3GPP TSG CN Plenary Meeting #18 **NP-020599**
4th – 6th December 2002 New Orleans, USA.

Source: TSG CN WG4

Title: Small Technical Enhancements and Improvements for MAP specification Rel-5

Agenda item: 8.8

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	442	3	N4-021299	Rel-5	Description of MT SM delivery via two serving nodes	F	5.3.0
29.002	475		N4-021124	Rel-5	ODB and CB for SMS	F	5.3.0
29.002	486		N4-021153	Rel-5	Correction of IMEI check for SGSN	F	5.3.0
29.002	489	5	N4-021467	Rel-5	Available codecs list and selected codec indication	F	5.3.0
29.002	521	1	N4-021524	Rel-5	Editorial clean-up	F	5.3.0

3GPP TSG CN WG2 Meeting #25 ***N2-020928***
Miami, Florida, USA, 23rd – 27th September 2002 **(Revision of *N2-020708*)**

3GPP TSG CN WG4 Meeting #14 ***N4-021299***
Miami, Florida, USA, 23rd – 27th September 2002 **(Revision of *N4-020979*)**

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **442** ⌘ **rev** **3** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	Description of MT SM delivery via two serving nodes
Source:	⌘	CN4
Work item code:	⌘	TEI5
Date:	⌘	17/07/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	The current SDL description of the behaviour of the SMS-GMSC does not define the behaviour of the SMS-GMSC when it tries to deliver a short message via two serving nodes. Further, the interworking with CAMEL is not properly specified for the case when the SMS-GMSC is integrated with the VMSC. This is proposed as a non-critical correction, agreed by consensus
Summary of change:	⌘	Replace the current SDL description of the SMS-GMSC behaviour to show the possibility of delivery attempts via two serving nodes, and to define the interworking with CAMEL for the case when the SMS-GMSC is integrated with the VMSC.
Consequences if not approved:	⌘	Misalignment between stage 2 (TS 23.040), text and SDL of TS 29.002. Missing definition of CAMEL interworking for MT SMS delivery from the SMS-GMSC to the MS

Clauses affected:	⌘	Figures 23.3/1 & 23.3/2; 23.3.1; Figures 23.3/3 & 23.3/4; 23.3.4; Figure 23.3/7; Figure 23.3/7a (new)

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

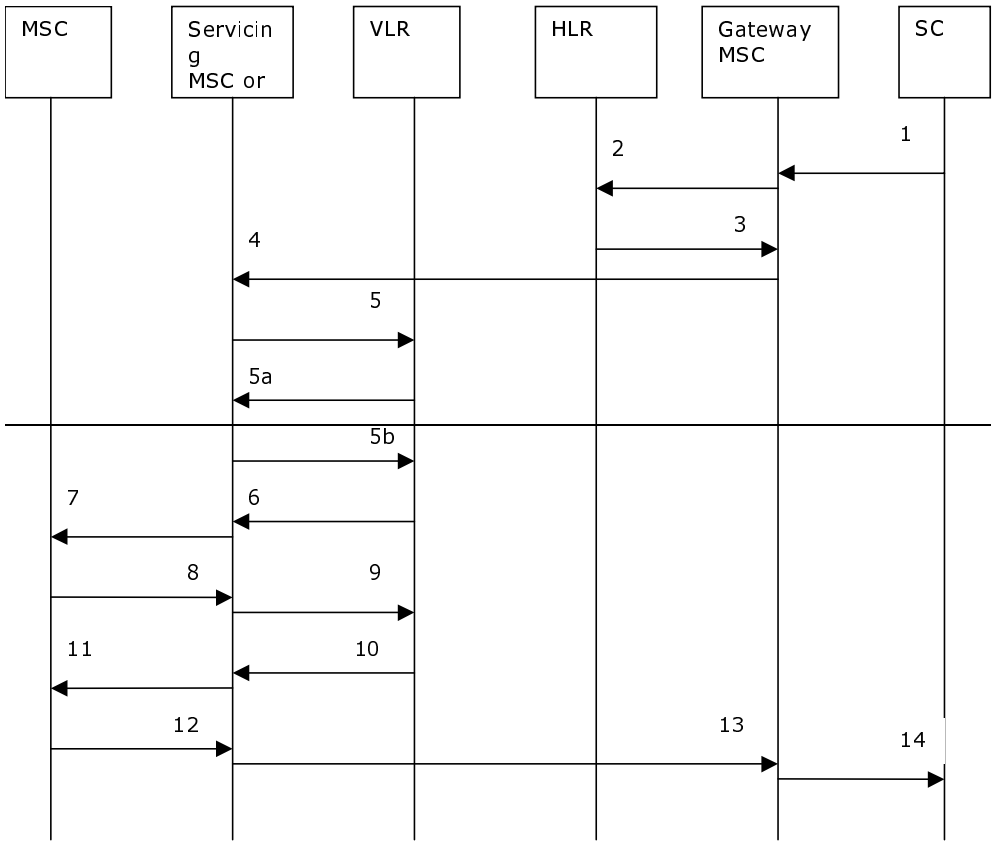
Other comments:	⌘	Editorial cleanup has been applied to the SDL diagrams for the process MTSM_VMSC and the macro MT_SM_Transfer_MSC; this includes some

	changes of state names. The process name "MTSM_VMSC" has been systematically changed to "MT_SM_VMSC", to align with the naming convention used for other processes and macros. The term "servicing MSC" has been systematically replaced by "serving MSC". In the message flow diagrams, the entity at the left of each diagram has been corrected from "MSC" to "MS" In the SDL diagrams, the orientation of signal inputs and outputs has been set consistently. The page naming convention for SDL diagrams has been changed.

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

23.3 The mobile terminated short message transfer procedure

The mobile terminated short message transfer procedure is used for forwarding a short message or several short messages from a Service Centre to a mobile subscriber. The mobile terminated short message procedure for a single short message transfer is shown in figure 23.3/1.



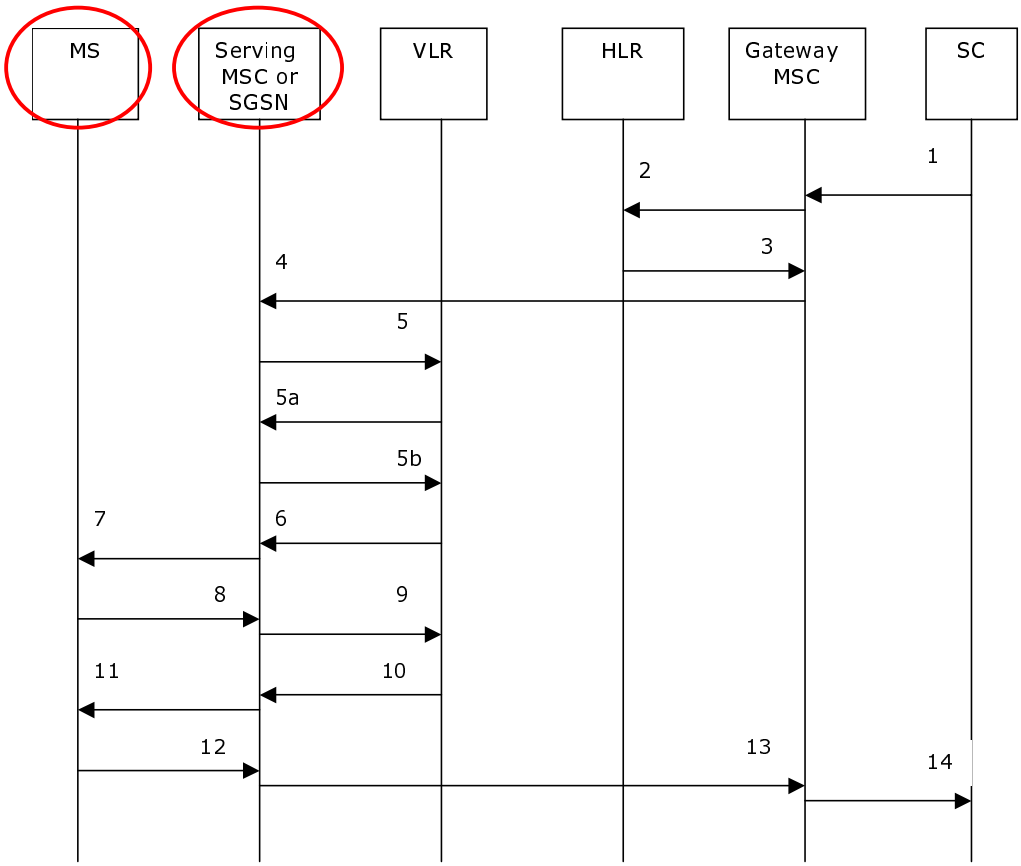
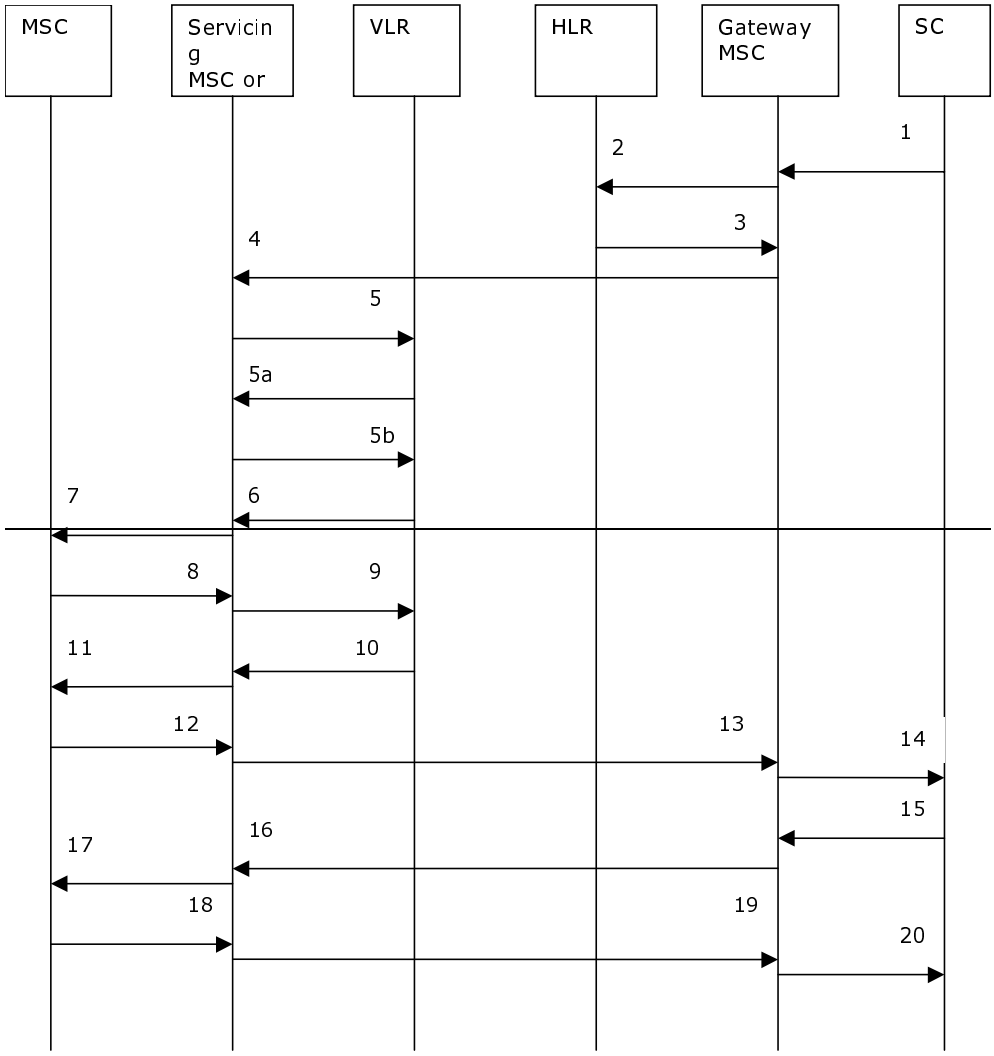


Figure 23.3/1: Mobile terminated short message service procedures

1) Short Message (3GPP TS 23.140).
2) MAP_SEND_ROUTING_INFO_FOR_SM.
3) MAP_SEND_ROUTING_INFO_FOR_SM_ACK.
4) MAP_MT_FORWARD_SHORT_MESSAGE.
5) MAP_SEND_INFO_FOR_MT_SMS (*).
5a) MAP_CONTINUE_CAMEL_SMS_HANDLING (*)(**)
5b) MAP_SEND_INFO_FOR_MT_SMS (*)(**)
6) MAP_PAGE/MAP_SEARCH_FOR_MOBILE_SUBSCRIBER (*).
7) Page (3GPP TS 24.008 [35]).
8) Page response (3GPP TS 24.008 [35]).
9) MAP_PROCESS_ACCESS_REQUEST_ACK and MAP_SEARCH_FOR_MOBILE_SUBSCRIBER_ACK (*).
10) MAP_SEND_INFO_FOR_MT_SMS_ACK (*).
11) Short Message (3GPP TS 24.011 [37]).
12) Short Message Acknowledgement (3GPP TS 24.011 [37]).
13) MAP_MT_FORWARD_SHORT_MESSAGE_ACK.
14) Short Message Acknowledgement (3GPP TS 23.140).

(*) Messages 5), 5a), 5b), 6), 9), and 10) are not used by the SGSN.
(**) These messages are used only for a subscriber provisioned with MT-SMS-CSI in the VLR.

The mobile terminated short message procedure for multiple short message transfer is shown in figure 23.3/2.



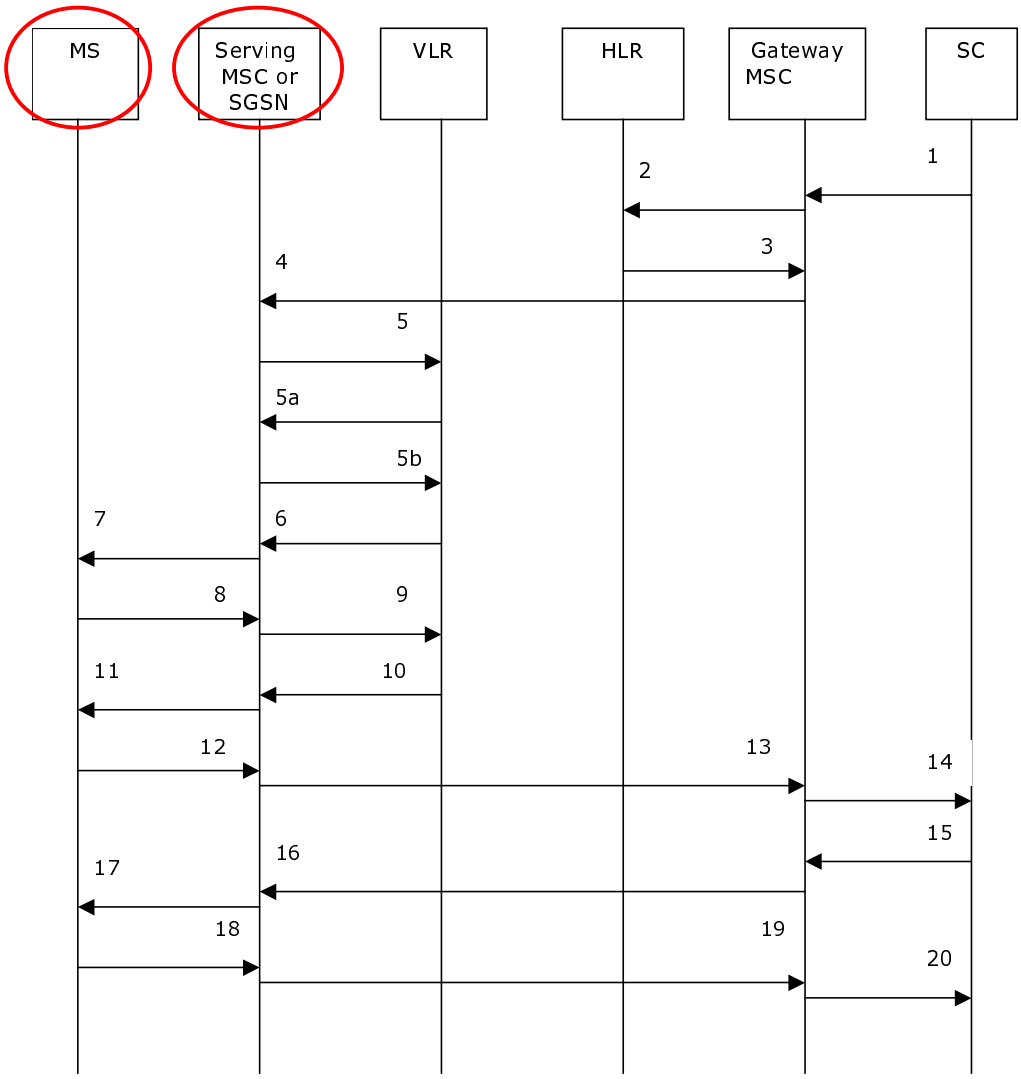


Figure 23.3/2: Mobile terminated short message procedure for multiple short message transfer

1) Short Message (3GPP TS 23.140).
2) MAP_SEND_ROUTING_INFO_FOR_SM.
3) MAP_SEND_ROUTING_INFO_FOR_SM_ACK.
4) MAP_MT_FORWARD_SHORT_MESSAGE (note 1).
5) MAP_SEND_INFO_FOR_MT_SMS (*).
5a) MAP_CONTINUE_CAMEL_SMS_HANDLING (*)(**)
5b) MAP_SEND_INFO_FOR_MT_SMS (*)(**)
6) MAP_PAGE/MAP_SEARCH_FOR_MOBILE_SUBSCRIBER (*).
7) Page (*3GPP TS 48.008 [49]*).
8) Page response (3GPP TS 24.008 [35]).
9) MAP_PROCESS_ACCESS_REQUEST_ACK and MAP_SEARCH_FOR_MOBILE_SUBSCRIBER_ACK (*).
10) MAP_SEND_INFO_FOR_MT_SMS_ACK (*).
11) Short Message (3GPP TS 24.011 [37]).
12) Short Message Acknowledgement (3GPP TS 24.011 [37]).
13) MAP_MT_FORWARD_SHORT_MESSAGE_ACK.
14) Short Message Acknowledgement (3GPP TS 23.140).
15) Short Message (3GPP TS 23.140).
16) MAP_MT_FORWARD_SHORT_MESSAGE (note 2).
17) Short Message (3GPP TS 24.011 [37]).
18) Short Message Acknowledgement (3GPP TS 24.011 [37]).
19) MAP_MT_FORWARD_SHORT_MESSAGE_ACK.
20) Short Message Acknowledgement (3GPP TS 23.140).

(*) Messages 5), 5a), 5b) 6), 9), and 10) are not used by the SGSN.
(**) These messages are used only for a subscriber provisioned with MT-SMS-CSI in the VLR.

NOTE 1: The “More Messages To Send” flag is TRUE.
NOTE 2: The “More Messages To Send” flag is FALSE.

In the multiple short message transfer the service MAP_MT_FORWARD_SHORT_MESSAGE can be used several times. However, the short message transfer is always acknowledged to the Service Centre before the next short message is sent.

In addition the following MAP services are used:

MAP_PROCESS_ACCESS_REQUEST	(see clause 8.3); (*)
MAP_PAGE	(see clause 8.2); (*)
MAP_SEARCH_FOR_MS	(see clause 8.2); (*)
MAP_AUTHENTICATE	(see clause 8.5); (*)
MAP_SET_CIPHERING_MODE	(see clause 8.6); (*)
MAP_CHECK_IMEI	(see clause 8.7);
MAP_FORWARD_NEW_TMSI	(see clause 8.9); (*)
MAP_REPORT_SM_DELIVERY_STATUS	(see clause 12.3);
MAP_INFORM_SERVICE_CENTRE	see clause 12.6);
MAP_TRACE_SUBSCRIBER_ACTIVITY	(see clause 9.1); (*)
MAP_READY_FOR_SM	(see clause 12.4).

(*) Those messages are not used by SGSN.

23.3.1 Procedure in the Servicing MSC

When initiating the dialogue with the servicing MSC, the SMS-Gateway MSC must provide the IMSI of the subscriber to whom the short message is directed.

The IMSI can be included either in the Destination Reference of the MAP_OPEN indication received from the SMS-Gateway MSC or in the sm-RP-DA information field of the MAP_MT_FORWARD_SHORT_MESSAGE indication.

When receiving a MAP_OPEN indication primitive that is not associated with any MAP service indication primitive and if the dialogue is accepted, the MAP service-user in the servicing MSC issues a MAP_DELIMITER request primitive in order to trigger the local MAP service-provider to confirm the dialogue.

When receiving the first MAP_MT_FORWARD_SHORT_MESSAGE indication from the gateway SMS-GMSC, the servicing MSC sends the MAP_SEND_INFO_FOR_MT_SMS request primitive to the VLR, if the MAP service primitive is accepted and if short message service is supported in the servicing MSC.

The MAP_MT_FORWARD_SHORT_MESSAGE indication primitive is checked by the macro "Check_Indication". If the received MAP service primitive contains errors, the service is aborted and an unexpected data value error or data missing error is returned to the GMSC.

If the MSC does not support the short message service, the service is aborted in the servicing MSC and the error "Facility Not Supported" is returned to the GMSC.

The subscriber identity information that may be included in the MAP_OPEN indication primitive and in the MAP service indication primitive is checked by the macro "Check_Subscr_Identity_For_MT_SMS" as follows.

If a Destination Reference has been received in the MAP_OPEN indication, an LMSI must be present in the sm-RP-DA information field of the MAP_MT_FORWARD_SHORT_MESSAGE indication. The LMSI shall be included in the sm-RP-DA information field of the MAP_SEND_INFO_FOR_MT_SMS request sent to the VLR; the associated MAP_OPEN request must contain a Destination Reference that carries an IMSI.

Otherwise, if the IMSI is included in the sm-RP-DA information field of the MAP_MT_FORWARD_SHORT_MESSAGE indication, it is mapped into the sm-RP-DA information field of the

MAP_SEND_INFO_FOR_MT_SMS request that is sent to the VLR. In this case, the IMSI is not accompanied by an LMSI and neither the MAP_OPEN indication received from the ~~gateway~~ SMS-GMSC nor the MAP_OPEN request sent to the VLR shall include a Destination Reference.

If a Destination Reference has been received in the serv~~ic~~ing MSC and the sm-RP-DA information field of the MAP_MT_FORWARD_SHORT_MESSAGE indication does not include an LMSI or if no Destination Reference has been received and the sm-RP-DA information field does not cover an IMSI the service is aborted in the serv~~ic~~ing MSC and the error "Unexpected Data Value" is returned to the SMS GMSC.

The following responses to the MAP_SEND_INFO_FOR_MT_SMS request may be received from the VLR:

- unidentified subscriber or system failure error. The error code is forwarded to the GMSC;
- absent subscriber error. The absent subscriber_SM error is forwarded to the GMSC with the absent subscriber diagnostic indication set to 'IMSI Detached';
- unknown subscriber error. The system failure indication is provided to the GMSC;
- data missing or unexpected data value error. The system failure indication is provided to the GMSC;
- a provider error or an abort indication. The system failure indication is provided to the GMSC;
- subscriber busy for MT SMS. The error code is forwarded to the GMSC;
- paging procedure invocation (see clause 25.3) reporting the successful outcome of the procedure;
- search procedure invocation (see clause 25.3) reporting the successful outcome of the procedure.

The result of the paging or the search procedure is processed as follows:

- if the procedure is completed successfully, the MSC will send the MAP_PROCESS_ACCESS_REQUEST request to the VLR (see clause 25.4);
- if the procedure is completed successfully, but the MS has no mobile terminated short message transfer capability, the procedure is terminated and SM delivery failure indication with cause "equipment not SM equipped" is provided to the GMSC;
- if the procedure ends unsuccessfully, the termination of the procedure is awaited from the VLR. The absent subscriber_SM error is forwarded to the GMSC with the absent subscriber diagnostic indication set to 'No Paging Response', but the other error causes are reported as a system failure indication.

If the short message transfer is aborted for any reason, the dialogue with the VLR is aborted. If the procedure with the VLR is aborted by the VLR or by the provider, a system failure indication is provided to the GMSC.

The unsuccessful outcome of the MAP_PROCESS_ACCESS_REQUEST service is reported by using the system failure error to the GMSC.

When the service MAP_PROCESS_ACCESS_REQUEST is carried out, the MSC will receive the MAP_SEND_INFO_FOR_MT_SMS confirmation indicating:

- the unsuccessful outcome of the procedure. The error indication received from the VLR is forwarded to the GMSC;
- the successful outcome of the procedure. The MSC initiates forwarding of the short message to the MS.

The MSC may receive MAP_CONTINUE_CAMEL_SMS_HANDLING. The MSC then opens a CAMEL dialogue with the gsmSCF, as specified in 3GPP TS 23.078. If the CAMEL service bars the MT SM, then the failure is reported to the SMS-GMSC, and the MT SM is not delivered to the MS. Otherwise, the MSC shall send a second MAP_SEND_INFO_FOR_MT_SMS request to the VLR.

If the primitive itself is badly formatted or data is missing, the system failure error is sent to the GMSC.

If forwarding of the short message is initiated, the MSC awaits the result before one of the following responses is sent back to the GMSC:

- an acknowledgement if the short message has been successfully delivered to the mobile subscriber. The successful MT SM delivery is reported to the gsmSCF as specified in 3GPP TS 23.078;

- an SM delivery failure error containing a parameter indicating either of the following: there is a MS protocol error or the MS memory capacity is exceeded; detailed diagnostic information (see clause 7.6.1.4) may also be carried. The failure in the MT SM delivery is reported to the gsmSCF as specified in 3GPP TS 23.078;

- a system failure error if the delivery procedure is aborted. The failure in the MT SM delivery is reported to the gsmSCF as specified in 3GPP TS 23.078.

If the More Messages To Send flag was FALSE or the service MAP_MT_FORWARD_SHORT_MESSAGE ends unsuccessfully, the transaction to the ~~gateway~~ SMS-GMSC is terminated. If the More Messages To Send flag was TRUE, ~~-~~then the serv~~ic~~ing MSC waits for the next short message from the Service Centre.

When receiving the next MAP_MT_FORWARD_SHORT_MESSAGE indication from the ~~gateway~~ SMS-GMSC the serv~~ic~~ing MSC will act as follows:

- if the received primitive contains errors, then the unexpected data value error or data missing error is provided to the ~~gateway~~ SMS-GMSC;

- The MSC opens a CAMEL dialogue as specified in 3GPP TS 23.078 for each SM. If the CAMEL service bars the MT SM, then the failure is reported to the GMSC, and the MT SM is not delivered to the MS.

- if the More Messages To Send flag is FALSE, then the serving MSC will start the short message transfer procedure to the mobile subscriber. The successful or unsuccessful outcome of this procedure is reported to the gsmSCF as specified in 3GPP TS 23.078 and to the ~~gateway~~ SMS-GMSC and the transaction is terminated.

- if the More Messages To Send flag is TRUE, then the serving MSC will start the short message transfer to the mobile subscriber. If the outcome of this procedure is unsuccessful, then the SM delivery failure is reported to the gsmSCF and the the reason is reported to the ~~gateway~~ SMS-GMSC and the procedure is terminated. If the procedure is successful, then the MT SM delivery is reported to the gsmSCF as specified in 3GPP TS 23.078, and it is acknowledged to the ~~gateway~~ SMS-GMSC and more short messages can be received.

The tracing procedure may be activated. It is described in detail in ~~the~~ clause 25~~0~~.

The mobile terminated short message transfer procedure in the serv~~ic~~ing MSC is shown in figures 23.3/3 and 23.3/4. The page and search procedures are shown in figures 25.3/1 and 25.3/2.

