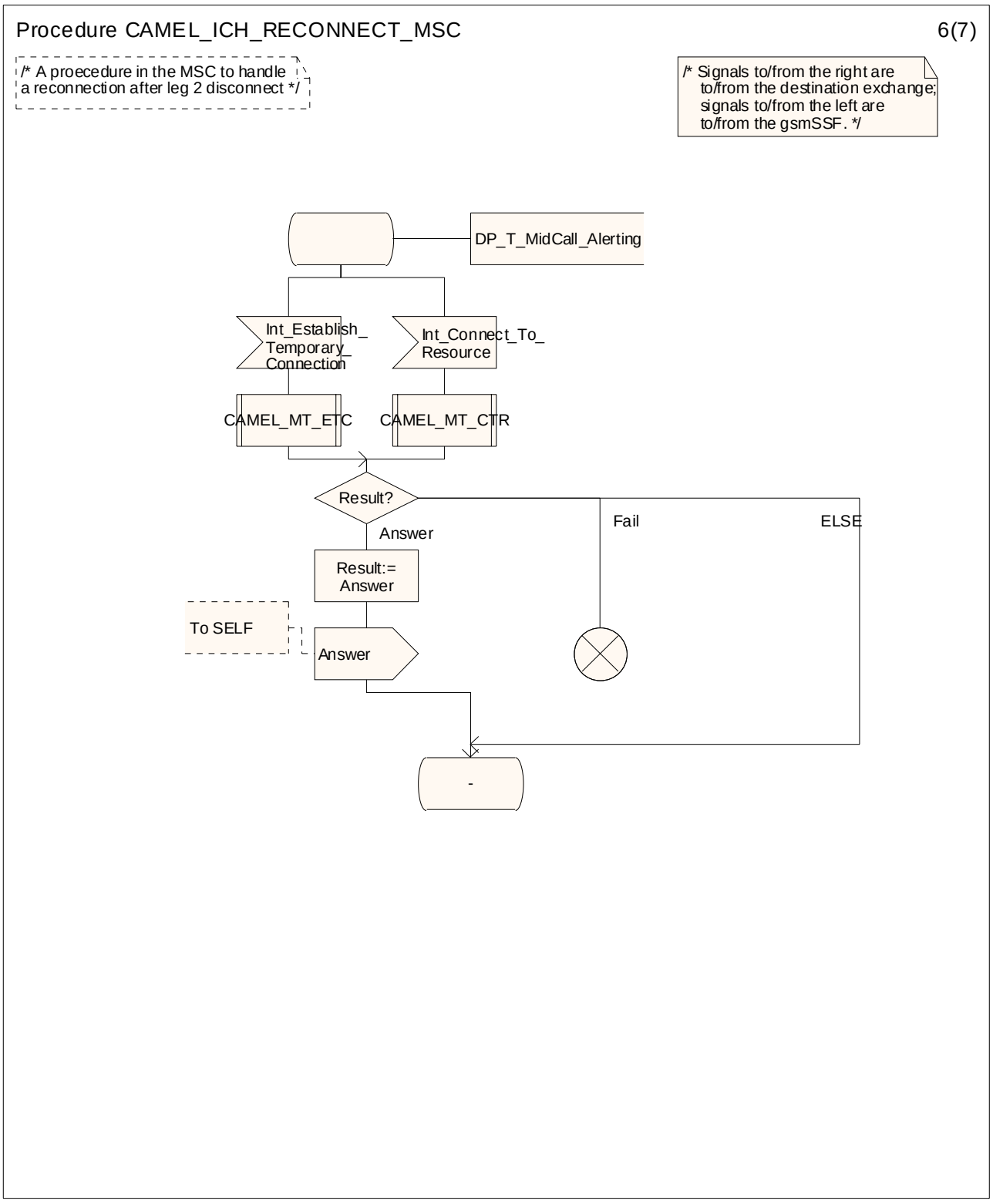


Figure 4.70-6: Procedure CAMEL_ICH_RECONNECT_MSC (sheet 6)

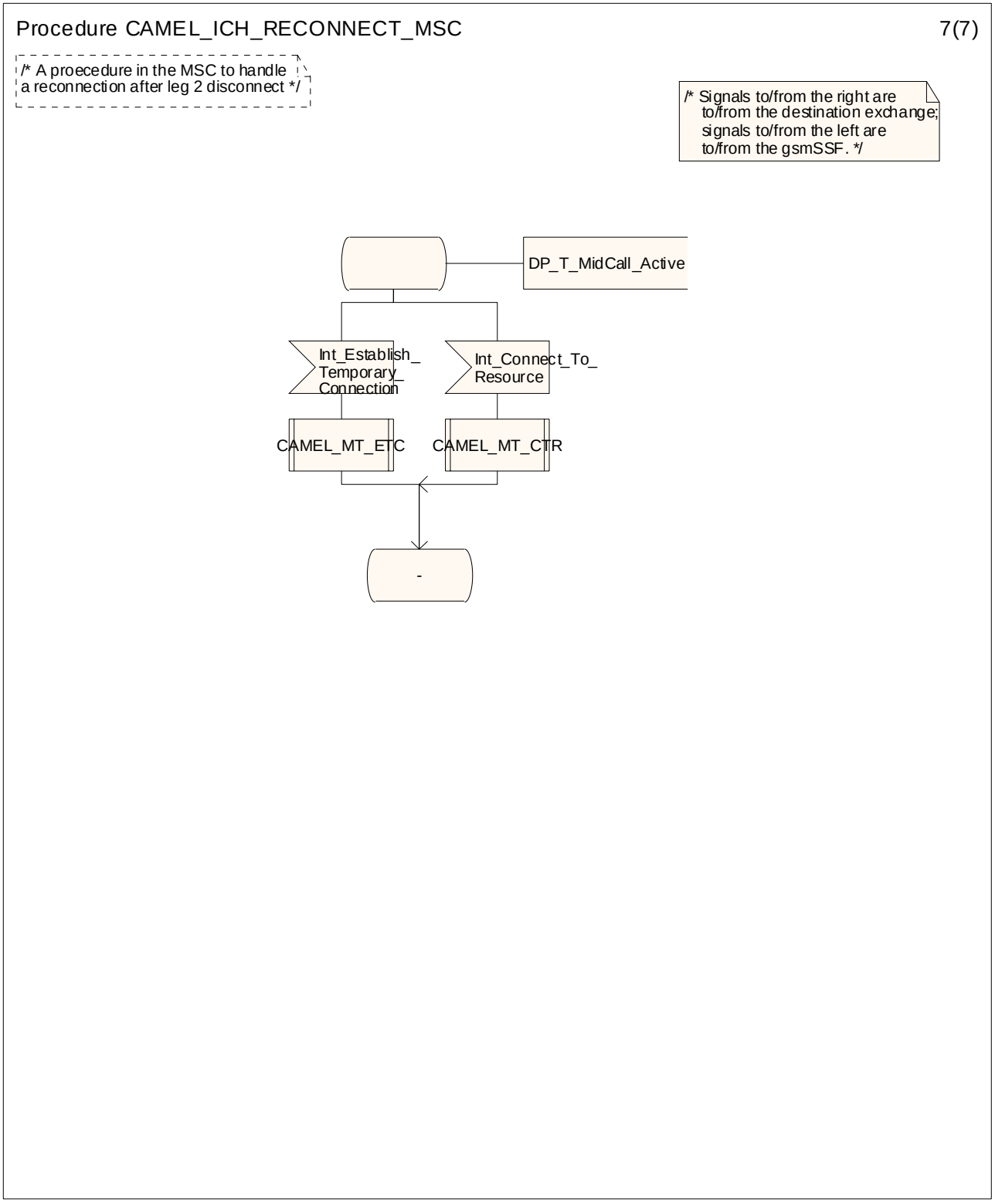


Figure 4.70-7: Procedure CAMEL_ICH_RECONNECT_MSC (sheet 7)

-- Next modified section --

4.5.5 Handling of forwarded calls

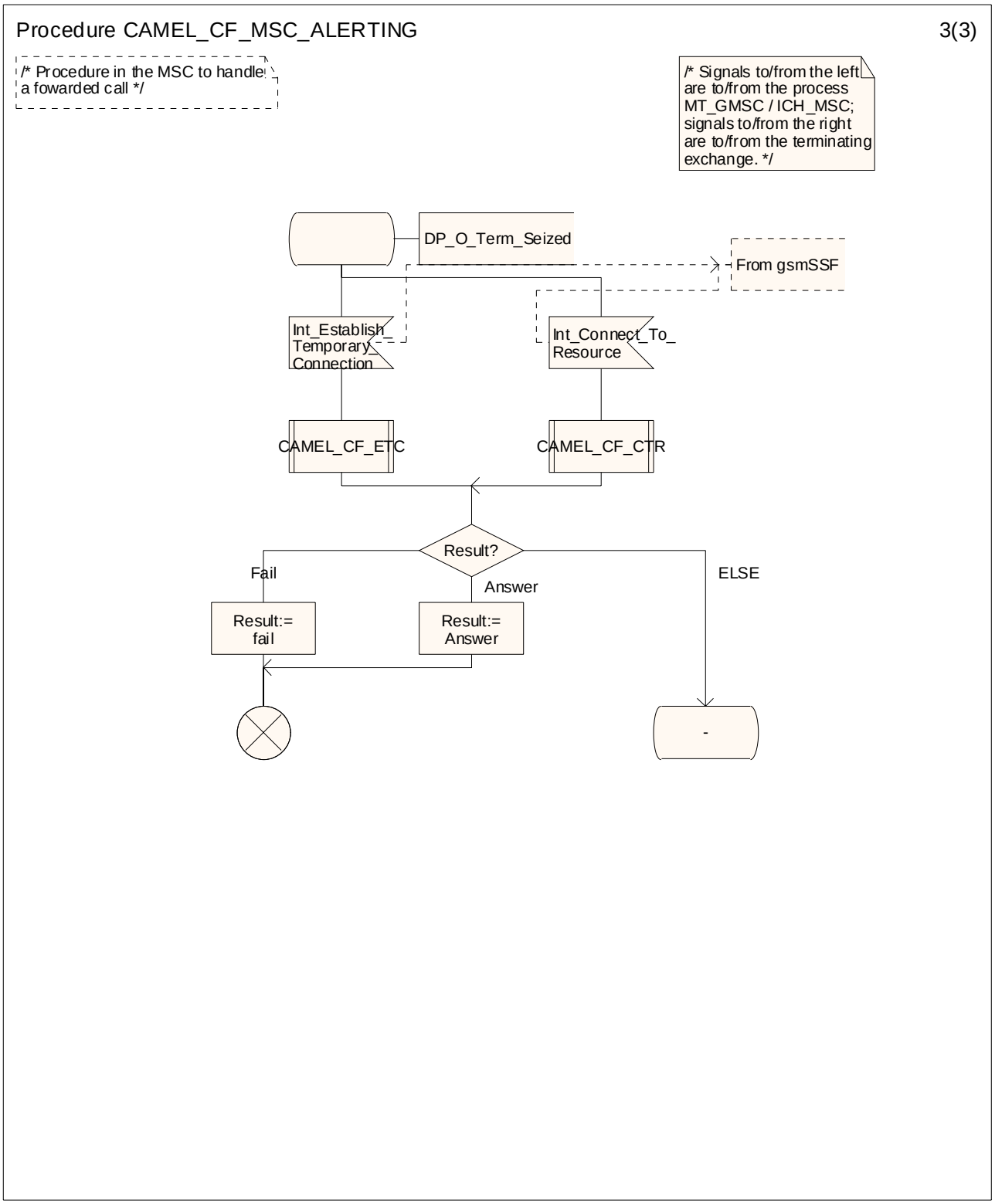
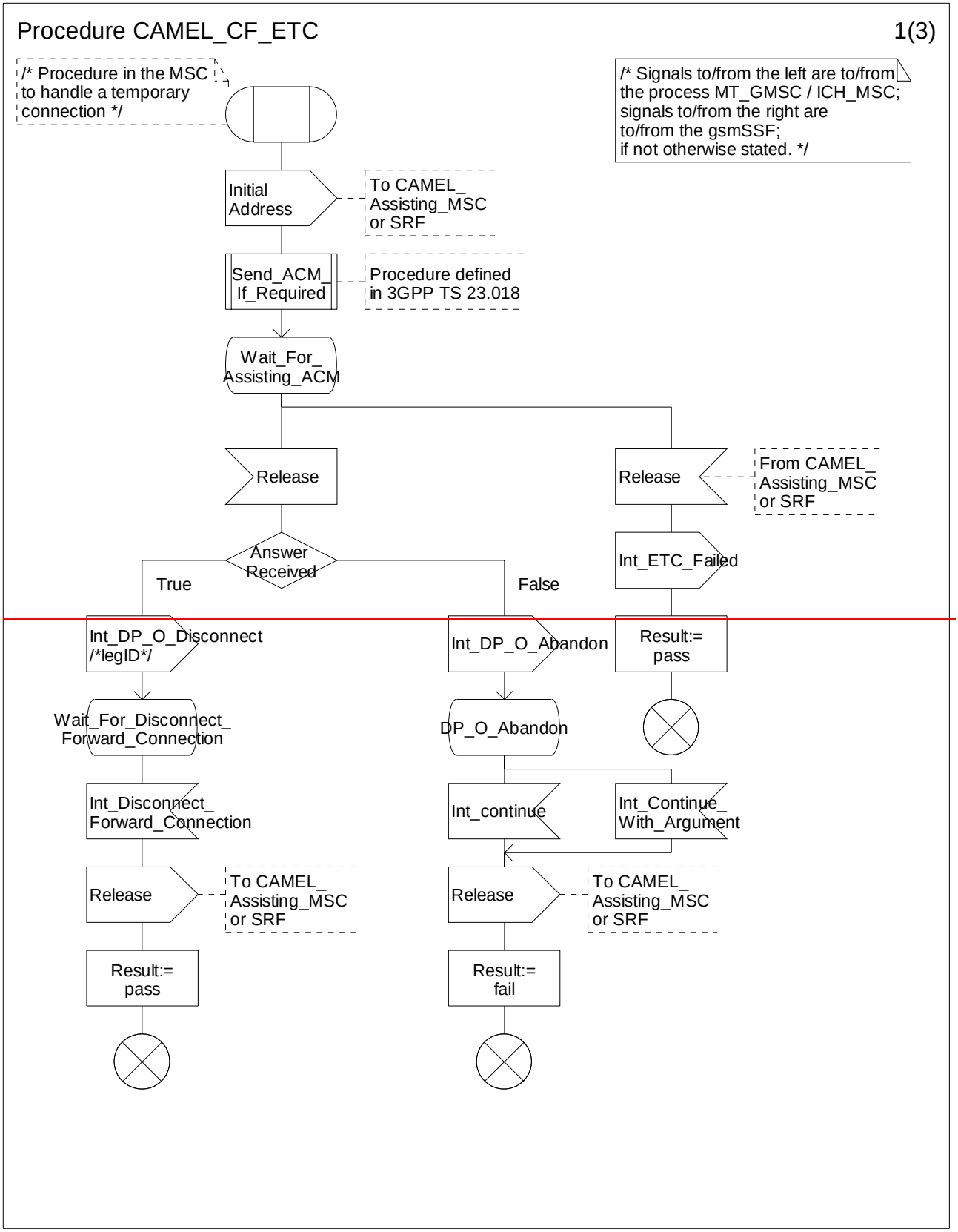


Figure 4.78-3: Procedure CAMEL_CF_MSC_ALERTING (sheet 3)


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. */
Initial Address
To CAMEL_ Assisting_MSC or SRF
Send_ACM_ If_Required
Procedure defined in 3GPP TS 23.018
Wait_For_ Assisting_ACM
Release
Release
From CAMEL_ Assisting_MSC or SRF
Answer Received
True
False
Int_ETC_Failed
Int_DP_O_Disconnect /*legID*/
Int_DP_O_Abandon
Result:= pass
Wait_For_Disconnect_ Forward_Connection
DP_O_Abandon
Int_Disconnect_ Forward_Connection
Int_continue
Int_Continue_ With_Argument
Release
To CAMEL_ Assisting_MSC or SRF
Release
To CAMEL_ Assisting_MSC or SRF
Result:= pass
Result:= fail

