

3GPP TSG CN Plenary Meeting #20
4th – 6th June 2003 Hämeenlinna, FINLAND.

NP-030226

Source: TSG CN WG4
Title: Corrections on Early UE; (UESBI, Bitmap)
Agenda item: 8.8
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	611	1	N4-030646	Rel-5	Enhancement of the CheckIMEI operation to retrieve the BMUEF	F	5.5.0
29.002	612	1	N4-030647	Rel-6	Enhancement of the CheckIMEI operation to retrieve the BMUEF	A	6.1.0
29.010	090		N4-030651	Rel-5	Handling of UE-specific behaviour data in the relay MSC	F	5.2.0
23.012	010	1	N4-030652	Rel-5	Addition of procedure to retrieve UE-specific behaviour data	F	5.0.0
23.018	124	1	N4-030660	Rel-5	ddition of procedure to retrieve UE-specific behaviour data	F	5.5.0

CHANGE REQUEST

⌘ **29.002 CR 611** ⌘ rev **1** ⌘ Current version: **5.5.0** ⌘

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:	⌘ Enhancement of the CheckIMEI operation to retrieve the BMUEF		
Source:	⌘ CN4		
Work item code:	⌘ Late UE	Date:	⌘ 20/05/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ In order for the MSC and SGSN to understand the functional limitations for a particular UE they need to receive data to indicate the UE specific behaviour. These data (BMUEF) may be retrieved from the EIR.
Summary of change:	⌘ Raise the AC version for the CheckIMEI operation. Add requestedEquipmentInfo and IMEISV to the request. Add BMUEF to the response
Consequences if not approved:	⌘ BMUEF information cannot be transferred from a central database to the serving node

Clauses affected:	⌘ 7.6.2.3a (new), 7.6.3.2a (new), 8.7.1, 17.1.6, 17.2.2.14, 17.3.2.14, 17.3.3, 17.6.1, 17.7.1, 25										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
		Test specifications									
		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.

7.6.2.3 IMEI

This parameter is the International Mobile Equipment Identity defined in 3GPP TS 23.003 [17].

[7.6.2.3a IMEISV](#)

[This parameter is the International Mobile Equipment Identity and Software Version Number defined in 3GPP TS 23.003 \[17\].](#)

7.6.3.2 Equipment status

This parameter refers to the status of the mobile equipment as defined in 3GPP TS 22.016 [7].

[7.6.3.2a BMUEF](#)

[This parameter refers to the Bit Map of UE Faults and corresponds to the UESBI parameter defined in 3GPP TS 25.413 \[120\].](#)

8.7.1 MAP_CHECK_IMEI service

8.7.1.1 Definition

This service is used between the VLR and the MSC and between the MSC and the EIR and between the SGSN and EIR to request check of IMEI. If the IMEI is not available in the MSC or in the SGSN, it is requested from the MS and transferred to the EIR in the service request.

[This service may also be used to request the BMUEF from the EIR.](#)

The service is a confirmed service and consists of four service primitives.

8.7.1.2 Service primitives

The service primitives are shown in table 8.7/1.

Table 8.7/1: MAP_CHECK_IMEI parameters

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
IMEI	C	C(=)	C	C(=)
IMEISV	C	C(=)	C(=)	C(=)
Requested Equipment Info	M	M(=)		
Equipment status			C	C(=)
BMUEF			C	C(=)
User error			C	C(=)
Provider error				O

8.7.1.3 Parameter use

Invoke id

See clause 7.6.1 for the use of this parameter.

Requested Equipment Info

This parameter indicates whether Equipment Status or BMUEF or both is requested.

IMEI

See clause 7.6.2 for the use of this parameter. The parameter shall not be included in the service request between the VLR and the MSC, but one of IMEI and IMEISV is mandatory in the service request from the MSC to the EIR and from the SGSN to the EIR. It is not included in the service response from the EIR to the MSC or to the SGSN, but one of IMEI and IMEISV is mandatory in the service response from the MSC to the VLR on successful outcome.

IMEISV

See clause 7.6.2 for the use of this parameter. IMEISV shall be present if BMUEF is requested.

Equipment status

See clause 7.6.34 for the use of this parameter. This parameter is sent by the responder in case of successful outcome of the service if Equipment status was requested.

BMUEF

See clause 7.6.4 for the use of this parameter. This parameter is sent by the responder in case of successful outcome of the service if BMUEF was requested.

User error

One of the following error causes defined in clause 7.6.1 shall be sent by the user in case of unsuccessful outcome of the service, depending on the respective failure reason:

- unknown equipment;
this error is returned by the responder when the IMEI is not known in the EIR;
- system failure;
- unexpected data value.

Provider error

See clause 7.6.1 for the use of this parameter.

17.1.6 Application Contexts

The following informative table lists the latest versions of the Application Contexts used in this specification, with the operations used by them and, where applicable, whether or not the operation description is exactly the same as for previous versions. Information in 17.6 & 17.7 relates only to the ACs in this table.

AC Name	AC Version	Operations Used	Comments
locationCancellationContext	v3	cancelLocation	
equipmentMngtContext	V32	checkIMEI	
imsiRetrievalContext	v2	sendIMSI	
infoRetrievalContext	v3	sendAuthenticationInfo	
interVlrInfoRetrievalContext	v3	sendIdentification	
handoverControlContext	v3	prepareHandover forwardAccessSignalling sendEndSignal processAccessSignalling prepareSubsequentHandover	the syntax of this operation has been extended in comparison with release 98 version
mwdMngtContext	v3	readyForSM	
msPurgingContext	v3	purgeMS	

AC Name	AC Version	Operations Used	Comments
shortMsgAlertContext	v2	alertServiceCentre	
resetContext	v2	reset	
networkUnstructuredSsContext	v2	processUnstructuredSS-Request unstructuredSS-Request unstructuredSS-Notify	
tracingContext	v3	activateTraceMode deactivateTraceMode	
networkFunctionalSsContext	v2	registerSS eraseSS activateSS deactivateSS registerPassword interrogateSS getPassword	
shortMsgMO-RelayContext	v3	mo-forwardSM	
shortMsgMT-RelayContext	v3	mt-forwardSM	
shortMsgGatewayContext	v3	sendRoutingInfoForSM reportSM-DeliveryStatus InformServiceCentre	the syntax of this operation has been extended in comparison with release 96 version
networkLocUpContext	v3	updateLocation forwardCheckSs-Indication restoreData insertSubscriberData activateTraceMode	the syntax is the same in v1 & v2
gprsLocationUpdateContext	v3	updateGprsLocation insertSubscriberData activateTraceMode	
subscriberDataMngtContext	v3	insertSubscriberData deleteSubscriberData	
roamingNumberEnquiryContext	v3	provideRoamingNumber	
locationInfoRetrievalContext	v3	sendRoutingInfo	
gprsNotifyContext	v3	noteMsPresentForGprs	
gprsLocationInfoRetrievalContext	v4	sendRoutingInfoForGprs	
failureReportContext	v3	failureReport	
callControlTransferContext	v4	resumeCallHandling	
subscriberInfoEnquiryContext	v3	provideSubscriberInfo	
anyTimeEnquiryContext	v3	anyTimeInterrogation	
anyTimeInfoHandlingContext	v3	anyTimeSubscriptionInterrogation anyTimeModification	
ss-InvocationNotificationContext	v3	ss-InvocationNotification	
sIWFSAllocationContext	v3	provideSIWFSNumber sIWFSsignallingModify	
groupCallControlContext	v3	prepareGroupCall processGroupCallSignalling forwardGroupCallSignalling sendGroupCallEndSignal	
reportingContext	v3	setReportingState statusReport remoteUserFree	
callCompletionContext	v3	registerCC-Entry eraseCC-Entry	
istAlertingContext	v3	istAlert	
ImmediateTerminationContext	v3	istCommand	
locationSvcEnquiryContext	v3	provideSubscriberLocation subscriberLocationReport	
locationSvcGatewayContext	v3	sendRoutingInfoForLCS	
mm-EventReportingContext	v3	noteMM-Event	
subscriberDataModificationNotificationContext	v3	noteSubscriberDataModified	

AC Name	AC Version	Operations Used	Comments
authenticationFailureReportContext	v3	authenticationFailureReport	
secureTransportHandlingContext	v3	secureTransportClass1 secureTransportClass2 secureTransportClass3 secureTransportClass4	

NOTE (*): The syntax of the operations is not the same as in previous versions unless explicitly stated

17.2.2.14 Equipment management

This operation package includes the operations required for equipment management procedures between EIR and MSC or between EIR and SGSN.

```
equipmentMngtPackage-v32 OPERATION-PACKAGE ::= {
  -- Supplier is EIR if Consumer is MSC
  -- Supplier is EIR if Consumer is SGSN
  CONSUMER INVOKES {
    checkIMEI } }
```

The v1-equivalent [and v2-equivalent](#) packages can be determined according to the rules described in clause 17.2.1.