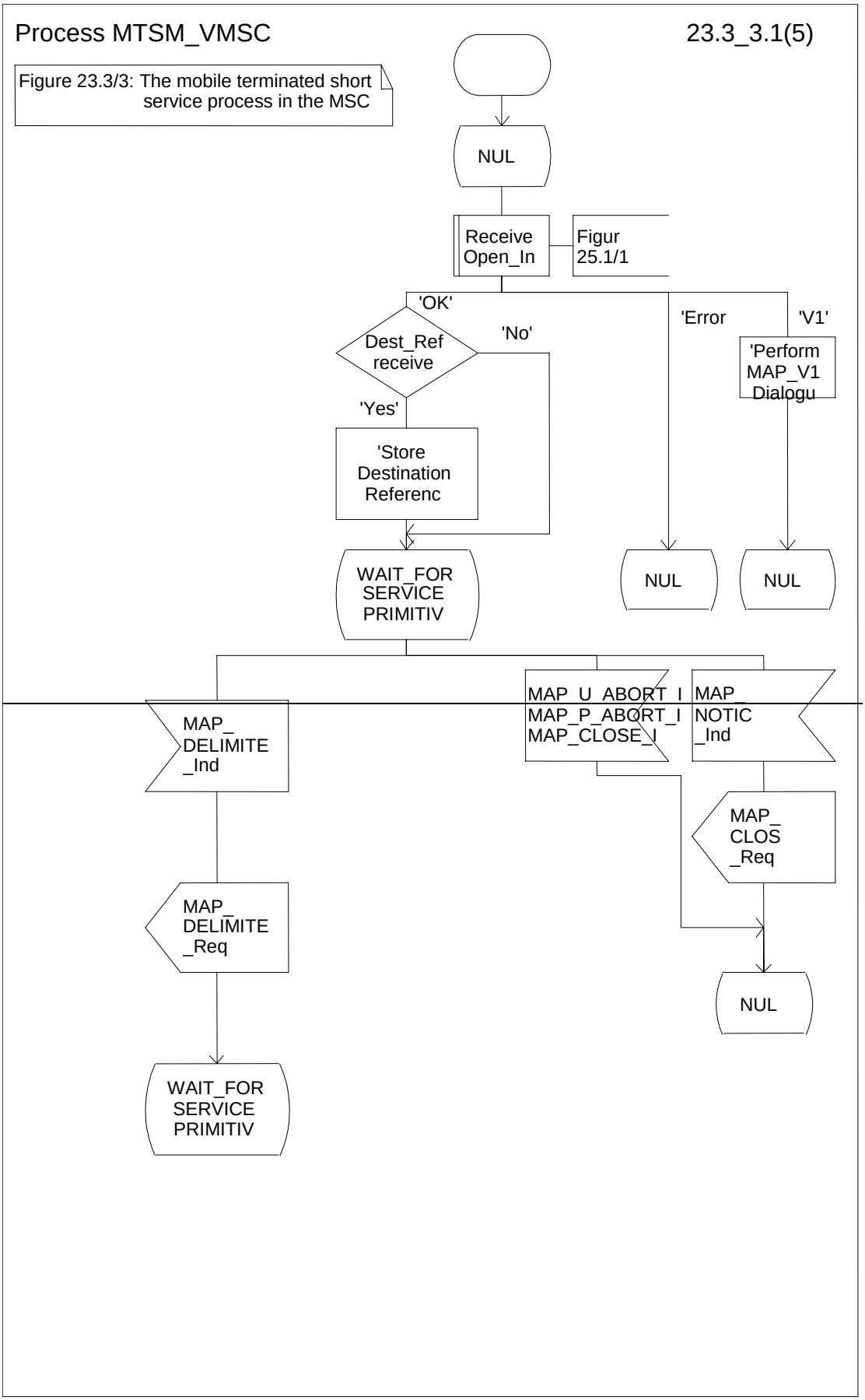


Figure 23.3/3: The mobile terminated short service process in the MSC

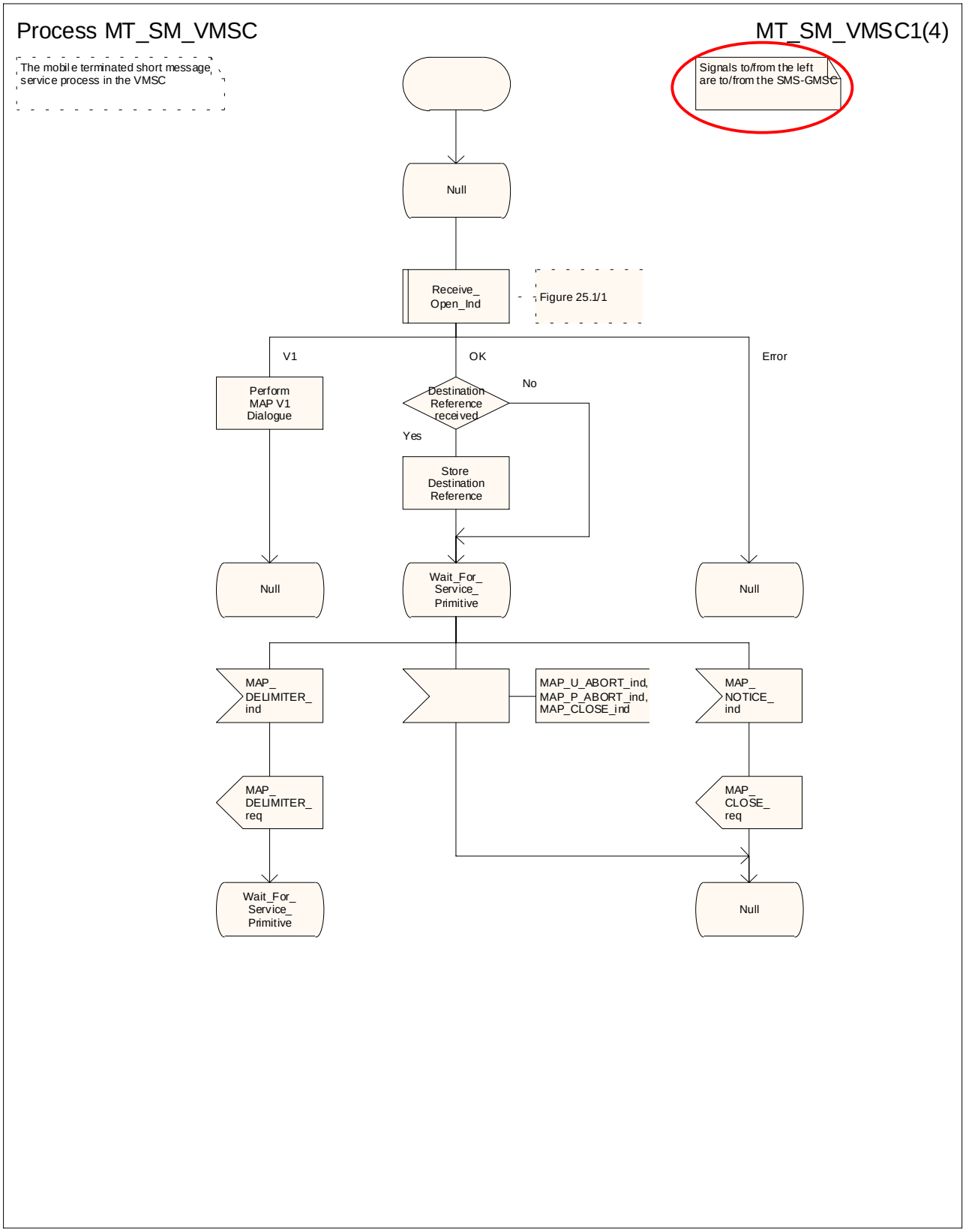
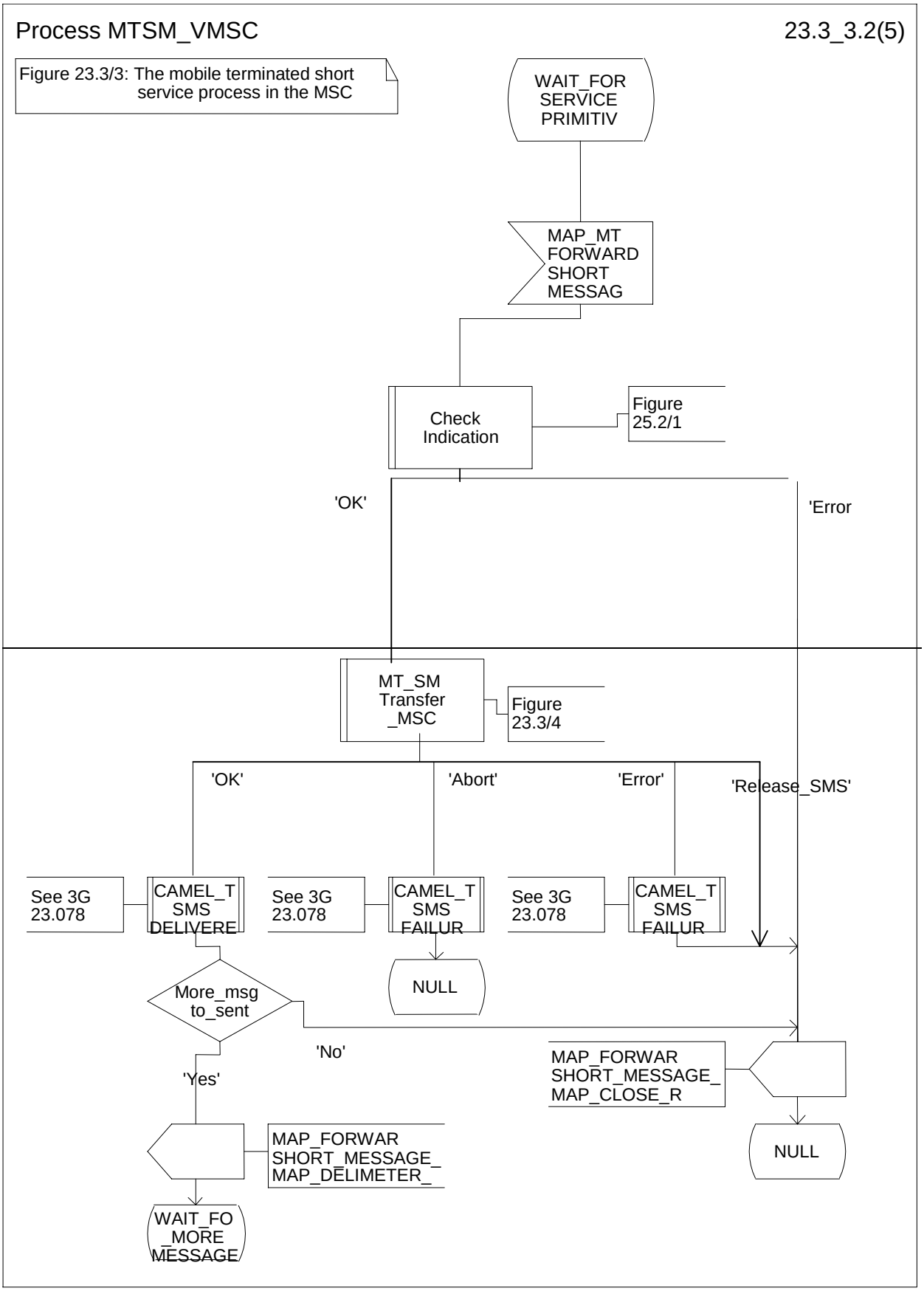


Figure 23.3/3 (sheet 1 of ~~4~~5): Procedure MT_SM_VMSC


Process MTSM_VMSC
23.3_3.2(5)
Figure 23.3/3: The mobile terminated short service process in the MSC
WAIT_FOR SERVICE PRIMITIV
MAP_MT FORWARD SHORT MESSAG
Check Indication
Figure 25.2/1
'OK'
'Error
MT_SM Transfer _MSC
Figure 23.3/4
'OK'
'Abort'
'Error'
'Release_SMS'
See 3G 23.078
CAMEL_T SMS DELIVERE
See 3G 23.078
CAMEL_T SMS FAILUR
See 3G 23.078
CAMEL_T SMS FAILUR
NULL
More_msg to_sent
'No'
'Yes'
MAP_FORWAR SHORT_MESSAGE_ MAP_DELIMETER_
WAIT_FO _MORE MESSAGE
MAP_FORWAR SHORT_MESSAGE_ MAP_CLOSE_R
NULL

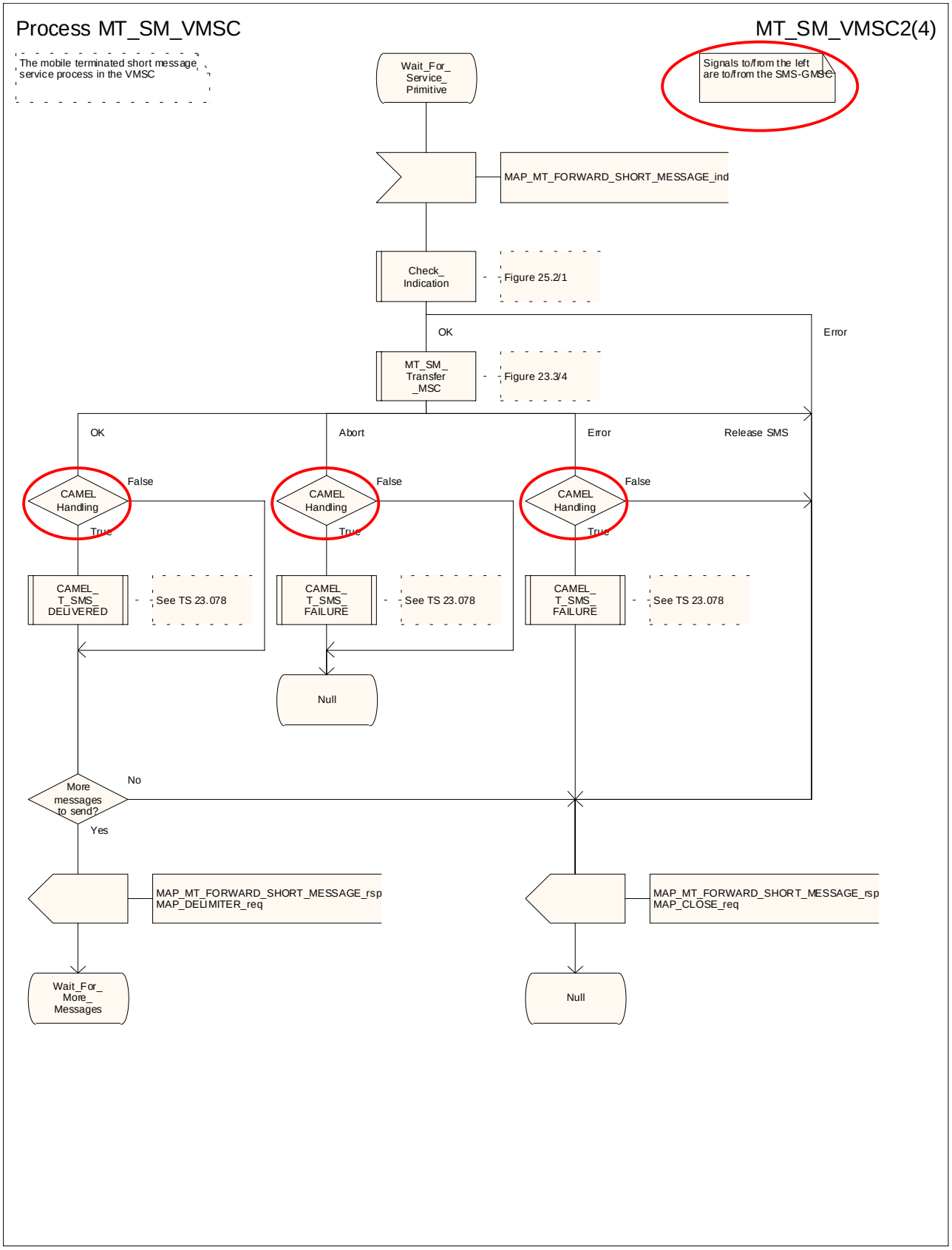
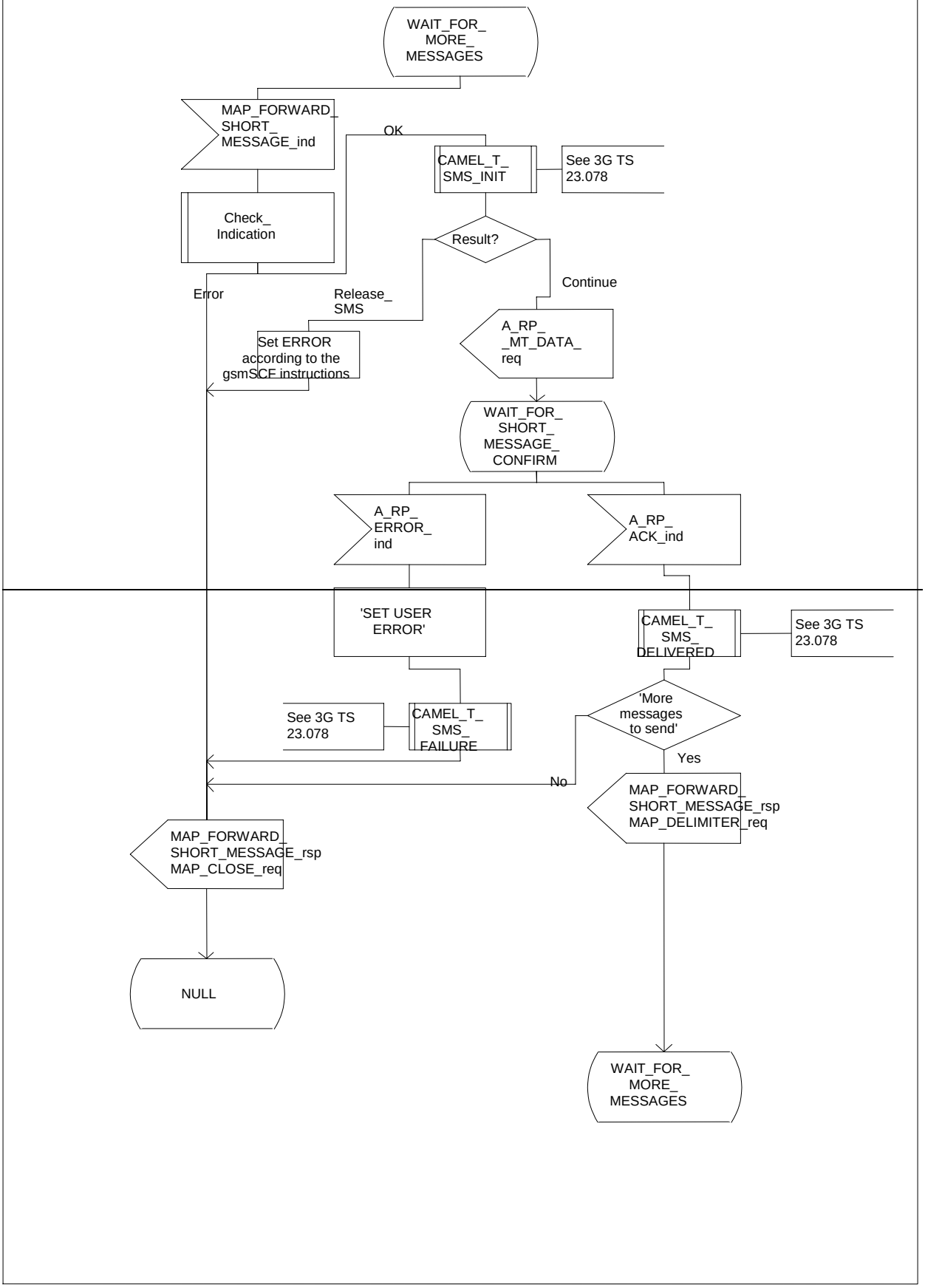


Figure 23.3/3 (sheet 2 of 4~~5~~): Procedure MT_SM_VMSC

Process MTSM_VMSC 23.3_3.3(5)