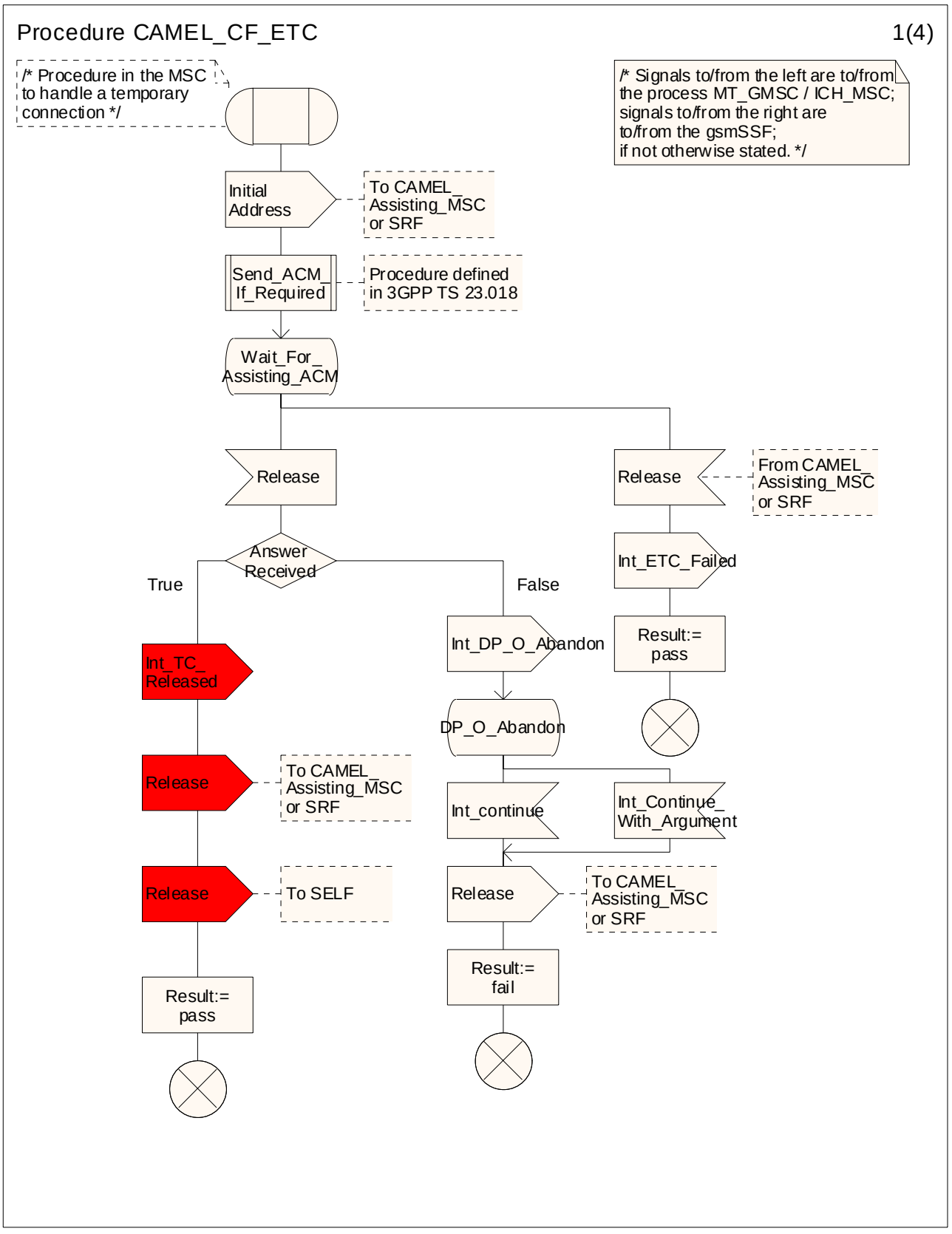
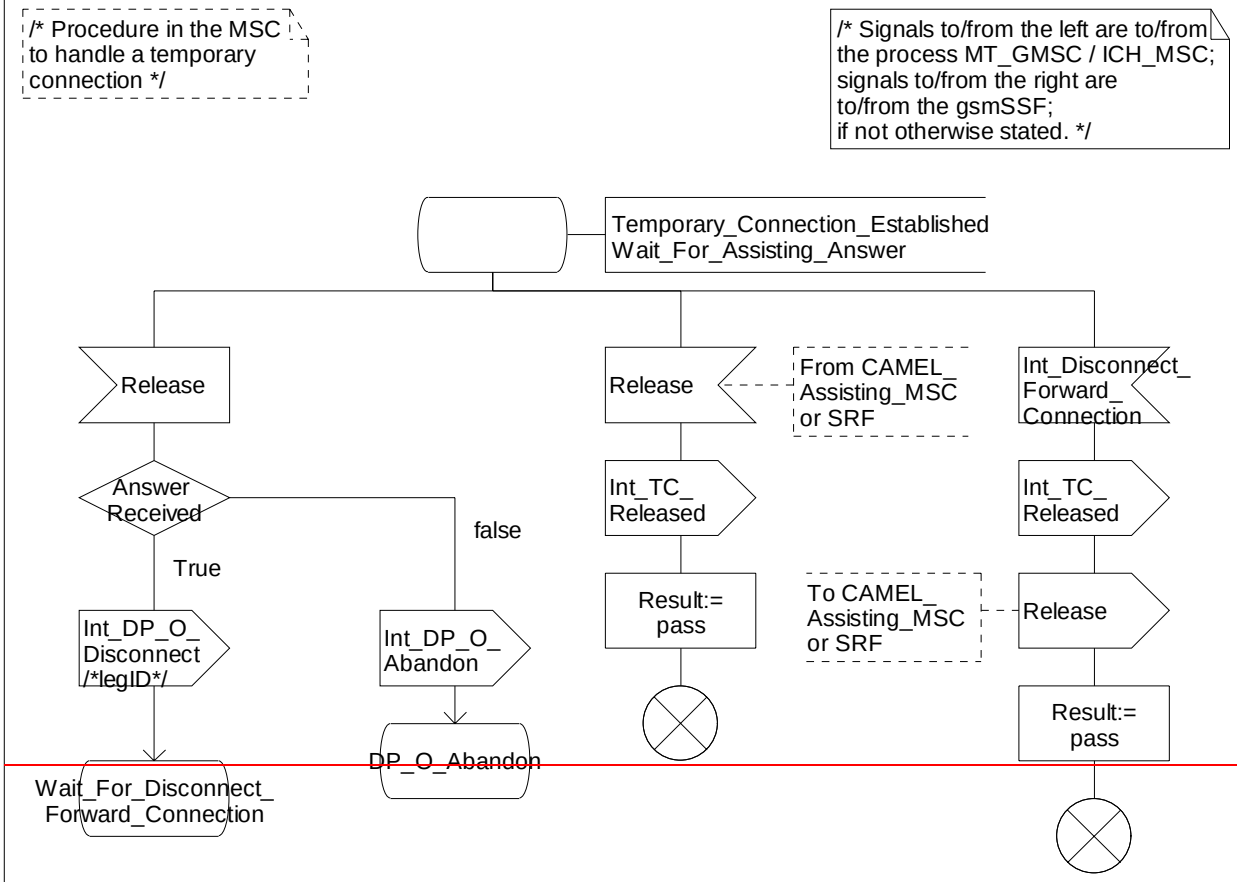


Figure 4.80-1: Procedure CAMEL_CF_ETC (sheet 1)

Procedure CAMEL_CF_ETC 3(3)



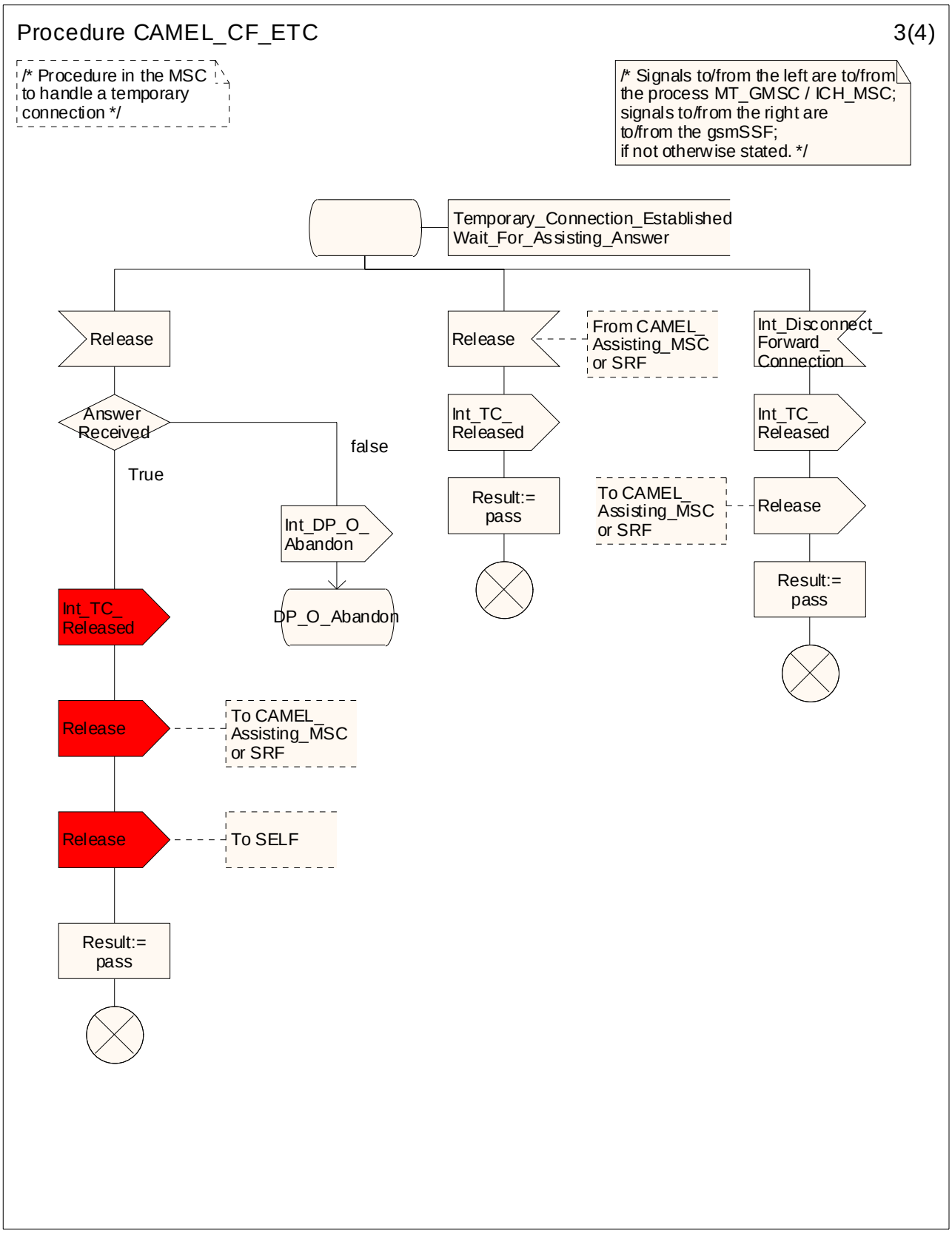


Figure 4.80-3: Procedure CAMEL_CF_ETC (sheet 3)

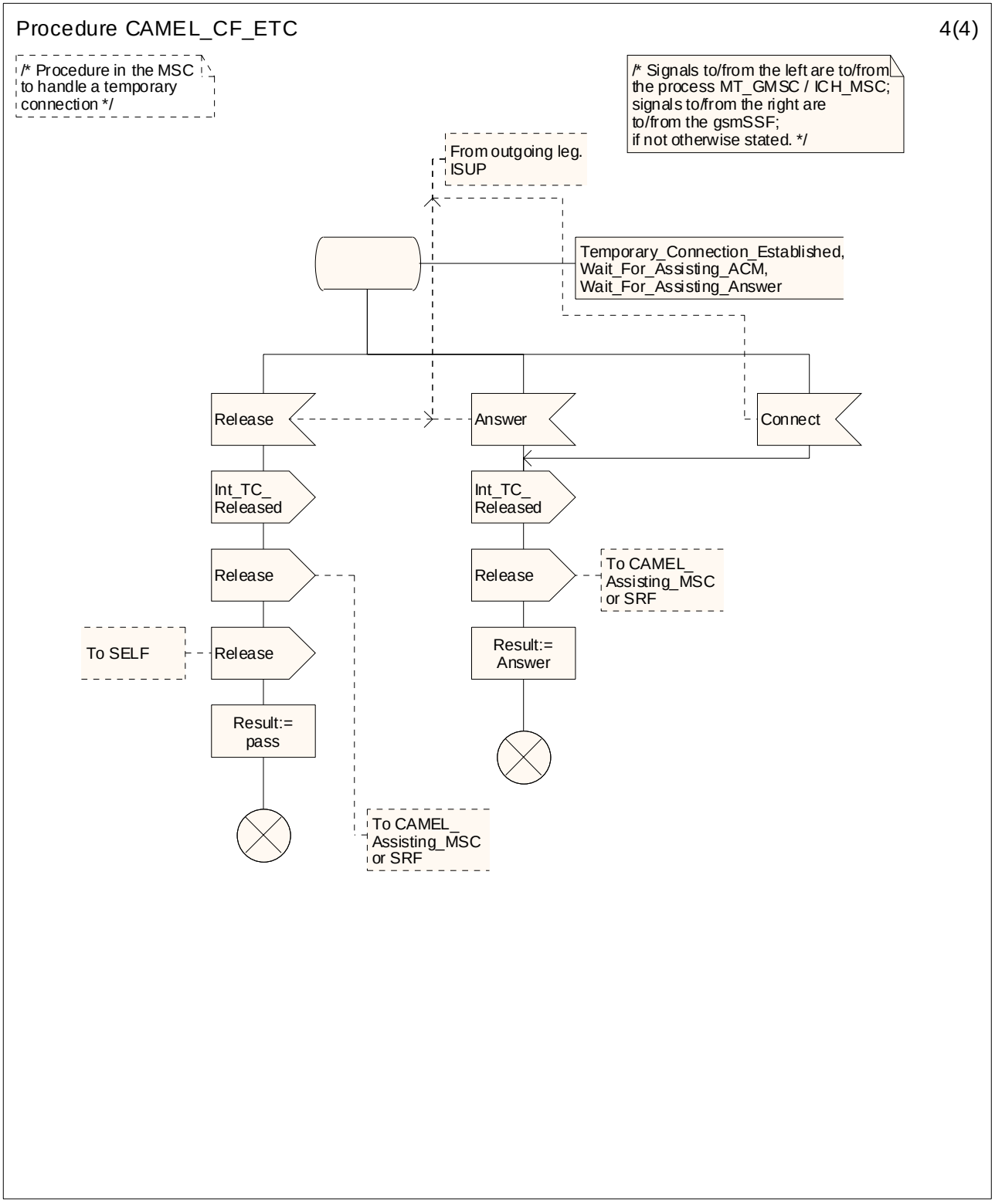
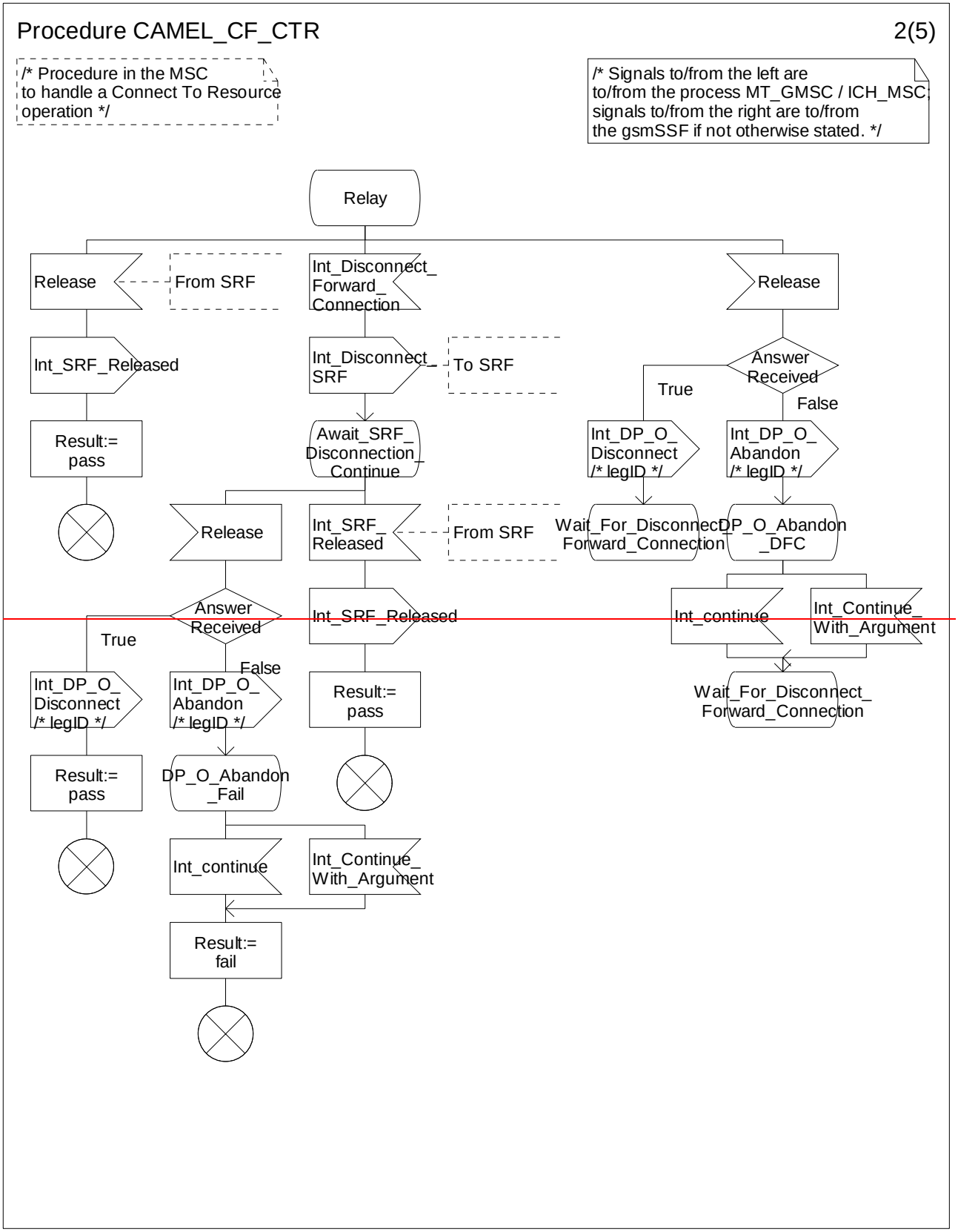