17.3.2.14 Equipment Management

This application context is used for equipment checking between MSC and EIR or between SGSN and EIR. For the SGSN - EIR interface version 1 and version 2 [and version 3](#) of this application context are applicable:

```
equipmentMngtContext-v3 APPLICATION-CONTEXT ::= {
  -- Responder is EIR if Initiator is MSC
  -- Responder is EIR if Initiator is SGSN
  INITIATOR CONSUMER OF {
    equipmentMngtPackage-v3 }
  ID {map-ac equipmentMngt(13) version3(3)} }
```

[The following application-context-name is assigned to the v2-equivalent application-context:](#)

```
equipmentMngtContext-v2 APPLICATION-CONTEXT ::= {
  -- Responder is EIR if Initiator is MSC
  -- Responder is EIR if Initiator is SGSN
  INITIATOR CONSUMER OF {
    equipmentMngtPackage-v2 }
  ID {map-ac equipmentMngt(13) version2(2)} }
```

[The following application-context-name is assigned to the v1-equivalent application-context:](#)

```
ID {map-ac equipmentMngt(13) version1(1)}
```

17.3.3 ASN.1 Module for application-context-names

.....

```
equipmentMngtContext-v32 OBJECT IDENTIFIER ::=
    {map-ac equipmentMngt(13) version32(32)}
```

.....

```
-- The following Object Identifiers are reserved for application-contexts
-- existing in previous versions of the protocol
```

AC Name & Version	Object Identifier	
--		
-- networkLocUpContext-v1	map-ac networkLocUp (1)	version1 (1)
-- networkLocUpContext-v2	map-ac networkLocUp (1)	version2 (2)
-- locationCancellationContext-v1	map-ac locationCancellation (2)	version1 (1)
-- locationCancellationContext-v2	map-ac locationCancellation (2)	version2 (2)
-- roamingNumberEnquiryContext-v1	map-ac roamingNumberEnquiry (3)	version1 (1)
-- roamingNumberEnquiryContext-v2	map-ac roamingNumberEnquiry (3)	version2 (2)
-- locationInfoRetrievalContext-v1	map-ac locationInfoRetrieval (5)	version1 (1)
-- locationInfoRetrievalContext-v2	map-ac locationInfoRetrieval (5)	version2 (2)
-- resetContext-v1	map-ac reset (10)	version1 (1)
-- handoverControlContext-v1	map-ac handoverControl (11)	version1 (1)
-- handoverControlContext-v2	map-ac handoverControl (11)	version2 (2)
-- equipmentMngtContext-v1	map-ac equipmentMngt (13)	version1 (1)
-- equipmentMngtContext-v2	map-ac equipmentMngt (13)	version2 (2)
-- infoRetrievalContext-v1	map-ac infoRetrieval (14)	version1 (1)
-- infoRetrievalContext-v2	map-ac infoRetrieval (14)	version2 (2)
-- interVlrInfoRetrievalContext-v2	map-ac interVlrInfoRetrieval (15)	version2 (2)
-- subscriberDataMngtContext-v1	map-ac subscriberDataMngt (16)	version1 (1)
-- subscriberDataMngtContext-v2	map-ac subscriberDataMngt (16)	version2 (2)
-- tracingContext-v1	map-ac tracing (17)	version1 (1)
-- tracingContext-v2	map-ac tracing (17)	version2 (2)
-- <i>networkFunctionalSsContext-v1</i>	<i>map-ac networkFunctionalSs (18)</i>	<i>version1 (1)</i>
-- shortMsgGatewayContext-v1	map-ac shortMsgGateway (20)	version1 (1)
-- shortMsgGatewayContext-v2	map-ac shortMsgGateway (20)	version2 (2)
-- shortMsgRelayContext-v1	map-ac shortMsgRelay (21)	version1 (1)
-- shortMsgAlertContext-v1	map-ac shortMsgAlert (23)	version1 (1)
-- <i>mwdMngtContext-v1</i>	<i>map-ac mwdMngt (24)</i>	<i>version1 (1)</i>
-- mwdMngtContext-v2	map-ac mwdMngt (24)	version2 (2)
-- shortMsgMT-RelayContext-v2	map-ac shortMsgMT-Relay (25)	version2 (2)
-- msPurgingContext-v2	map-ac msPurging (27)	version2 (2)
-- callControlTransferContext-v3	map-ac callControlTransferContext (6)	version3 (3)
-- gprsLocationInfoRetrievalContext-v3	map-ac gprsLocationInfoRetrievalContext (33)	version3 (3)

17.6.1 Mobile Service Operations


```

MAP-MobileServiceOperations {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MobileServiceOperations (5)
    version8 (8)}

DEFINITIONS

 ::=

BEGIN

EXPORTS

    -- location registration operations
    updateLocation,
    cancelLocation,
    purgeMS,
    sendIdentification,

    -- gprs location registration operations
    updateGprsLocation,

    -- subscriber information enquiry operations
    provideSubscriberInfo,

    -- any time information enquiry operations
    anyTimeInterrogation,

    -- any time information handling operations
    anyTimeSubscriptionInterrogation,
    anyTimeModification,

    -- subscriber data modification notification operations
    noteSubscriberDataModified,

    -- handover operations
    prepareHandover,
    sendEndSignal,
    processAccessSignalling,
    forwardAccessSignalling,
    prepareSubsequentHandover,

    -- authentication management operations
    sendAuthenticationInfo,
    authenticationFailureReport,

    -- IMEI management operations
    checkIMEI,

    -- subscriber management operations
    insertSubscriberData,
    deleteSubscriberData,

    -- fault recovery operations
    reset,
    forwardCheckSS-Indication,
    restoreData,

-- gprs location information retrieval operations
    sendRoutingInfoForGprs,

    -- failure reporting operations
    failureReport,

    -- gprs notification operations
    noteMsPresentForGprs,

    -- Mobility Management operations
    noteMM-Event

;

IMPORTS
    OPERATION
FROM Remote-Operations-Information-Objects {

```

```
joint-iso-itu-t remote-operations(4)
informationObjects(5) version1(0)}
```

```
systemFailure,
dataMissing,
unexpectedDataValue,
unknownSubscriber,
unknownMSC,
unidentifiedSubscriber,
unknownEquipment,
roamingNotAllowed,
ati-NotAllowed,
noHandoverNumberAvailable,
subsequentHandoverFailure,
absentSubscriber,
mm-EventNotSupported,
atsi-NotAllowed,
atm-NotAllowed,
bearerServiceNotProvisioned,
teleserviceNotProvisioned,
callBarred,
illegalSS-Operation,
ss-ErrorStatus,
ss-NotAvailable,
ss-Incompatibility,
ss-SubscriptionViolation,
informationNotAvailable,
targetCellOutsideGroupCallArea
```

```
FROM MAP-Errors {
itu-t identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-Errors (10) version8 (8)}
```

```
UpdateLocationArg,
UpdateLocationRes,
CancelLocationArg,
CancelLocationRes,
PurgeMS-Arg,
PurgeMS-Res,
SendIdentificationArg,
SendIdentificationRes,
UpdateGprsLocationArg,
UpdateGprsLocationRes,
PrepareHO-Arg,
PrepareHO-Res,
ForwardAccessSignalling-Arg,
ProcessAccessSignalling-Arg,
SendEndSignal-Arg,
SendEndSignal-Res,
PrepareSubsequentHO-Res,
PrepareSubsequentHO-Arg,
SendAuthenticationInfoArg,
SendAuthenticationInfoRes,
AuthenticationFailureReportArg,
AuthenticationFailureReportRes,
EquipmentStatus,
CheckIMEI-Arg,
CheckIMEI-Res,
InsertSubscriberDataArg,
InsertSubscriberDataRes,
DeleteSubscriberDataArg,
DeleteSubscriberDataRes,
ResetArg,
RestoreDataArg,
RestoreDataRes,
ProvideSubscriberInfoArg,
ProvideSubscriberInfoRes,
AnyTimeSubscriptionInterrogationArg,
AnyTimeSubscriptionInterrogationRes,
AnyTimeModificationArg,
AnyTimeModificationRes,
NoteSubscriberDataModifiedArg,
NoteSubscriberDataModifiedRes,
AnyTimeInterrogationArg,
AnyTimeInterrogationRes,
SendRoutingInfoForGprsArg,
SendRoutingInfoForGprsRes,
FailureReportArg,
```

```
FailureReportRes,  
NoteMsPresentForGprsArg,  
NoteMsPresentForGprsRes,  
NoteMM-EventArg,  
NoteMM-EventRes
```

```
FROM MAP-MS-DataTypes {  
  itu-t identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}
```

```
-----IMEI  
FROM MAP-CommonDataTypes {  
  itu-t identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (8)}  
;
```

.....