Figure 23.3/3: The mobile terminated short message service process in the MSC



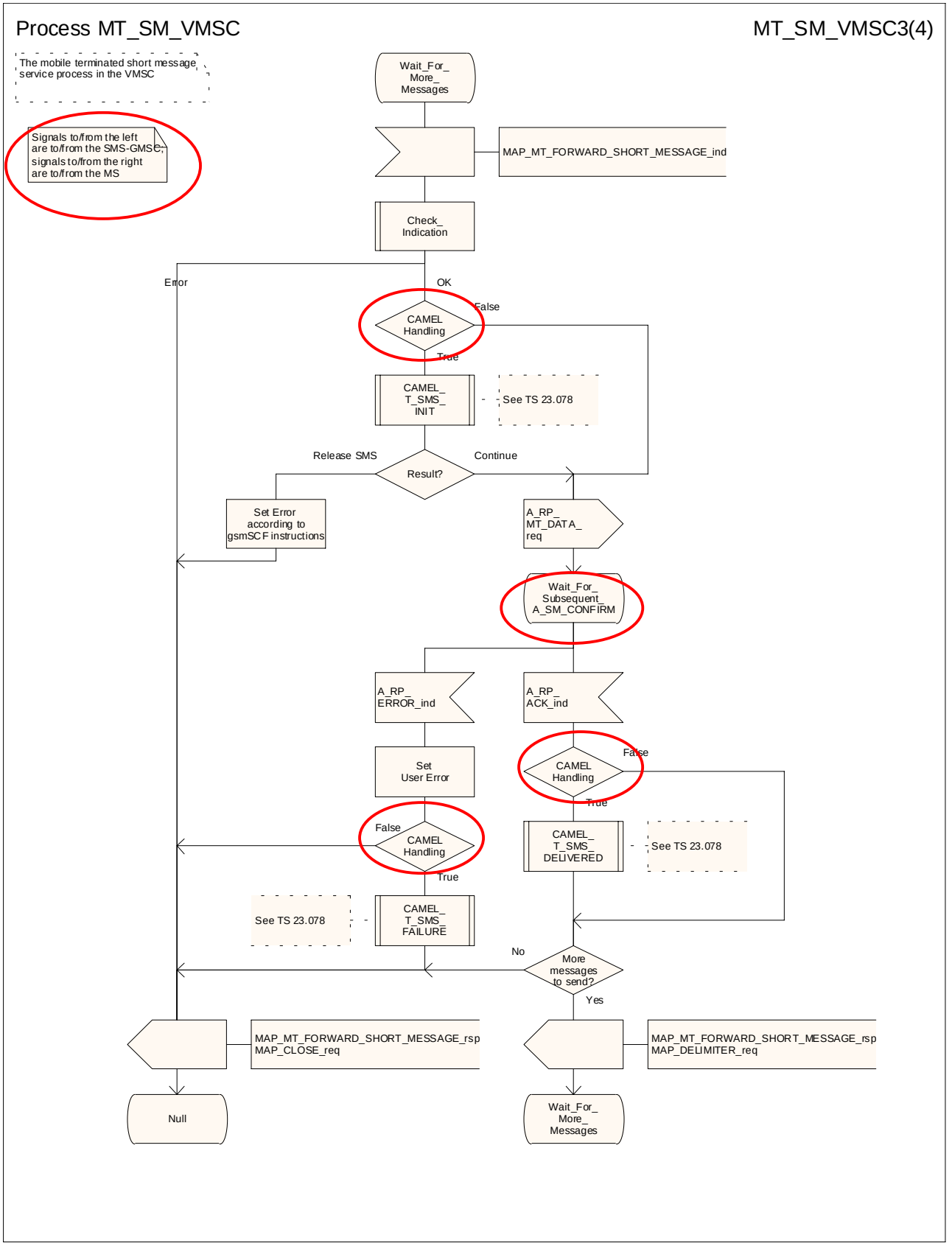


Figure 23.3/3 (sheet 3 of 4~~5~~): Procedure MT_SM_VMSC

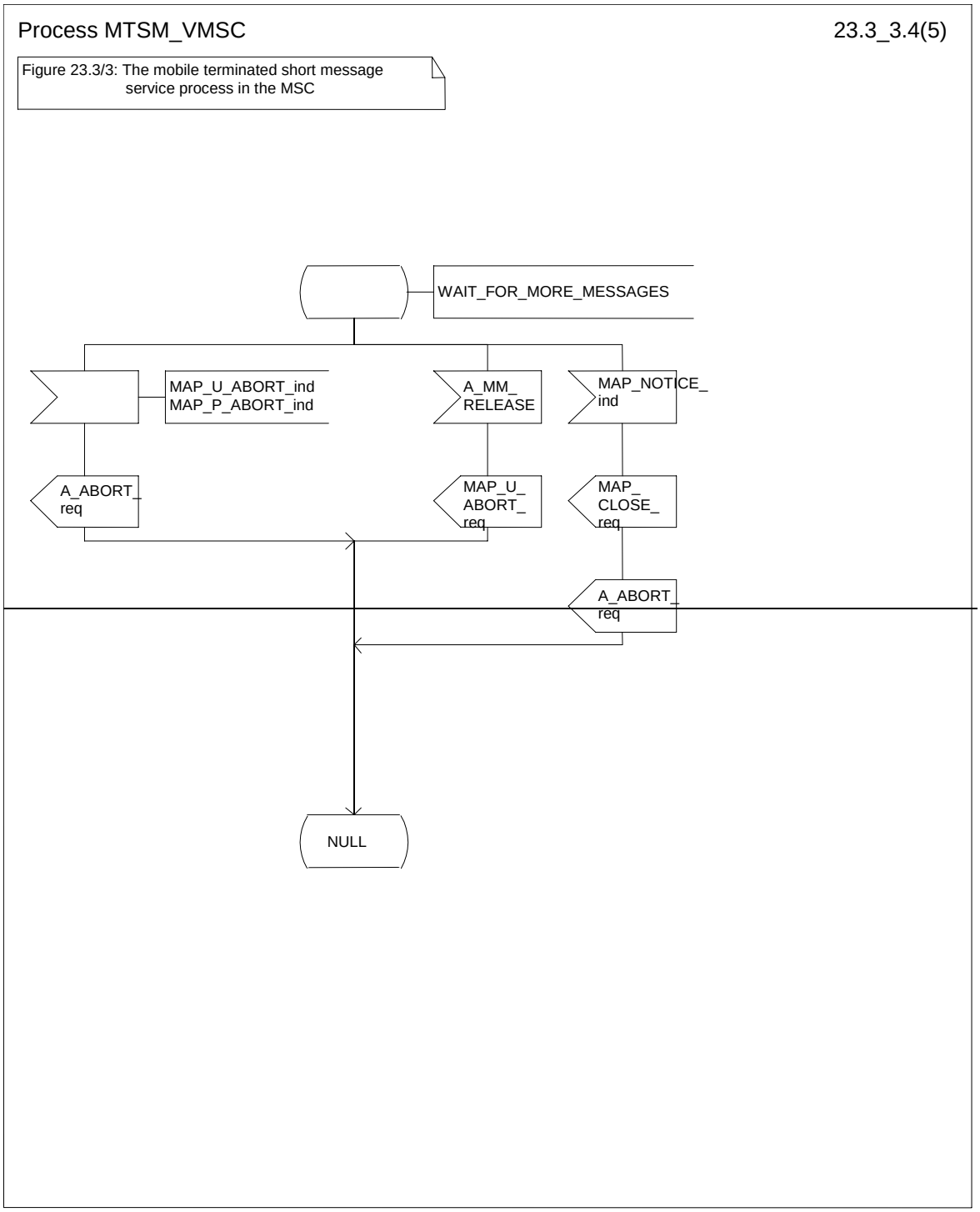


Figure 23.3/3: The mobile terminated short message service process in the MSC

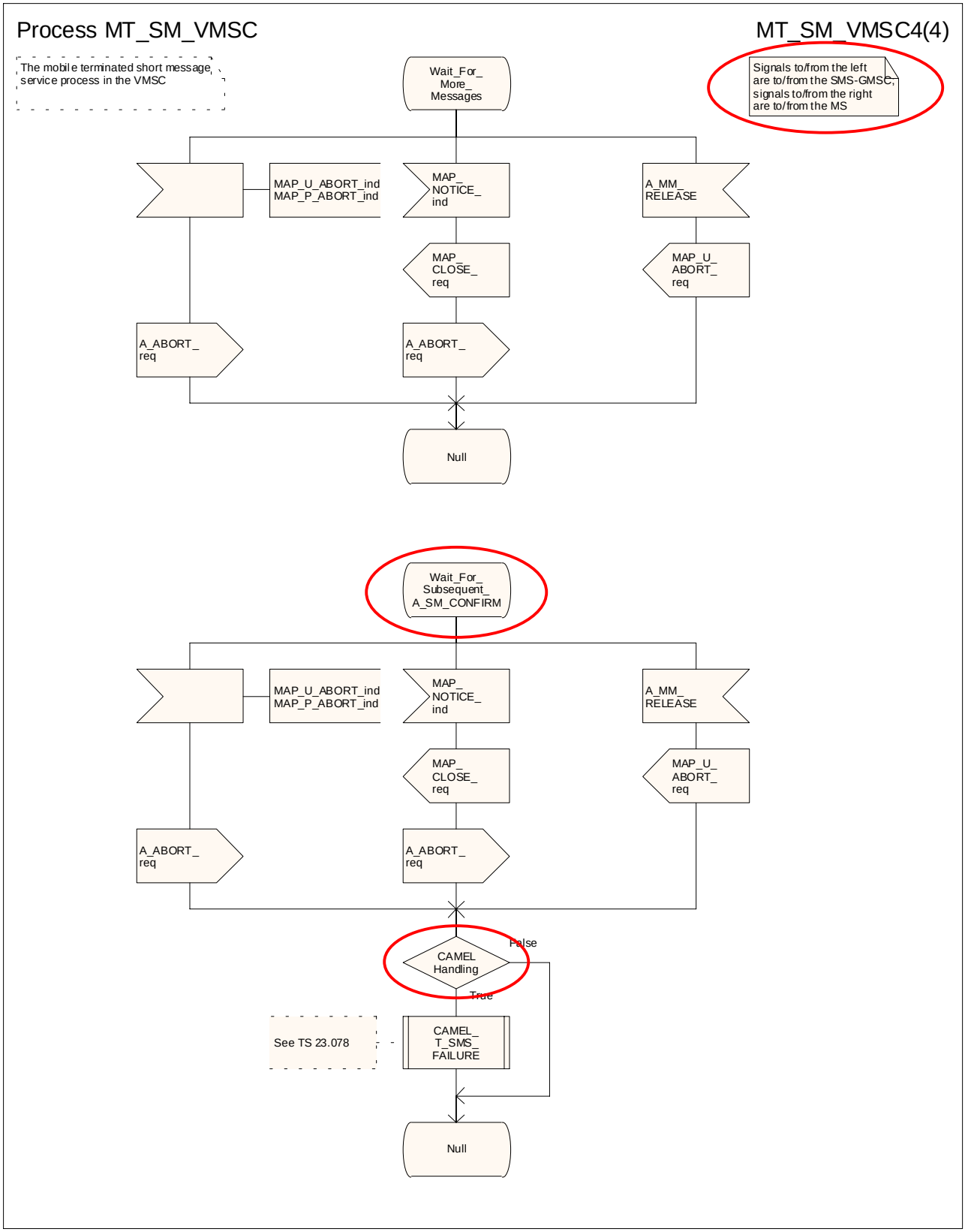
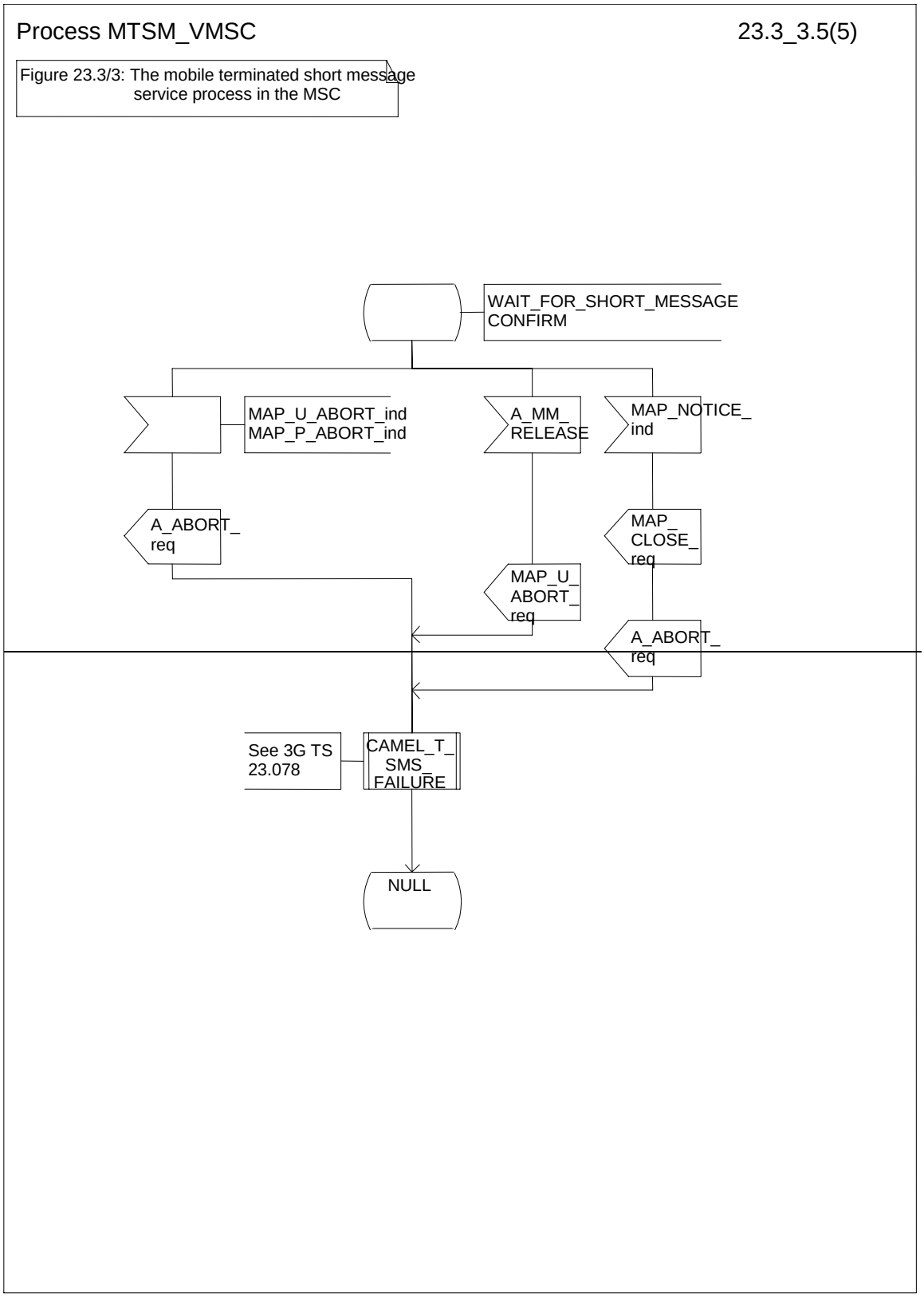
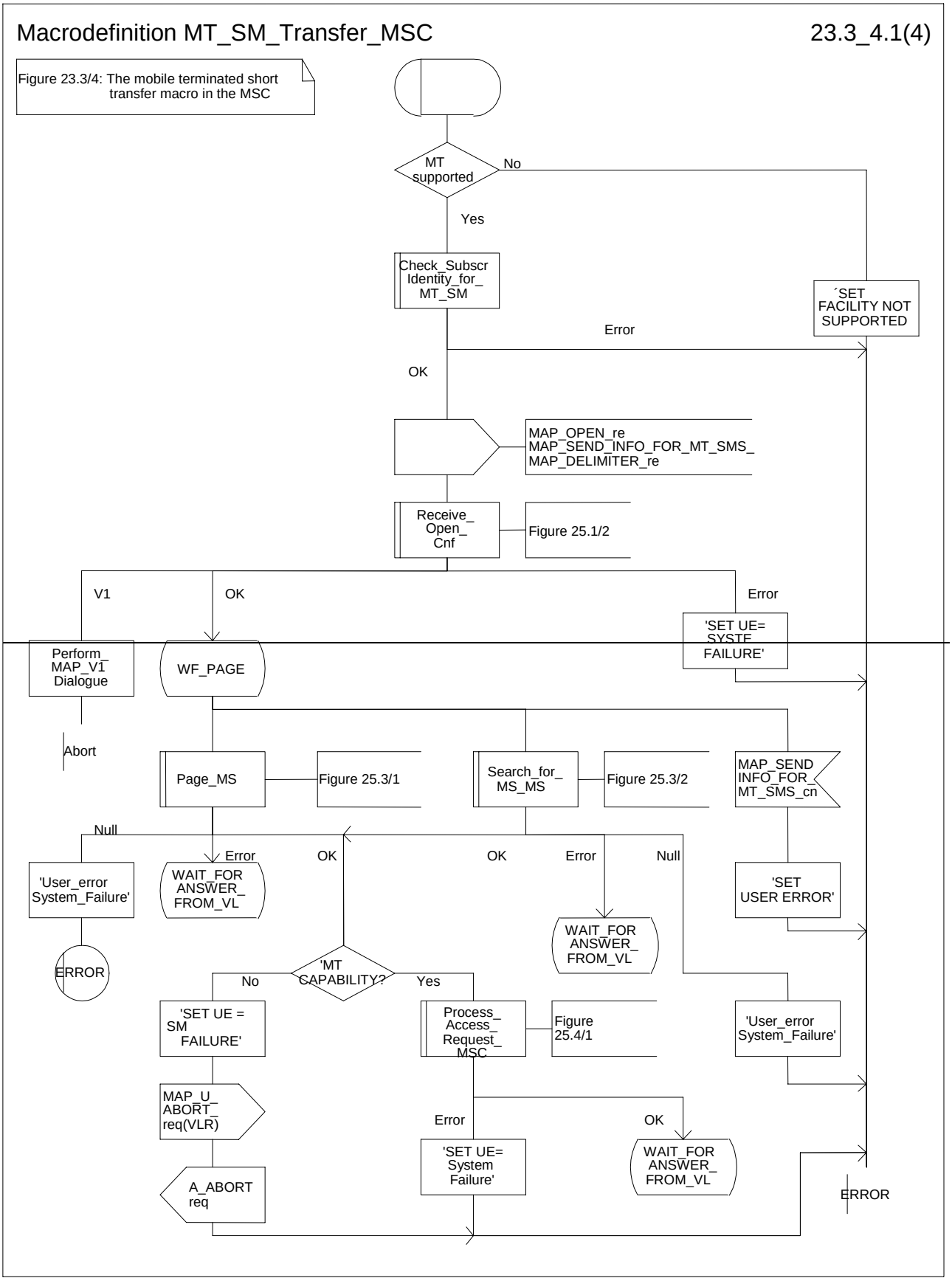


Figure 23.3/3 (sheet 4 of ~~4~~5): Procedure MT_SM_VMSC



CR editor's note: Sheets 4 & 5 have been combined to form sheet 4

~~**Figure 23.3/3 (sheet 5 of 5): Procedure MTSM_VMSC**~~


Macrodefinition MT_SM_Transfer_MSC
23.3_4.1(4)
Figure 23.3/4: The mobile terminated short transfer macro in the MSC
MT supported
No
Yes
Check_Subscr Identity_for_ MT_SM
´SET FACILITY NOT SUPPORTED
Error
OK
MAP_OPEN_re MAP_SEND_INFO_FOR_MT_SMS_ MAP_DELIMITER_re
Receive_ Open_ Cnf
Figure 25.1/2
V1
OK
Error
'SET UE= SYSTE FAILURE'
Perform_ MAP_V1 Dialogue
WF_PAGE
Abort
Page_MS
Figure 25.3/1
Search_for_ MS_MS
Figure 25.3/2
MAP_SEND INFO_FOR_ MT_SMS_cn
Null
Error
OK
OK
Error
Null
'User_error System_Failure'
WAIT_FOR ANSWER_ FROM_VL
'SET USER ERROR'
WAIT_FOR ANSWER_ FROM_VL
ERROR
'MT CAPABILITY?
No
Yes
'SET UE = SM FAILURE'
Process_ Access_ Request_ MSC
Figure 25.4/1
'User_error System_Failure'
MAP_U_ ABORT_ req(VLR)
Error
OK
'SET UE= System Failure'
WAIT_FOR ANSWER_ FROM_VL
A_ABORT req
ERROR

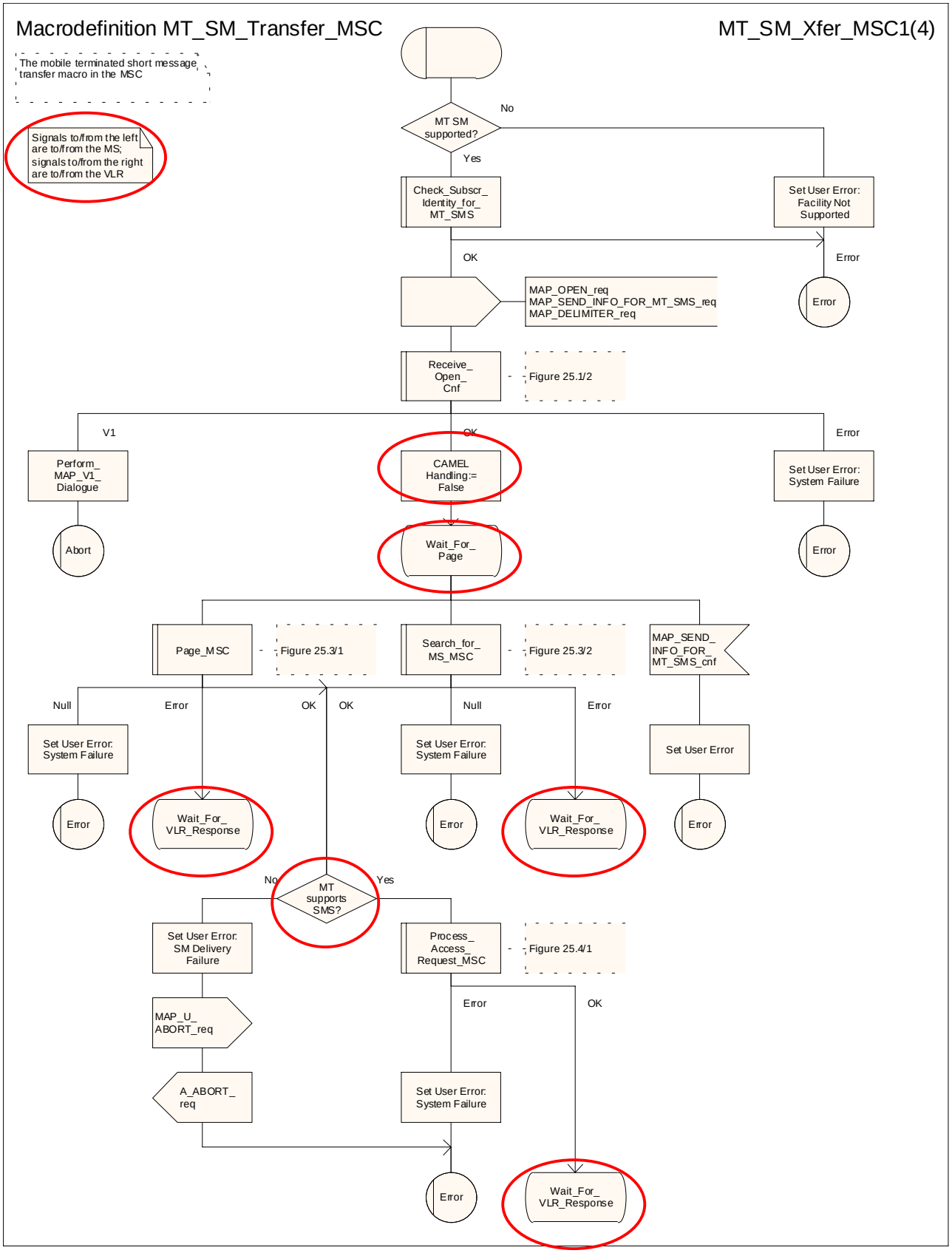
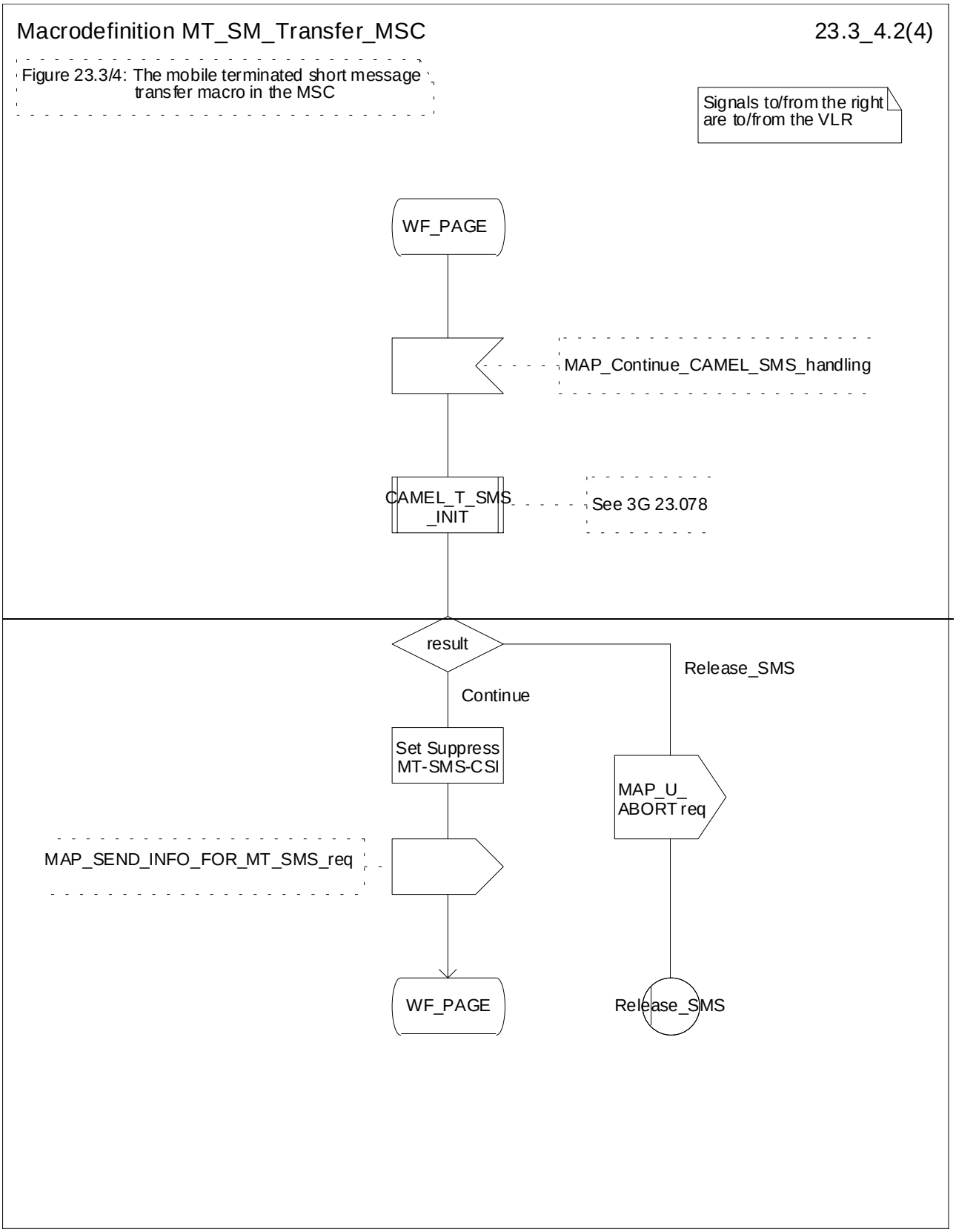


Figure 23.3/4 (sheet 1 of 4): Macro MT_SM_Transfer_MSC


Macrodefinition MT_SM_Transfer_MSC
23.3_4.2(4)
Figure 23.3/4: The mobile terminated short message transfer macro in the MSC
Signals to/from the right are to/from the VLR
WF_PAGE
MAP_Continue_CAMEL_SMS_handling
CAMEL_T_SMS_INIT
See 3G 23.078
result
Release_SMS
Continue
Set Suppress MT-SMS-CSI
MAP_U_ABORT req
MAP_SEND_INFO_FOR_MT_SMS_req
WF_PAGE
Release_SMS

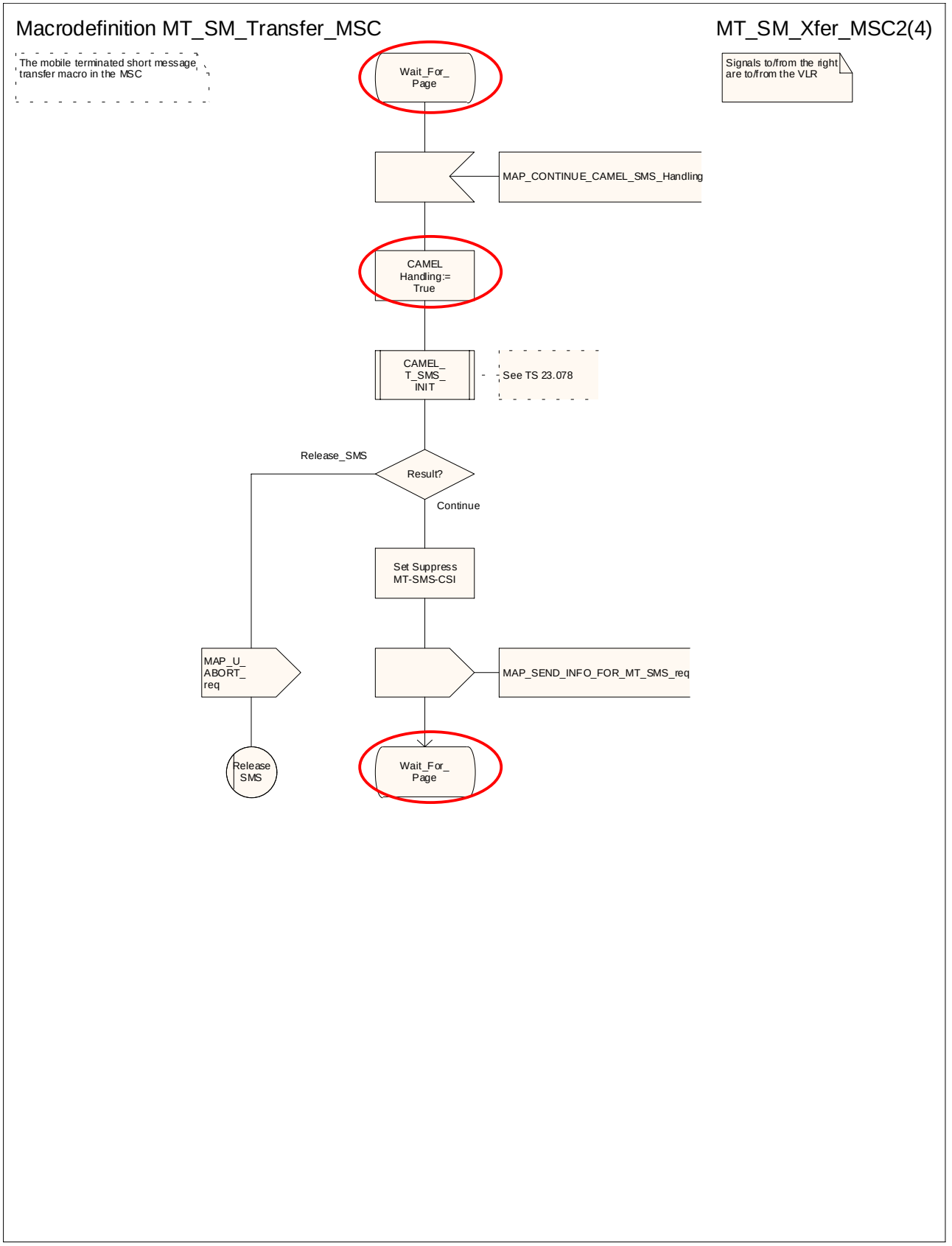
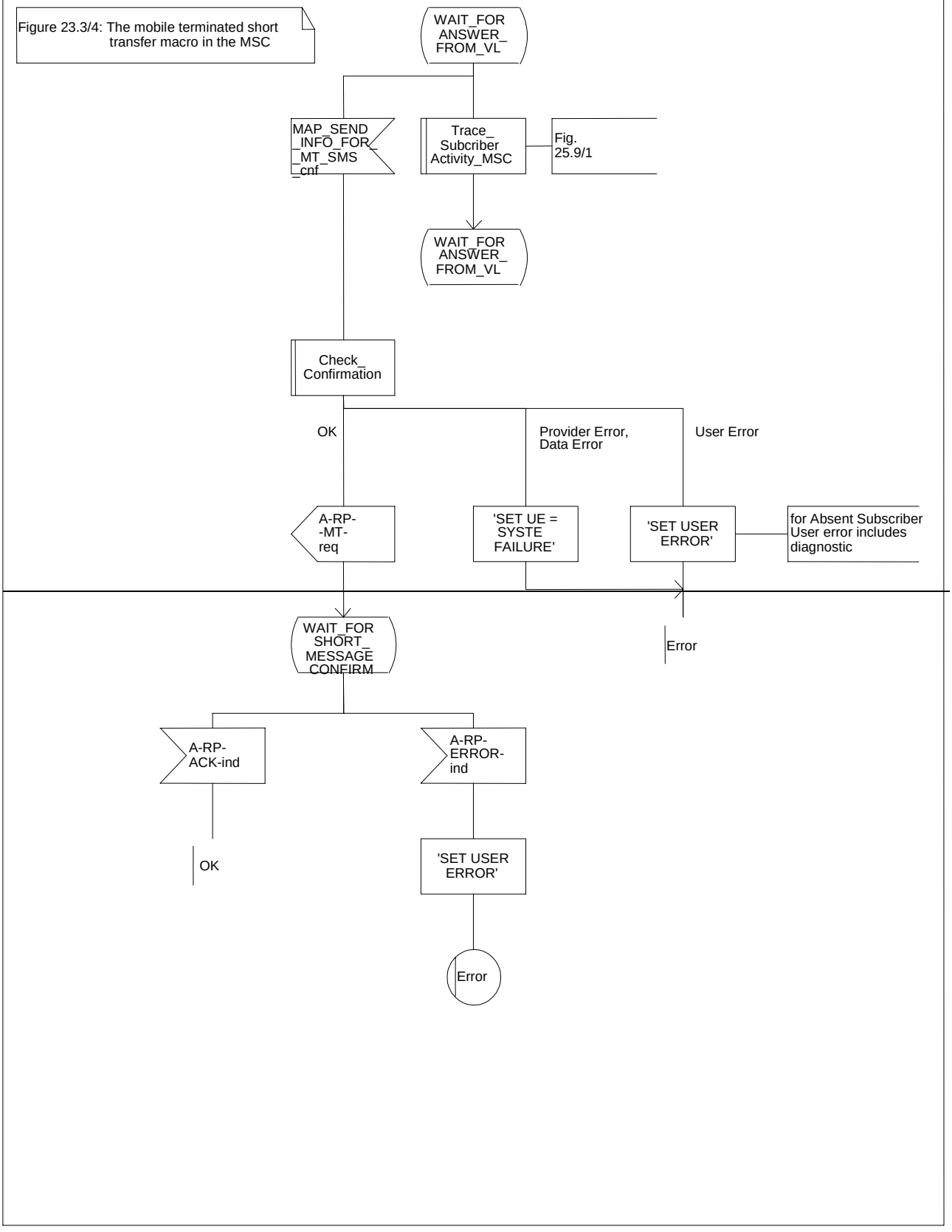


Figure 23.3/4 (sheet 2 of 4): Macro MT_SM_Transfer_MSC

Macrodefinition MT_SM_Transfer_MSC 23.3_4.3(4)

Figure 23.3/4: The mobile terminated short transfer macro in the MSC



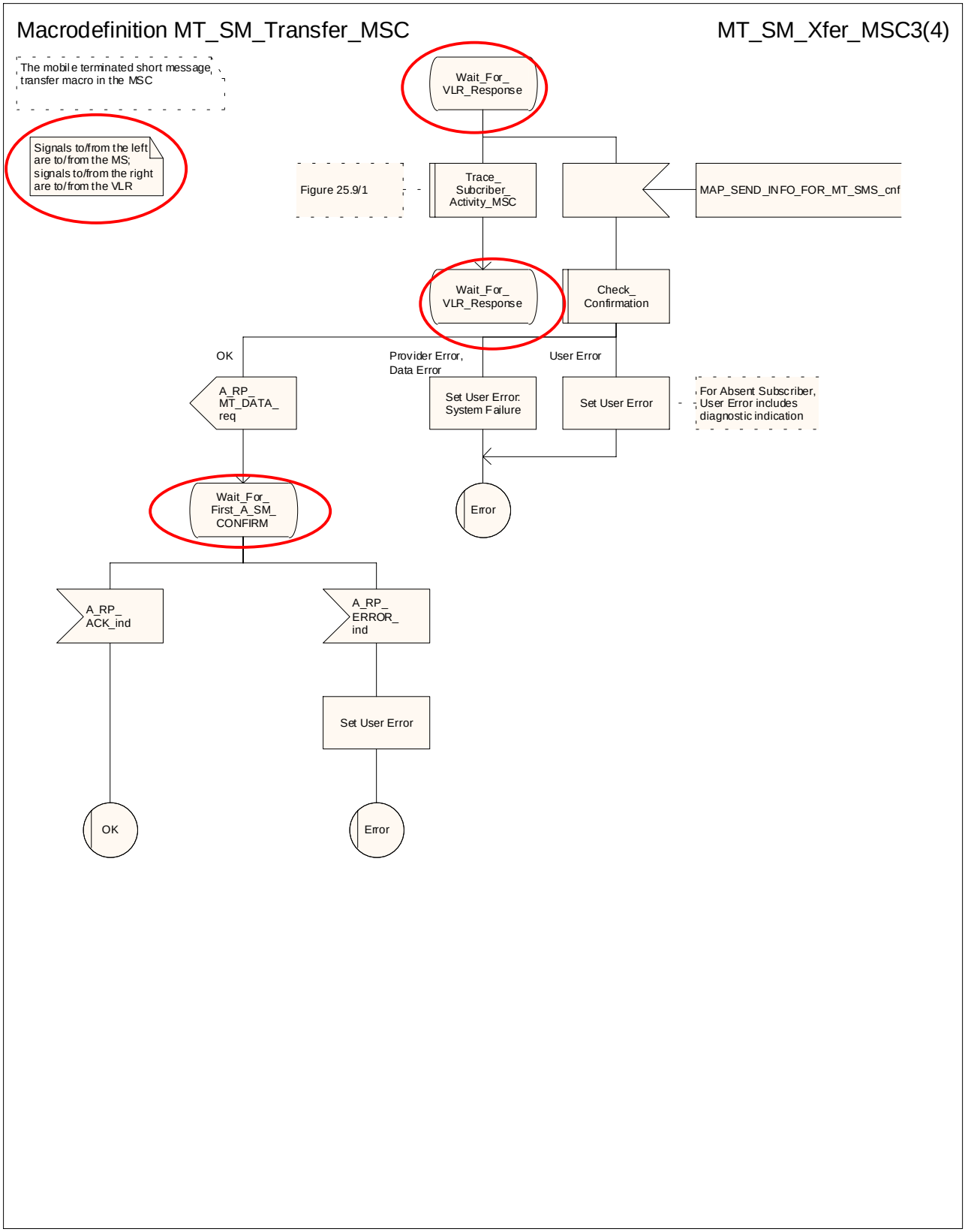
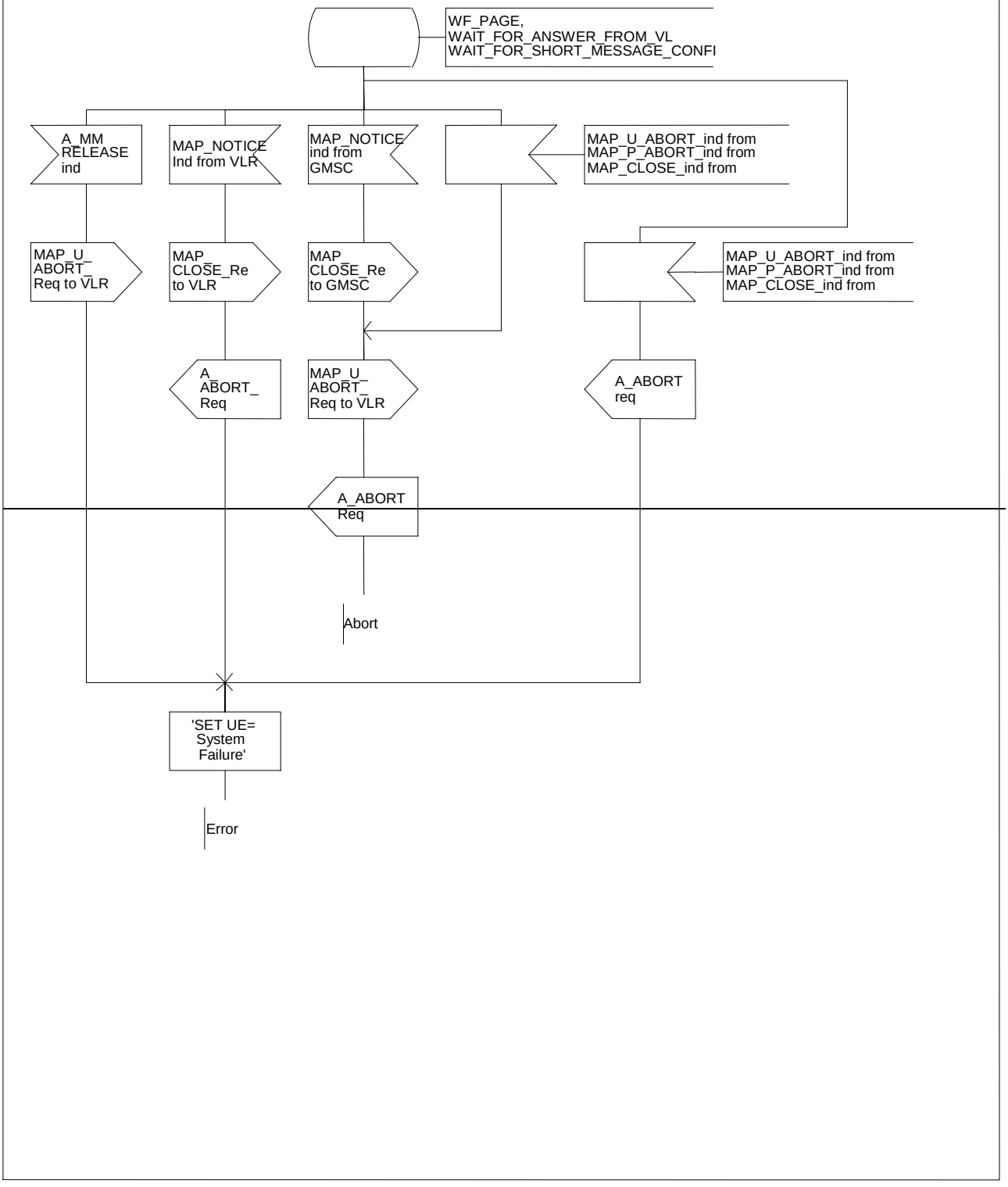