Figure 4.80-4: Procedure CAMEL_CF_ETC (sheet 4)


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. */
Relay
Release
From SRF
Int_Disconnect_ Forward_ Connection
Release
Int_SRF_Released
Int_Disconnect_ SRF
To SRF
Answer Received
True
False
Result:= pass
Await_SRF_ Disconnection_ Continue
Int_DP_O_ Disconnect /* legID */
Int_DP_O_ Abandon /* legID */
Release
Int_SRF_ Released
From SRF
Wait_For_Disconnect_ Forward_Connection
DP_O_Abandon _DFC
Answer Received
Int_SRF_Released
Int_continue
Int_Continue_ With_Argument
True
False
Int_DP_O_ Disconnect /* legID */
Int_DP_O_ Abandon /* legID */
Result:= pass
Wait_For_Disconnect_ Forward_Connection
Result:= pass
DP_O_Abandon _Fail
Int_continue
Int_Continue_ With_Argument
Result:= fail

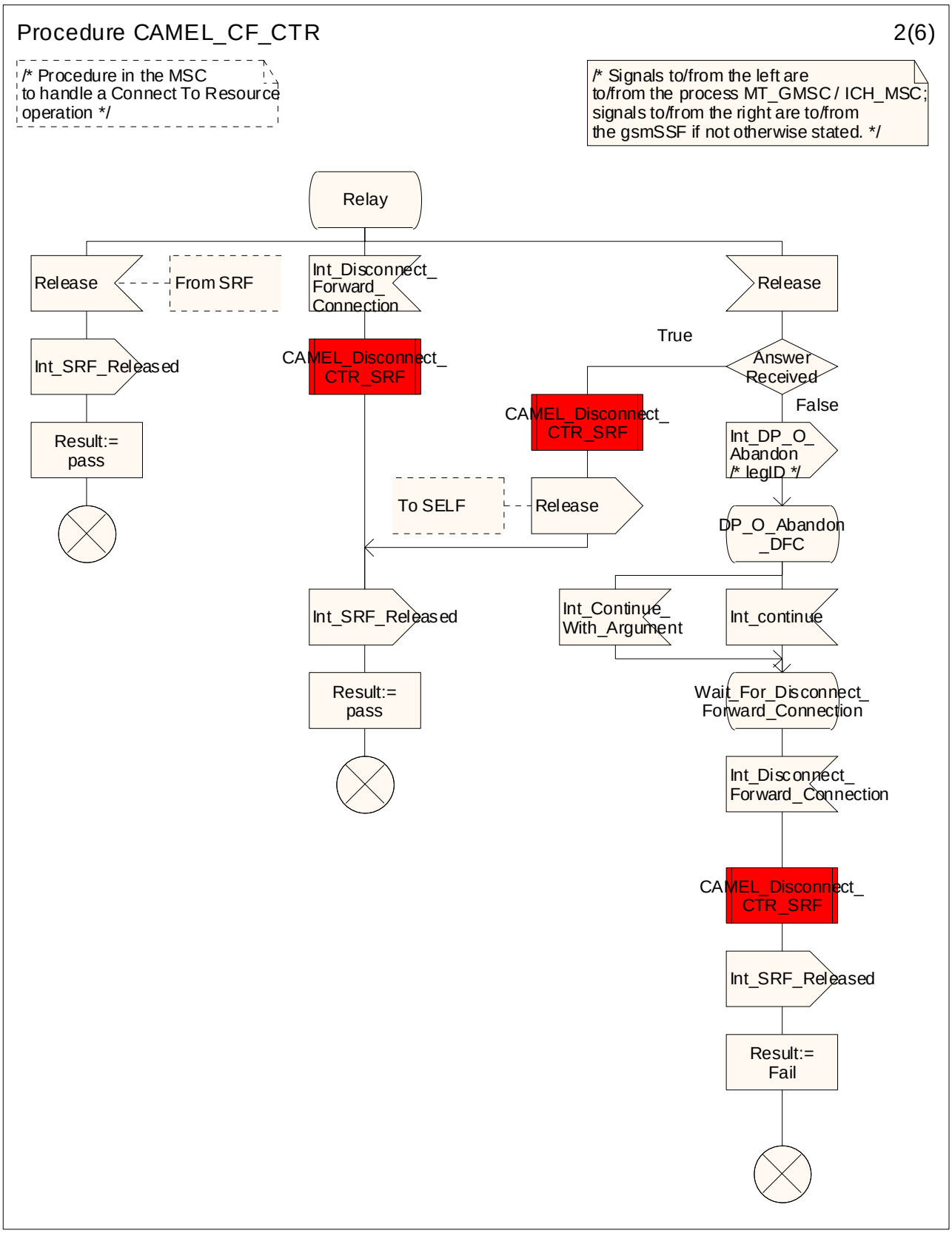
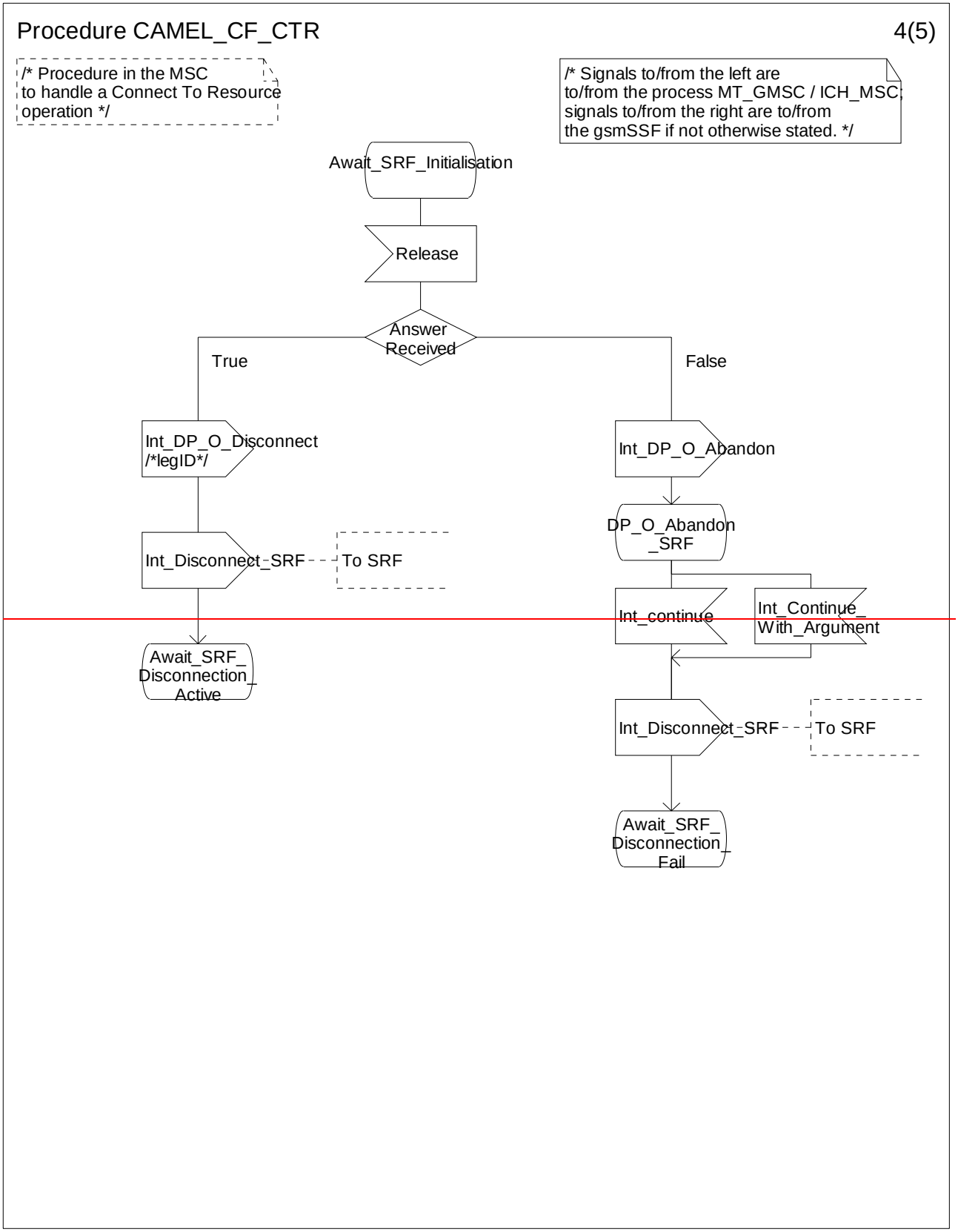


Figure 4.81-2: Procedure CAMEL_CF_CTR (sheet 2)


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. */
Await_SRF_Initialisation
Release
Answer
Received
True
False
Int_DP_O_Disconnect
/*legID*/
Int_DP_O_Abandon
DP_O_Abandon
_SRF
Int_Disconnect_SRF
To SRF
Int_continue
Int_Continue_
With_Argument
Await_SRF_
Disconnection_
Active
Int_Disconnect_SRF
To SRF
Await_SRF_
Disconnection_
Fail

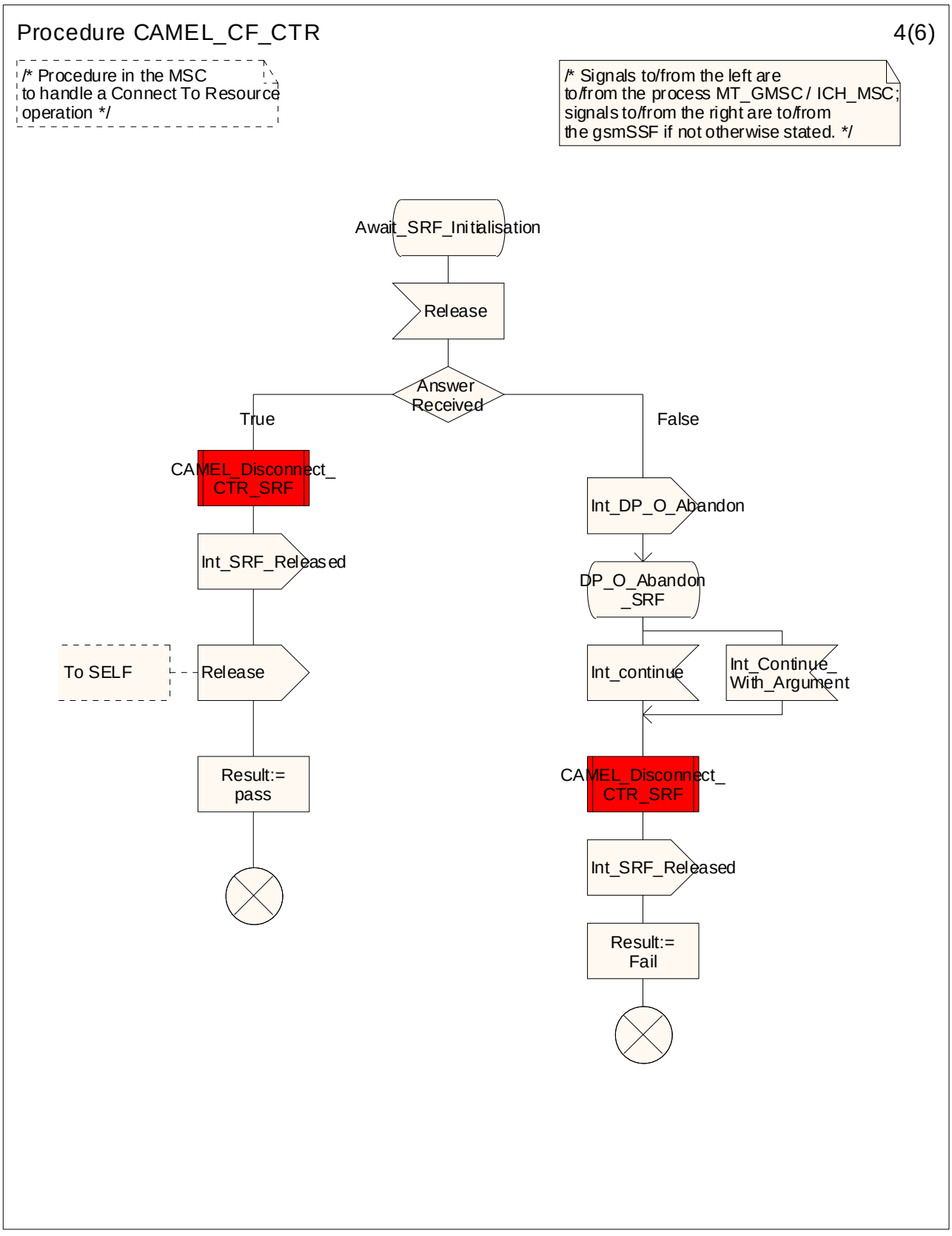
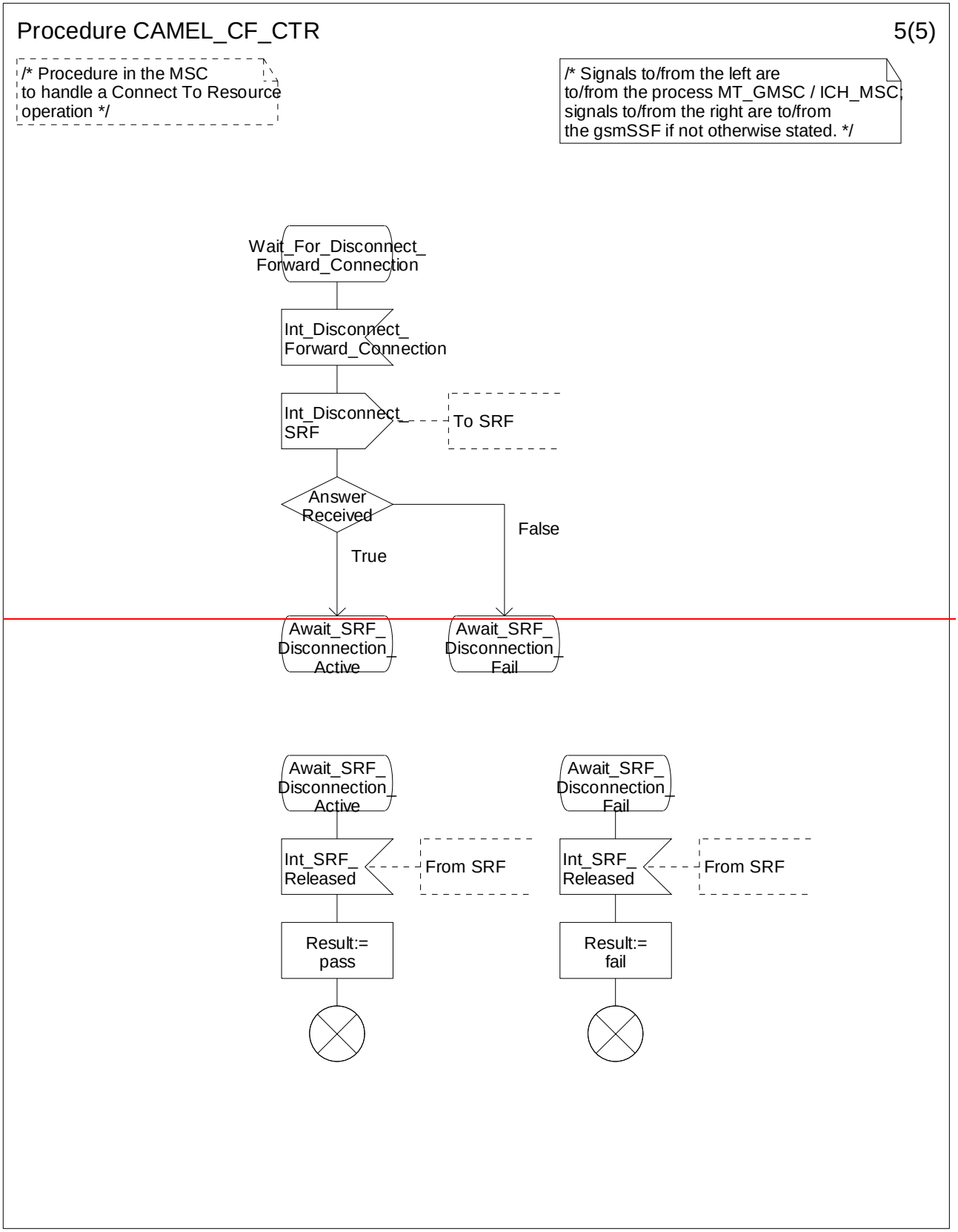