-- IMEI management operations

```
checkIMEI OPERATION ::= {                                     --Timer m  
  ARGUMENT  
    CheckIMEI-Arg  
  RESULT  
    CheckIMEI-ResEquipmentStatus  
  ERRORS {  
    systemFailure |  
    dataMissing |  
    unknownEquipment}  
  CODE local:43 }
```

.....

17.7.1 Mobile Service data types

```

MAP-MS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}

DEFINITIONS

IMPLICIT TAGS

 ::=

BEGIN

EXPORTS

    -- location registration types
    UpdateLocationArg,
    UpdateLocationRes,
    CancelLocationArg,
    CancelLocationRes,
    PurgeMS-Arg,
    PurgeMS-Res,
    SendIdentificationArg,
    SendIdentificationRes,
    UpdateGprsLocationArg,
    UpdateGprsLocationRes,
    IST-SupportIndicator,
    SupportedLCS-CapabilitySets,

    -- gprs location registration types
    GSN-Address,

    -- handover types
    ForwardAccessSignalling-Arg,
    PrepareHO-Arg,
    PrepareHO-Res,
    PrepareSubsequentHO-Arg,
    PrepareSubsequentHO-Res,
    ProcessAccessSignalling-Arg,
    SendEndSignal-Arg,
    SendEndSignal-Res,

    -- authentication management types
    SendAuthenticationInfoArg,
    SendAuthenticationInfoRes,
    AuthenticationFailureReportArg,
    AuthenticationFailureReportRes,

    -- security management types
    EquipmentStatus,
    Kc,

    -- equipment management types
    CheckIMEI-Arg,
    CheckIMEI-Res,

    -- subscriber management types
    InsertSubscriberDataArg,
    InsertSubscriberDataRes,
    LSAIdentity,
    DeleteSubscriberDataArg,
    DeleteSubscriberDataRes,
    Ext-QoS-Subscribed,
    SubscriberData,
    ODB-Data,
    SubscriberStatus,
    ZoneCodeList,
    maxNumOfZoneCodes,
    O-CSI,
    D-CSI,
    O-BcsmCamelTDPCriteriaList,
    T-BCSM-CAMEL-TDP-CriteriaList,
    SS-CSI,
    ServiceKey,
    DefaultCallHandling,
    CamelCapabilityHandling,
    BasicServiceCriteria,
    SupportedCamelPhases,
    OfferedCamel4CSIs,

```

```

OfferedCamel4Functionalities,
maxNumOfCamelTDPData,
CUG-Index,
CUG-Info,
CUG-Interlock,
InterCUG-Restrictions,
IntraCUG-Options,
NotificationToMSUser,
QoS-Subscribed,
IST-AlertTimerValue,
T-CSI,
T-BcsmTriggerDetectionPoint,
APN,

-- fault recovery types
ResetArg,
RestoreDataArg,
RestoreDataRes,

```

.....

-- ~~equipment security~~ management types

```

CheckIMEI-Arg ::= SEQUENCE {
    imei                               IMEI,
    requestedEquipmentInfo             RequestedEquipmentInfo,
    extensionContainer                  ExtensionContainer OPTIONAL,
    ...}

```

```

CheckIMEI-Res ::= SEQUENCE {
    equipmentStatus                    EquipmentStatus OPTIONAL,
    bmuef                               UESBIBMUEF
    OPTIONAL,
    extensionContainer                  ExtensionContainer OPTIONAL,
    ...}

```

```

RequestedEquipmentInfo ::= BIT STRING {
    equipmentStatus (0),
    bmuef (1)} (SIZE (2..8))
-- exception handling: reception of unknown bit assignments in the
-- RequestedEquipmentInfo data type shall be discarded by the receiver

```

```

BMUEF ::= OCTET STRING (SIZE (10))
-- The internal structure is defined in 3GPP TS 25.413

```

```

UESBI ::= OCTET STRING (SIZE (10))
-- Octets are coded according the UESBI information element in 3GPP TS 25.413.

```

```

EquipmentStatus ::= ENUMERATED {
    whiteListed (0),
    blackListed (1),
    greyListed (2)}

```

25.6 IMEI Handling Macros

The following macros are used in the ~~GSM~~ network in order to enable handling and checking of the mobile equipment identity.

25.6.1 Macro Check_IMEI_MSC

This macro is used by the MSC to receive a request from the VLR, relay it to the EIR, and pass the result from the EIR back to the VLR. The macro proceeds as follows:

- a MAP_CHECK_IMEI service indication containing Requested Equipment Info and ~~only the~~ Invoke Id is received from the VLR;
- if the IMEI/IMEISV is not available in the MSC, it is requested from the MS using the IDENTITY REQUEST message;

- if the MS releases the radio resources, a MAP_U_ABORT request indicating "Application procedure Cancellation" is sent to the VLR, and the "Error" exit of the macro is used;
- when the IMEI/IMEISV is known, a connection is set up towards the EIR, and a MAP_CHECK_IMEI service request is sent including the [Requested Equipment Info. If BMUEF is requested, IMEISV shall be included; otherwise IMEI or IMEISV shall be included](#);
- if the opening of the dialogue fails, a System Failure is reported to the VLR. Otherwise, the MSC waits for a response from the EIR;
- when the MAP_CHECK_IMEI service confirm is received, it is checked for errors. Any errors discovered in the MSC lead to the System Failure error to be reported to the VLR in the MAP_CHECK_IMEI response. Any errors reported from the EIR are sent directly to the VLR in the MAP_CHECK_IMEI service response. If no errors are detected by or reported to the MSC, the IMEI/IMEISV is added to the MAP_CHECK_IMEI service response returned to the VLR. The "OK" exit is used in all cases;
- if a MAP_P_ABORT, MAP_U_ABORT, MAP_CLOSE or MAP_NOTICE service indication is received from the EIR, the MSC closes the transaction with the EIR (if necessary), reports a System Failure error back to the VLR in the MAP_CHECK_IMEI response, and uses the macro's "OK" exit;
- if a ~~MAP_P_ABORT, MAP_U_ABORT, or MAP_CLOSE or MAP_NOTICE~~ indication is received from the VLR, the MSC ~~closes the transaction with the VLR (if necessary) and~~ aborts the connections towards the EIR and the MS; the macro takes the "Error" exit.

If the dialogue with the EIR drops back to version 1 [or version 2](#), the result or error returned by the EIR is checked. [If the result is badly formed, the MSC reports a System Failure error to the VLR in the MAP_CHECK_IMEI response. If the EIR returns an error, the MSC relays the error to the VLR in the MAP_CHECK_IMEI response. The "OK" exit is used in all cases.](#) ~~The use of the "Check_Confirmation" macro in the SDL diagram indicates that the checks carried out on the result returned by the EIR in a MAP v1 dialogue are functionally equivalent to those carried out on the parameters of the MAP_CHECK_IMEI confirm received from the EIR in a MAP v2 dialogue.~~

The macro is described in figure 25.6/1.

25.6.2 Macro Check_IMEI_VLR

This macro is used by the VLR to control the check of a mobile equipment's IMEI. [It may also be used to request the BMUEF from the EIR.](#) The macro proceeds as follows:

- a MAP_CHECK_IMEI service request is sent to the MSC, including [Requested Equipment Info and only the](#) Invoke Id;
- the VLR then waits for the response from the MSC;
- if a MAP_CHECK_IMEI service confirm including either:
 - the IMEI and the Equipment Status [and/or the IMEISV and the BMUEF](#); or
 - an error;
 is received, the VLR checks whether the response requires that an alarm be generated on the Operation and Maintenance interface. The criteria for such alarms are PLMN operator dependent;
- the VLR then checks whether the response from the MSC means that service is granted to the MS. The criteria for granting service depending on the equipment status or errors received in the MAP_CHECK_IMEI service response are also PLMN operator dependent;
- if a ~~MAP_P_ABORT, MAP_U_ABORT or~~ MAP_CLOSE ~~or MAP_NOTICE~~ indication is received from the MSC, then ~~the MSC connection is closed (if necessary) and~~ the macro takes the "Aborted" exit.