Figure 23.3/4 (sheet 3 of 4): Macro MT_SM_Transfer_MSC

Macrodefinition 23.3_4.4(4)

Figure 23.3/4: The mobile terminated short transfer macro in the MSC



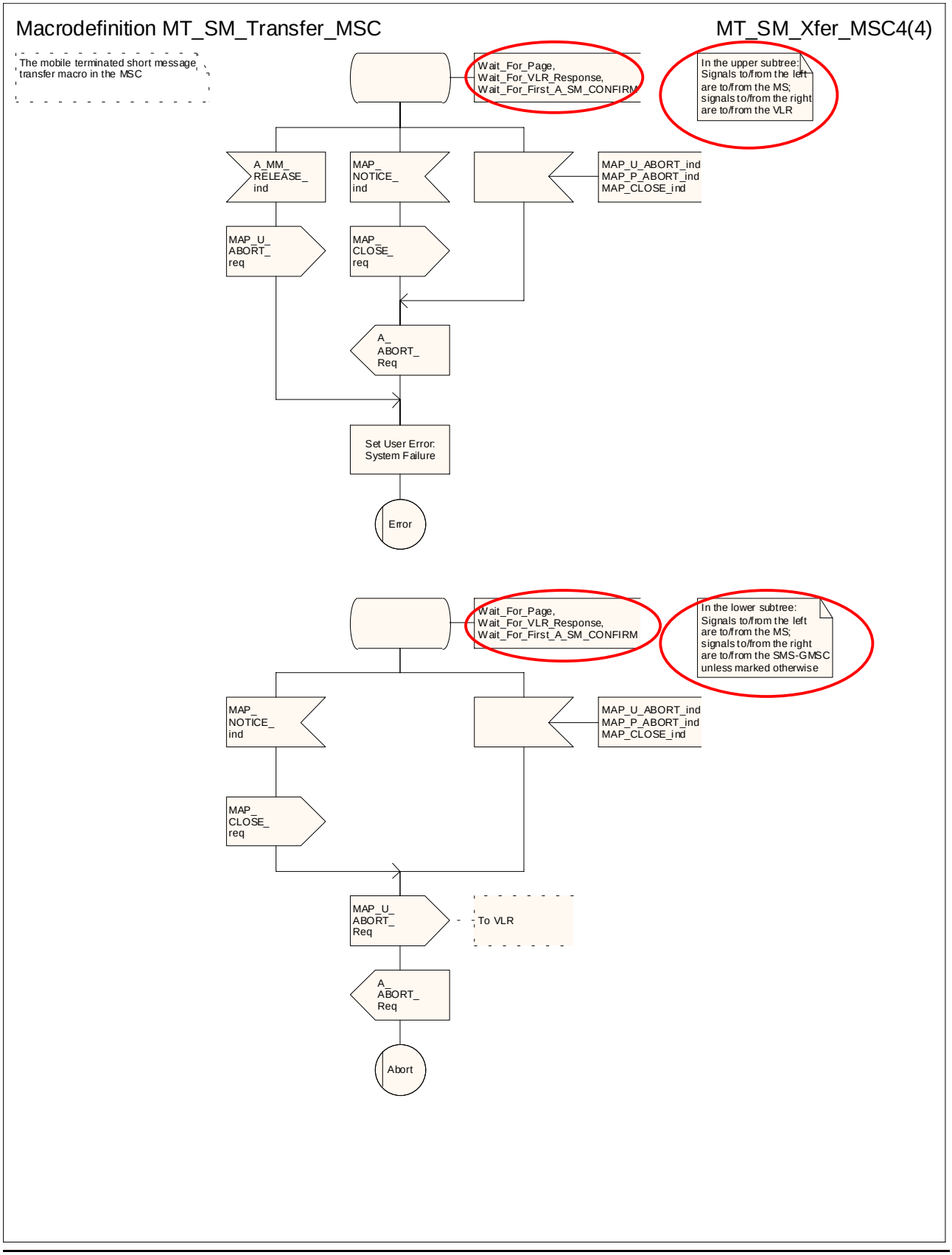


Figure 23.3/4 (sheet 4 of 4): Macro MT_SM_Transfer_MSC

****** Next modified section ******

23.3.4 Procedures in the ~~gateway~~ SMS-GMSC

Any CAMEL-specific handling described in this subclause is omitted if the SMS-GMSC does not support CAMEL. CAMEL-specific handling is invoked only if the SMS-GMSC is integrated with the VMSC.

The short message handling function of the GMSC ~~will~~ requests routing information when a mobile terminated short message is received from a Service Centre. The GMSC sends the MAP_SEND_ROUTING_INFO_FOR_SM request, with an indication of whether the SMS-GMSC supports the delivery of short messages via an SGSN, to the HLR containing the subscriber data of the mobile subscriber ~~and the indication that the SMS-GMSC supports the GPRS functionality~~.

As an outcome of the procedure the SMS-GMSC receives a MAP_SEND_ROUTING_INFO_FOR_SM ~~confirmation is received~~ indicating:

- an unsuccessful event indication containing an error;

  The mapping between the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.140.

- a successful event indication containing the following parameters:

  - an IMSI optionally accompanied by an LMSI; and

  - one or two routing addresses (serv~~ic~~ing MSC, SGSN or both numbers).

The LMSI shall not be used ~~in case~~if the short message is routed towards the SGSN.

The GMSC may also receive a MAP_INFORM_SERVICE_CENTRE indication after the MAP_SEND_ROUTING_INFO_FOR_SM confirmation. The parameter MW Status in the message indicates whether or not the Service Centre address is stored in the Message Waiting Data. It also indicates the status of the MCEF-, MNRF and MNRG flags in the HLR. The message also indicates the value of the MNRR if this is stored in the HLR and one or both of the MNRF and MNRG flags is set in the HLR.

If the MSISDN-Alert stored in the MWD data is not the same as the ~~one~~ MSISDN sent to the HLR, the MSISDN-Alert is ~~receiv~~included in the MAP_INFORM_SERVICE_CENTRE indication. This MSISDN-Alert ~~number~~ shall be transferred in a delivery failure report to the SC.

In the abnormal end or in the provider error case the SMS-GMSC reports a system failure error ~~is provided~~ to the SC.

~~The forward short message procedure is initiated w~~When the GMSC has obtained the routing information needed to forward a mobile terminated short message to the serv~~ic~~ing MSC or SGSN it calls the procedure MT_SM_Delivery_Attempt_GMSC.

If both ~~numbers~~ MSC and SGSN numbers are received from HLR as routing information, the SMS-GMSC may choose which ~~path~~ serving node (SGSN or MSC) ~~first the SMS is to be transferred~~to use for the first delivery attempt.

If the first delivery attempt succeeds, or the delivery is aborted, the process returns to the Null state. If the first delivery attempt fails and the HLR provided a second routing address, the SMS-GMSC attempt to deliver the short message through the second choice serving node. The process then returns to the Null state.

~~If an LMSI has been provided in the MAP_SEND_ROUTING_INFO_FOR_SM confirmation, it can be included in the sm-RP-DA information field of the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the servicing MSC. In this case, the IMSI must be included in the Destination Reference of the MAP_OPEN request. If the LMSI is not sent by the SMS Gateway MSC, the sm-RP-DA information field in the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the servicing MSC or SGSN shall contain the IMSI and the Destination Reference in the MAP_OPEN request shall not be present. The Service Centre address is sent in the parameter SM_RP_OA. The More Messages To Send flag is set to TRUE or FALSE depending on the information received from the Service Centre.~~

If the serving node for the delivery attempt is the GMSC ~~is the servicing MSC~~ then the ~~MAP service is not initiated~~GMSC invokes the macro MT_SM_Transfer_MSC. ~~The procedure in the Servicing MSC~~This macro is described in clause 23.3.1 and in ~~the~~ figure 23.3/4.

If the macro takes the Abort exit, the GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98] and the procedure returns a Fail result.

If the macro takes the Error or Release SMS exit, the GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98]. If required, the GMSC reports the outcome of the delivery attempt to the HLR. The GMSC sends an error report to the service centre and the procedure returns a Fail result.

If the macro takes the OK exit, the GMSC reports the successful delivery to the gsmSCF as described in 3GPP TS 23.078 [98] and checks whether the "More messages to send" indication was set in the request from the service centre.

- If the " More messages to send" indication was not set, the GMSC reports the successful delivery to the HLR, if necessary, and reports the successful delivery to the service centre. The procedure returns a Pass result.

- If the " More messages to send" indication was set, the GMSC reports the successful delivery to the service centre and waits for another message delivery request from the service centre. When the request is received, the GMSC opens a dialogue with the gsmSCF as described in 3GPP TS 23.078 [98].

    - If the gsmSCF bars the delivery of the short message (Release_SMS result) the GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.

    - If the gsmSCF instructs the GMSC to continue with the delivery, the GMSC sends the message over the access interface to the destination MS and waits for a response.

        - If the delivery was successful, the GMSC reports the successful delivery to the gsmSCF as described in 3GPP TS 23.078 [98] and checks whether the "More messages to send" indication was set in the request from the service centre, as above.

        - If the delivery was unsuccessful, the GMSC reports the delivery failure to the gsmSCF as described in 3GPP TS 23.078 [98]. If required, the GMSC reports the outcome of the delivery attempt to the HLR. The GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.

If the serving node for the delivery attempt is not the GMSC, the GMSC checks whether the MAP_OPEN request and the MAP_MT_FORWARD_SHORT_MESSAGE request can be sent in a single message signal unit through the lower layers of the protocol.

If the grouping of MAP_OPEN request and MAP_MT_FORWARD_SHORT_MESSAGE request together would need segmenting, these primitives must not be grouped together. The MAP_OPEN request primitive is sent first without any associated MAP service request primitive and the dialogue confirmation must be received before the MAP_MT_FORWARD_SHORT_MESSAGE request is sent.

If an LMSI has been provided in the MAP_SEND_ROUTING_INFO_FOR_SM confirmation, it can be included in the sm-RP-DA information field of the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the serving MSC. In this case, the IMSI must be included in the Destination Reference of the MAP_OPEN request. If the LMSI is not sent by the SMS-GMSC, the sm-RP-DA information field in the first MAP_MT_FORWARD_SHORT_MESSAGE request sent to the serving MSC or SGSN shall contain the IMSI and the Destination Reference in the MAP_OPEN request shall not be present. The Service Centre address is sent in the parameter SM_RP_OA. The More Messages To Send flag is set to TRUE or FALSE depending on the information received from the Service Centre.

When the GMSC receives the response from the serving node, it checks the content of the response.

If the response indicates successful delivery, the GMSC checks whether the "More messages to send" indication was set in the request from the service centre.

- If the " More messages to send" indication was not set, the GMSC reports the successful delivery to the HLR, if necessary, and reports the successful delivery to the service centre. The procedure returns a Pass result.

- If the " More messages to send" indication was set, the GMSC reports the successful delivery to the service centre and waits for another message delivery request from the service centre. When the request is received, the GMSC sends a MAP_MT_FORWARD_SHORT_MESSAGE request to the serving node and waits for a response.

    - If the delivery was successful, the GMSC checks whether the "More messages to send" indication was set in the request from the service centre, as above.

- If the delivery was unsuccessful, the GMSC reports the outcome of the delivery attempt to the HLR, if required. The GMSC informs the service centre that the multiple message transfer was aborted and the procedure returns an Abort result.

~~As a response to the procedure, the GMSC will receive the MAP_MT_FORWARD_SHORT_MESSAGE confirmation indicating:~~

- ~~a successful forwarding of the short message. This indication is passed to the SC;~~
- ~~unsuccessful forwarding of the short message:~~
  - ~~In case only one number (MSC or SGSN) was received from HLR as routing information, the mapping of the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.140. The appropriate error indication is sent to the SC.~~
  - ~~In case both numbers (MSC and SGSN) were received from HLR as routing information, the transfer of SMS is re-attempted towards the second path only when one of the following errors is received from the unsuccessful transfer over the first path:~~
    - ~~Facility Not Supported~~
    - ~~Unidentified Subscriber~~
    - ~~Absent Subscriber with indication: GPRS or IMSI Detach~~
    - ~~Unexpected Data Value~~
    - ~~System failure~~
    - ~~Data Missing~~
    - ~~Subscriber Busy for MT SMS: GPRS Connection Suspended~~
  - ~~otherwise, the mapping of the MAP error causes and the RP_ERROR causes is performed (see 3GPP TS 23.140) and the appropriate error indication is sent to the SC.~~
- ~~If second forwarding of short message is unsuccessful, the mapping of the MAP error causes and the RP_ERROR causes is explained in 3GPP TS 23.140. The appropriate error indications are sent to the SC.~~
- ~~If second forwarding of short message is successful, the successful indication is passed to the SC.~~

~~A provider error is indicated as a system failure error to the SC.~~

The GMSC invokes the procedure MAP_REPORT_SM_DELIVERY_STATUS, if:

- an absent subscriber_SM, an unidentified subscriber or SM delivery failure with error cause MS memory capacity exceeded indication is received from the serv~~ic~~ing MSC, SGSN or both, and
- the SC address is not yet included in the MWD set, or
- the reason received from the serving MSC for failure to deliver the message is absent subscriber_SM, unidentified subscriber or SM delivery failure with error cause MS memory capacity exceeded, and the corresponding flag in the HLR (as indicated the information received in the MAP_INFORM_ SERVICE_CENTRE) is not set, or
- the reason received from the serving MSC for failure to deliver the message is absent subscriber_SM and the absent subscriber diagnostic is different from the absent subscriber diagnostic received in the MAP_INFORM_ SERVICE_CENTRE.

If absent subscriber diagnostic information (see 3GPP TS 23.140) is included with the absent subscriber_SM error indication then this information is relayed to the HLR using the procedure MAP_REPORT_SM_DELIVERY_STATUS.

~~In case~~If the~~re SMS~~ was an attempt~~ed~~ to ~~be~~ deliver~~ed~~ the short message ~~towards~~ through both the MSC and the SGSN, and both delivery attempts failed with causes described above, the two unsuccessful SMS delivery outcomes for GPRS and non GPRS are sent to the HLR.

If there was an attempt to deliver the short message through both the MSC and the SGSN, ~~In case the SMS was attempted to be delivered towards the MSC and the SGSN,~~ and the first delivery failed with causes described above and the second delivery succeeded, the unsuccessful and successful SMS delivery outcomes for GPRS and non GPRS are sent to HLR.

The ~~gateway~~ SMS-GMSC may also ~~invoke the procedure~~report successful delivery to the HLR when the first SMS delivery through the MSC was successful ~~towards MSC~~, if the MNRF~~,~~ or MCEF flag~~s~~ or both were set in the HLR.

The ~~gateway~~ SMS-GMSC may also report successful delivery to the HLR ~~invoke the procedure~~ when the first SMS delivery through the SGSN was successful ~~towards SGSN~~, if the MNRG~~,~~ or MCEF flag~~s~~ or both were set in the HLR.

This procedure is described in detail in clause 23.5.

Unexpected data value and~~,~~ system failure errors are indicated as a system failure to the SC. Other errors are indicated using appropriate cause values and diagnostic information between the GMSC and the SC as described in 3GPP TS 23.0~~1~~40 [26] and 3GPP TS 24.011 [37].

The unidentified subscriber error is indicated to the SC as absent subscriber with diagnostic information set to 'Unidentified subscriber' as described in 3GPP TS 23.140 [26].

Note that the indication, on which number belongs the SGSN and MSC, received from the HLR at routing information result (see clause 23.3.3) will enable the GMSC to map the causes received from the SGSN, MSC or both into the appropriate causes for non GPRS, GPRS or both, and send them to the SC and HLR.

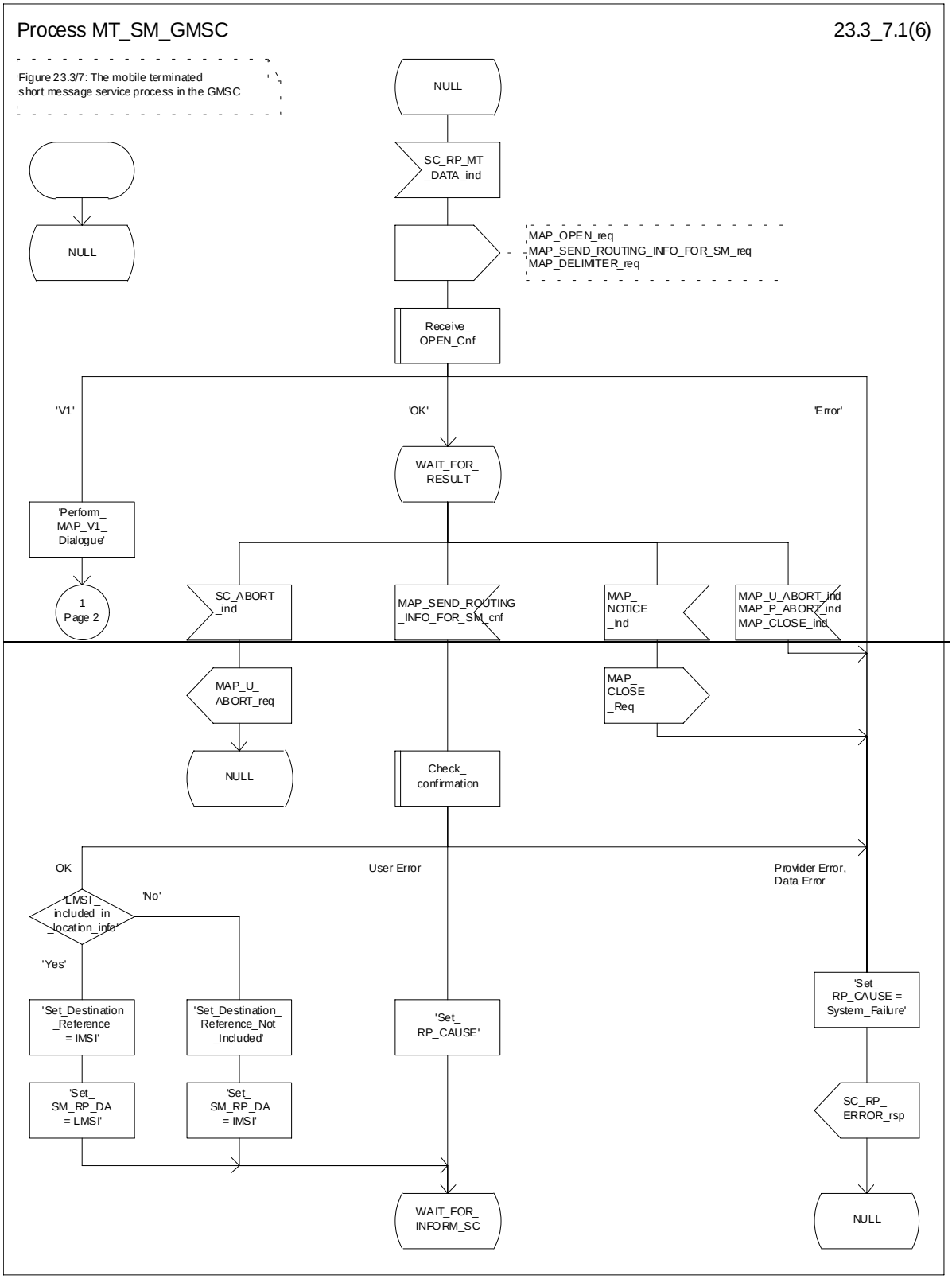
If there are more short messages to send in the Service Centre and the previous short message transfer succeeded, then the ~~gateway~~ SMS-GMSC awaits the next short message.

~~When receiving the next short message from the SC, the gateway MSC sets the More Messages To Send flag according to the information received and starts the service MAP_MT_FORWARD_SHORT_MESSAGE again.~~

~~If the gateway MSC is the servicing MSC, then the short message transfer to mobile subscriber is started as described in the clause 23.3.1.~~

The mobile terminated short message transfer procedure in the ~~gateway~~ SMS-GMSC is shown in figure 23.3/7.

CR editor's note: most of the handling in the process MT_SM_GMSC has been transferred to the new procedure MT_SM_Delivery_Attempt_GMSC


Process MT_SM_GMSC
23.3_7.1(6)
'Figure 23.3/7: The mobile terminated short message service process in the GMSC'
NULL
SC_RP_MT _DATA_ind
NULL
MAP_OPEN_req
MAP_SEND_ROUTING_INFO_FOR_SM_req
MAP_DELIMITER_req
Receive_ OPEN_Cnf
'V1'
'OK'
'Error'
WAIT_FOR_ RESULT
'Perform_ MAP_V1_ Dialogue'
1
Page 2
SC_ABORT _ind
MAP_SEND_ROUTING _INFO_FOR_SM_cnf
MAP_ NOTICE _Ind
MAP_U_ABORT_ind
MAP_P_ABORT_ind
MAP_CLOSE_ind
MAP_U_ ABORT_req
MAP_ CLOSE _Req
NULL
Check_ confirmation
OK
User Error
Provider Error, Data Error
'LMSI_ included_in _location_info'
'No'
'Yes'
'Set_Destination _Reference = IMSI'
'Set_Destination_ Reference_Not _Included'
'Set_ RP_CAUSE'
'Set_ RP_CAUSE = System_Failure'
'Set_ SM_RP_DA = LMSI'
'Set_ SM_RP_DA = IMSI'
SC_RP_ ERROR_rsp
WAIT_FOR_ INFORM_SC
NULL

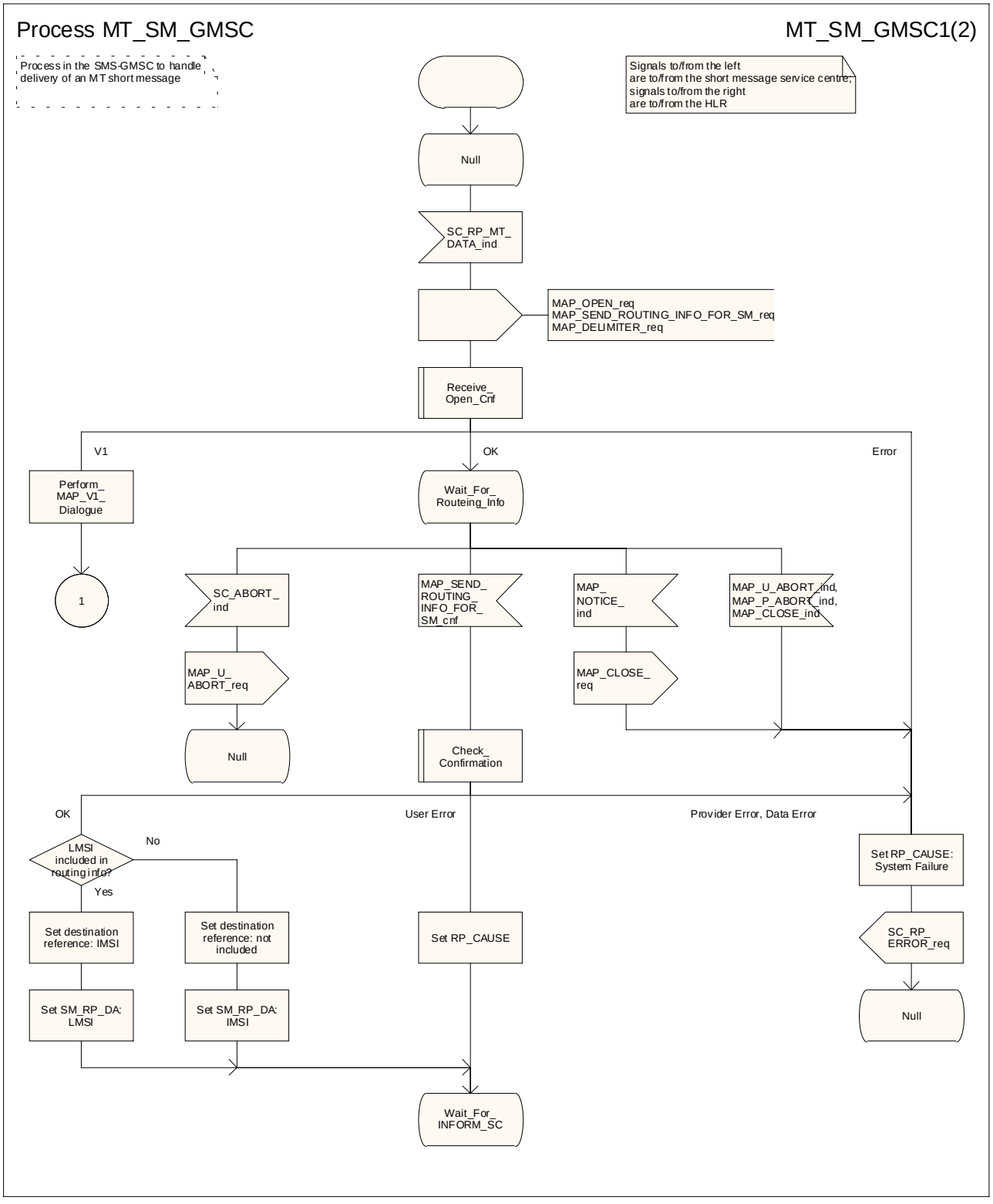
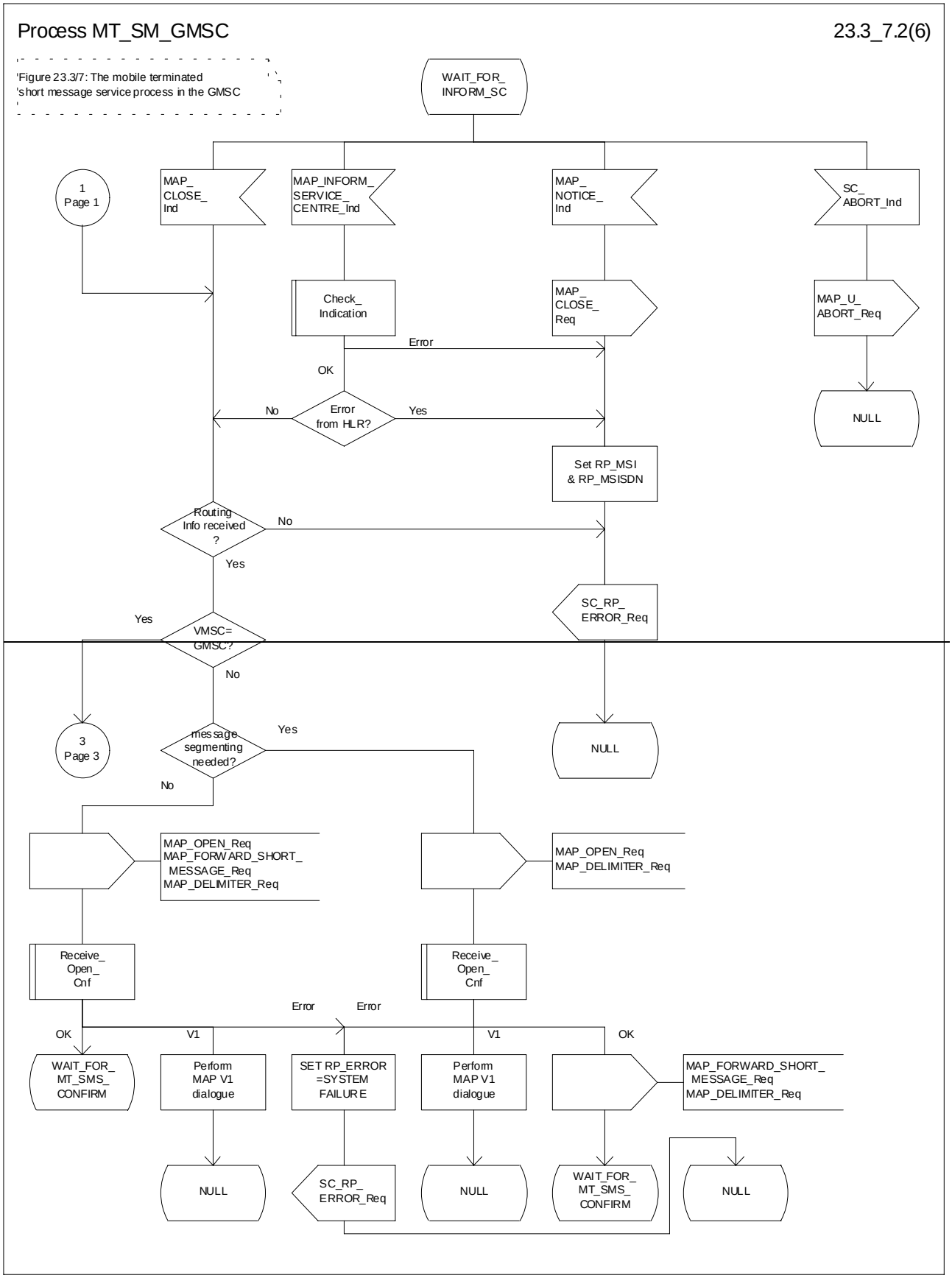