Figure 4.81-4: Procedure CAMEL_CF_CTR (sheet 4)



~~Figure 4.81-5: Procedure CAMEL_CF_CTR (sheet 5)~~

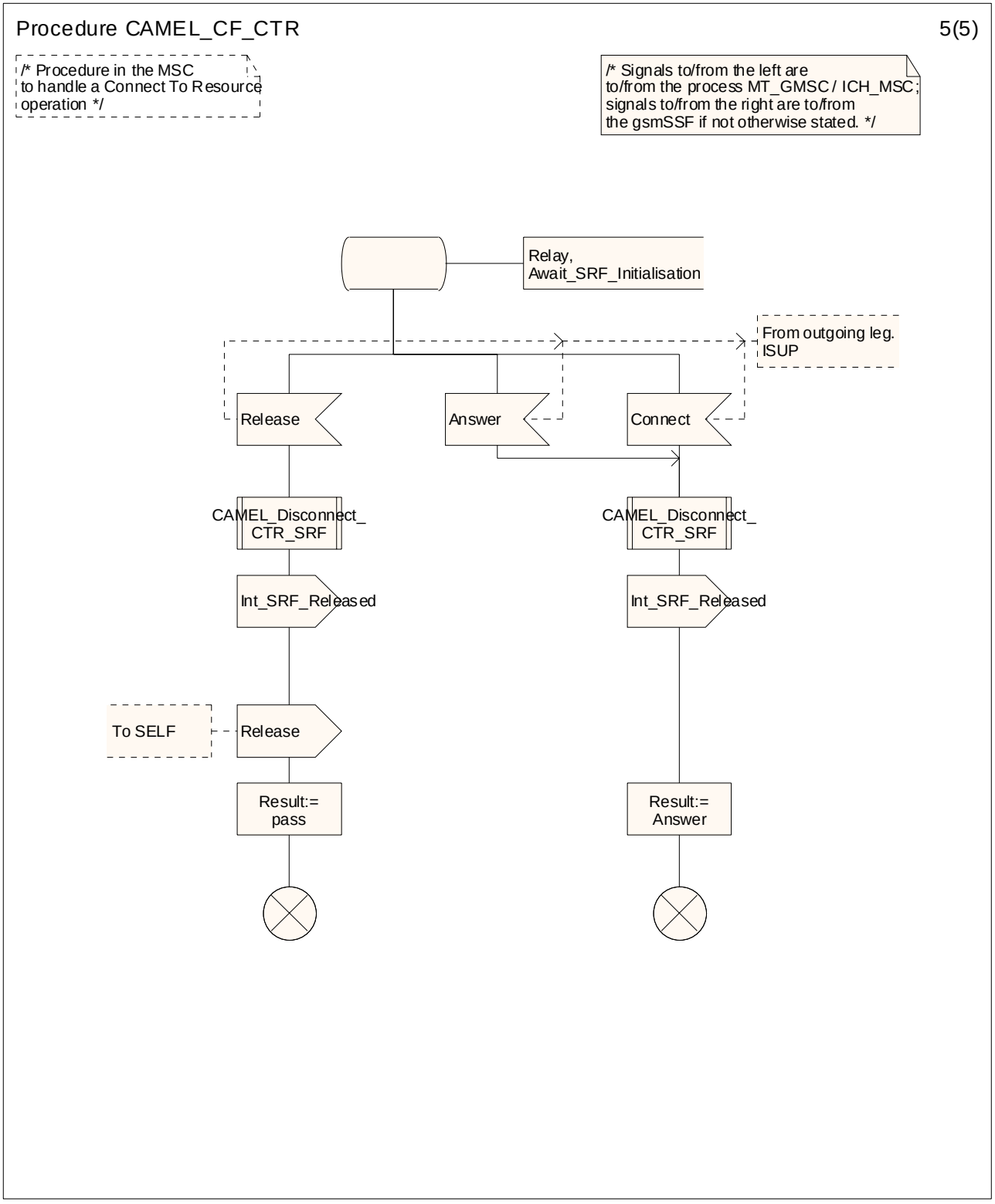


Figure 4.81-5: Procedure CAMEL_CF_CTR (sheet 5)

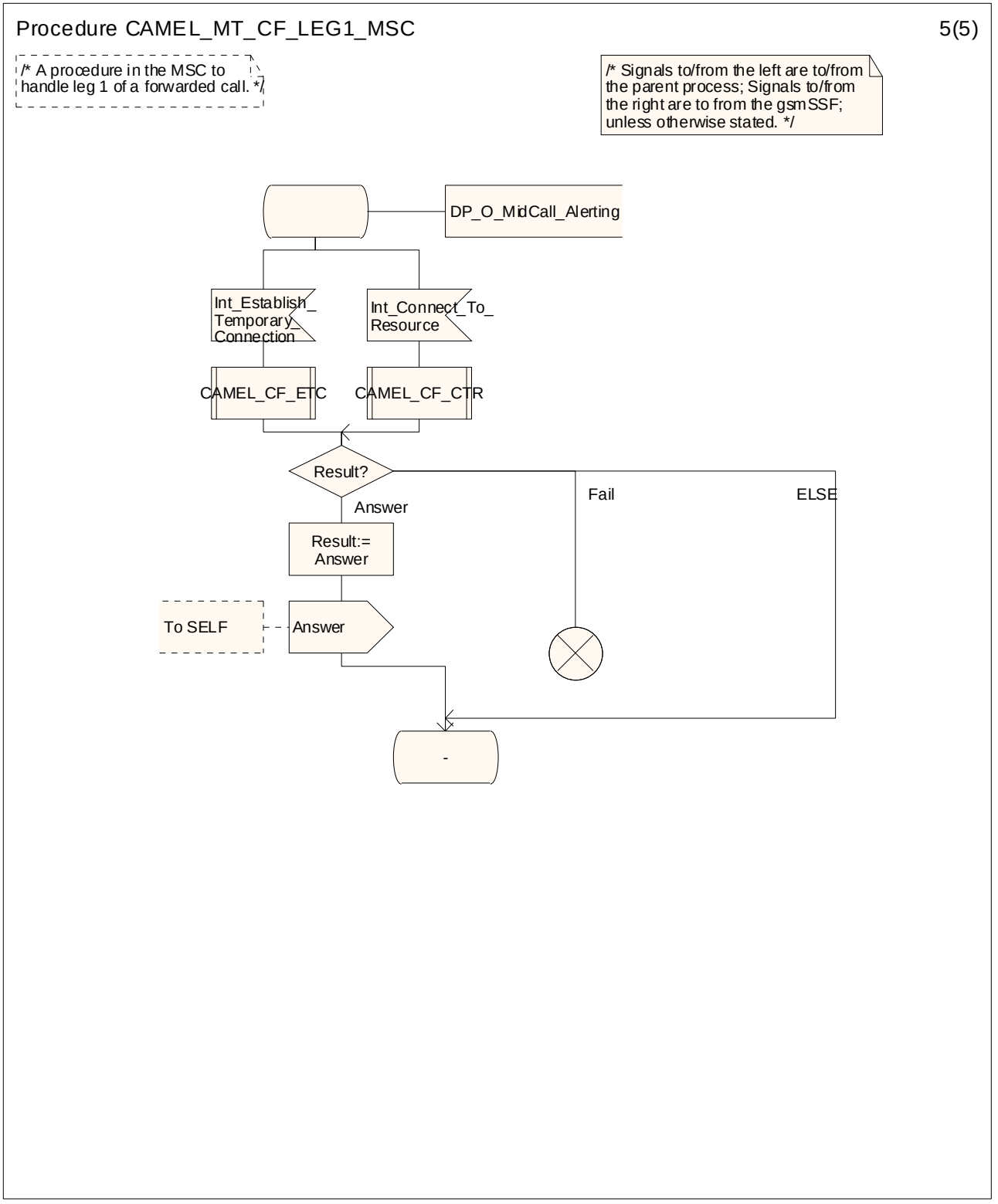


Figure 4.82-5: Procedure CAMEL_MT_CF_LEG1_MSC (sheet 5)

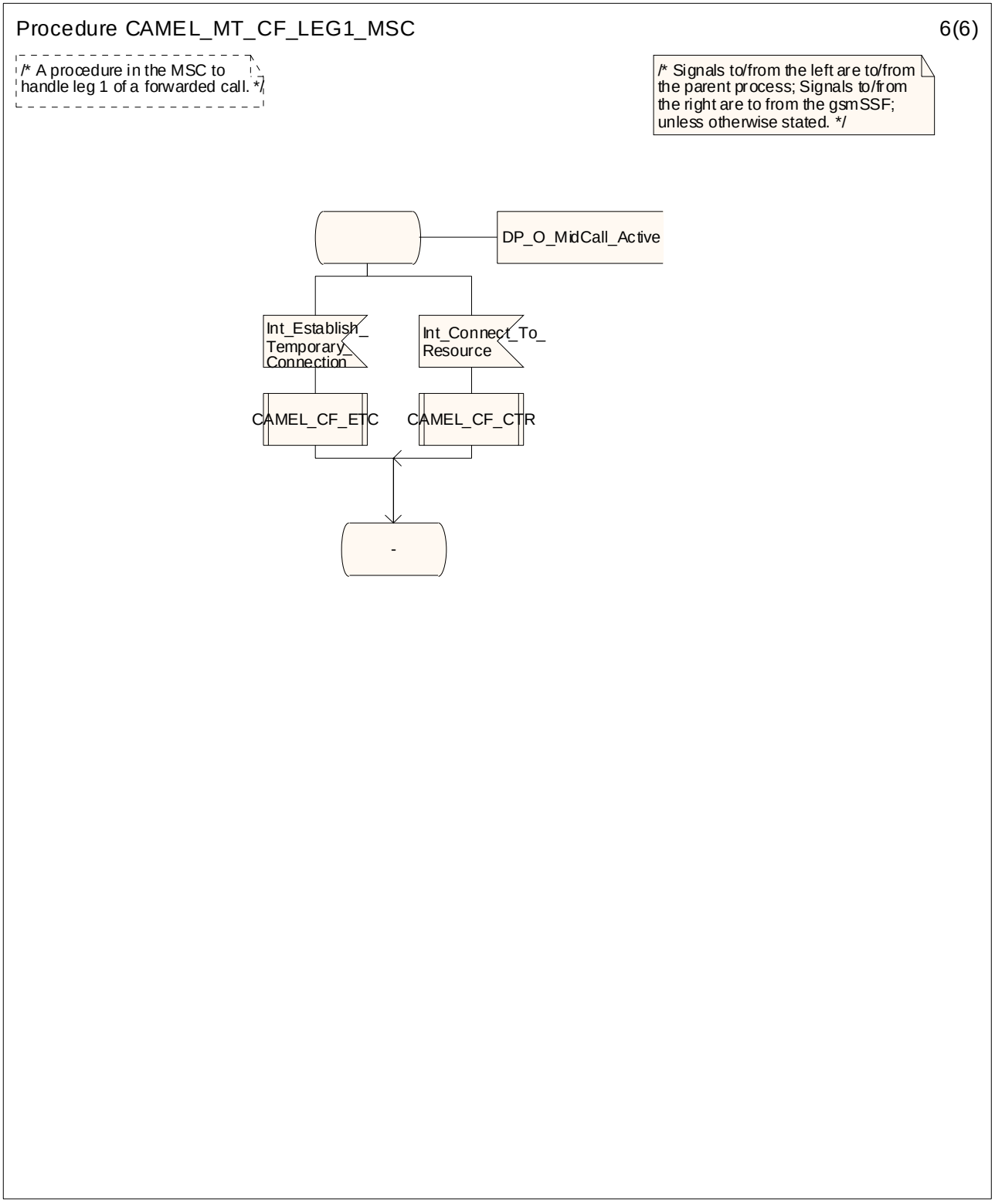


Figure 4.82-6: Procedure CAMEL_MT_CF_LEG1_MSC (sheet 6)

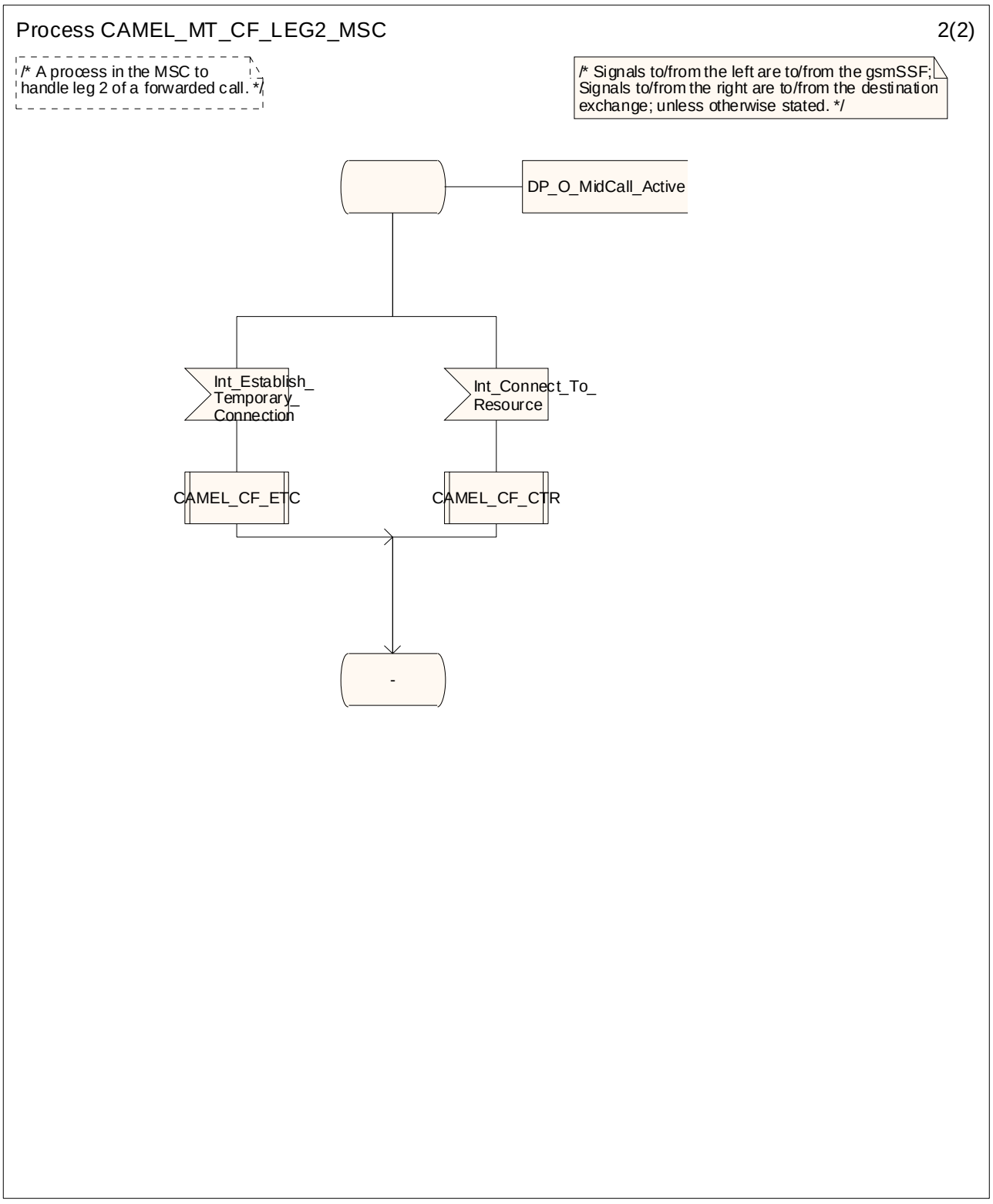


Figure 4.83-12: Process CAMEL_MT_CF_LEG2_MSC (sheet 2)