The macro is described in figure 25.6/2.

25.6.3 Process Check_IMEI_EIR

This process is used by the EIR to obtain the status of a piece of mobile equipment, upon request from the MSC or from the SGSN. [This process may also be used to obtain the BMUEF](#). The process acts as follows:

- a MAP_OPEN service indication is received (macro Receive_Open_Ind, clause 25.1.1). If the dialogue opening fails, the process [returns to the Null state](#)~~terminates~~;
- otherwise, a MAP_CHECK_IMEI indication is received by the EIR, containing the [Requested Equipment Info and theIMEI/IMEISV](#) to be checked;
- the EIR checks the service indication for errors. If there are any, they are reported to the MSC or to the SGSN in the MAP_CHECK_IMEI response. If no errors are detected, [and if the EIR supports equipment status interrogation and/or BMUEF interrogation](#) the EIR data-base function is interrogated for the status of the given equipment [and/or the BMUEF](#). Further details are found in 3GPP TS 22.016 [7];
- the status of the equipment (white-listed, grey-listed, black-listed or unknown) [and/or the BMUEF](#) is returned to the MSC or to the SGSN in the MAP_CHECK_IMEI service response;
- if a MAP_U_ABORT, MAP_P_ABORT, MAP_NOTICE or MAP_CLOSE indication is received from the MSC or from the SGSN at any time during this process, the process in the EIR [returns to the Null state](#) ~~terminates~~.

The process is described in figure 25.6/3.

25.6.4 Macro Obtain_IMEI_MSC

This macro is used by the MSC to respond to a request from the VLR to provide the IMEI. The macro proceeds as follows:

- a MAP_OBTAIN_IMEI service indication containing only the Invoke Id is received from the VLR;
- if the IMEI is not available in the MSC, it is requested from the MS using the IDENTITY REQUEST message;
- when the IMEI is known, it is returned to the VLR in the MAP_OBTAIN_IMEI service response. The macro terminates at the "OK" exit;
- if the IMEI cannot be obtained by the MSC, the System Failure error is reported back to the VLR in the MAP_OBTAIN_IMEI service response. The macro terminates at the "OK" exit;
- if a ~~MAP_P_ABORT~~, MAP_U_ABORT or MAP_CLOSE indication is received from the VLR, the macro terminates at the "Error" exit.

The macro is described in figure 25.6/4.

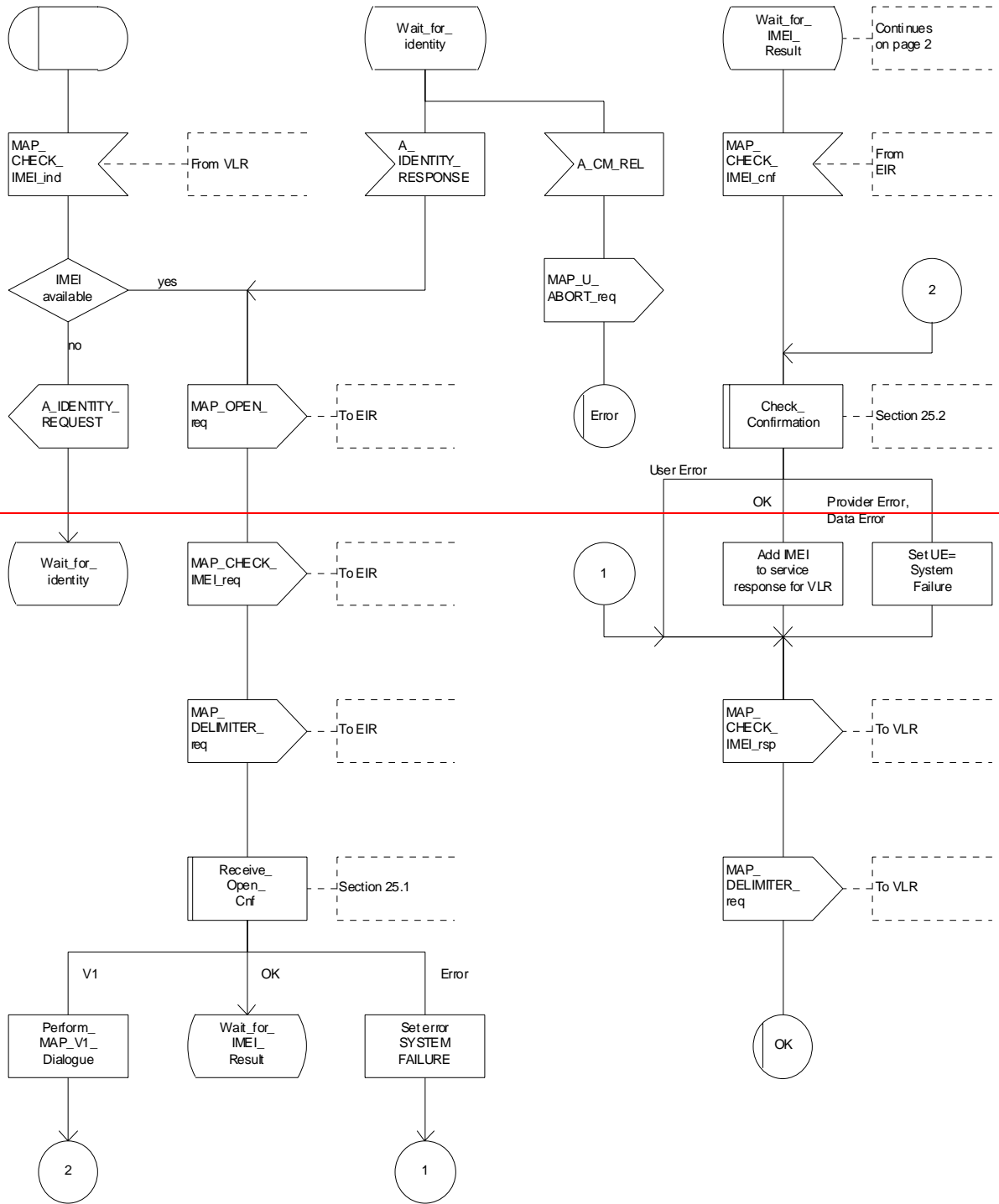
25.6.5 Macro Obtain_IMEI_VLR

This macro is used by the VLR to obtain the IMEI from the MSC, e.g. ~~to enable handling of emergency calls in case of authentication failure (in which case the IMEI may be used by some operators as an alternative to the IMSI)~~. It proceeds as follows:

- the MAP_OBTAIN_IMEI service request is sent to the MSC, including only the Invoke Id;
- the VLR then waits for the response from the MSC;
- if the IMEI is received in the MAP_OBTAIN_IMEI service response, the macro terminates at the "OK" exit;
- if ~~the System Failure~~ [an](#) error is reported in the MAP_OBTAIN_IMEI service response, the "Error" exit is used;
- if the MSC terminates the dialogue using a ~~MAP_P_ABORT~~, MAP_U_ABORT [or](#) MAP_CLOSE ~~or MAP_NOTICE~~ service indication, ~~the necessary connections are released, and~~ the "Aborted" exit is used for termination of the macro.

The macro is shown in figure 25.6/5.