Figure 23.3/7 (sheet 1 of 2~~6~~): Process~~dure~~ MT_SM_GMSC


Process MT_SM_GMSC
23.3_7.2(6)
'Figure 23.3/7: The mobile terminated
'short message service process in the GMSC
WAIT_FOR_
INFORM_SC
1
Page 1
MAP_
CLOSE_
Ind
MAP_INFORM_
SERVICE_
CENTRE_Ind
MAP_
NOTICE_
Ind
SC_
ABORT_Ind
Check_
Indication
MAP_
CLOSE_
Req
MAP_U_
ABORT_Req
Error
OK
No
Error
from HLR?
Yes
NULL
Set RP_MSI
& RP_MSISDN
Routing
Info received
?
No
Yes
SC_RP_
ERROR_Req
Yes
VMSC=
GMSC?
No
3
Page 3
message
segmenting
needed?
Yes
NULL
No
MAP_OPEN_Req
MAP_FORWARD_SHORT_
MESSAGE_Req
MAP_DELIMITER_Req
MAP_OPEN_Req
MAP_DELIMITER_Req
Receive_
Open_
Cnf
Receive_
Open_
Cnf
Error
Error
OK
V1
V1
OK
WAIT_FOR_
MT_SMS_
CONFIRM
Perform
MAP V1
dialogue
SET RP_ERROR
=SYSTEM
FAILURE
Perform
MAP V1
dialogue
MAP_FORWARD_SHORT_
MESSAGE_Req
MAP_DELIMITER_Req
NULL
SC_RP_
ERROR_Req
NULL
WAIT_FOR_
MT_SMS_
CONFIRM
NULL

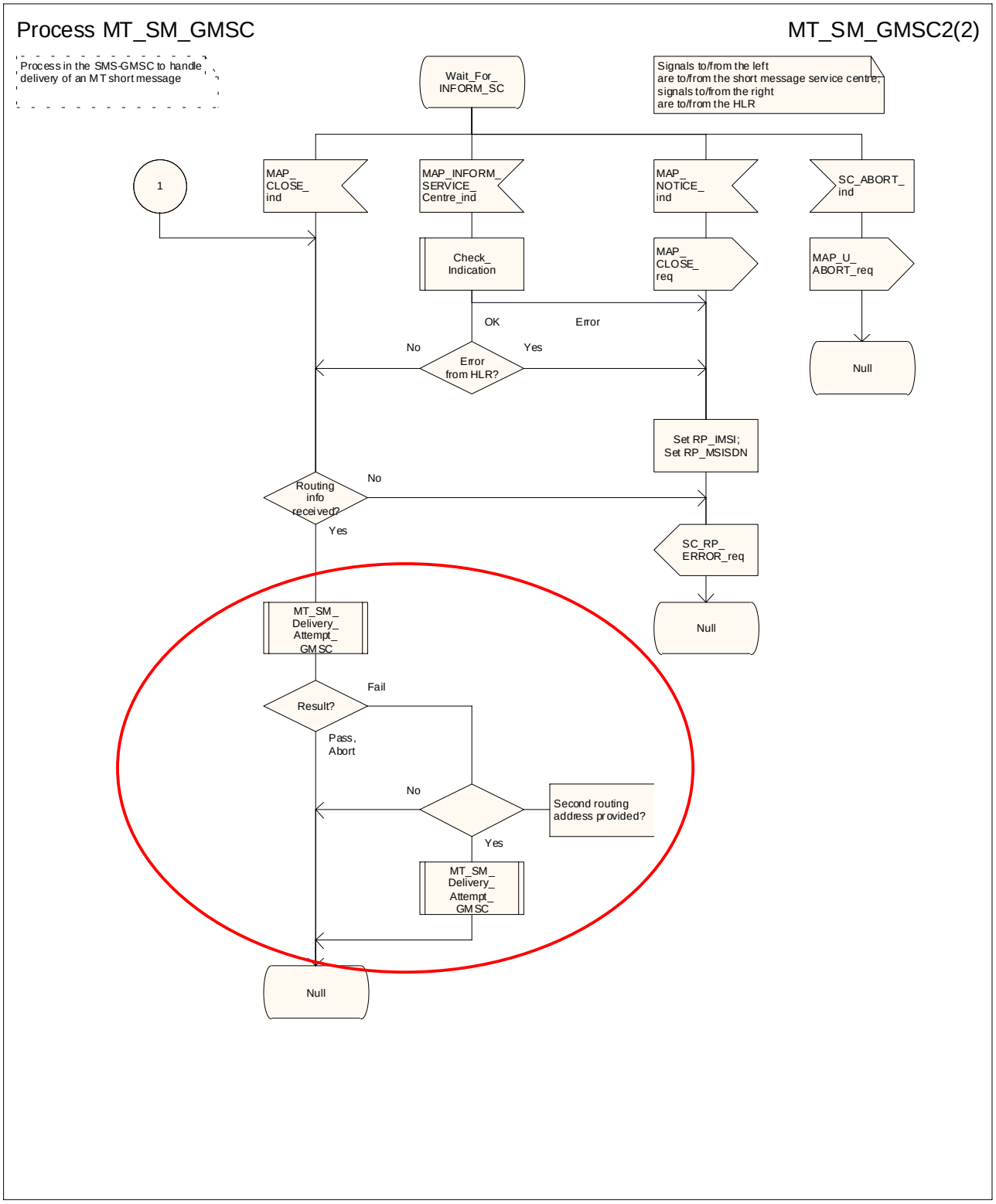
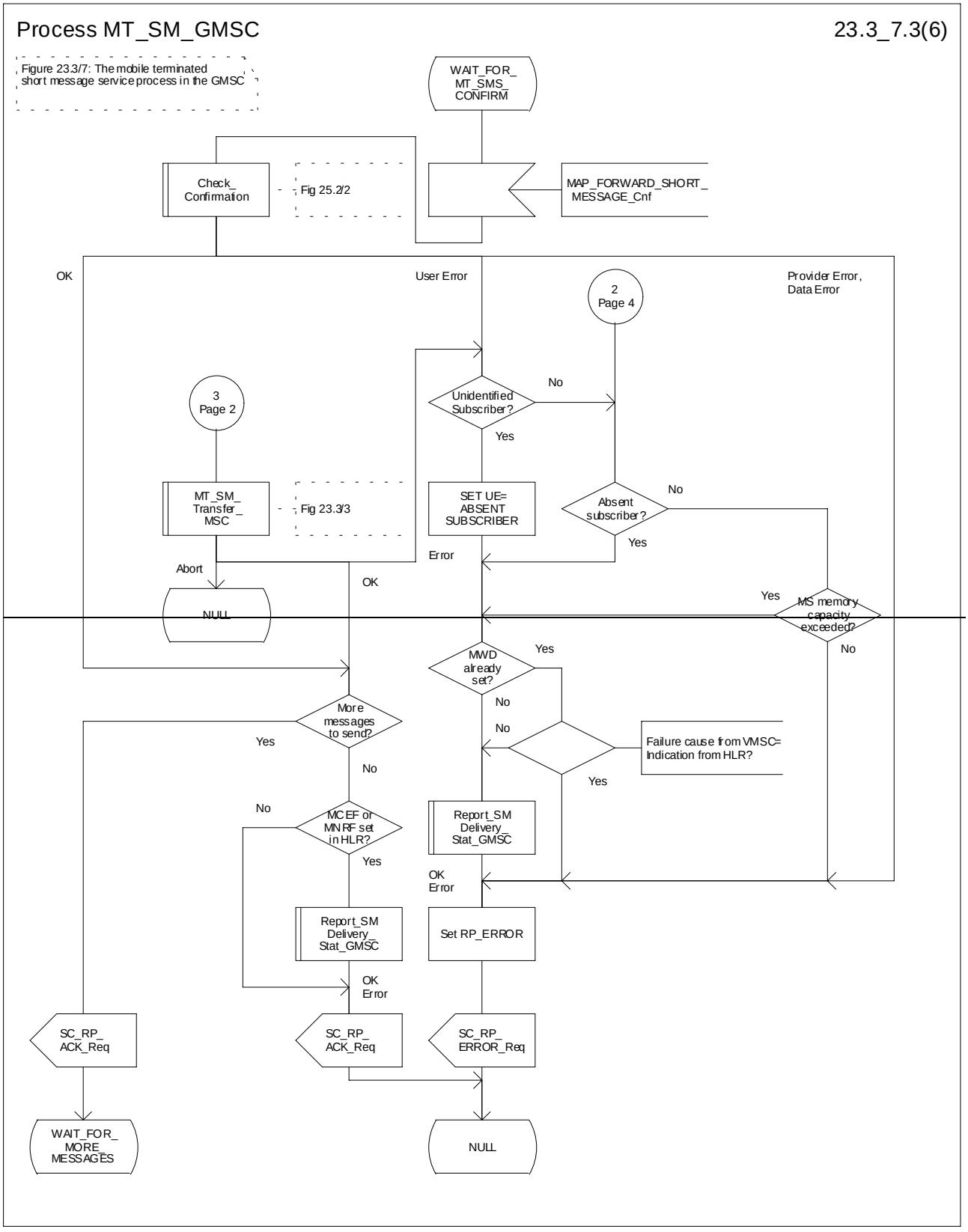
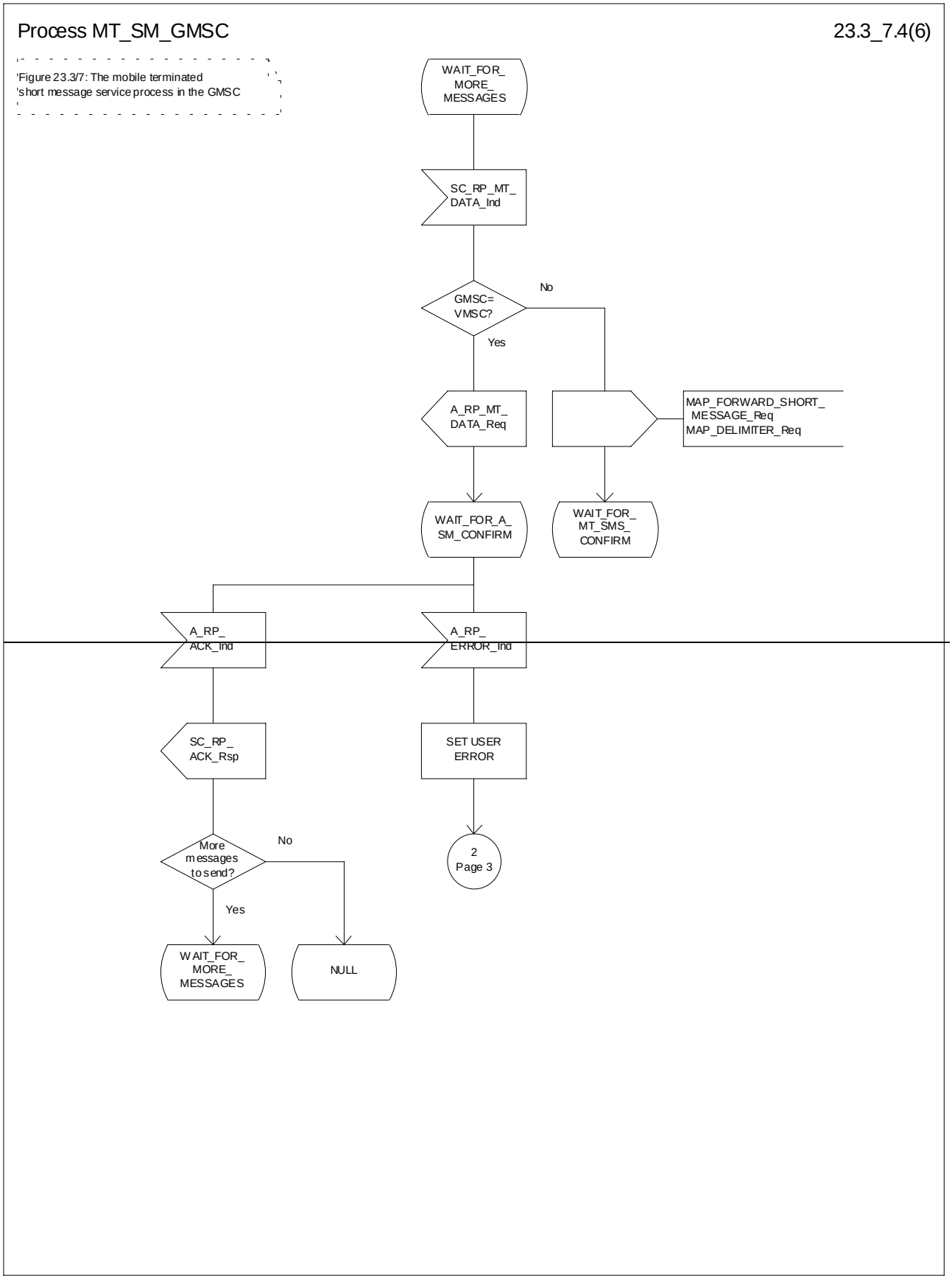


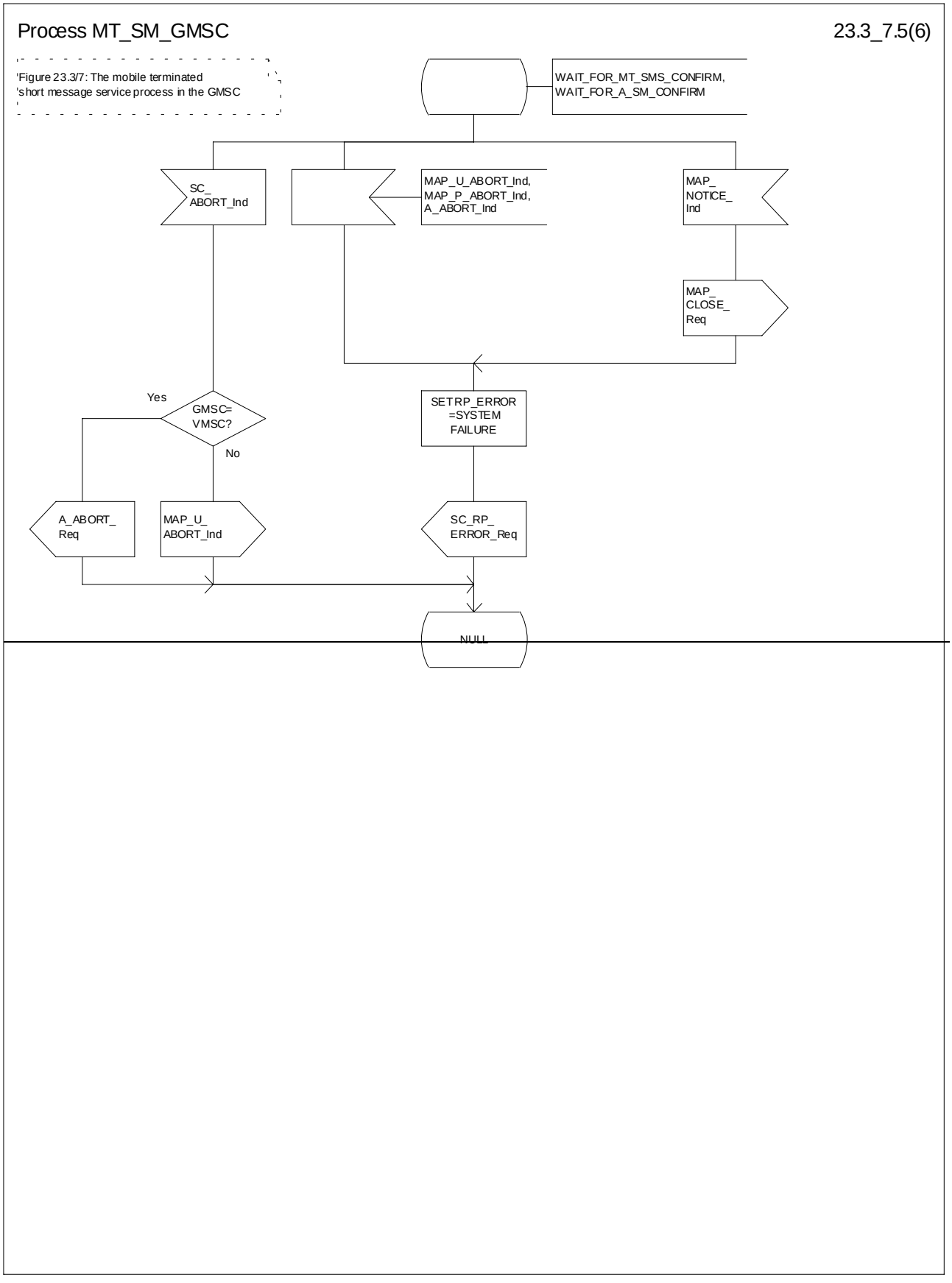
Figure 23.3/7 (sheet 2 ~~to~~f ~~6~~2): Process~~dure~~ MT_SM_GMSC



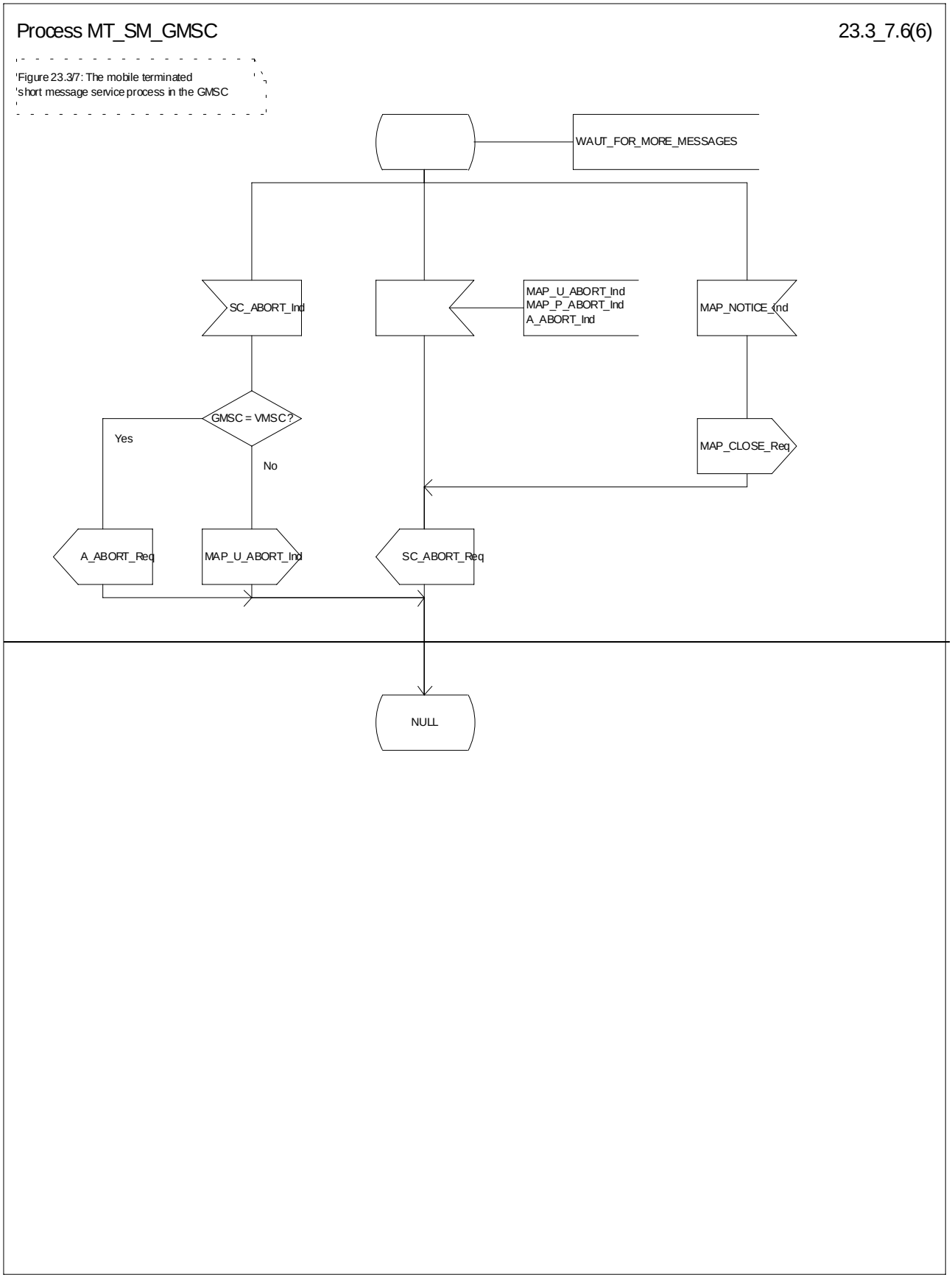
~~Figure 23.3/7 (sheet 3 of 6): Procedure MT_SM_GMSC~~



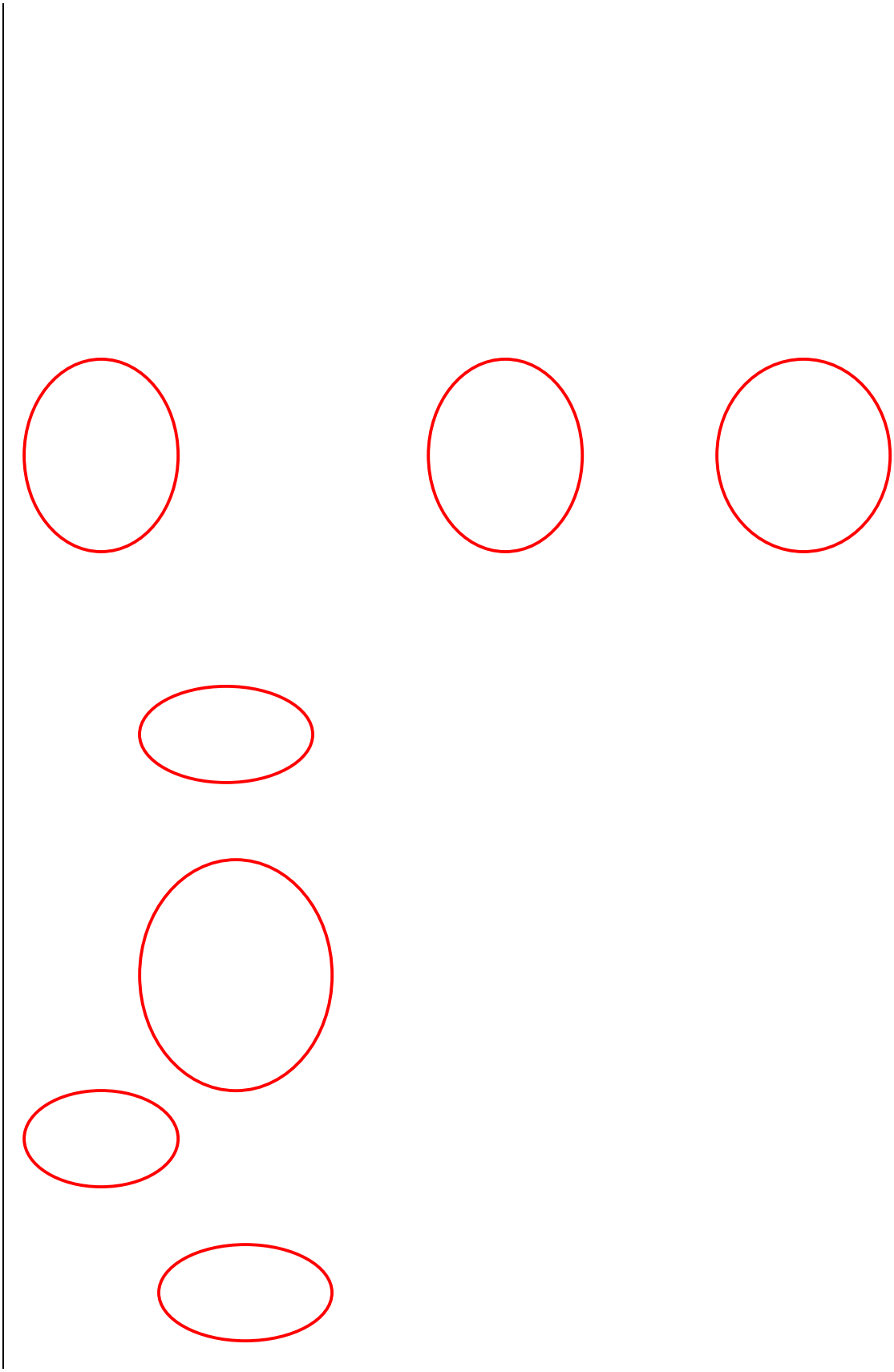
~~Figure 23.3/7 (sheet 4 of 6): Procedure_MT_SM_GMSC~~