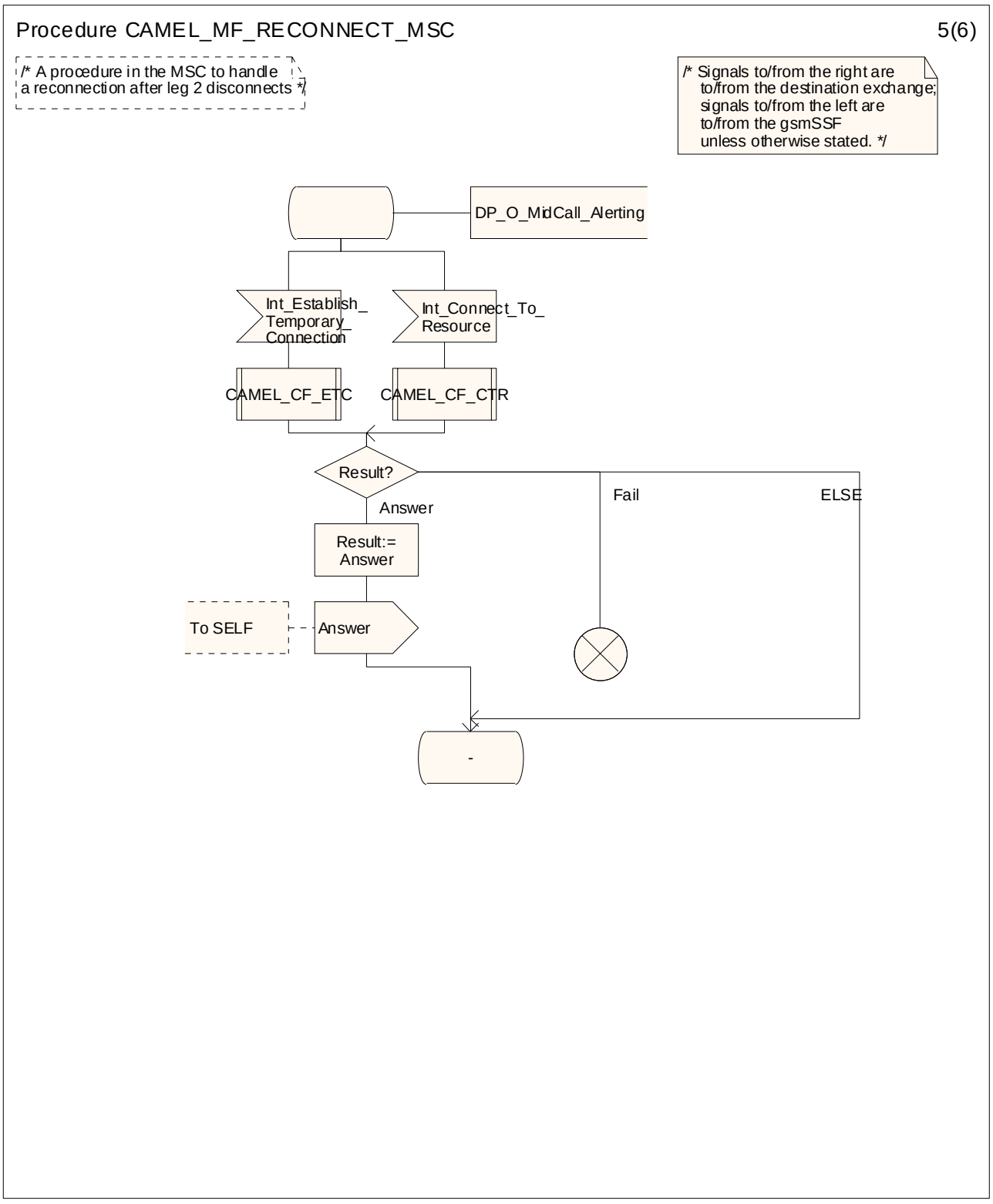


Figure 4.84-5: Procedure CAMEL_MF_RECONNECT_MSC (sheet 5)

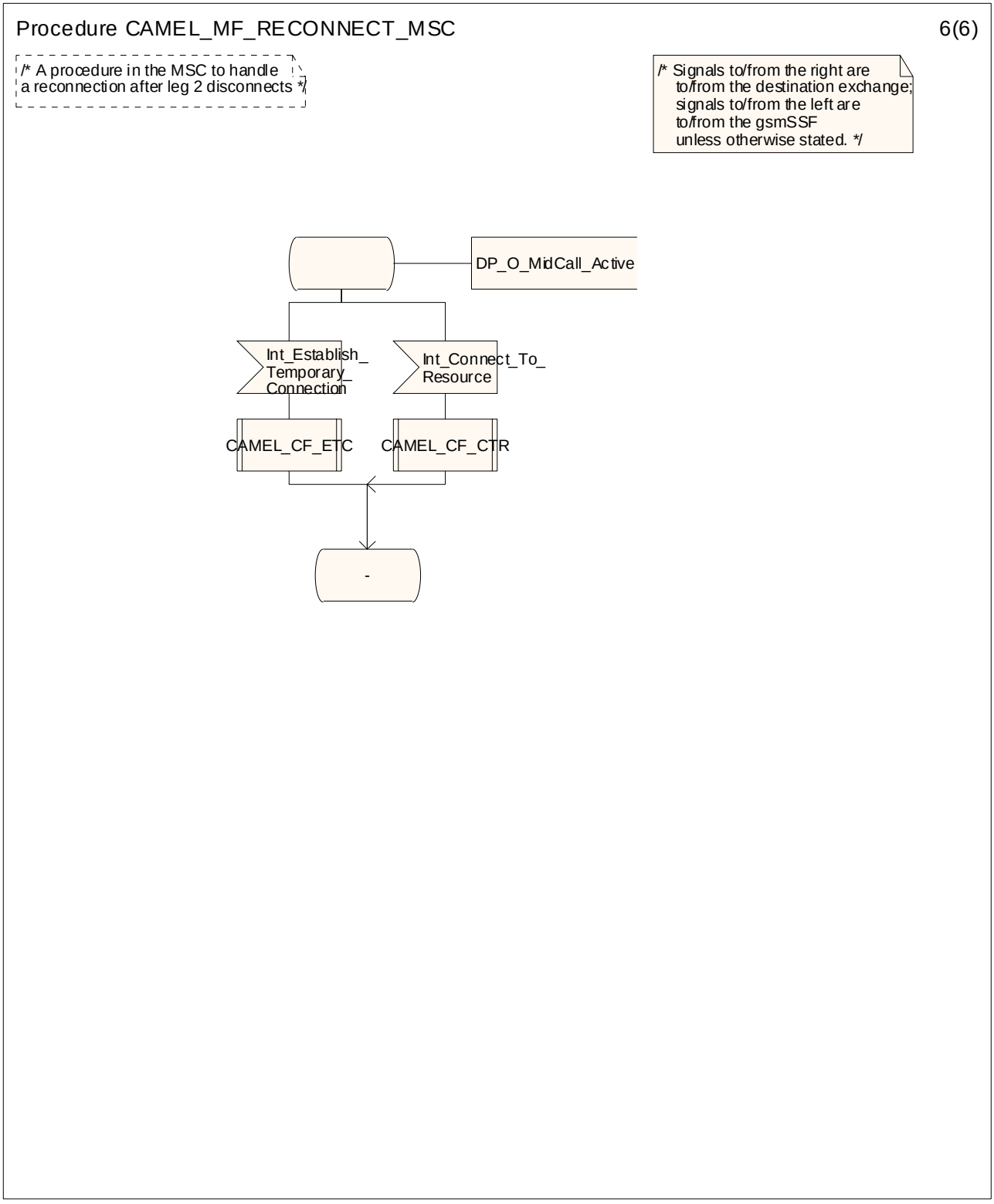


Figure 4.84-6: Procedure CAMEL_MF_RECONNECT_MSC (sheet 6)

-- Next modified section --

4.5.6 Handling of gsmSCF initiated calls

4.5.6.1 Handling of gsmSCF initiated calls in the MSC

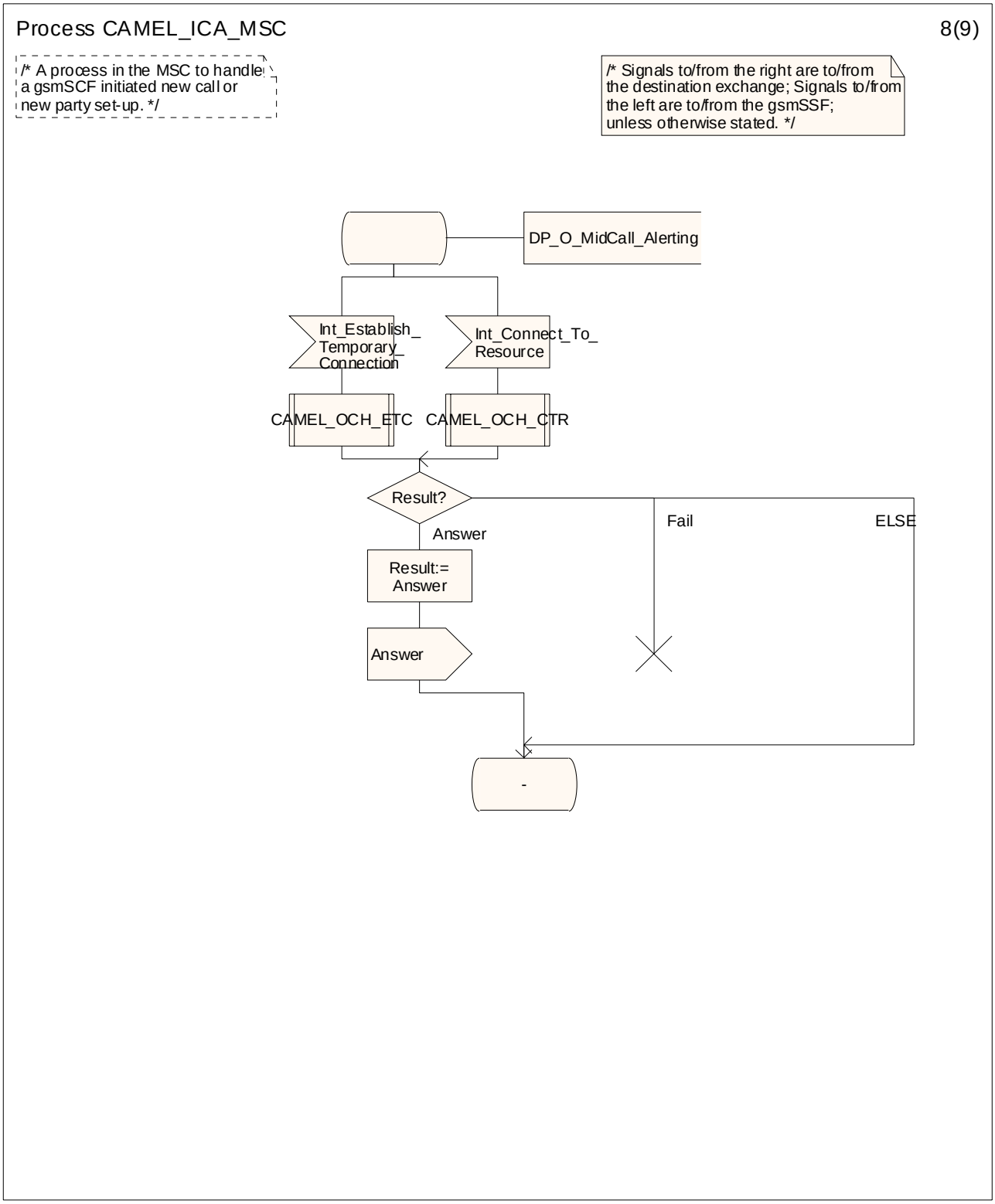


Figure 4.85-8: Process CAMEL_ICA_MSC (sheet 8)

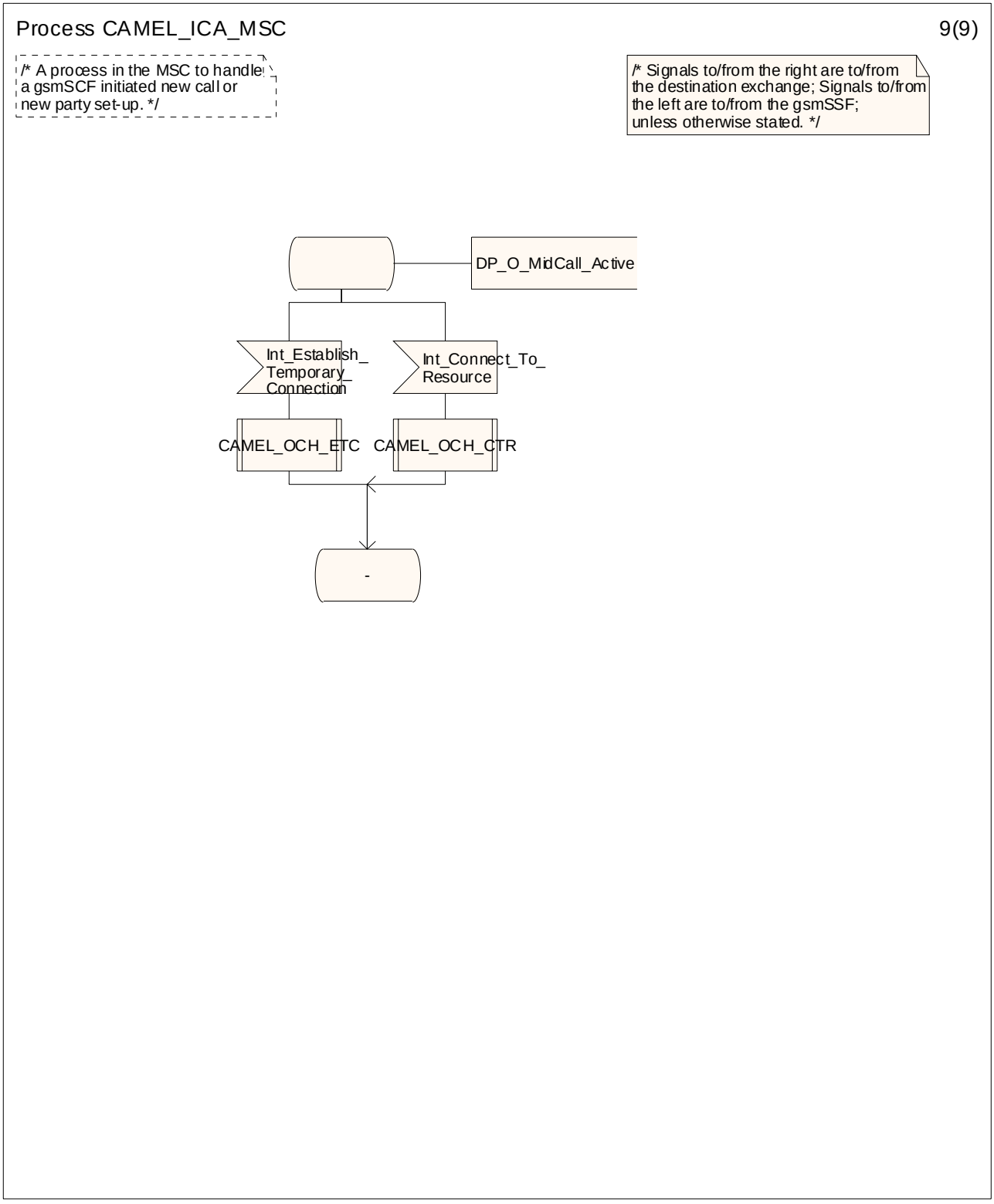


Figure 4.85-9: Process CAMEL_ICA_MSC (sheet 9)