Figure 25.6/1: Check IMEI macro in the MSC, relaying the IMEI check indication from the VLR to the MSC and relaying the confirmation from the EIR to the VLR



macrodefinition Check_IMEI_MSC

Chk_IMEI_MSC

Macro in the MSC to check the IMEI of the MS, and report the result to the VLR

Signals to/from the left are to/from the MS; signals to/from the right are to/from the VLR unless marked otherwise

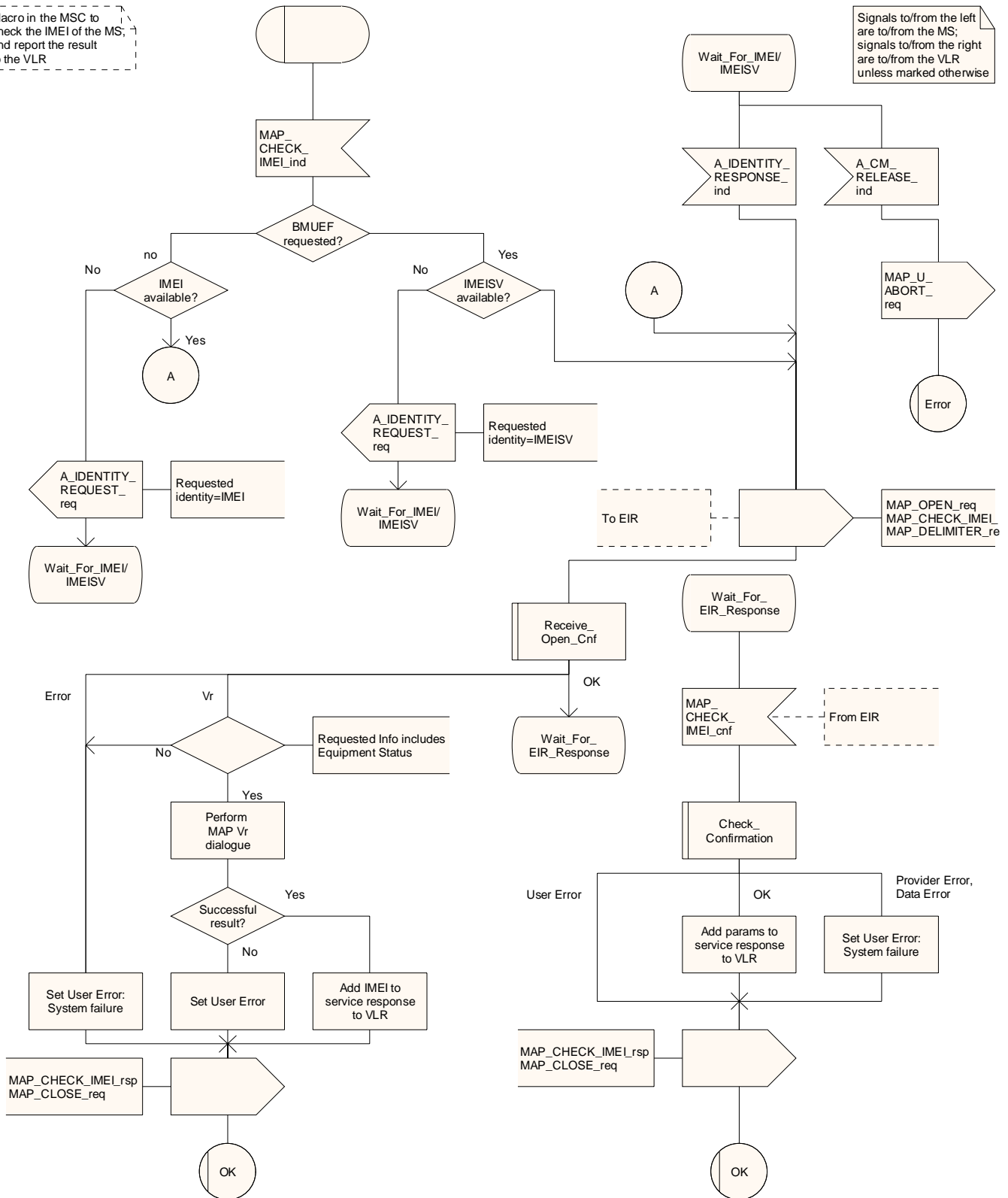
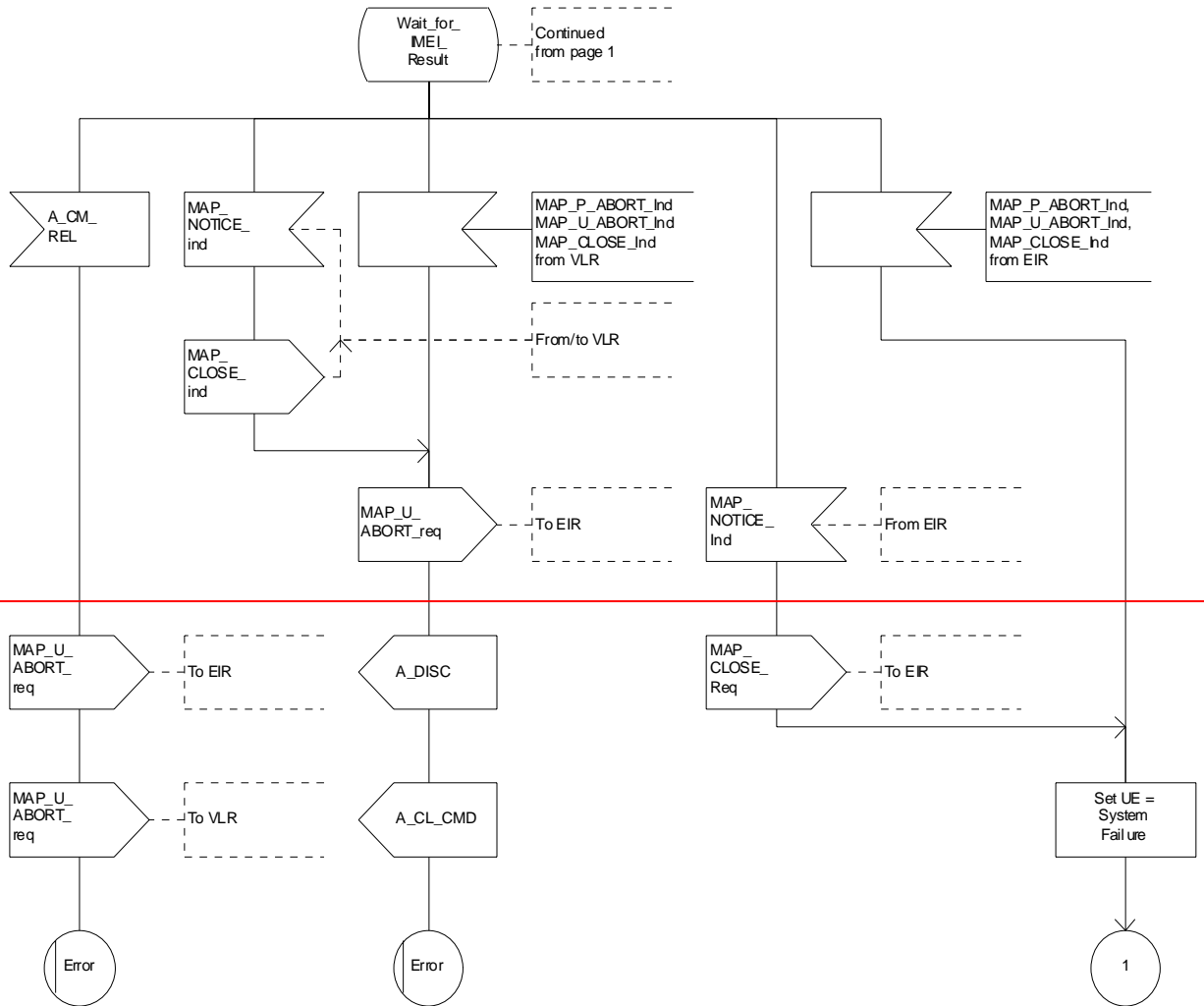


Figure 25.6/1 (sheet 1 of 2): MacroProcess Check_IMEI_MSC

Figure 25.6/1: Check IMEI macro in the MSC, relaying the IMEI check indication from the VLR to the MSC and relaying the confirmation from the EIR to the VLR



macrodefinition Check_IMEI_MSC

Ch_IMEI_MSC

Macro in the MSC to check the IMEI of the MS, and report the result to the VLR

Signals to/from the left are to/from the MS; signals to/from the right are to/from the VLR unless marked otherwise