~~Figure 23.3/7 (sheet 5 to 6): Procedure MT_SM_GMSC~~



~~Figure 23.3/7 (sheet 6 of 6): Procedure MT_SM_GMSC~~



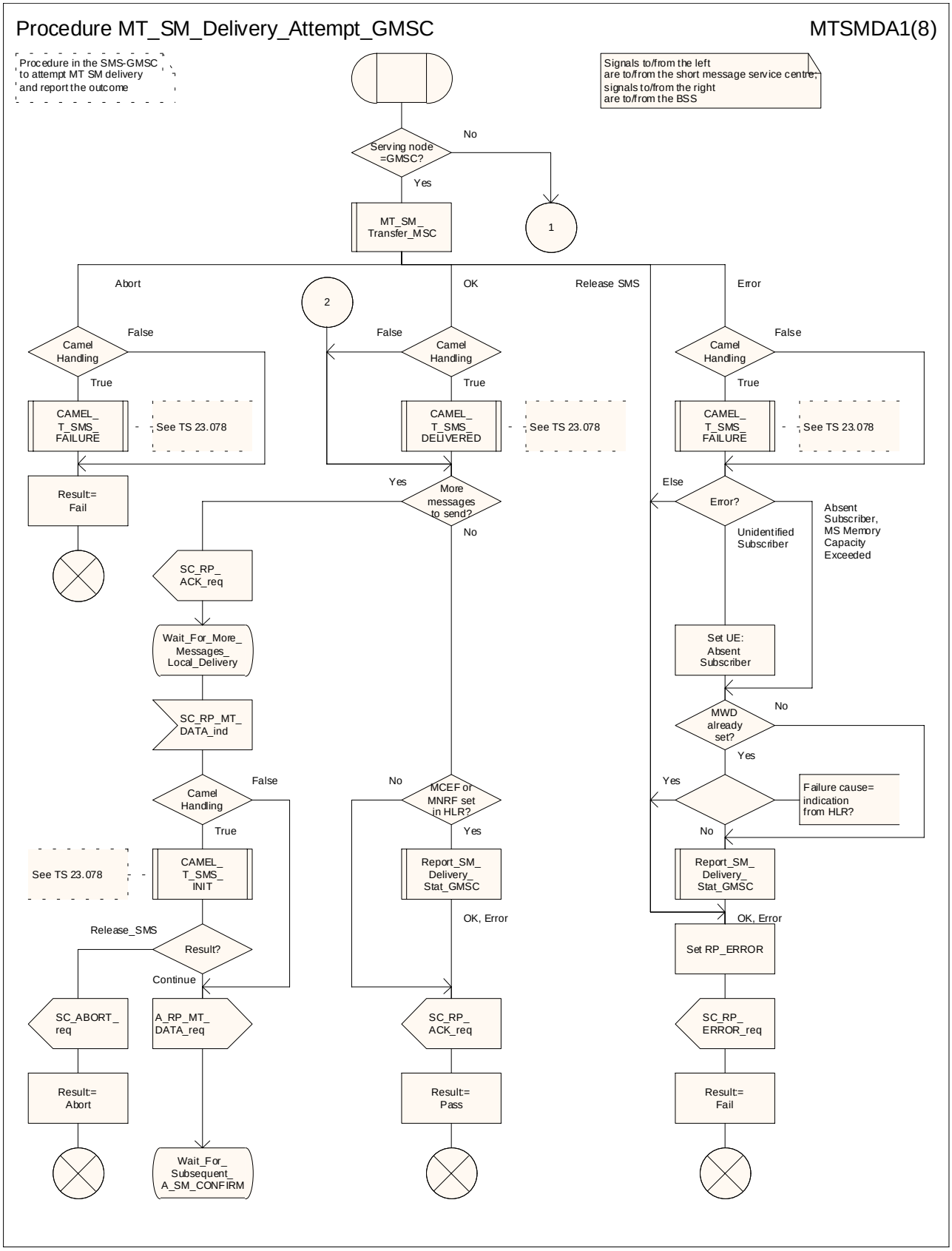
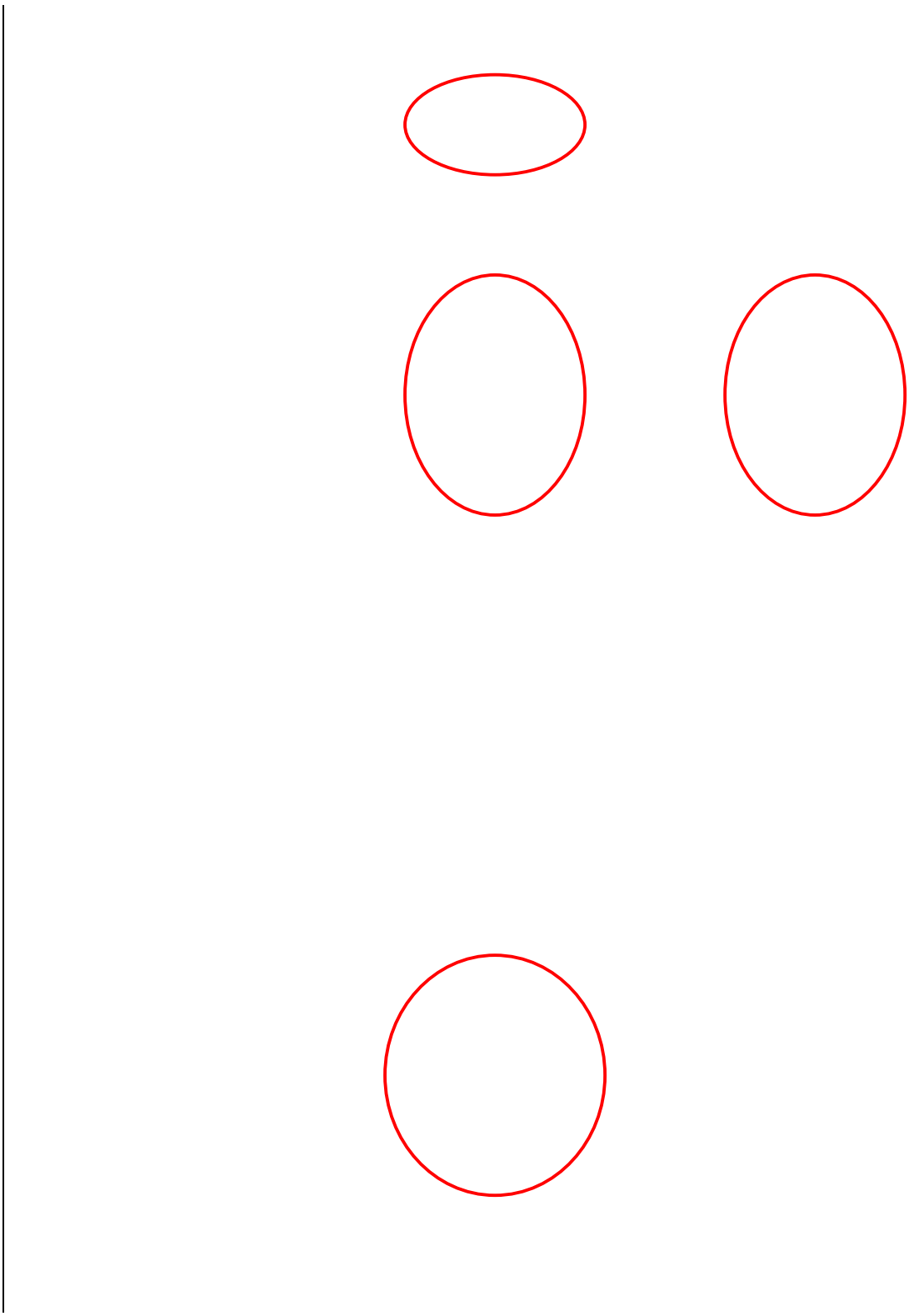


Figure 23.3/7a (sheet 1 of 8): Procedure MT_SM_Delivery_Attempt_GMSC



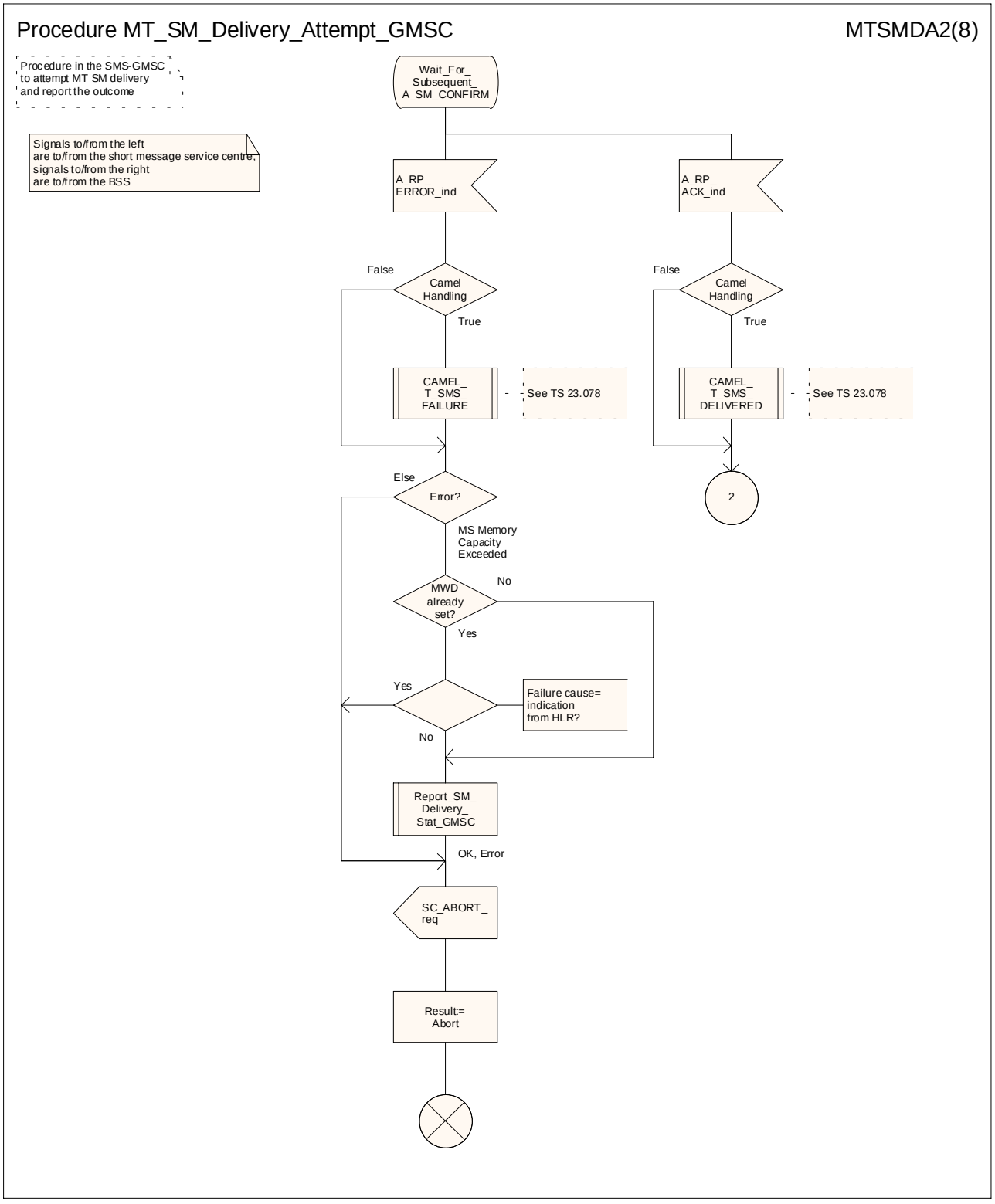


Figure 23.3/7a (sheet 2 of 8): Procedure MT_SM_Delivery_Attempt_GMSC

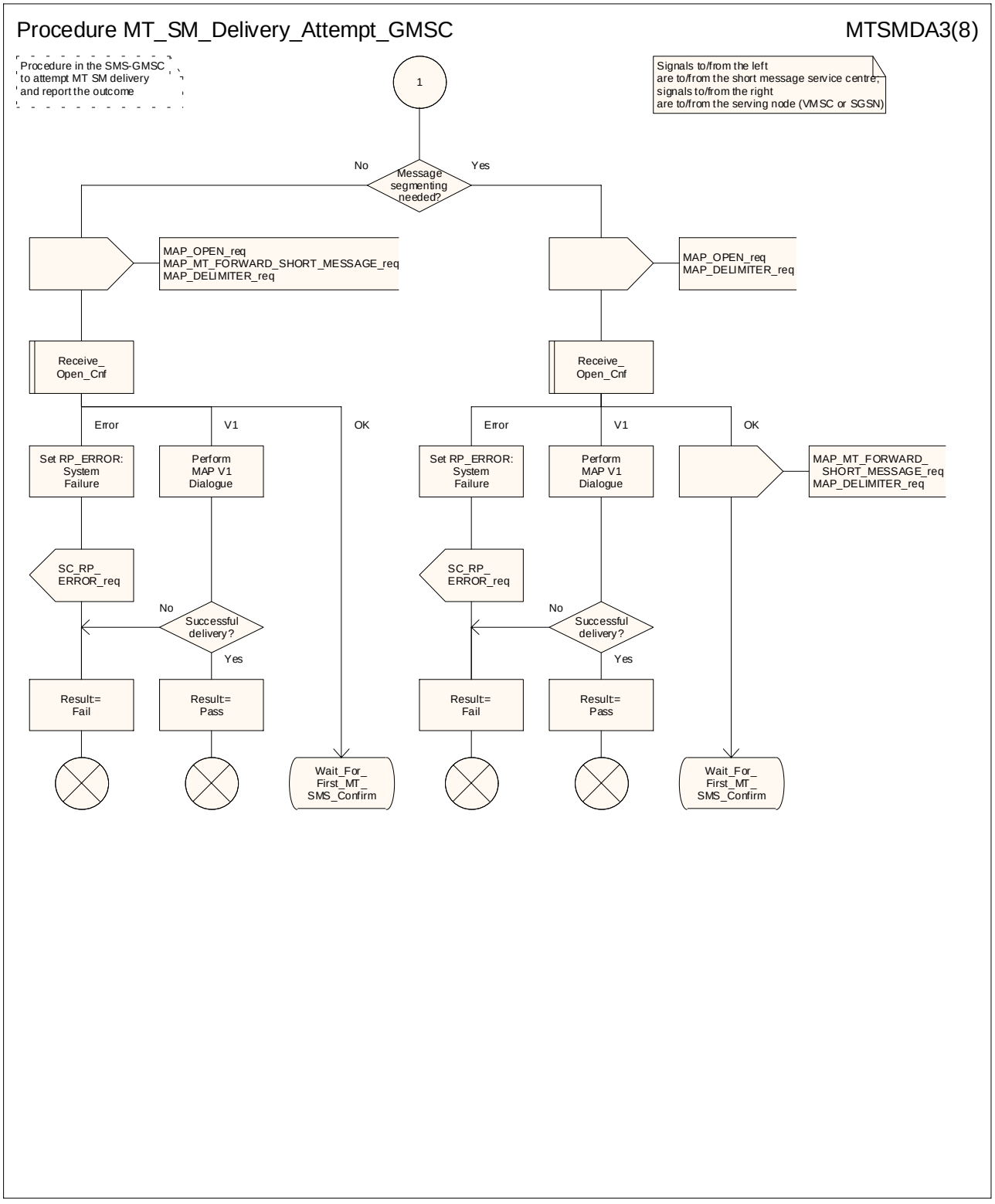
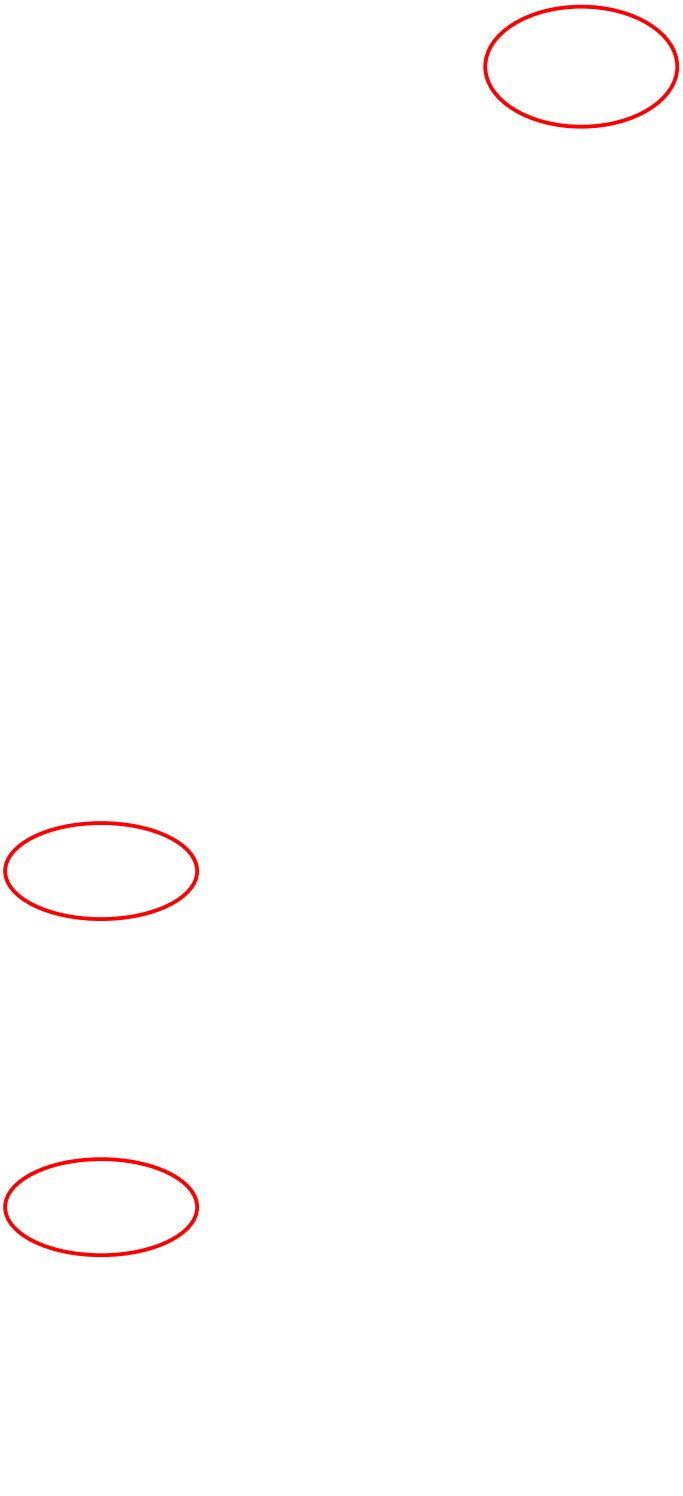