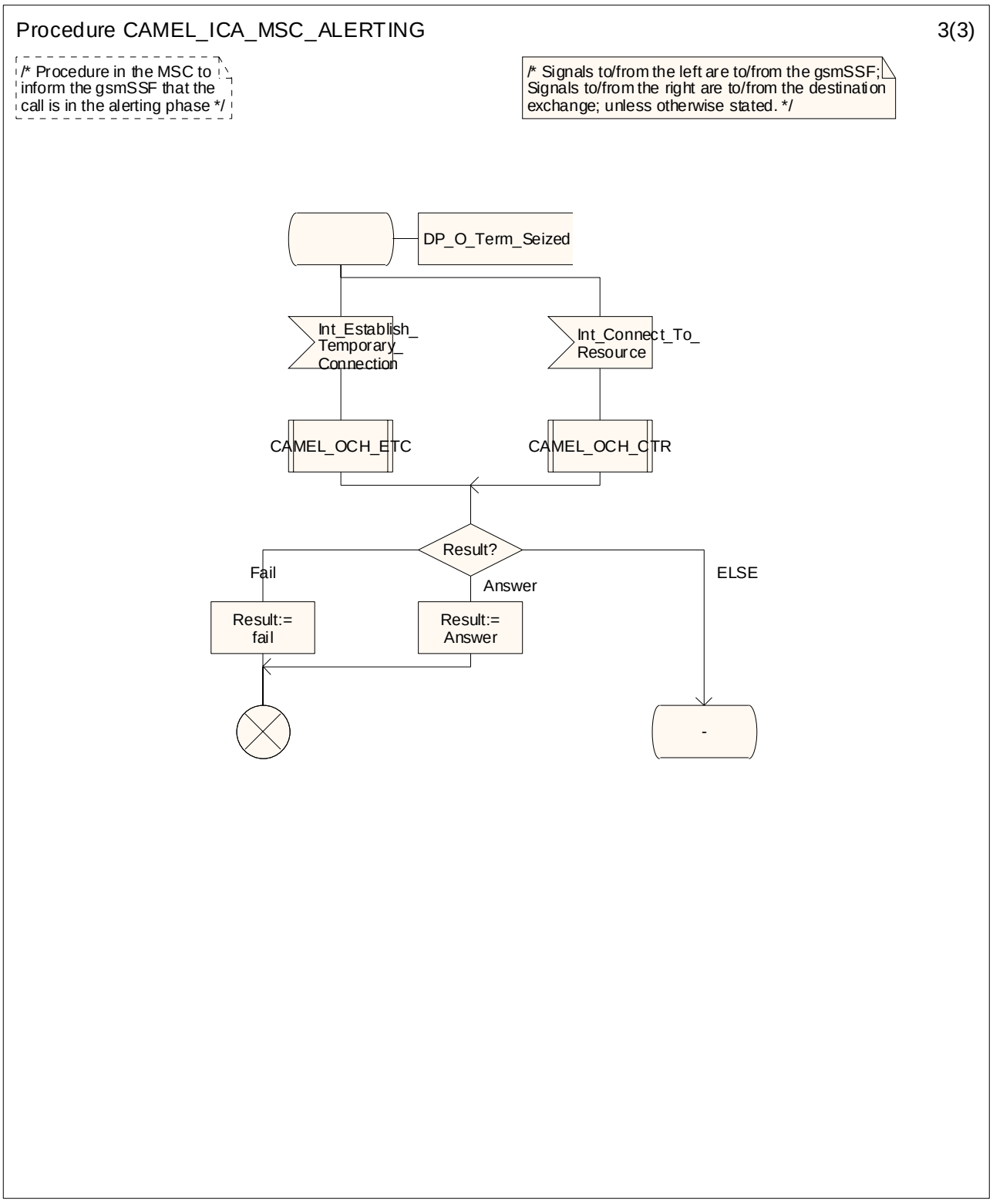


Figure 4.86-3: Process CAMEL_ICA_MSC_ALERTING (sheet 3)

3GPP TSG CN WG2 Meeting #31 **N2-030576**
Bangkok, Thailand, 27th – 31st October 2003

CHANGE REQUEST

⌘ **23.078** **CR** **644** ⌘**rev** ⌘ Current version: **5.5.1** ⌘

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

Title:	⌘	Correction to Disconnect Leg handling – gsmSSF shall send charging reports
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4 ***Date:*** ⌘ 29 October 2003
Category:	⌘	F (essential correction) ***Release:*** ⌘ Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	A service requirement for CAMEL Phase 4 is that when the gsmSCF disconnects a call party from the call segment, then the gsmSSF shall send the pending reports for that leg to the gsmSCF. Refer to the "for information" section of the present CR. It is indicated in that section that for all call leg releases (such as DP Disconnect, Release Call), the outstanding reports shall be sent to the gsmSCF. Currently, the gsmSSF does not send the pending charging reports when it receives Disconnect Leg. The present CR proposes a correction to process CS_gsmSSF, to send the pending charging reports when Disconnect Leg is received. The CS_gsmSSF shall send both Apply Charging Report (if pending) and the Call Information Report (if pending).
Summary of change:	⌘	Process CS_gsmSSF, figure 42, sheet is corrected. When CS_gsmSSF receives Disconnect Leg for a particular leg, then any outstanding reports (i.e. ACR and CIRp) for that leg shall be sent to the gsmSCF.
Consequences if not approved:	⌘	Incorrect charging for CPH calls. When the gsmSCF disconnects a call party from the call, no charging reports are generated for that call party. On-line charging services are dependent on receiving an ACR at the end of a call party connection, to finalise the charging for that call party. If no ACR is received for the call party, then that call party can not be charged adequately.

Clauses affected:	⌘	4.5.7.5
Other specs	⌘	Y: ☐ N: X Other core specifications ⌘

affected:	X Test specifications X O&M Specifications	
Other comments: ⌘		

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

--- Extract from Tdoc N2-030553, which proposes explanatory text for TS 23.078, related to leg handling ---

< start of extract >

4.4.6.3 Leg is ceased to exist

Before a leg is released and ceases to exist the corresponding connection is released. All outstanding reports for the leg are sent to the gsmSCF and the corresponding call records are closed.

For the purposes of the formal description, a leg ceases to exist when any of the following events occurs:

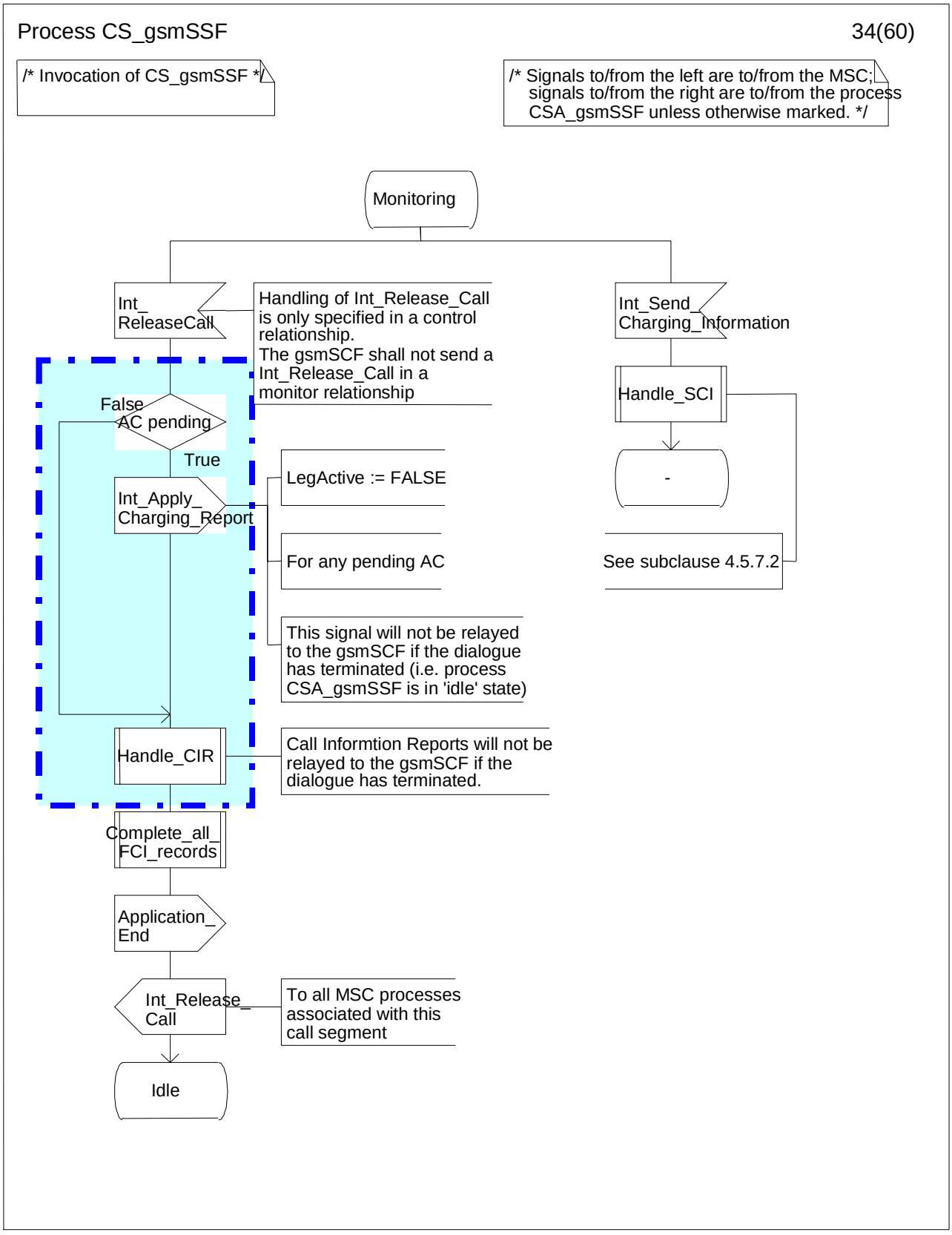
- The calling party releases the connection, the CCF sends a DP to the CS_gsmSSF and the CCF receives Int_Continue or Int_Continue_With_Argument from the CS_gsmSSF process;
- A connection to a called party is not successful (DPs Route_Select_Failure, O_Busy, O_No_Answer, T_Busy and T_No_Answer), the CCF sends a DP to the CS_gsmSSF and the CCF and the CCF does not receive Int_Connect for that outgoing leg from the CS_gsmSSF;
- The called party releases her connection, the CCF sends a DP to the CS_gsmSSF and the CCF does not receive Int_Connect for that outgoing leg from the CS_gsmSSF;
- The CCF receives Int_Disconnect_Leg from the CS_gsmSSF;
- The timer Tcp expires for a leg and the condition "Release if duration exceeded" is true for that leg;
- The CCF receives Int_Release_Call from the CS_gsmSSF.

If a call is released, either on instruction from the CS_gsmSSF or on normal call handling without any CAMEL interaction, then all legs involved in the call cease to exist.