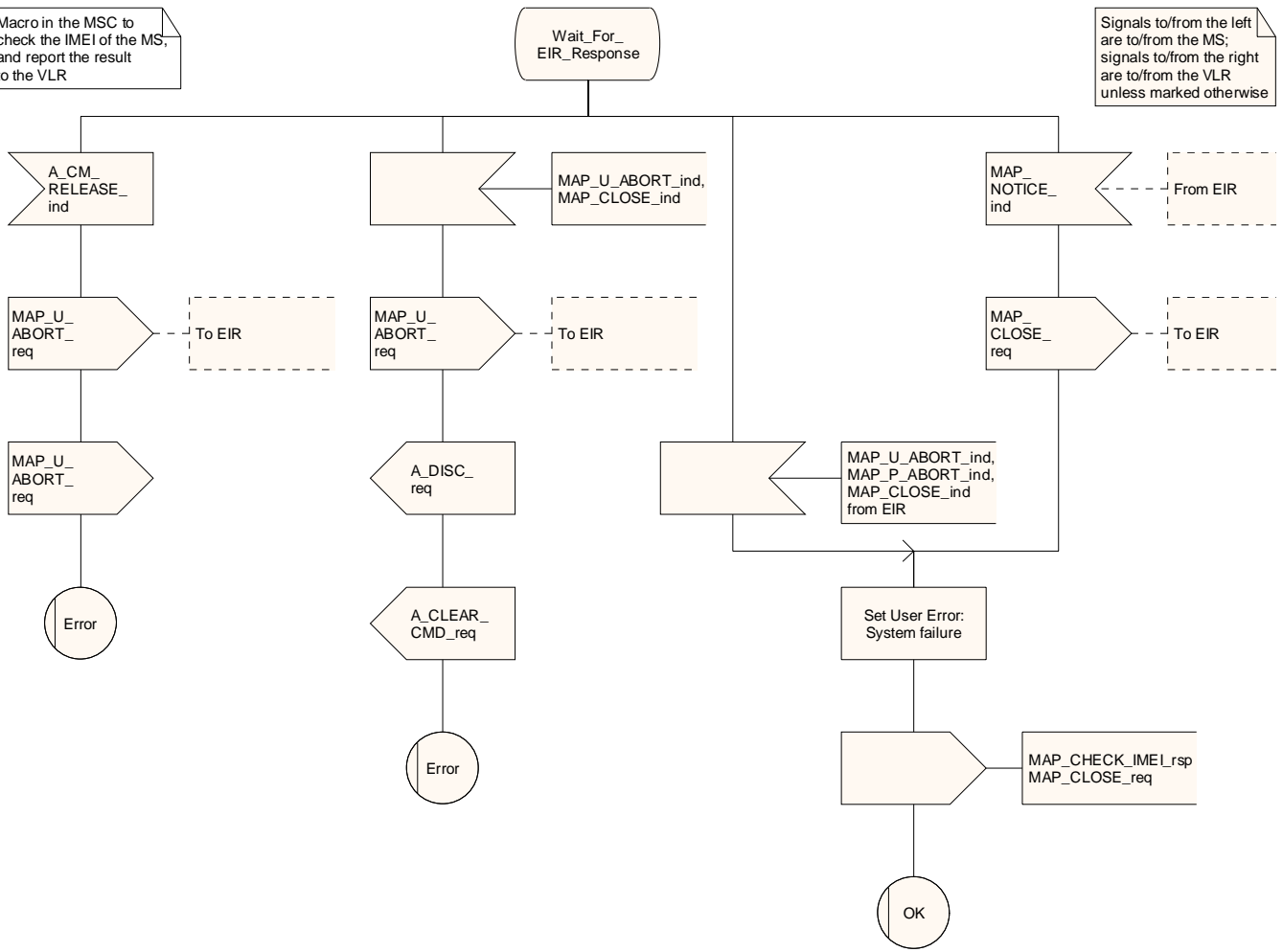
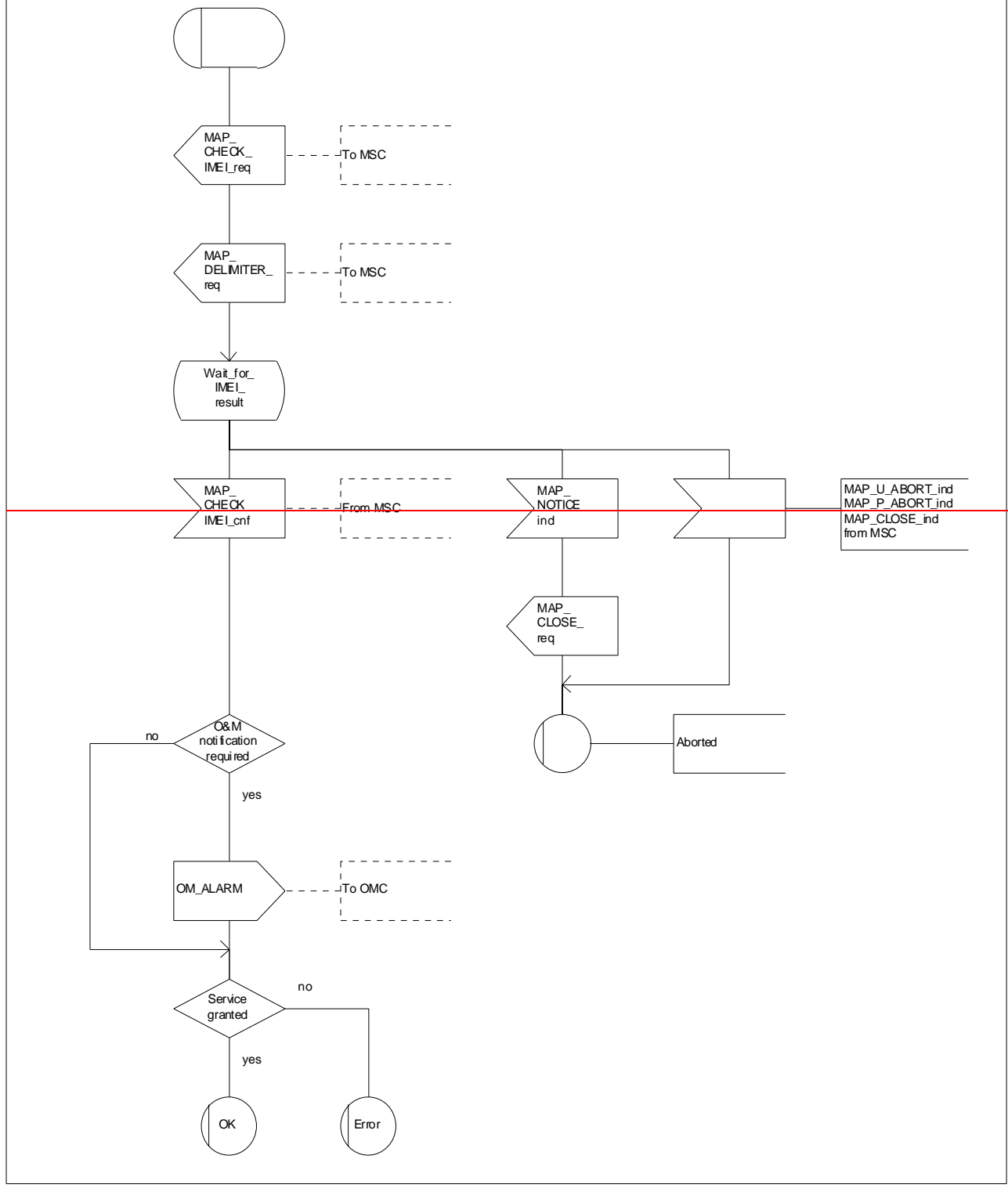


Figure 25.6/1 (sheet 2 of 2): **MacroProcess** Check_IMEI_MSC

Figure 25.6/2: Check IMEI macro in the VLR, containing the request towards the MSC/EIR



macrodefinition Check_IMEI_VLR

Chk_IMEI_VLR

Macro in the VLR to instruct the MSC to check the IMEI of the MS and handle the report of the result

Signals to/from the left are to/from the MSC; signals to/from the right are to/from the OMC