Figure 23.3/7a (sheet 3 of 8): Procedure MT_SM_Delivery_Attempt_GMSC



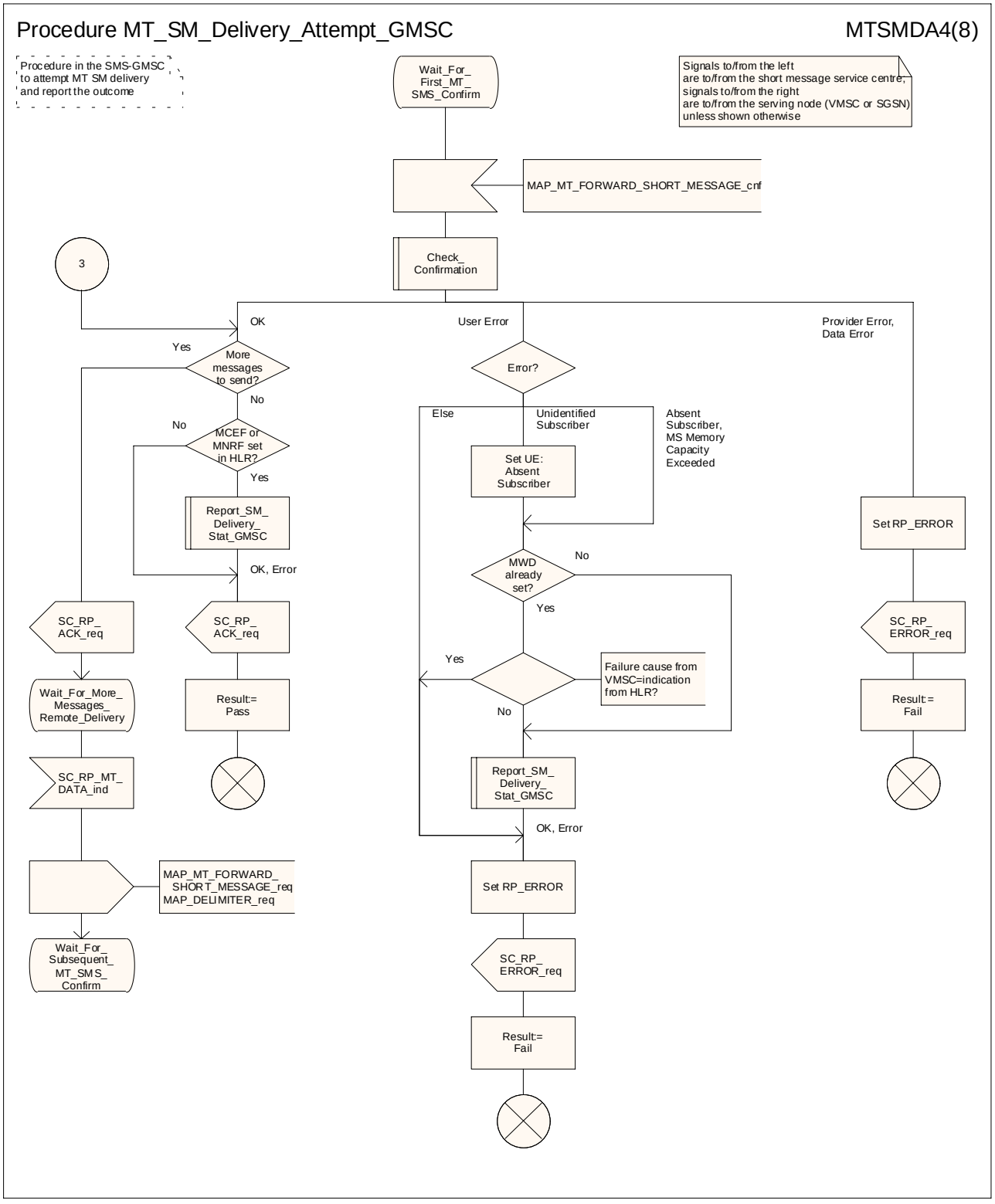


Figure 23.3/7a (sheet 4 of 8): Procedure MT_SM_Delivery_Attempt_GMSC

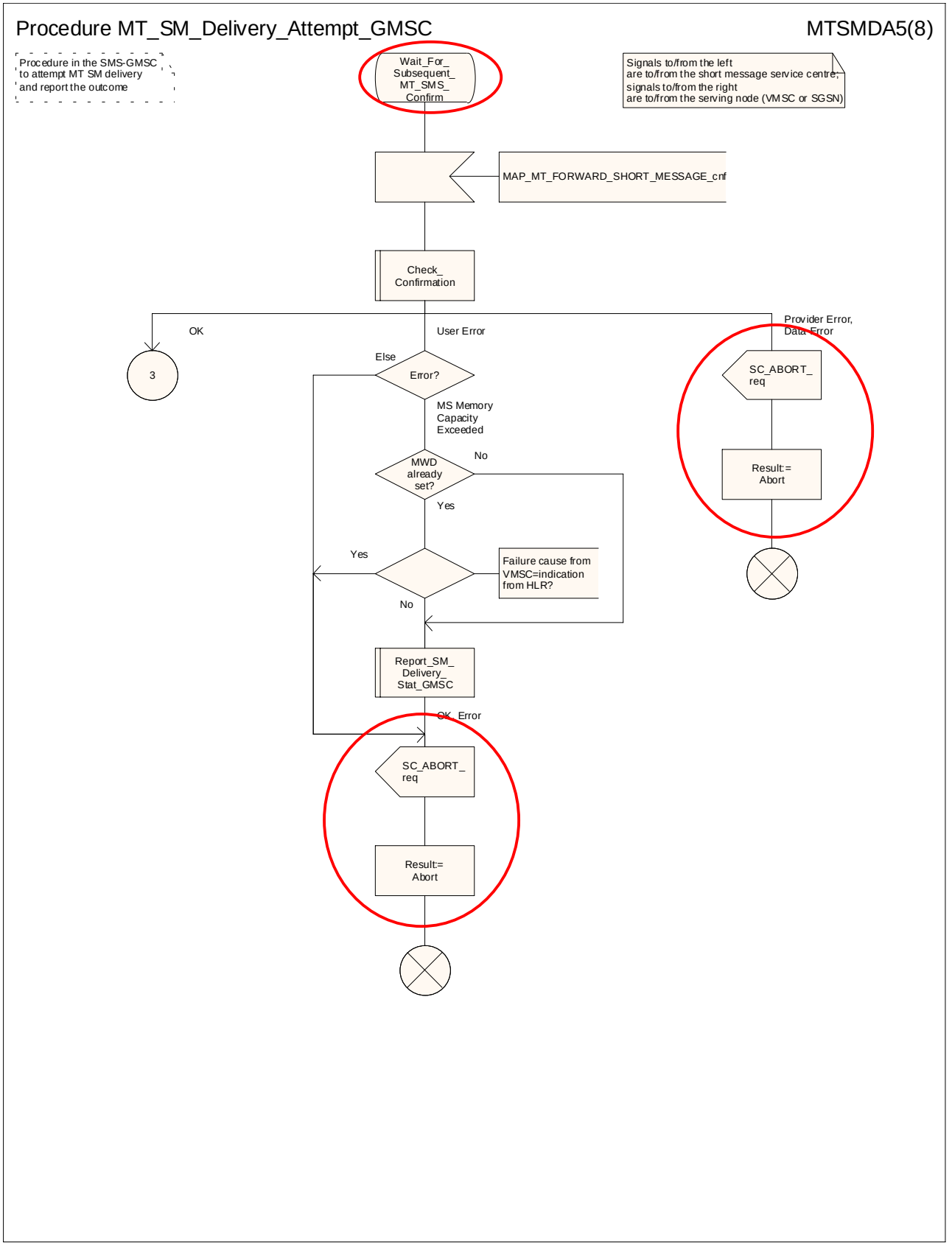


Figure 23.3/7a (sheet 5 of 8): Procedure MT_SM_Delivery_Attempt_GMSC

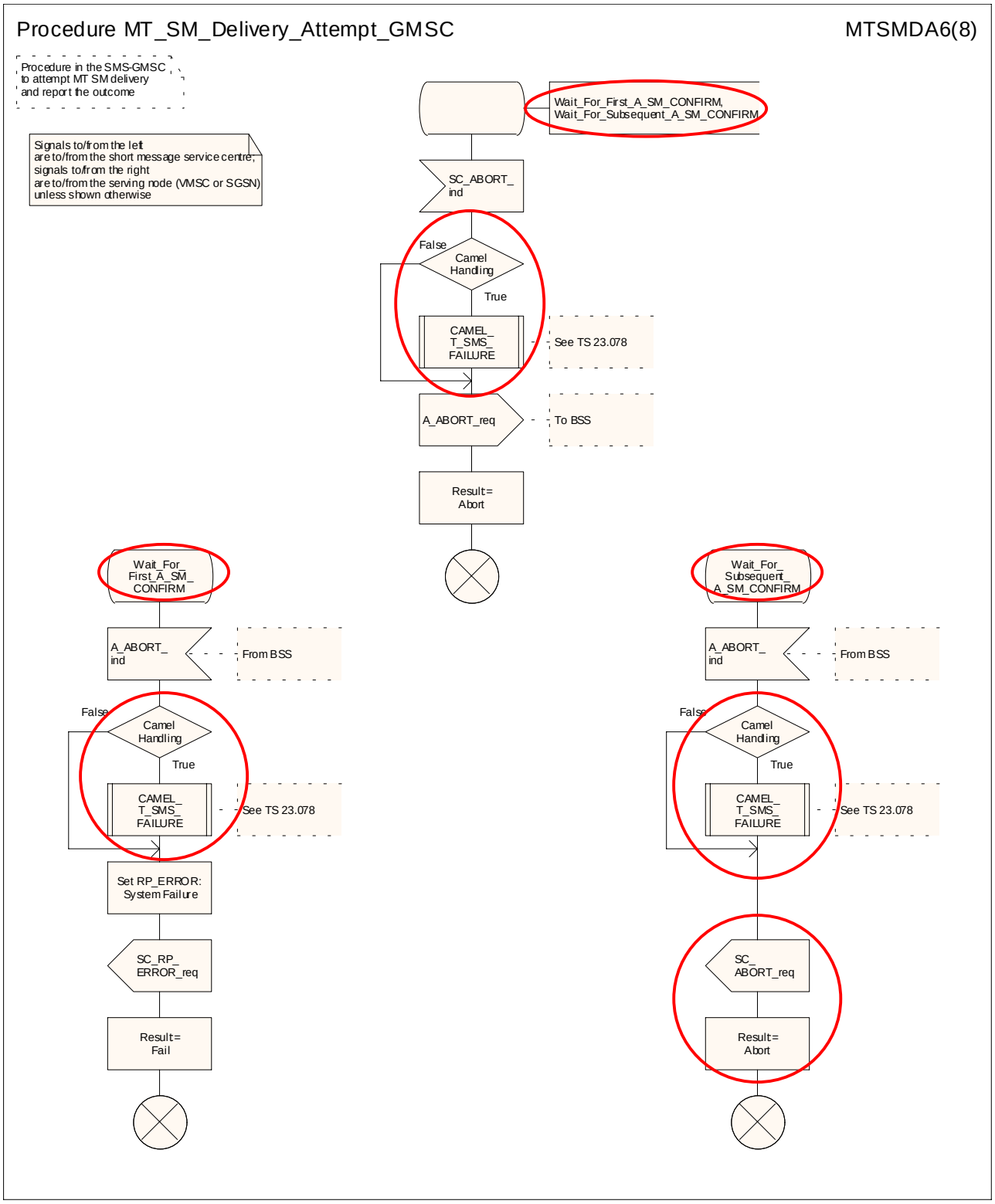


Figure 23.3/7a (sheet 6 of 8): Procedure MT_SM_Delivery_Attempt_GMSC

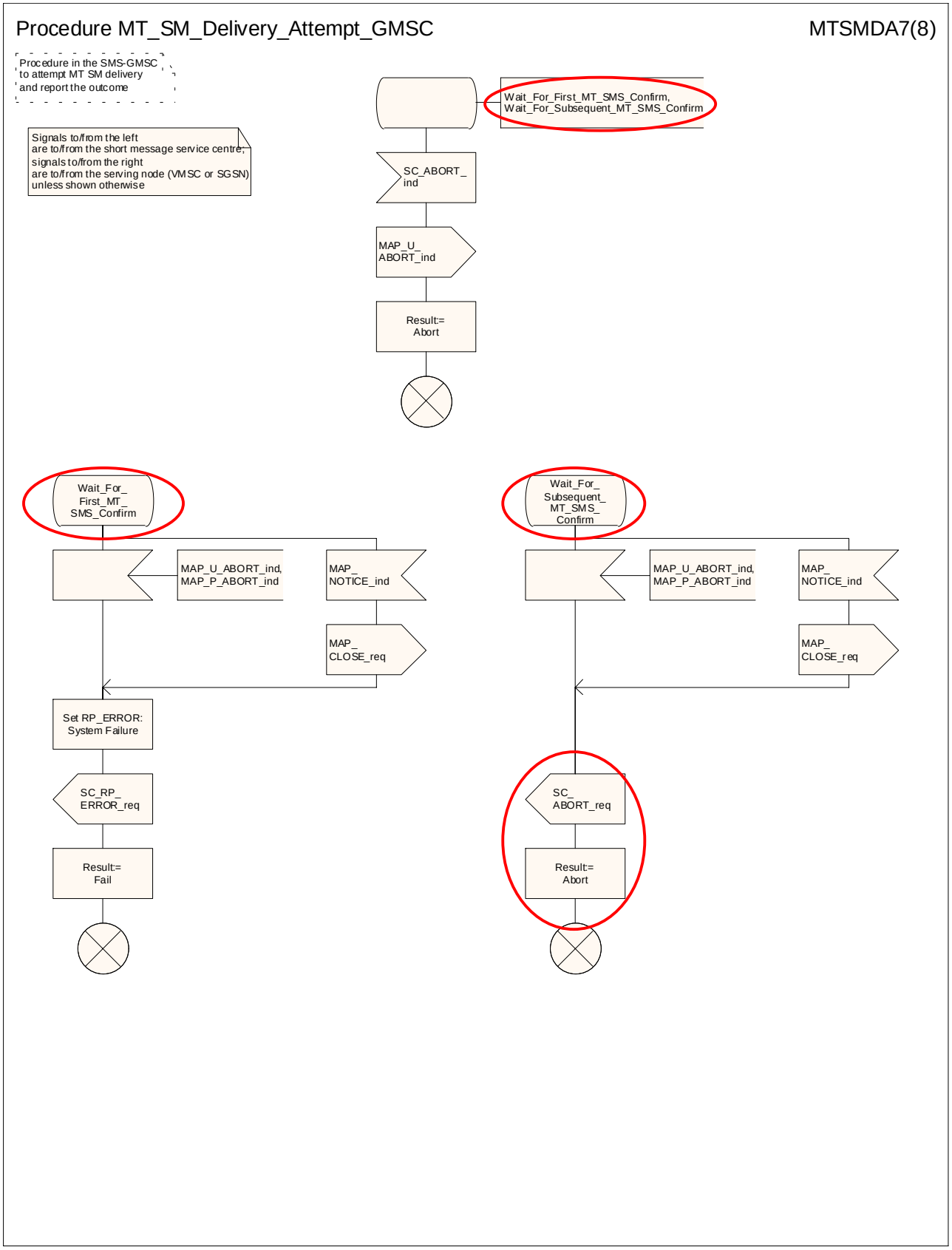


Figure 23.3/7a (sheet 7 of 8): Procedure MT_SM_Delivery_Attempt_GMSC

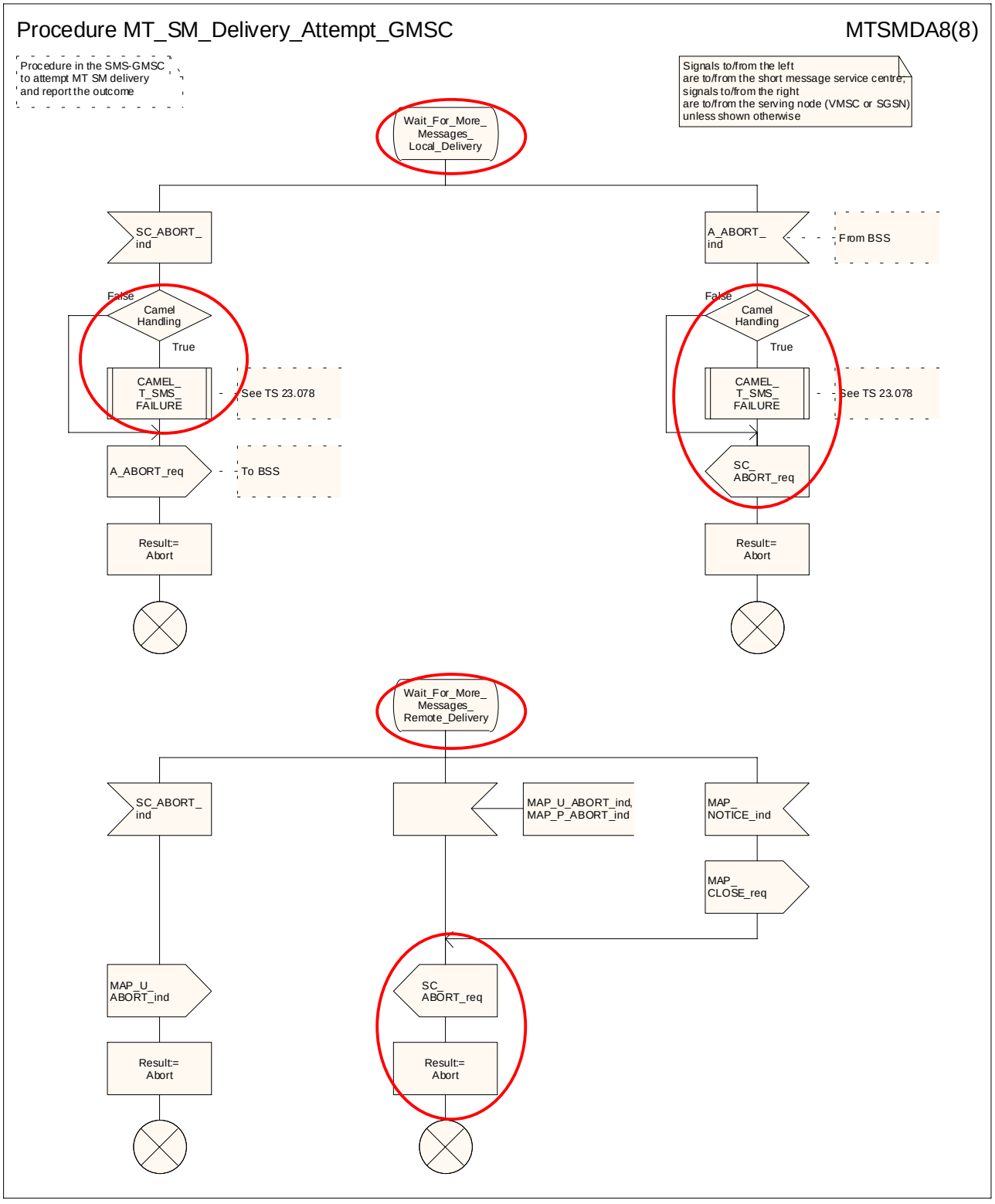


Figure 23.3/7a (sheet 8 of 8): Procedure MT_SM_Delivery_Attempt_GMSC

****** End of document ******

3GPP TSG CN WG4 Meeting #16 ***N4-021124***
Miami, USA, 23rd – 27th September 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **475** ⌘ **rev** **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	ODB and CB for SMS
Source:	⌘	CN4
Work item code:	⌘	TEI5
Date:	⌘	23/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	In section 23.2.2 Procedure in the VLR, it is defined that ODB (BAOC) and CB (BAOC) are applied for SM-MO, but there is no description for other categories of ODB and CB (e.g.BOIC and BOIC-exHC). In TS22.004 ANNEX A, BAOC, BOIC and BOIC-exHC are applicable for SMS. Therefore, CB (BOIC) and CB (BOIC-exHC) can be applicable for SMS even if it is not clearly defined in the current TS29.002. In addition to that, TS23.015 defines that Barring of all outgoing international calls, Barring of all outgoing international calls except those directed to the home PLMN country and other catergories of barring are applicable for SMS. In current TS29.002, it seems that only ODB (BAOC) and CB (BAOC) are applicaple for SMS, because only ODB(BAOC) and CB(BAOC) are clearly defined. Therefore, decsciption of specific category of barring should be deleted from section 23.2.2 in order to avoid misinterpretation.
Summary of change:	⌘	Description of the specific category of barring (i.e. BAOC) is deleted from section section 23.2.2.
Consequences if not approved:	⌘	Stage 1 requrirements on CB and Stage2 requirements of ODB may be satisfied by a VLR and SGSN which are implemented based on only TS29.002 and inconsistent description between stage 3 and stage1/2 requirements remains.

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

	X	O&M Specifications

Other comments: ⌘

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

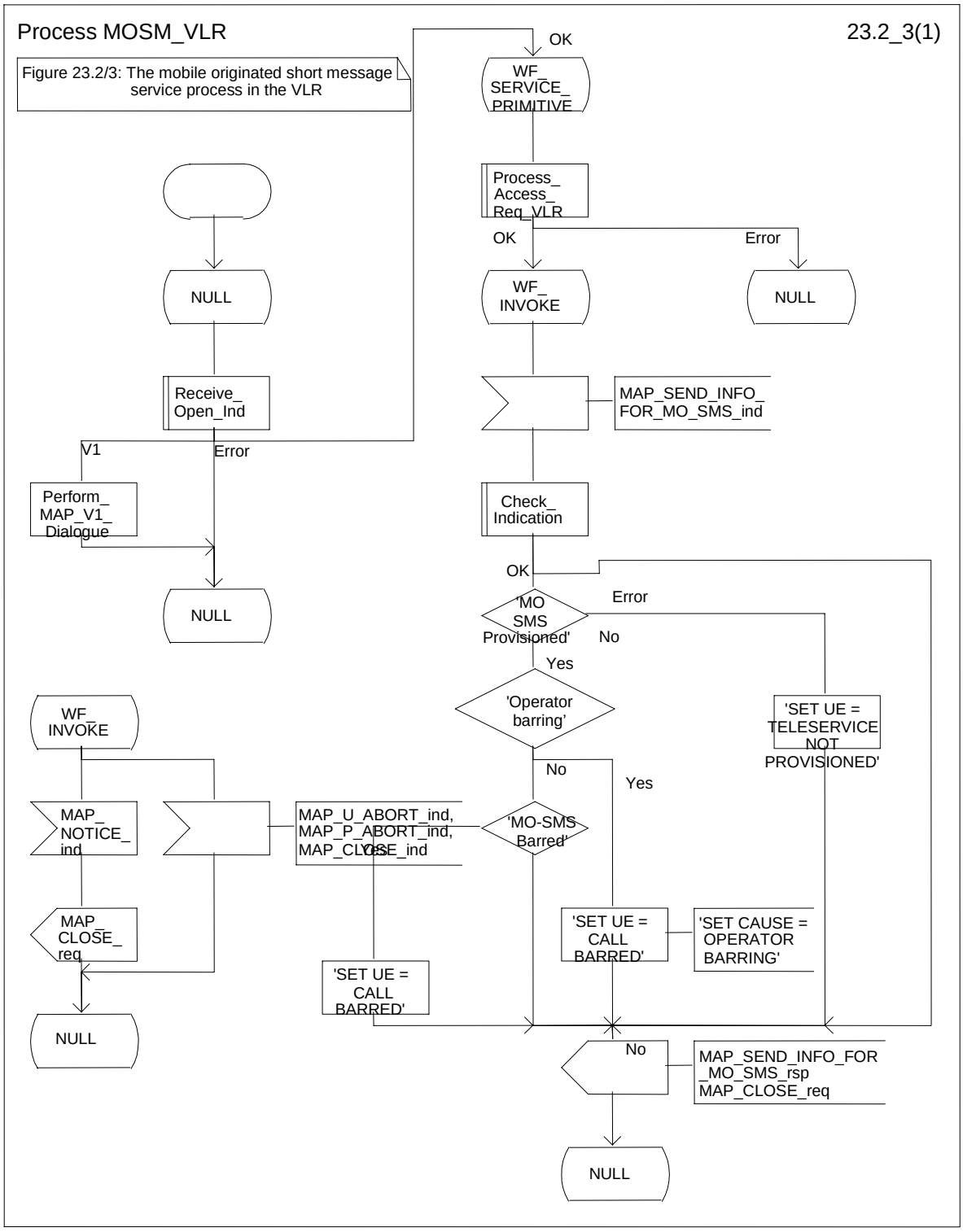
23.2.2 Procedure in the VLR

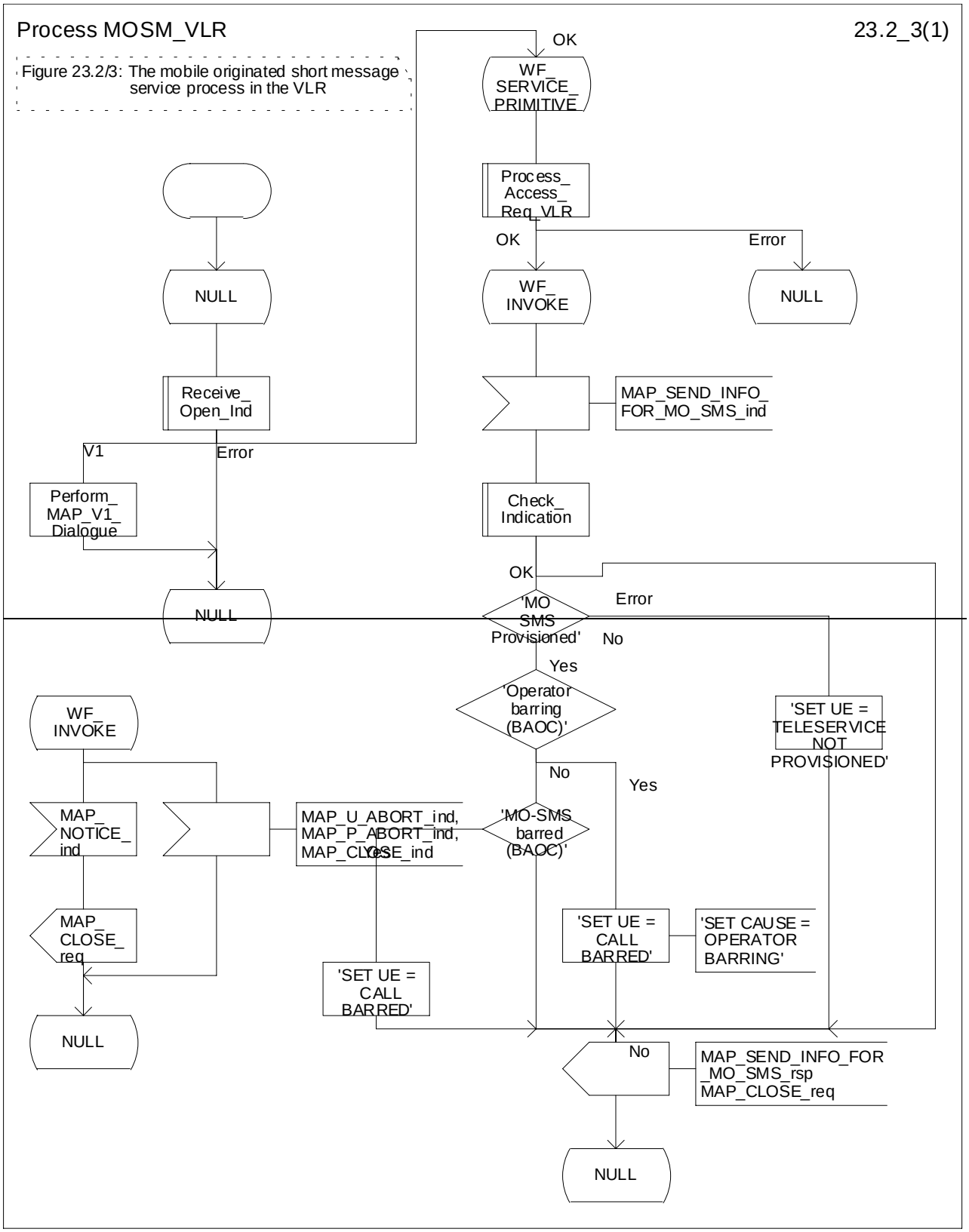
The MAP_PROCESS_ACCESS_REQUEST indication starts the MAP_PROCESS_ACCESS_REQUEST service in the VLR. The application context in the MAP_OPEN indication is mobile originated short message transfer.

If the service MAP_PROCESS_ACCESS_REQUEST is successful, the VLR waits for the next message from the MSC. When receiving the MAP_SEND_INFO_FOR_MO_SMS indication, the VLR acts as follows:

- if there is incompatibility in the subscription check, the error teleservice not provisioned is returned to the MSC;
- if the short message transfer would contravene Operator determined Barring ~~(BAOC)~~, the call barred error with cause operator barring is returned;
- if the short message transfer would contravene the supplementary service call barring conditions ~~(BAOC)~~in the VLR, the call barred error with cause barring service active is returned.

When the mobile subscriber has passed all checks, the MAP_SEND_INFO_FOR_MO_SMS response is initiated and the procedure is terminated in the VLR. The mobile originated short message transfer procedure in the VLR is shown in figure 23.2/3.


Process MOSM_VLR
23.2_3(1)
Figure 23.2/3: The mobile originated short message service process in the VLR
OK
WF_ SERVICE_ PRIMITIVE
Process_ Access_ Req_VLR
OK
Error
NULL
WF_ INVOKE
NULL
Receive_ Open_Ind
MAP_SEND_INFO_ FOR_MO_SMS_ind
V1
Error
Perform_ MAP_V1_ Dialogue
Check_ Indication
NULL
OK
'MO SMS Provisioned'
Error
No
Yes
'Operator barring'
'SET UE = TELESERVICE NOT PROVISIONED'
WF_ INVOKE
No
Yes
MAP_ NOTICE_ ind
MAP_U_ABORT_ind, MAP_P_ABORT_ind, MAP_CLOSE_ind
'MO-SMS Barred'
Yes
MAP_ CLOSE_ req
'SET UE = CALL BARRED'
'SET UE = CALL BARRED'
'SET CAUSE = OPERATOR BARRING'
NULL
No
MAP_SEND_INFO_FOR _MO_SMS_rsp
MAP_CLOSE_req
NULL


Process MOSM_VLR
23.2_3(1)
Figure 23.2/3: The mobile originated short message service process in the VLR
OK
WF_ SERVICE_ PRIMITIVE
Process_ Access_ Req_VLR
OK
Error
NULL
WF_ INVOKE
NULL
Receive_ Open_Ind
MAP_SEND_INFO_ FOR_MO_SMS_ind
V1
Error
Perform_ MAP_V1_ Dialogue
Check_ Indication
OK
NULL
'MO SMS Provisioned'
Error
No
Yes
'Operator barring (BAOC)'
'SET UE = TELESERVICE NOT PROVISIONED'
WF_ INVOKE
No
Yes
MAP_ NOTICE_ ind
MAP_U_ABORT_ind, MAP_P_ABORT_ind, MAP_CLOSE_ind
'MO-SMS barred (BAOC)'
MAP_ CLOSE_ req
'SET UE = CALL BARRED'
'SET UE = CALL BARRED'
'SET CAUSE = OPERATOR BARRING'
NULL
No
MAP_SEND_INFO_FOR _MO_SMS_rsp
MAP_CLOSE_req
NULL

3GPP TSG CN WG4 Meeting #16 ***N4-021153***
Miami, USA, 23rd – 27th September 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **486** ⌘ **rev** **-** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	Correction of IMEI check for SGSN
Source:	⌘	CN4
Work item code:	⌘	TEI5
Date:	⌘	17/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	In 29.002 clause 19.1.1.1 there is a list of MAP services that may be invoked by the location update procedure. There the procedure MAP_CHECK_IMEI is marked as not applicable to the SGSN. But also a reference to clause 8.7 is given, where it is said that the SGSN is using this service.
Summary of change:	⌘	Remove the indication 'not used in SGSN' in clause 19.1.1.1
Consequences if not approved:	⌘	Inconsistent specification.

Clauses affected:	⌘	19.1.1.1

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

Other comments:	⌘	

****** START OF MODIFICATION ******

19.1.1 Location updating

19.1.1.1 General

The location updating procedure is used to update the location information held in the network. For GPRS subscribers, this procedure describes also updating of the SGSN and, if Gs interface is installed, updating of the VLR in combination with an attach/routing area updating in the SGSN. This location information is used to route incoming calls, packet data, short messages and unstructured supplementary service data to the roaming subscriber. Additionally, this procedure is used to provide the VLR and/or the SGSN with the information that a subscriber already registered, but being detached, is reachable again (IMSI Attach and/or GPRS Attach, see 3GPP TS 23.012 [23] and 3GPP TS 23.060 [104]). The use of the IMSI Detach / Attach feature is optional for the network operator.

To minimise the updates of the subscriber's HLR, the HLR holds only information about the VLR and MSC the subscriber is attached to and, for GPRS subscribers, the SGSN the subscriber is attached to. The VLR and the SGSN contain more detailed location information, i.e. the location area the subscriber is actually roaming in (for the VLR) and the routing area (RA) where the GPRS subscriber is located (for SGSN). Therefore, the VLR needs to be updated at each location area change (see figure 19.1.1/1 for this procedure) and the SGSN needs to be updated at each routing area change. The HLR needs updating only in the following cases:

- when the subscriber registers in a new VLR or SGSN, i.e. the VLR or SGSN has no data for that subscriber;
- when the subscriber registers in a new location area of the same VLR and new routing information is to be provided to the HLR (change of MSC area);
- if the indicator "Confirmed by HLR" or the indicator "Location Information Confirmed in HLR" is set to "Not Confirmed" because of HLR, VLR or SGSN restoration, and the VLR or SGSN receives an indication that the subscriber is present.

If a mobile subscriber registers in a visitor location register (VLR) not holding any information about this subscriber and is identified by a temporary mobile subscriber identity (TMSI) allocated by a previous visitor location register (PVLR), if the PVLR identity can be derived from LAI the new VLR must obtain the IMSI from PVLR to identify the HLR to be updated (see figure 19.1.1/2). If the IMSI cannot be retrieved from PVLR, it is requested from the MS (see figure 19.1.1/3).

The stage 2 specification for GPRS is in 3GPP TS 23.060 [104]. The interworking between the MAP signalling procedures and the GPRS procedures in the SGSN is shown by the transfer of signals between these procedures (see clause 19.1.1.8).

The message flow for successful GPRS Attach/ RA update procedure (with Gs interface not installed) is shown in figure 19.1.1/4.

The message flow for successful GPRS Attach/ RA update procedure combined with a successful VLR location updating (Gs interface installed) is shown in figure 19.1.1/5.

The following MAP services are invoked by the location update procedure:

MAP_UPDATE_LOCATION_AREA	(see clause 8.1);(**)
MAP_UPDATE_LOCATION	(see clause 8.1);(**)
MAP_UPDATE_GPRS_LOCATION	(see clause 8.1) (*);
MAP_CANCEL_LOCATION	(see clause 8.1);
MAP_INSERT_SUBSCRIBER_DATA	(see clause 8.8);
MAP_SEND_IDENTIFICATION	(see clause 8.1) (**);
MAP_PROVIDE_IMSI	(see clause 8.9) (**);
MAP_AUTHENTICATE	(see clause 8.5) (**);

MAP_SET_CIPHERING_MODE (see clause 8.6) (**);

MAP_FORWARD_NEW_TMSI (see clause 8.9) (**);

MAP_CHECK_IMEI (see clause 8.7) ~~(**)~~;

MAP_ACTIVATE_TRACE_MODE (see clause 9.2);

MAP_TRACE_SUBSCRIBER_ACTIVITY (see clause 9.2) (**).

(*): only used in SGSN and HLR for GPRS

(**): not used in SGSN

****** END OF MODIFICATION ******

3GPP TSG CN WG4 Meeting #17 **N4-021467**
Bangkok, THAILAND, 11th – 15th November 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **489** ⌘ **rev** **5** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	Available codecs list and selected codec indication
Source:	⌘	CN4
Work item code:	⌘	TEI5
Date:	⌘	1/11/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	Currently MSC-A can not indicate to 3G_MSC-B currently used codec or available codecs that can be used after inter-MSC handover/relocation. Any method based on reverse deducing of the codec (i.e. based on received RAB parameters) in 3G_MSC-B is not seen viable, since it is possible similar RAB parameters result from different codecs. Note that it is essential for 3G_MSC-B to know the currently used codec and available codecs for it to select a codec and to be able to allocate a correct transcoder in 3G_MSC/MGW. In R99 this problem does not exist since UMTS_AMR is the only possible codec. However, in later releases other codecs are possible as well and the currently specified relocation procedure is clearly requiring a correction. In addition, the 3G_MSC-B needs to know the set of available UMTS codecs due to potential subsequent intersystem handover to UMTS within 3G_MSC-B. MSC-A/3G_MSC-A needs to always know the selected codec for subsequent relocation and charging purposes.
Summary of change:	⌘	
Consequences if not approved:	⌘	Other codecs than UMTS_AMR/UMTS_AMR2 can not be used after Inter-MSC handover/relocation.

Clauses affected:	⌘	7.6.6.16-19(new), 8.4.1, 8.4.3, 8.4.4, 8.4.5, 17.7.1

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications	⌘	23.009 CR 084
			X	Test specifications		
			X	O&M Specifications		

Other comments: ⌘	

How to create CRs using this form:

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

7.6.6.16 Currently Used Codec

This parameter indicates the currently used codec in MSC-A.

7.6.6.17 Available Codecs List

This parameter indicates the available codecs in MSC-A and the associated modes in priority order (the first entry being the highest priority codec). MSC-B uses this information to select the associated transcoder resources.

7.6.6.18 Selected Codec

This parameter indicates the codec selected by MSC-B.

7.6.6.19 RAB Configuration Indicator

This parameter indicates by its presence that MSC-A (or MSC-B in case of subsequent handover) has generated the RAB parameters according to the preferred codec (first entry in the Available Codecs List).

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

8.4.1 MAP_PREPARE_HANDOVER service

8.4.1.1 Definition

This service is used between MSC-A and MSC-B (E-interface) when a call is to be handed over or relocated from MSC-A to MSC-B.

The MAP_PREPARE_HANDOVER service is a confirmed service using the primitives from table 8.4/1.

8.4.1.2 Service primitives

Table 8.4/1: MAP_PREPARE_HANDOVER

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Target Cell Id	C	C(=)		
Target RNC Id	C	C(=)		
HO-NumberNotRequired	C	C(=)		
IMSI	C	C(=)		
Integrity Protection Information	C	C(=)		
Encryption Information	C	C(=)		
Radio Resource Information	C	C(=)		
AN-APDU	C	C(=)	C	C(=)
Allowed GSM Algorithms	C	C(=)		
Allowed UMTS Algorithms	C	C(=)		
Radio Resource List	C	C(=)		
RAB ID	C	C(=)		
GERAN Classmark	C	C(=)		
BSSMAP Service Handover	C	C(=)		
RANAP Service Handover	C	C(=)		
Currently Used Codec	C	C(=)		
Available Codecs List	C	C(=)		
RAB Configuration Indicator	C	C(=)		
Handover Number			C	C(=)
Relocation Number List			C	C(=)
Multicall Bearer Information			C	C(=)
Multiple Bearer Requested	C	C(=)		

Multiple Bearer Not Supported			C	C(=)
Selected UMTS Algorithms			C	C(=)
Chosen Radio Resource Information			C	C(=)
Selected Codec			C	C(=)
User error			C	C(=)
Provider error				O

8.4.1.3 Parameter use

Invoke Id

For definition of this parameter see clause 7.6.1.

Target Cell Id

For definition of this parameter see clause 7.6.2. This parameter is only included if the service is not in an ongoing transaction. This parameter shall also be excluded if the service is a part of the Inter-MSC SRNS Relocation procedure or the inter-system handover GSM to UMTS procedure described in 3G TS 23.009.

Target RNC Id

For definition of this parameter see clause 7.6.2. This parameter shall be included if the service is a part of the Inter-MSC SRNS Relocation procedure or the inter-system handover GSM to UMTS procedure described in 3G TS 23.009.

HO-Number Not Required

For definition of this parameter see clause 7.6.6.

IMSI

For definition of this parameter see clause 7.6.2. This UMTS parameter shall be included if:

- available and
- if the access network protocol is BSSAP and
- there is an indication that the MS also supports UMTS.

Integrity Protection Information

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if available and if the access network protocol is BSSAP.

Encryption Information

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if available and if the access network protocol is BSSAP.

Radio Resource Information

For definition of this parameter see clause 7.6.6. This GSM parameter shall be included if the access network protocol is RANAP and there is an indication that the UE also supports GSM. If the parameter Radio Resource List is sent , the parameter Radio Resource Information shall not be sent.

AN-APDU

For definition of this parameter see clause 7.6.9.

Allowed GSM Algorithms

For definition of this parameter see clause 7.6.6. This parameters includes allowed GSM algorithms. This GSM parameter shall be included if:

- the service is a part of the Inter-MSC SRNS Relocation procedure and

- Ciphering or Security Mode Setting procedure has been performed.and
- there is an indication that the UE also supports GSM.

Allowed UMTS Algorithms

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if all of the following conditions apply:

- access network protocol is BSSAP and
- Integrity Protection Information and Encryption Information are not available and

Ciphering or Security Mode Setting procedure has been performed.