< end of extract >

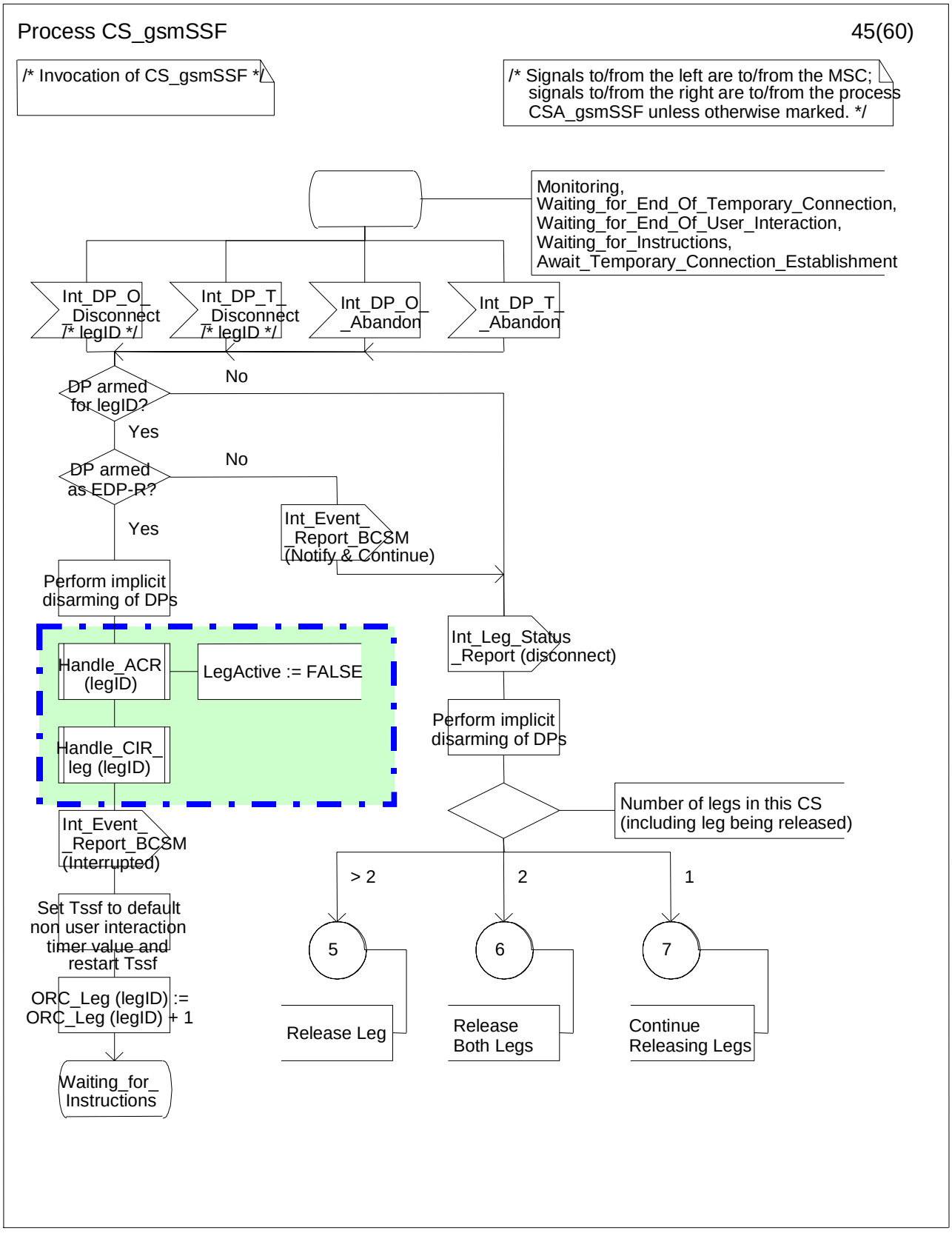
****** For Information ******

--- Figure 4.95-34: Process CS_gsmSSF (sheet 34) from TS 23.078 V5.5.1 ---



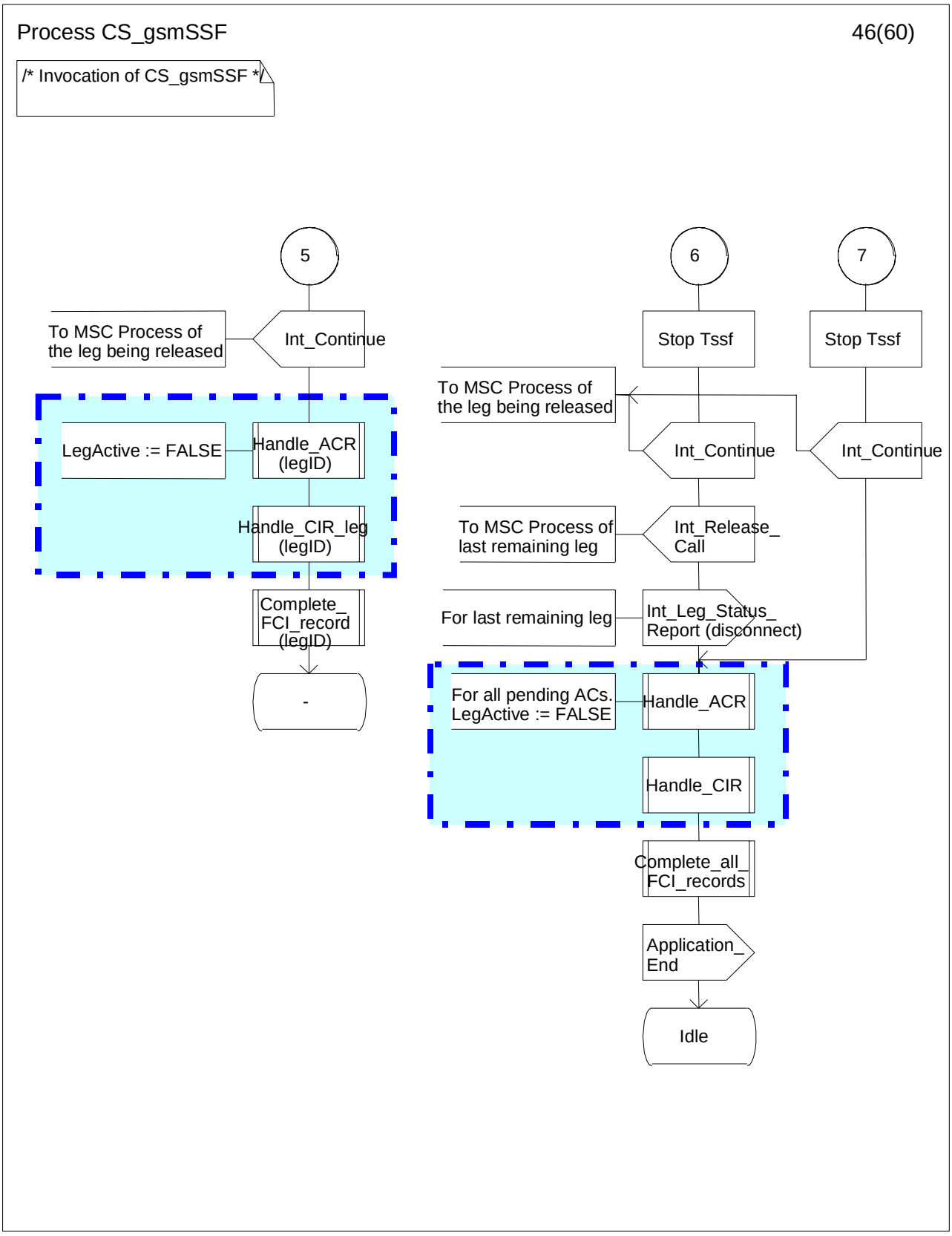
****** For Information ******

--- Figure 4.95-45: Process CS_gsmSSF (sheet 45) from TS 23.078 V5.5.1 ---



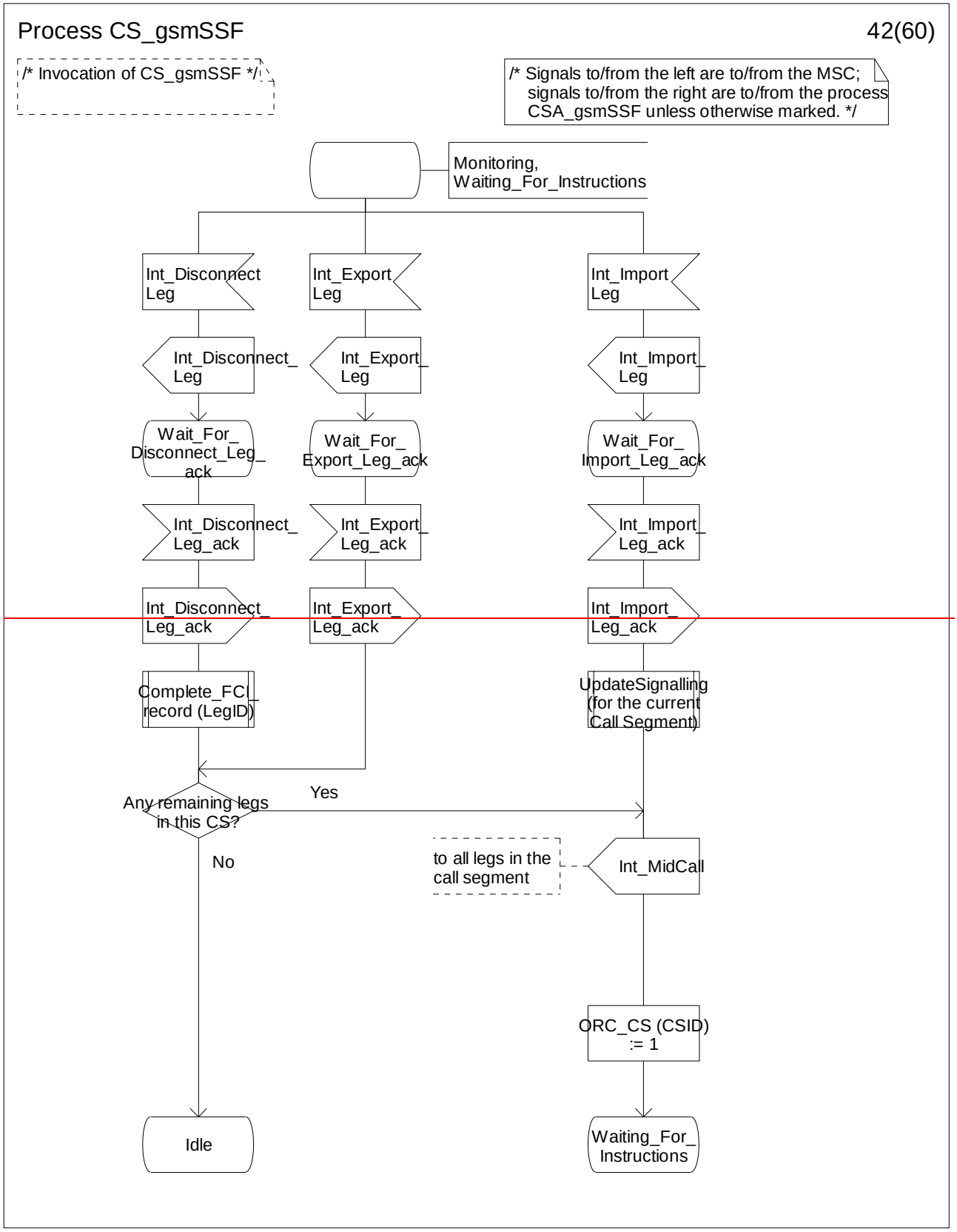
****** For Information ******

--- Figure 4.95-46: Process CS_gsmSSF (sheet 46) from TS 23.078 V5.5.1 ---



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

4.5.7.5 Process CS_gsmSSF and procedures



~~**Figure 4.95-42: Process CS_gsmSSF (sheet 42)**~~

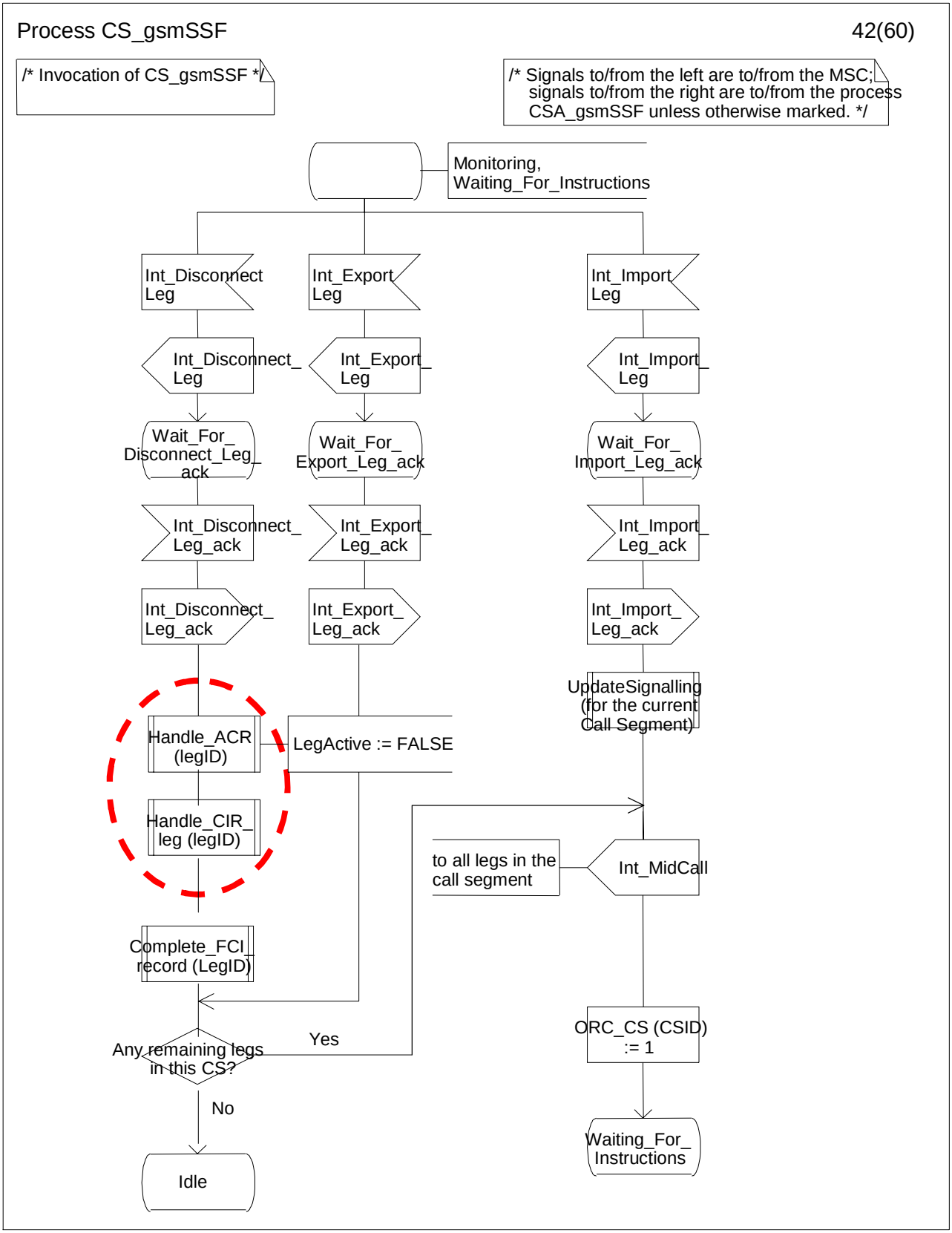


Figure 4.95-42: Process CS_gsmSSF (sheet 42)

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

3GPP TSG CN WG2#31
Bangkok, Thailand, 27 th - 31 st October, 2003

TDoc N2-030578
N2-030553rev

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **619** ⌘ **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 ☒

Title:	⌘	CAMEL Leg Handling	
Source:	⌘	Alcatel	
Work item code:	⌘	CAMEL4	***Date:*** ⌘ 30/10/2003
Category:	⌘	**F (essential correction)**	***Release:*** ⌘ Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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:	⌘	CAMEL, especially Call Party handling, is treating legs. E.g. "A call segment contains one or more legs that are controlled by the same CS_gsmSSF instance." However it is not clearly defined when a leg exists or when a leg ceases to exist. This common understanding is necessary for the communication between the gsmSSF and the gsmSCF.
Summary of change:	⌘	This CR clarifies when a leg begins to exist and when the leg ceases to exist.
Consequences if not approved:	⌘	Misunderstanding between the gsmSSF and the gsmSCF may induce interworking problems .

Clauses affected:	⌘	new subclause 4.4.6

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

Other comments: ⌘

— New section —

4.4.6 Leg Handling

A call may consist of several call parties with each party connected to the call, e.g. there may be a calling party and several called parties.

From a call handling point of view it is necessary to distinguish between a **leg**, which is a concept internal to the call handling model, and a **connection**, which is the external link to the party. A connection to the call party will be set up using telephony (e.g. ISUP) or radio access signalling. The outgoing leg already exists when the connection is set up. On the other hand, if a connection is released, e.g. because the destination user is busy, the leg still exists, and the gsmSCF can send a Connect Information Flow to connect this leg to another call party.

4.4.6.1 Leg is created

For the purposes of the formal description, one or more legs are created in the following cases:

- When a call is to be established, i.e. when an incoming Setup or ISUP IAM is being handled or when a call is to be forwarded, the incoming leg (leg1) and the outgoing leg (leg2) are created before the first CS_gsmSSF process is invoked for that call in this MSC. In particular, this applies before the Call Control Function (CCF) sends DP_Collected_Info (for originating, forwarded or deflected calls) or DP_Terminating_Attempt_Authorised (for terminating calls) to the CS_gsmSSF process;

- When the CS_gsmSSF process receives an Initiate Call Attempt Information Flow, an outgoing leg is created.

4.4.6.2 Leg continues to exist

For the purposes of the formal description, a leg continues to exist in the following cases:

- The CCF sends any DP to the CS_gsmSSF the leg will continue to exist at least until the CS_gsmSSF instructs the CCF to continue its processing for the leg;

- A connection to a called party is not successful and the gsmSCF sends a new Connect Information Flow for that leg;

- A called party releases her connection and the gsmSCF sends a new Connect Information Flow for that leg;

- The CS_gsmSSF processes either of the Call Party Handling Information Flows Move Leg and Split Leg;

4.4.6.3 Leg is released

Before a leg is released the corresponding connection is released. All outstanding reports for the leg are sent to the gsmSCF and the corresponding call records are closed.

For the purposes of the formal description, a leg ceases to exist when any of the following events occurs:

- The calling party releases the connection, the CCF sends a DP to the CS_gsmSSF and the CCF receives Int_Continue or Int_Continue_With_Argument from the CS_gsmSSF process;

- A connection to a called party is not successful (DPs Route_Select_Failure, O_Busy, O_No_Answer, T_Busy and T_No_Answer), the CCF sends a DP to the CS_gsmSSF and the CCF and the CCF does not receive Int_Connect for that outgoing leg from the CS_gsmSSF;

- The called party releases her connection, the CCF sends a DP to the CS_gsmSSF and the CCF does not receive Int_Connect for that outgoing leg from the CS_gsmSSF;

- The CCF receives Int_Disconnect_Leg from the CS_gsmSSF;

- The timer Tcp expires for a leg and the condition "Release if duration exceeded" is true for that leg;

- The CCF receives Int_Release_Call from the CS_gsmSSF.

If a call is released, either on instruction from the CS_gsmSSF or on normal call handling without any CAMEL interaction, then all legs involved in the call cease to exist.

4.4.6.4 Leg is moved

A leg can be moved from one call segment (source call segment) to another call segment (target call segment) as a result of a Move Leg or Split Leg information flow. When the CSA_gsmSSF receives a Split Leg Information Flow it creates a new call segment and moves the specified leg into this call segment. When the CSA_gsmSSF receives a Move Leg Information Flow it moves the specified leg into call segment 1.

A leg is no longer contained in the source call segment when the source CS_gsmSSF receives Int_Export_Leg_ack from the CCF.

A leg is contained in the target call segment when the target CS_gsmSSF receives Int_Import_Leg_ack from the CCF.

— END —

3GPP TSG CN WG2 Meeting #31 **N2-030579**
Bangkok, Thailand, 27th – 31st October 2003 (revision of N2-030558)

CHANGE REQUEST

⌘ **23.078** **CR** **631** ⌘ **rev** **2** ⌘ Current version: **5.5.1** ⌘

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

Title:	⌘	Correction to MAP SRI between gsmSCF and HLR – HLR shall use TS11
Source:	⌘	Ericsson
Work item code:	⌘	CAMEL4
Date:	⌘	30 October 2003
Category:	⌘	F (essential correction)
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change: ⌘ The gsmSCF may send MAP Send Routeing Information (SRI) to the HLR to obtain a mobile station roaming number (MSRN), to initiate a call to the VMSC of a served subscriber. TS 22.078 specifies that Call Party Handling operations, which includes SCP-initiated call establishment, is restricted to speech calls, i.e. Basic Service TS11.

The MAP SRI Information Flow (IF) from GMSC to HLR may include the Information Element (IE) "ISDN bearer capability" (ISDN BC). The HLR uses the ISDN BC in MAP SRI to select the required Basic Service for the call. If the ISDN BC is not present in MAP SRI, then the HLR may use an HLR-configurable default Basic Service.

When MAP SRI is sent from gsmSCF to HLR, then the IF does not contain the ISDN BC IE. Hence, the HLR does not get an indication of the required Basic Service. However, the HLR shall always use TS11 for MAP SRI from gsmSCF, notwithstanding the fact that the HLR may have a different default Basic Service value, to cater for MAP SRI without ISDN BC.

In addition, a subscriber may have multiple MSISDNs registered, with a different Basic Service associated with each MSISDN. The HLR may use the IEs ISDN BC, ISDN LLC or ISDN HLC in MAP SRI, together with the MSISDN in MAP SRI, to select the appropriate Basic Service for this call.

However, with ISDN BC, ISDN LLC and ISDN HLC not being present in MAP SRI from gsmSCF, the HLR may not always be capable to select the correct Basic Service (i.e. TS11) for the gsmSCF initiated calls.

The selection of Basic Service, based on MSISDN, ISDN BC, ISDN LLC and ISDN HLC in MAP SRI, is specified in 3GPP TS 29.007. One of the rationales of

	gsmSCF initiated calls is that the HLR shall apply standard handling of MAP SRI, when the MAP SRI is generated by the gsmSCF. Therefore, inclusion of ISDN BC, ISDN LLC and ISDN HLC in MAP SRI from gsmSCF, enables the HLR to apply the standard handling of MAP SRI, i.e. no additional rules need to be defined for MAP SRI from gsmSCF. The inclusion of ISDN BC, ISDN LLC and ISDN HLC in MAP SRI is ***Optional*** for the gsmSCF. The Service Logic in the gsmSCF shall ascertain whether the inclusion of these IEs is necessary. The inclusion of ISDN BC, ISDN LLC and ISDN HLC in MAP SRI from gsmSCF, is in line with the rationale that a pre Rel-5 HLR shall be capable of processing MAP SRI from a gsmSCF. Such HLR does not recognise the IE "gsmSCF Initiated Call" in MAP SRI and can therefore not apply specific behaviour for MAP SRI from gsmSCF. Instead, that HLR can use the ISDN BC, ISDN LLC and ISDN HLC, if present, to select the appropriate Basic Service for this call. Refer to the "for information" section of the present CR for extracts from TS 22.078 and TS 23.018.
Summary of change: ⌘	Include ISDN LLC and ISDN HLC in MAP SRI from gsmSCF.
Consequences if not approved: ⌘	An HLR may not know which Basic Service shall be selected; this may result in selection of a Basic Service other than TS11. This may hamper the deployment of gsmSCF initiated calls for subscribers with e.g. multiple MSISDNs and multiple Basic Services.