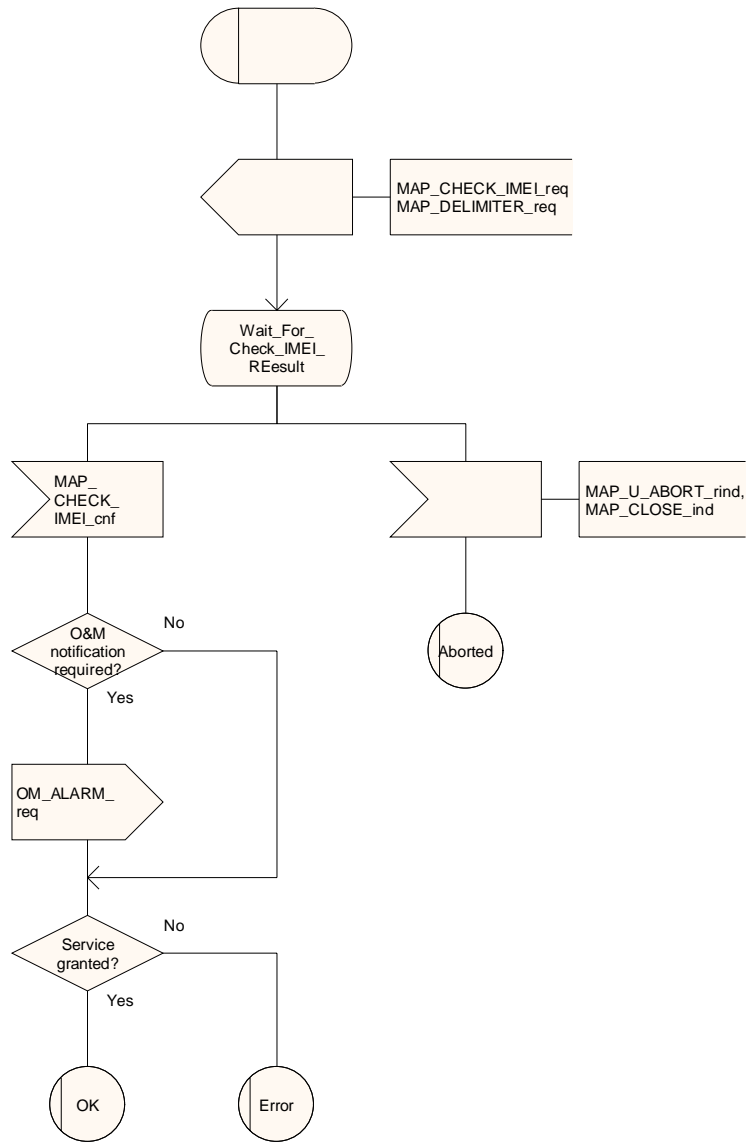
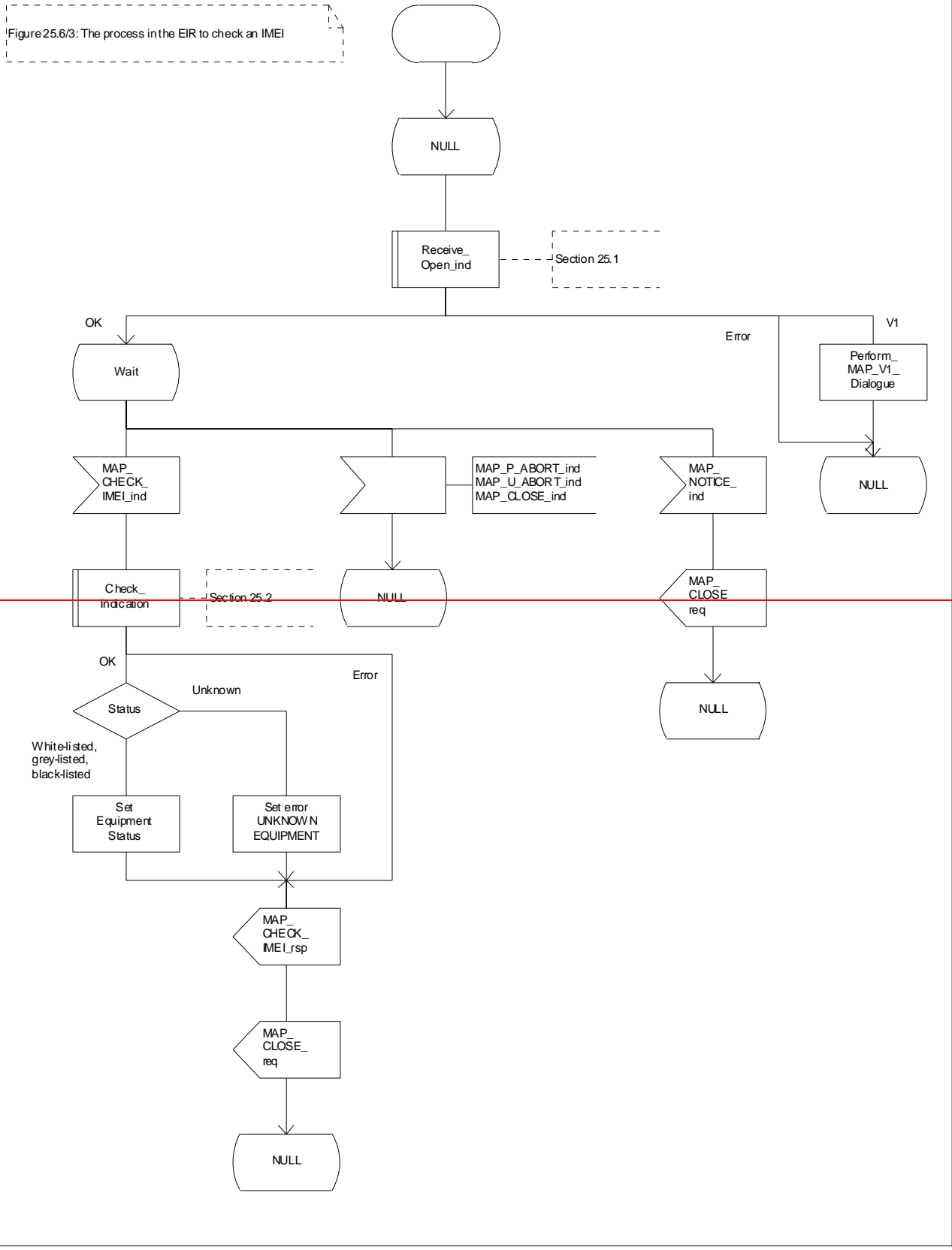


Figure 25.6/2: MacroProcess Check_IMEI_VLR

Process Check_IMEI_EIR

25.6_3(1)

Figure 25.6/3: The process in the EIR to check an IMEI



process Check_IMEI_EIR

Chk_IMEI_EIR1(1)