Radio Resource List

For definition of this parameter see clause 7.6.6. This parameter shall be included if the access network protocol is RANAP and there is an indication that the UE also supports GSM. This parameter shall be sent when MSC-A requests multiple bearers to MSC-B. If the parameter Radio Resource Information is sent , the parameter Radio Resource List shall not be sent.

RAB ID

For definition of this parameter see subclause 7.6.2. This parameter shall be included when MSC-A supports multiple bearers and access network protocol is BSSAP and the RAB ID has a value other than 1.

GERAN Classmark

For definition of this parameter see subclause 7.6.6 This parameter shall be included if available.

BSSMAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available.

RANAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available.

Currently Used Codec

For definition of this parameter see subclause 7.6.6. This parameter shall be included if the call is a speech call. This parameter shall not be included if Available Codecs List is not included.

Available Codecs List

For definition of this parameter see subclause 7.6.6. This parameter shall be included if the call is a speech call.

RAB Configuration Indicator

For definition of this parameter see subclause 7.6.6. This parameter may be included if the call is a speech call and MSC-A knows by means of configuration information that MSC-B supports the use of Available Codecs List parameter. This parameter shall not be included if Available Codecs List is not included.

Handover Number

For definition of this parameter see clause 7.6.2. This parameter shall be returned at handover, unless the parameter HO-NumberNotRequired is sent. If the parameter Handover Number is returned, the parameter Relocation Number List shall not be returned.

Relocation Number List

For definition of this parameter see clause 7.6.2. This parameter shall be returned at relocation, unless the parameter HO-NumberNotRequired is sent. If the parameter Relocation Number List is returned, the parameter Handover Number shall not be returned.

Multicall Bearer Information

For a definition of this parameter see clause 7.6.2. This parameter shall be returned at relocation in the case that MSC-B supports multiple bearers.

Multiple Bearer Requested

For a definition of this parameter see clause 7.6.2. This parameter shall be sent when MSC-A requests multiple bearers to MSC-B.

Multiple Bearer Not Supported

For a definition of this parameter see clause 7.6.2. This parameter shall be returned at relocation when MSC-B receives Multiple Bearer Requested parameter and MSC-B does not support multiple bearers.

Selected UMTS Algorithms

For definition of this parameter see clause 7.6.6. This parameters includes the UMTS integrity and optionally encryption algorithms selected by RNC under the control of MSC-B. This UMTS parameter shall be included if the service is a part of the inter MSC inter system handover from GSM to UMTS.

Chosen Radio Resource Information

For definition of this parameter see clause 7.6.6. This parameter shall be returned at relocation if the encapsulated PDU is RANAP RAB Assignment Response and MS is in GSM access.

Selected Codec

For definition of this parameter see subclause 7.6.6. This parameter shall be included always if MSC-B supports the selection of codec based on Available Codecs List, even if Selected Codec is equal to the Currently Used Codec received in the service request. This parameter shall not be included if Available Codecs List was not received in the service request.

User error

For definition of this parameter see clause 7.6.1. The following errors defined in clause 7.6.1 may be used, depending on the nature of the fault:

- No handover number available.
- Target cell outside group call area;
- System failure.
- Unexpected data value.
- Data Missing.

Provider error

See definition of provider errors in clause 7.6.1.

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

8.4.3 MAP_PROCESS_ACCESS_SIGNALLING service

8.4.3.1 Definition

This service is used between MSC-B and MSC-A (E-interface) to pass information received on the A-interface or Iu-interface in MSC-B to MSC-A.

The MAP_PROCESS_ACCESS_SIGNALLING service is a non-confirmed service using the primitives from table 8.4/3.

8.4.3.2 Service primitives

Table 8.4/3: MAP_PROCESS_ACCESS_SIGNALLING

Parameter name	Request	Indication
Invoke Id	M	M(=)
AN-APDU	M	M(=)
Selected GSM Algorithm	C	C(=)
Selected UMTS Algorithms	C	C(=)
Chosen Radio Resource Information	C	C(=)
Selected RAB id	C	C(=)
Selected Codec	C	C(=)

8.4.3.3 Parameter use

Invoke Id

For definition of this parameter see clause 7.6.1.

AN-APDU

For definition of this parameter see clause 7.6.9.

Selected GSM algorithm

For definition of this parameter see clause 7.6.6. This parameter shall be present if the encapsulated PDU is Security Mode Complete and MS is in GSM access.

Selected UMTS Algorithms

For definition of this parameter see clause 7.6.6. This parameters includes the UMTS integrity and optionally encryption algorithms selected by RNC under the control of MSC-B. This UMTS parameter shall be included if the encapsulated PDU is BSSMAP Cipher Mode Complete and the MS is in UMTS, or an interystem handover to UMTS is performed in MSC-B, or in the case of intra MSC-B intra UMTS relocation.

Chosen Radio Resource Information

For definition of this parameter see clause 7.6.6. This parameter shall be sent if the encapsulated PDU is RANAP RAB Assignment Response and MS is in GSM access.

Selected RAB ID

The selected radio access bearer that was kept at subsequent intra-MSC handover from UMTS to GSM after multiple bearers were used.

Selected Codec

For definition of this parameter see subclause 7.6.6. This parameter shall be included if MSC-B changes the selected codec or in case of intersystem handover to UMTS is performed in MSC-B. This parameter shall not be included if Available Codecs List was not received either in the Prepare Handover service request or in the Forward Access Signalling service request.

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

8.4.4 MAP_FORWARD_ACCESS_SIGNALLING service

8.4.4.1 Definition

This service is used between MSC-A and MSC-B (E-interface) to pass information to be forwarded to the A-interface or Iu-interface of MSC-B.

The MAP_FORWARD_ACCESS_SIGNALLING service is a non-confirmed service using the primitives from table 8.4/4.

8.4.4.2 Service primitives

Table 8.4/4: MAP_FORWARD_ACCESS_SIGNALLING

Parameter name	Request	Indication
Invoke Id	M	M(=)
Integrity Protection Information	C	C(=)
Encryption Information	C	C(=)
Key Status	C	C(=)
AN-APDU	M	M(=)
Allowed GSM Algorithms	C	C(=)
Allowed UMTS Algorithms	C	C(=)
Radio Resource Information	C	C(=)
Radio Resource List	C	C(=)
BSSMAP Service Handover	C	C(=)
RANAP Service Handover	C	C(=)
Currently Used Codec	C	C(=)
Available Codecs List	C	C(=)
RAB Configuration Indicator	C	C(=)

8.4.4.3 Parameter use

For the definition and use of all parameters and errors, see clause 7.6.1.

Invoke Id

For definition of this parameter see clause 7.6.1.

Integrity Protection Information

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if available and if the encapsulated PDU is BSSMAP Cipher Mode Command.

Encryption Information

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if available and if the encapsulated PDU is BSSMAP Cipher Mode Command.

Key Status

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if available and if the encapsulated PDU is BSSMAP Cipher Mode Command.

AN-APDU

For definition of this parameter see clause 7.6.9.

Allowed GSM Algorithms

This parameters includes allowed GSM algorithms. This GSM parameter shall be included if the encapsulated PDU is RANAP Security Mode Command and there is an indication that the UE also supports GSM.

Allowed UMTS Algorithms

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if Integrity Protection Information and Encryption Information are not available and the encapsulated PDU is BSSMAP Cipher Mode Command.

Radio Resource Information

For definition of this parameter see clause 7.6.6. This parameter shall be sent if the encapsulated PDU is RANAP RAB Assignment Request. If the parameter Radio Resource List is sent, the parameter Radio Resource Information shall not be sent.

Radio Resource List

For definition of this parameter see clause 7.6.6. This parameter shall be sent if the encapsulated PDU is RANAP RAB Assignment Request and MSC-A requests modification of multiple bearers. If the parameter Radio Resource Information is sent, the parameter Radio Resource List shall not be sent.

BSSMAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the encapsulated PDU is RANAP RAB Assignment Request or BSSMAP Assignment Request.

RANAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the encapsulated PDU is BSSMAP Assignment Request or RANAP RAB Assignment Request.

Currently Used Codec

For definition of this parameter see subclause 7.6.6. This parameter shall be included if the encapsulated PDU is RANAP RAB Assignment Request and the bearer is modified from data to speech. This parameter shall not be included if Available Codecs List is not included.

Available Codecs List

For definition of this parameter see subclause 7.6.6. This parameter shall be included if the encapsulated PDU is RANAP RAB Assignment Request and the bearer is modified from data to speech.

RAB Configuration Indicator

For definition of this parameter see subclause 7.6.6. This parameter may be included if the encapsulated PDU is RANAP RAB Assignment Request, the bearer is modified from data to speech and MSC-A knows by means of configuration information that MSC-B supports the use of Available Codecs List parameter. This parameter shall not be included if Available Codecs List is not included.

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

8.4.5 MAP_PREPARE_SUBSEQUENT_HANDOVER service

8.4.5.1 Definition

This service is used between MSC-B and MSC-A (E-interface) to inform MSC-A that it has been decided that a handover or relocation to either MSC-A or a third MSC (MSC-B') is required.

The MAP_PREPARE_SUBSEQUENT_HANDOVER service is a confirmed service using the primitives from table 8.4/5.

8.4.5.2 Service primitives

Table 8.4/5: MAP_PREPARE_SUBSEQUENT_HANDOVER

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Target Cell Id	C	C(=)		
Target RNC Id	C	C(=)		
Target MSC Number	M	M(=)		
Selected RAB ID	C	C(=)		
GERAN Classmark	C	C(=)		
RAB Configuration Indicator	C	C(=)		
AN-APDU	M	M(=)	C	C(=)
User error			C	C(=)
Provider error				O

8.4.5.3 Parameter use

Invoke Id

For definition of this parameter see clause 7.6.1.

Target Cell Id

For definition of this parameter see clause 7.6.2. This parameter shall be excluded if the service is a part of the Inter-MSC SRNS Relocation procedure or the inter-system handover GSM to UMTS procedure described in 3G TS 23.009.

Target RNC Id

For definition of this parameter see clause 7.6.2. This parameter shall be included if the service is a part of the Inter-MSC SRNS Relocation procedure or the inter-system handover GSM to UMTS procedure described in 3G TS 23.009.

Target MSC Number

For definition of this parameter see clause 7.6.2.

Selected RAB ID

For definition of this parameter see clause 7.6.2.

GERAN Classmark

For definition of this parameter see subclause 7.6.6 This parameter shall be included if available.

RAB Configuration Indicator

For definition of this parameter see subclause 7.6.6. This parameter may be included if the call is a speech call and MSC-B knows by means of configuration information that MSC-B' (and MSC-A) supports the use of Available Codecs List parameter.

AN-APDU

For definition of this parameter see clause 7.6.9.

User error

For definition of this parameter see clause 7.6.1. The following error causes defined in clause 7.6.1 may be used, depending on the nature of the fault:

- Unknown MSC;
- Subsequent handover failure;
- Unexpected data value;

- Data Missing.

Provider error

For definition of this parameter see clause 7.6.1.

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

17.7 MAP constants and data types

17.7.1 Mobile Service data types

….

```
ForwardAccessSignalling-Arg ::= [3] SEQUENCE {
    an-APDU                          AccessNetworkSignalInfo,
    integrityProtectionInfo          [0] IntegrityProtectionInformation  OPTIONAL,
    encryptionInfo                   [1] EncryptionInformation           OPTIONAL,
    keyStatus                        [2]  KeyStatus                      OPTIONAL,
    allowedGSM-Algorithms            [4]  AllowedGSM-Algorithms          OPTIONAL,
    allowedUMTS-Algorithms           [5]  AllowedUMTS-Algorithms         OPTIONAL,
    radioResourceInformation         [6] RadioResourceInformation        OPTIONAL,
    extensionContainer               [3]  ExtensionContainer             OPTIONAL,
    ...,
    radioResourceList                [7]  RadioResourceList              OPTIONAL,
    bssmap-ServiceHandover           [9]  BSSMAP-ServiceHandover         OPTIONAL,
    ranap-ServiceHandover            [8]  RANAP-ServiceHandover          OPTIONAL,
    currentlyUsedCodec               [xx] Codec                          OPTIONAL,
    availableCodecsList              [xx] AvailableCodecsList            OPTIONAL,
    rab-ConfigurationIndicator       [xx] NULL                           OPTIONAL }
```

.....

```
PrepareHO-Arg ::= [3] SEQUENCE {
    targetCellId                     [0] GlobalCellId                    OPTIONAL,
    ho-NumberNotRequired             NULL                                OPTIONAL,
    targetRNCId                      [1] RNCId                           OPTIONAL,
    an-APDU                          [2] AccessNetworkSignalInfo         OPTIONAL,
    multipleBearerRequested          [3] NULL                            OPTIONAL,
    imsi                             [4] IMSI                            OPTIONAL,
    integrityProtectionInfo          [5] IntegrityProtectionInformation  OPTIONAL,
    encryptionInfo                   [6] EncryptionInformation           OPTIONAL,
    radioResourceInformation         [7] RadioResourceInformation        OPTIONAL,
    allowedGSM-Algorithms            [9]  AllowedGSM-Algorithms          OPTIONAL,
    allowedUMTS-Algorithms           [10] AllowedUMTS-Algorithms         OPTIONAL,
    radioResourceList                [11] RadioResourceList              OPTIONAL,
    extensionContainer               [8] ExtensionContainer              OPTIONAL,
    ... ,
    rab-Id                           [12] RAB-Id                         OPTIONAL,
    bssmap-ServiceHandover           [13] BSSMAP-ServiceHandover         OPTIONAL,
    ranap-ServiceHandover            [14] RANAP-ServiceHandover          OPTIONAL,
    geran-classmark                  [15] GERAN-Classmark                OPTIONAL,
    currentlyUsedCodec               [xx] Codec                          OPTIONAL,
    availableCodecsList              [xx] AvailableCodecsList            OPTIONAL,
    rab-ConfigurationIndicator       [xx] NULL                           OPTIONAL}
```

.....

```
PrepareHO-Res ::= [3] SEQUENCE {
     handoverNumber                      [0] ISDN-AddressString             OPTIONAL,
     relocationNumberList                [1]  RelocationNumberList          OPTIONAL,
     an-APDU                             [2]  AccessNetworkSignalInfo       OPTIONAL,
     multicallBearerInfo                 [3]  MulticallBearerInfo           OPTIONAL,
     multipleBearerNotSupported          NULL                               OPTIONAL,
     selectedUMTS-Algorithms             [5]  SelectedUMTS-Algorithms       OPTIONAL,
     chosenRadioResourceInformation      [6] ChosenRadioResourceInformation OPTIONAL,
     extensionContainer                  [4]  ExtensionContainer            OPTIONAL,
     ...,
     selectedCodec                       [x] Codec                          OPTIONAL }
```

.....

```
PrepareSubsequentHO-Arg ::= [3] SEQUENCE {
     targetCellId                        [0] GlobalCellId                   OPTIONAL,
     targetMSC-Number                    [1] ISDN-AddressString,
     targetRNCId                         [2] RNCId                          OPTIONAL,
     an-APDU                             [3]  AccessNetworkSignalInfo       OPTIONAL,
     selectedRab-Id                      [4]  RAB-Id                        OPTIONAL,
     extensionContainer                  [5]  ExtensionContainer            OPTIONAL,
     ...,
     geran-classmark                     [6] GERAN-Classmark                OPTIONAL,
     rab-ConfigurationIndicator          [x] NULL                           OPTIONAL }
```

```
PrepareSubsequentHO-Res ::= [3] SEQUENCE {
     an-APDU                             AccessNetworkSignalInfo,
     extensionContainer                  [0]  ExtensionContainer            OPTIONAL,
     ...}
```

```
ProcessAccessSignalling-Arg ::= [3] SEQUENCE {
     an-APDU                             AccessNetworkSignalInfo,
     selectedUMTS-Algorithms             [1]  SelectedUMTS-Algorithms       OPTIONAL,
     selectedGSM-Algorithm               [2]  SelectedGSM-Algorithm         OPTIONAL,
     chosenRadioResourceInformation      [3] ChosenRadioResourceInformation OPTIONAL,
     selectedRab-Id                      [4] RAB-Id                         OPTIONAL,
     extensionContainer                  [0]  ExtensionContainer            OPTIONAL,
     ...,
     selectedCodec                       [x] Codec                          OPTIONAL }
```

.....

```
AvailableCodecsList ::= SEQUENCE {
     utranCodecList                      [0] CodecList                      OPTIONAL,
     geranCodecList                      [1] CodecList                      OPTIONAL,
     extensionContainer                  [2] ExtensionContainer             OPTIONAL,
     ...}
```

```
CodecList ::= SEQUENCE {
     codec1                              [1] Codec,
     codec2                              [2] Codec                          OPTIONAL,
     codec3                              [3] Codec                          OPTIONAL,
     codec4                              [4] Codec                          OPTIONAL,
     codec5                              [5] Codec                          OPTIONAL,
     codec6                              [6] Codec                          OPTIONAL,
     codec7                              [7] Codec                          OPTIONAL,
     codec8                              [8] Codec                          OPTIONAL,
     extensionContainer                  [9] ExtensionContainer             OPTIONAL,
     ...}
     -- Codecs are sent in priority order where codec1 has highest priority
```

```
Codec ::= OCTET STRING (SIZE (1..4))

     -- The internal structure is defined as follows:
     -- octet 1                          Coded as Codec Identification code in 3GPP TS 26.103
     -- octets 2,3,4                     Parameters for the Codec as defined in 3GPP TS
     --                                  26.103, if available, length depending on the codec
```

3GPP TSG CN WG4 Meeting #17 ***N4-021524***
Bangkok, THAILAND, 11th – 15th November 2002

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **521** ⌘ **rev** **1** ⌘ Current version: **5.3.0** ⌘

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

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

Title:	⌘	Editorial clean-up
Source:	⌘	CN4
Work item code:	⌘	TEI5
Date:	⌘	16/09/2002
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	Some references are not valid in this specification.
Summary of change:	⌘	Section 2, references have been updated.
Consequences if not approved:	⌘	The specification is unconvincing with the references.

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

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

****** 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*.

[1] 3GPP TS 21.905: "3G Vocabulary".

[2] 3GPP TS 22.001: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a Public Land Mobile Network (PLMN)".

[3] 3GPP TS 22.002: "Bearer Services Supported by a Public Land Mobile Network (PLMN)".

[4] 3GPP TS 22.003: "Circuit Teleservices Supported by a Public Land Mobile Network (PLMN)".

[5] 3GPP TS 22.004: "General on Supplementary Services".

[6] 3GPP TS 42.009: "Digital cellular telecommunications system (Phase 2+); Security aspects".

[7] 3GPP TS 22.016: "International Mobile station Equipment Identities (IMEI)".

[8] 3GPP TS 22.041: "Operator Determined Barring".

[9] 3GPP TS 22.081: "Line identification supplementary services - Stage 1".

[10] 3GPP TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

[11] 3GPP TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1".

[12] 3GPP TS 22.084: "Multi Party (MPTY) Supplementary Services - Stage 1".

[13] 3GPP TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".

[14] 3GPP TS 22.086: "Advice of charge (AoC) Supplementary Services - Stage 1".

[15] 3GPP TS 22.088: "Call Barring (CB) supplementary services - Stage 1".

[16] 3GPP TS 22.090: "Unstructured Supplementary Service Data (USSD); - Stage 1".

[17] 3GPP TS 23.003: "Numbering, addressing and identification".

[18] ~~GSM 03.04: "Digital cellular telecommunications system (Phase 2+); Signalling requirements relating to routeing of calls to mobile subscribers".~~Void

[19] 3GPP TS 23.007: "Restoration procedures".

[20] 3GPP TS 23.008: "Organisation of subscriber data".

[21] 3GPP TS 23.009: "Handover procedures".

[22] 3GPP TS 23.011: "Technical realization of Supplementary Services - General Aspects".

[23] 3GPP TS 23.012: "Location registration procedures".

[24] 3GPP TS 43.020: "Security related network functions".

[25] 3GPP TS 23.038: "Alphabets and language".

[26] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".

[26a] 3GPP TS 23.271: "Functional stage2 description of LCS".

[27] 3GPP TS 23.081: "Line Identification Supplementary Services - Stage 2".

[28] 3GPP TS 23.082: "Call Forwarding (CF) Supplementary Services - Stage 2".

[29] 3GPP TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 2".

[30] 3GPP TS 23.084: "Multi Party (MPTY) Supplementary Services - Stage 2".

[31] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Services - Stage 2".

[32] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Services - Stage 2".

[33] 3GPP TS 23.088: "Call Barring (CB) Supplementary Services - Stage 2".

[34] 3GPP TS 23.090: "Unstructured Supplementary Services Data (USSD) - Stage 2".

[34a] 3GPP TS 33.200: "3G Security; Network domain security; MAP application layer security".

[35] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".

[36] 3GPP TS 24.010: "Mobile radio interface layer 3 Supplementary Services specification - General aspects".

[37] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[37a] 3GPP TS 44.071: "Location Services (LCS) – stage 3".

[38] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification - Formats and coding".

[39] 3GPP TS 24.081: "Line identification supplementary services - Stage 3".

[40] 3GPP TS 24.082: "Call Forwarding (CF) Supplementary Services - Stage 3".

[41] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

[42] 3GPP TS 24.084: "Multi Party (MPTY) Supplementary Services - Stage 3".

[43] 3GPP TS 24.085: "Closed User Group (CUG) Supplementary Services - Stage 3".

[44] 3GPP TS 24.086: "Advice of Charge (AoC) Supplementary Services - Stage 3".

[45] 3GPP TS 24.088: "Call Barring (CB) Supplementary Services - Stage 3".

[46] 3GPP TS 24.090: "Unstructured Supplementary Services Data - Stage 3".

[47] 3GPP TS 48.002: " Base Station System - Mobile-services Switching Centre (BSS - MSC) interface principles".

[48] 3GPP TS 48.006: "Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[49] 3GPP TS 48.008: "Mobile Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification".

[49a1] 3GPP TS 48.031: "Location Services (LCS); Serving Mobile Location Centre (SMLC) – Serving Mobile Location Centre (SMLC); SMLC Peer Protocol (SMLCPP)".

[49b] 3GPP TS 48.071: "Location Services (LCS); Serving Mobile Location Centre - Base Station System (SMLC - BSS) interface Layer 3 specification".

[50] 3GPP TS 49.001: "General network interworking scenarios".

[51] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[52] ~~GSM 09.03: "Digital cellular telecommunications system (Phase 2+); Signalling requirements on interworking between the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) and the Public Land Mobile Network (PLMN)".~~Void

[53] ~~GSM 09.04: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Circuit Switched Public Data Network (CSPDN)".~~Void

[54] ~~GSM 09.05: "Digital cellular telecommunications system (Phase 2+); Interworking between the Public Land Mobile Network (PLMN) and the Packet Switched Public Data Network (PSPDN) for Packet Assembly/Disassembly facility (PAD) access".~~Void

[55] 3GPP TS 29.006: "Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of Packet Switched data transmission services".

[56] 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)".

[57] 3GPP TS 29.008: "Application of the Base Station System Application Part (BSSAP) on the E-interface".

[58] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".

[59] 3GPP TS 29.011: "Signalling interworking for Supplementary Services".

[59a] 3GPP TS 49.031: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE)".

[60] ~~GSM 09.90: "Digital cellular telecommunications system (Phase 2+); Interworking between Phase 1 infrastructure and Phase 2 Mobile Stations (MS)".~~Void

[61] GSM 12.08: "Digital cellular telecommunications system (Phase 2); Subscriber and Equipment Trace".

[62] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3 specifications for basic call control".

[63] ETS 300 136 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service description".

[64] ETS 300 138 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service Digital Subscriber Signalling System No.one (DSS1) protocol".

[65] ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2".

[66] ETR 060: "Signalling Protocols and Switching (SPS); Guide-lines for using Abstract Syntax Notation One (ASN.1) in telecommunication application protocols".

[66b] ETR 091: "ETSI object identifier tree; Common domain Mobile domain"

[67] ITU-T Recommendation E.164: " The international public telecommunication numbering plan ~~Numbering plan for the ISDN era~~".

[68] ITU-T Recommendation E.212: " The international identification plan for mobile terminals and mobile users

~~Identification plan for land mobile stations~~".

[69] ITU-T Recommendation E.213: " Telephone and ISDN numbering plan for land mobile stations in public land mobile networks (PLMN)

~~Telephone and ISDN numbering plan for land mobile stations~~".

[70] ITU-T Recommendation E.214: " Structure of the land mobile global title for the signalling connection control part (SCCP)

~~Structuring of the land mobile global title for the signalling connection control part~~".

[71] ~~CCITT~~ ITU-T Recommendation Q.699: " Interworking between ISDN access and non-ISDN access over ISDN User Part of Signalling System No. 7

~~Interworking between the Digital Subscriber Signalling System Layer 3 protocol and the Signalling System No.7 ISDN User part~~".

[72] ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Functional description of the Signalling Connection Control Part".

[73] ITU-T Recommendation Q.712: "Definition and function of SCCP messages".

[74] ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; SCCP formats and codes".

[75] ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling Connection Control Part procedures".

[76] ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling connection control part (SCCP) performances".

[77] ITU-T Recommendation Q.721 (1988): "Specifications of Signalling System No.7; Functional description of the Signalling System No.7 Telephone user part".

[78] ITU-T Recommendation Q.722 (1988): "Specifications of Signalling System No.7; General function of Telephone messages and signals".

[79] ITU-T Recommendation Q.723 (1988): "Specifications of Signalling System No.7; Formats and codes".

[80] ITU-T Recommendation Q.724 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[81] ITU-T Recommendation Q.725 (1988): "Specifications of Signalling System No.7; Signalling performance in the telephone application".

[82] ITU-T Recommendation Q.761 (1988): "Specifications of Signalling System No.7; Functional description of the ISDN user part of Signalling System No.7".

[83] ITU-T Recommendation Q.762 (1988): "Specifications of Signalling System No.7; General function of messages and signals".

[84] ITU-T Recommendation Q.763 (1988): "Specifications of Signalling System No.7; Formats and codes".

[85] ITU-T Recommendation Q.764 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[86] ITU-T Recommendation Q.767: "Specifications of Signalling System No.7; Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".

[87] ITU-T Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".

[88] ITU-T Recommendation Q.772: "Specifications of Signalling System No.7; Transaction capabilities information element definitions".

[89] ITU-T Recommendation Q.773: "Specifications of Signalling System No.7; Transaction capabilities formats and encoding".

[90] ITU-T Recommendation Q.774: "Specifications of Signalling System No.7; Transaction capabilities procedures".

[91] ITU-T Recommendation Q.775: "Specifications of Signalling System No.7; Guide-lines for using transaction capabilities".

[92] ITU-T Recommendation X.200: "Reference Model of Open systems interconnection for CCITT Applications".

[93] ITU-T Recommendation X.680: "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[93b] ITU-T Recommendation X.681: "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification"

[94] ITU-T Recommendation X.690: "Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)".

[95] ITU-T Recommendation X.210: "Open systems interconnection layer service definition conventions".

[97] 3GPP TS 23.018: "Basic Call Handling".

[98] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase ~~3~~ 4 - Stage 2".

[99] 3GPP TS 23.079: "Support of Optimal Routeing (SOR) - Stage 2".

[100] 3GPP TS 43.068: "Voice Group Call Service (VGCS) - Stage 2".

[101] 3GPP TS 43.069: "Voice Broadcast service (VBS) - Stage 2".

[102] ANSI T1.113: "Signaling System No. 7 (SS7) - ISDN User Part".

[103] ~~GSM 03.54 "Shared Inter Working Function (SIWF) - Stage 2"~~Void.

[104] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Description; Stage 2".

[105] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".

[106] 3GPP TS 29.018: "General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification".

[107] 3GPP TS 23.093: "Technical Realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[108] 3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical Realisation Stage 2".

[109] ANSI T1.112 (1996): "Telecommunication – Signalling No. 7 - Signaling Connection Control Part (SCCP)".

[110] 3GPP TS 23.116: "Super-Charger Technical Realisation; Stage 2."

[111] ~~ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Signalling System No. 7 - Functional Description of the Signalling Connection Control Part".~~Void

[112] ~~ITU-T Recommendation Q.712: "Specifications of Signalling System No.7; Signalling System No. 7 - Definition and Function of SCCP Messages".~~Void

[113] ~~ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; Signalling System No. 7 - SCCP formats and codes".~~Void

[114] ~~ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling System No. 7 – Signalling Connection Control Part Procedures".~~Void

[115] ~~ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling System No. 7 – Signalling Connection Control Part (SCCP) Performance".~~Void

[116] ITU-T Recommendation Q.850 (May 1998): "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".

[117] 3GPP TS 22.135: "Multicall; Service description; Stage 1".

[118] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".

[119] 3GPP TS 24.135: "Multicall supplementary service; Stage 3".

[120] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[121] 3GPP TS 29.202: "SS7 signalling transport in core network"

[122] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)"

[123] 3GPP TS 22.071: " Location Services (LCS); Service description, Stage 1"

[124] ITU-T Recommendation X.880: "Data networks and open system communication - Open System Interconnection - Service definitions - Remote operations: Concepts, model and notation".

[125] 3GPP TS 23.278: “Customised Applications for Mobile Network Enhanced Logic (CAMEL) Phase 4 – Stage 2 IM CN Interworking (Rel-5)”

**** End of modification ****