Clauses affected:	⌘	2, 4.6.15.1			
		Y	**N**		
Other specs affected:	⌘		**X**	Other core specifications	⌘
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

***** For Information – extract from 3GPP TS 23.018 V5.8.0 *****

8 Contents of messages

< … >

8.2 Messages on the C interface (MSC-HLR)

8.2.1 Send Routeing Info

The following information elements are required:

Information element name	Required	Description
MSISDN	M	MSISDN of the B subscriber (see 3GPP TS 23.003 [5]).
Alerting Pattern	C	Shall be present if received in a Connect operation from the gsmSCF; otherwise shall be absent.
CUG interlock	C	For the definition of this IE, see 3GPP TS 23.085 [18]. Shall be present if the GMSC received it in the IAM and the GMSC supports CUG, otherwise shall be absent.
CUG outgoing access	C	For the definition of this IE, see 3GPP TS 23.085 [18]. Shall be present if the GMSC received it in the IAM and the GMSC supports CUG, otherwise shall be absent.
Number of forwarding	C	Number of times the incoming call has already been forwarded. Shall be present if it was received in the IAM; otherwise shall be absent.
ISDN BC	C	ISDN bearer capability. Shall be present if the GMSC received it in the IAM, otherwise shall be absent.
ISDN LLC	C	ISDN lower layer compatibility. Shall be present if the GMSC received it in the IAM, otherwise shall be absent.
ISDN HLC	C	ISDN higher layer compatibility. Shall be present if the GMSC received it in the IAM, otherwise shall be absent.
Pre-paging supported	C	Shall be present if the GMSC supports pre-paging, otherwise shall be absent.

< … >

***** For Information – extract from 3GPP TS 22.078 V5.11.0 *****

8 Procedures for Call Party Handling

Call Party Handling (CPH) procedures only apply to speech telephony (TS11) as defined in TS 22.003 [10].

< … >

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

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

< references removed >

[1] GSM TR 03.47: "Example protocol stacks for interconnecting; Service Centre(s) (SC) and Mobile-services Switching Centre(s) (MSC)".

[2] ITU-T Recommendation Q.763, December 1999: "Signalling System No. 7 - ISDN user part formats and codes".

[3] ITU-T Recommendation Q.1224, September 1997: "Distributed Functional Plane for Intelligent Network Capability Set 2".

[44] 3GPP TS 29.007: “General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)”

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

4 Circuit switched Call Control

< … >

4.6 Description of information flows

< … >

4.6.15 gsmSCF to HLR information flows

4.6.15.1 Send Routeing Info

4.6.15.1.1 Description

This IF is defined in 3GPP TS 23.018 [12] and subclause 4.6.10.1; it is used to request information from the HLR to route a gsmSCF initiated call.

Refer to 3GPP TS 29.007 [44] for the usage of ISDN BC, ISDN LLC, ISDN HLC and MSISDN for the selection of the PLMN Basic Service.

4.6.15.1.2 Information Elements

Send Routeing Info from the gsmSCF contains the following information elements:

Information element name	Status	Description
MSISDN	M	This IE indicates the MSISDN of the called subscriber.
Alerting Pattern	O	This IE indicates the kind of Alerting Pattern to be applied.
CUG Interlock	O	For the definition of this IE, see 3GPP TS 23.085 [**Error! Reference source not found.**].
CUG Outgoing Access	O	For the definition of this IE, see 3GPP TS 23.085 [**Error! Reference source not found.**].
Suppression Of Announcement	O	This IE indicates that announcements or tones generated as a result of unsuccessful call establishment shall be suppressed.
Suppress T-CSI	M	This IE indicates that CAMEL subscription information should not be returned in the first Send Routeing Info ack (to avoid the need for a second interrogation).
Supported CAMEL Phases	O	This IE indicates the CAMEL Phases supported by the gsmSCF.
Offered CAMEL4 CSIs	S	This IE indicates the CAMEL phase 4 CSIs offered by the gsmSCF. This IE shall be present when the Supported CAMEL Phases IE is present in this IF and indicates support of CAMEL Phase 4. This IE is described in a table below.
Call Reference Number	M	This IE carries the Call Reference Number allocated for the call by the gsmSCF.
GMSC Or gsmSCF Address	M	This IE is the E.164 address of the gsmSCF.
Call Diversion Treatment Indicator	O	This IE indicates whether or not the call is allowed to be forwarded on behalf of the called party using the Call Forwarding supplementary service.
Pre-paging Supported	S	This IE shall be present if the gsmSCF supports pre-paging, otherwise it shall be absent.
Interrogation Type	M	This IE shall contain the value "Basic Call".
Long FTN Supported	O	This IE indicates that the gsmSCF supports Long Forwarded to Numbers.
gsmSCF Initiated Call	M	This IE indicates that the IF was originated by a gsmSCF.
Suppress Incoming Call Barring	O	This IE indicates that Incoming Call Barrings shall be suppressed for the called party.
Suppress VT-CSI	O	This IE indicates that VT-CSI shall be suppressed.
ISDN BC	O	ISDN bearer capability. See 3GPP TS 23.018 [12].
ISDN LLC	O	ISDN lower layer compatibility. See 3GPP TS 23.018 [12].
ISDN HLC	O	ISDN higher layer compatibility. See 3GPP TS 23.018 [12].

Offered CAMEL4 CSIs contains the following information elements:

Information element name	Status	Description
O-CSI	S	This IE indicates the offer of CAMEL phase 4 O-CSI.
D-CSI	S	This IE indicates the offer of CAMEL phase 4 D-CSI.
T-CSI	S	This IE indicates the offer of CAMEL phase 4 T-CSI.

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

3GPP TSG CN WG2#31 **TDoc N2-030584**
Bangkok, Thailand, 27 th - 31 st October, 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.078** **CR** **642** ⌘**rev** **1** ⌘ 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 ☒

Title:	⌘	Use of Continue With Argument for gsmSCF initiated calls
Source:	⌘	Alcatel
Work item code:	⌘	CAMEL4
Date:	⌘	30/10/2003
Category:	⌘	**F (essential correction)**
Release:	⌘	Rel-5

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
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 SDLs in Figure 4.95-11: Process CS_gsmSSF (sheet 11) and clause 4.5.7.4 "Outstanding Request Counter and Rules for CAMEL" are stating that for ICA resumption a Continue With Argument IF with LegId is used. However, the description in 4.6.2.9 "Continue With Argument" is in contradiction. It is stating that for resumption of the processing of an Initiate Call Attempt IF, a Call Segment ID shall be included and Leg ID shall be absent. This needs to be corrected. As ICA is used to initiate a new call with a single leg or a new call party the description for 4.6.2.9 "Continue With Argument" shall use a Leg ID as well. As this is the only leg to be continued in the ICA case, also the CS will be continued by this IF.
Summary of change:	⌘	- When Continue With Argument is used to resume the processing of an Initiate Call Attempt IF or a Call Party Handling IF, then a Leg ID shall be included and the Call Segment ID shall be absent. - Editorial: In 4.5.7.4 the term CPH operation / information flow (DisconnectLeg, SplitLeg or MoveLeg) should be used similar as defined in clause 3.1 Definitions. - Editorial: Term "operation" should be replaced by "IF" in the stage 2.
Consequences if not approved:	⌘	The handling of Continue withArgument for gsmSCF initiated calls is ambigous and the gsmSCF intitiated new call and party will not be finalised.

Clauses affected:	⌘	4.5.7.4, 4.6.2.9

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

Other comments: ⌘

— For information —

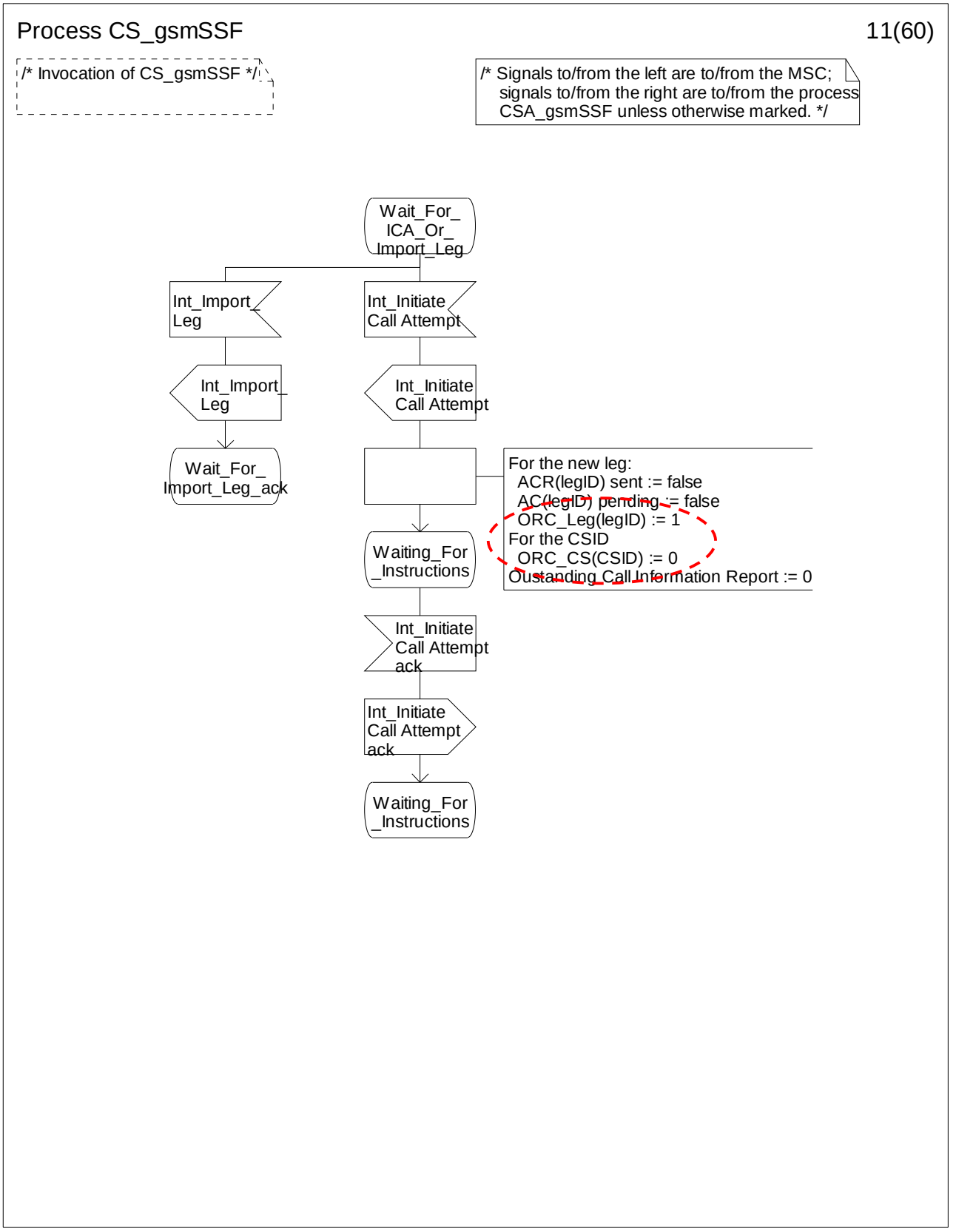


Figure 4.95-11: Process CS_gsmSSF (sheet 11)

— First modified section —

4.5.7.4 Outstanding Request Counter and Rules for CAMEL

In the following the rules on handling of the 'outstanding requests' variables in the process CS_gsmSSF are given. They are storing the number of required resumptions.

1) There shall be one outstanding requests variable ORC_Leg (legID) per leg to handle TDP-R and EDP-R reports and ICA.

2) In addition there shall be one outstanding requests variable ORC_CS (CSID) per call segment to handle the CPH ~~operation~~IFs.

3) A leg will only be resumed if the ORC_Leg (legID) variable for this leg and the ORC_CS (CSID) for the call segment containing the leg are 0.

4) Events that cause the suspension of the call processing are signalling events armed as TDP-Rs or EDP-Rs, or the processing of a CPH IF~~operation~~ (Disconnect_Leg, Split_Leg~~,~~ or Move_Leg) or Initiate_Call_Attempt~~)~~ sent by the gsmSCF.

   a) For TDP-R or EDP-R events the number of required resumptions relative to the associated leg will be incremented by 1.

   b) For CPH ~~operation~~IFs the number of required resumptions per call segment will be set to one if it is still 0. Otherwise the number of resumptions remains unchanged. For Split Leg the number of required resumptions for each of the source call segment and the target call segment will be set to one if it is still 0

   c) For ICA the number of required resumptions relative to the associated leg will be set to 1.

5) In addition the CS_gsmSSF stores information about the events (DP with the associated leg, CPH) that require resumption and keep track of the order of events for TDP-Rs and EDP-Rs for each leg . The order of resumptions for a leg shall be the order in which the suspension events occured for that leg.

6) For DP event resumption Continue with Argument with legID or Continue are valid. If not otherwise stated below, for each received resumption the number of required resumption for that leg will be decremented by 1 if it was a valid resumption for the event that has to be handled first. Decrementing of the outstanding requests variables does not go below 0.

7) For CPH resumption Continue with Argument with CSID is valid. On receipt of the resumption the number of required resumptions for that call segment will be set to 0.

8) For ICA resumption Continue with Argument with LegId is valid. On receipt of the resumption the number of required resumptions for that Leg will be set to 0.

9) The processing of a Continue with Argument with neither LegID nor CSID causes the number of all required resumptions for legs to be set to 0. All stored resumption events for legs are discarded.

10) If a Continue is received to resume a DP for O_Disconnect or for T_Disconnect the number of resumptions required for that leg will be decremented by 1. For other DPs the number of resumptions for legs is set to 0 and all stored resumption events for legs are discarded.

11) The processing of a Connect with a LegID causes the number of required resumptions for that leg to be set to 0. The processing of a Connect without a LegID causes the number of resumptions required to be set to 0 and all stored resumption events for legs are discarded.

12) The processing of Tssf expiry and of TC Abort causes the number of resumptions required to be set to 0 and the call processing to be resumed. All stored resumption events are discarded.

— Next modified section —

4.6.2.9 Continue With Argument

4.6.2.9.1 Description

This IF requests the gsmSSF to continue the call processing with modified information at the DP at which it previously suspended call processing to await gsmSCF instructions or to continue call processing after a Call Party Handling IF was received. The gsmSSF completes DP processing if necessary, and continues basic call processing (i.e. proceeds to the next point in call in the BCSM) with the modified call setup information as received from the gsmSCF.

This IF may also be used to continue call processing after an Initiate Call Attempt IF and Call Party Handling IF.

The gsmSCF can send modified call information at DP Collected_Info and at DP Analysed_Info, as listed in the MO and MF columns in subclause 4.6.2.9.2.

The gsmSCF can send modified call information at DP Termination_Attempt_Authorised, as listed in the MT and VT columns in subclause 4.6.2.9.2.

The gsmSCF can send modified call information immediately after sending an Initiate Call Attempt IF, as listed in the NC and NP columns in subclause 4.6.2.9.2.

In all other cases, Continue With Argument shall contain no other IE than Leg ID or Call Segment ID.

When this IF is used to resume the processing of an Initiate Call Attempt IF, then a Leg ID shall be included and Call Segment ID shall be absent.

When this IF is used to resume the processing of ~~an Initiate Call Attempt IF or~~ a Call Party Handling IF, then a Call Segment ID shall be included and Leg ID shall be absent.

When this IF is used to resume processing after an EDP-R or TDP-R, then a Leg ID shall be included and Call Segment ID shall be absent. The following exception exists: if this IF is used to resume processing after an EDP-R or TDP-R in one of the following scenarios:

- the CSA has one Call Segment only, which includes leg 1 only;
- the CSA has one Call Segment only, which includes leg 2 only;
- the CSA has one Call Segment only, which includes leg 1 and leg 2, but no other legs;

then, the Leg ID may be present or absent, as required by the Service Logic.

4.6.2.9.2 Information Elements

…

— Next modified section —

4.6.14 Internal MSC information flows

4.6.14.1 Perform Call Forwarding ack

4.6.14.1.1 Description

This IF is defined in 3GPP TS 23.018 [12]; it is used to inform the MSC that Call Forwarding is taking place.

4.6.14.1.2 Information Elements

Perform Call Forwarding ack is defined in 3GPP TS 23.018 [12]. The following differences apply:

Information element name	Status	Description
Forwarded-to Number	M	If the Forwarded-to Number is not available due to CAMEL handling (a Disconnect Leg ~~operation~~ IF has been received for Leg 2), then the MSC shall populate this parameter with a dummy number.

— END —