Process in the EIR to check the IMEI of an MS

Signals to/from the left are to/from the MSC or the SGSN

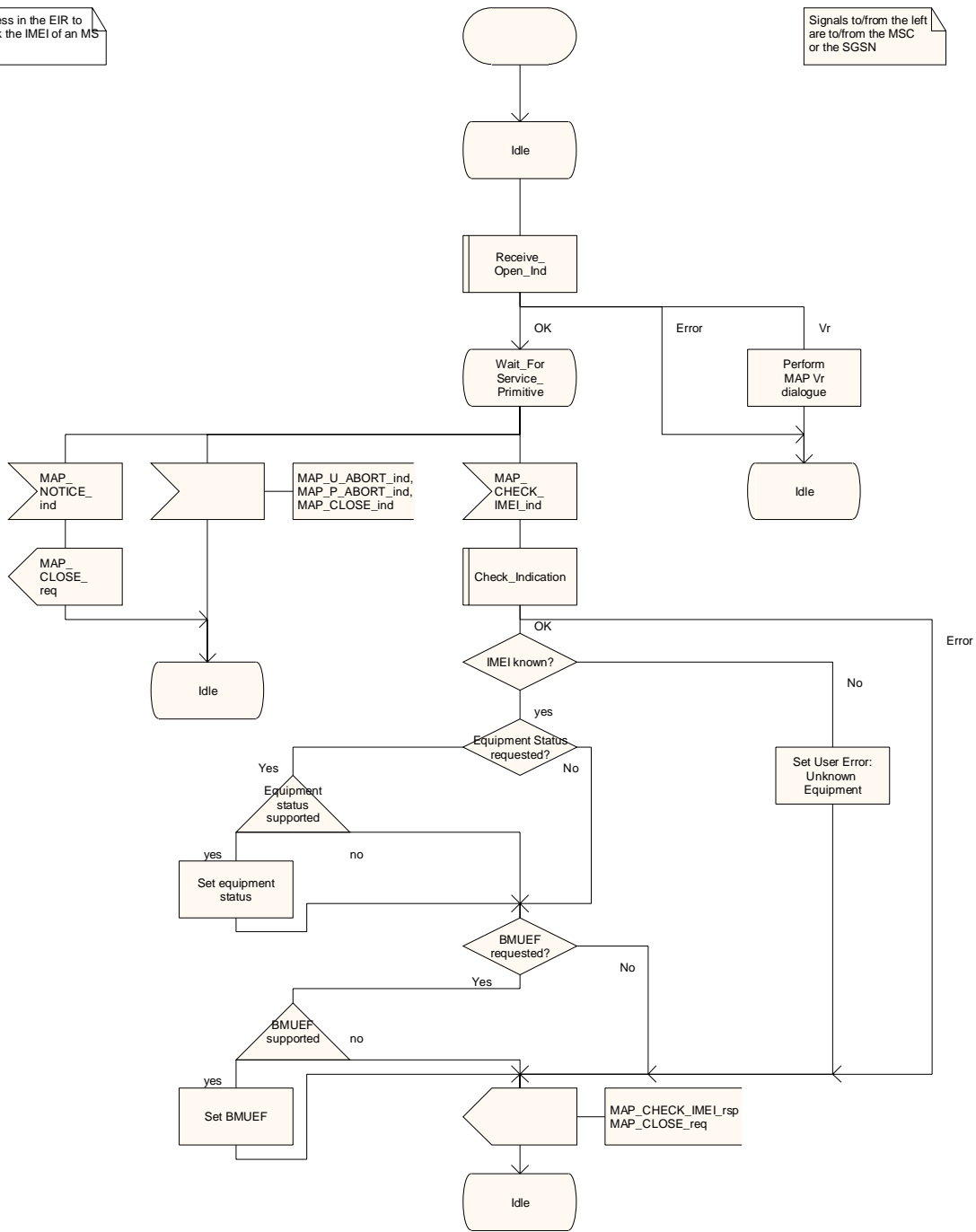
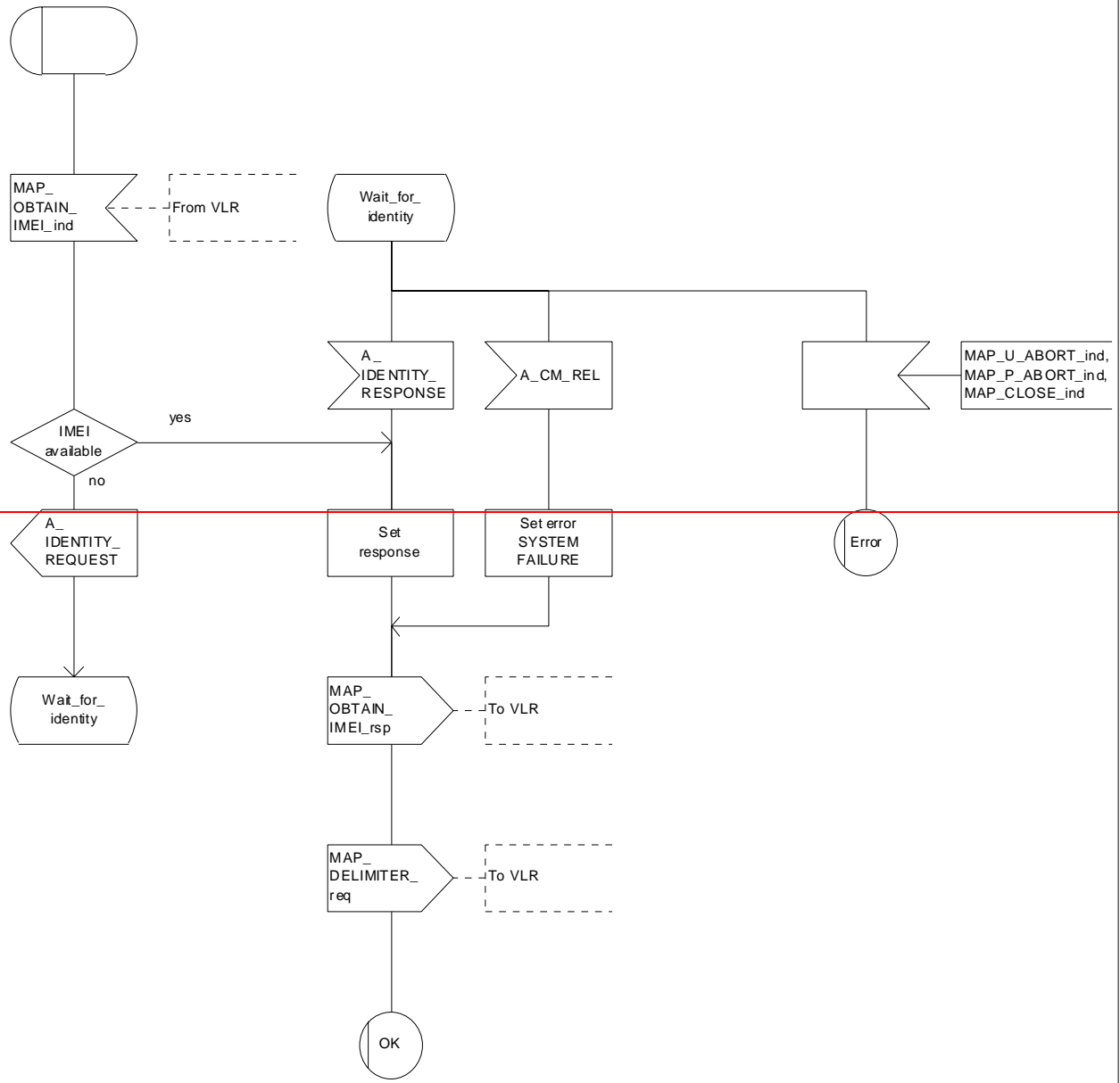


Figure 25.6/3: Process Check_IMEI_EIR

Macrodefinition Obtain_IMEI_MSC

25.6_4(1)

Figure 25.6/4: Obtain IMEI macro in the MSC, receiving the Obtain_IMEI indication from the VLR to the MSC and returning the confirmation to the VLR



macrodefinition Obtain_IMEI_MSC

Obt_IMEI_MSC1(1)

Macro in the MSC to obtain the IMEI from the MS

Signals to/from the left are to/from the MS; signals to/from the right are to/from the VLR

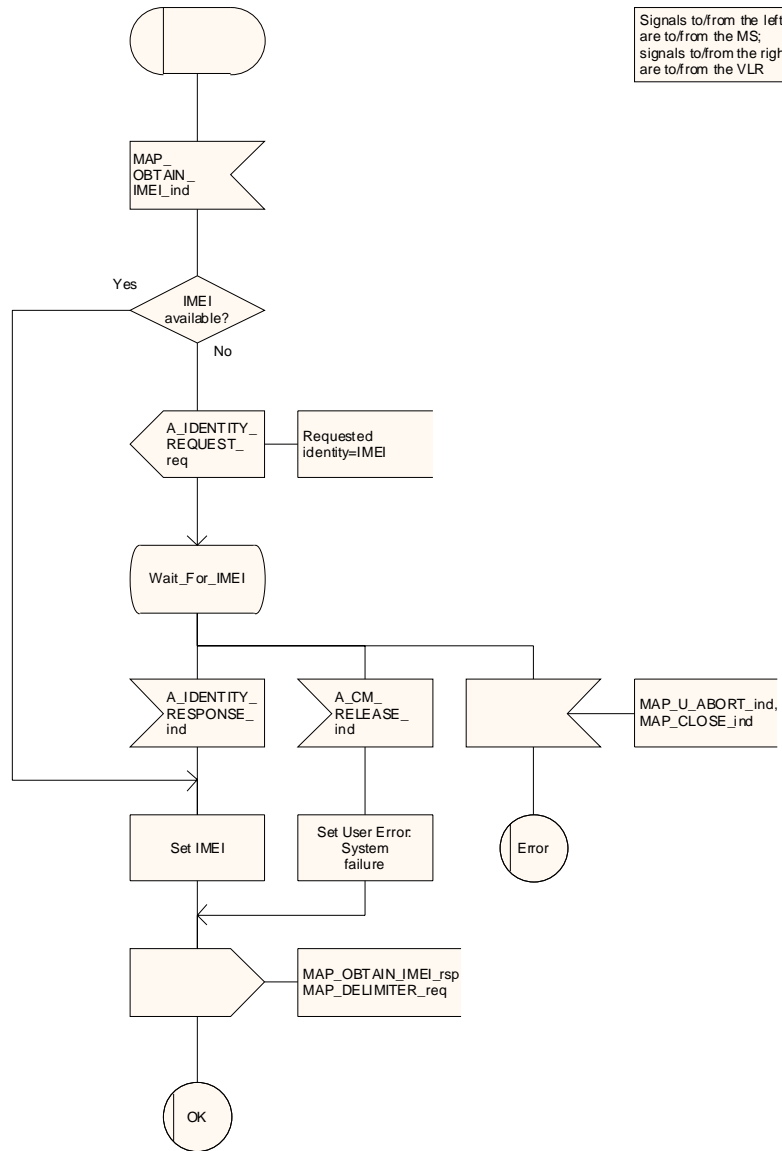
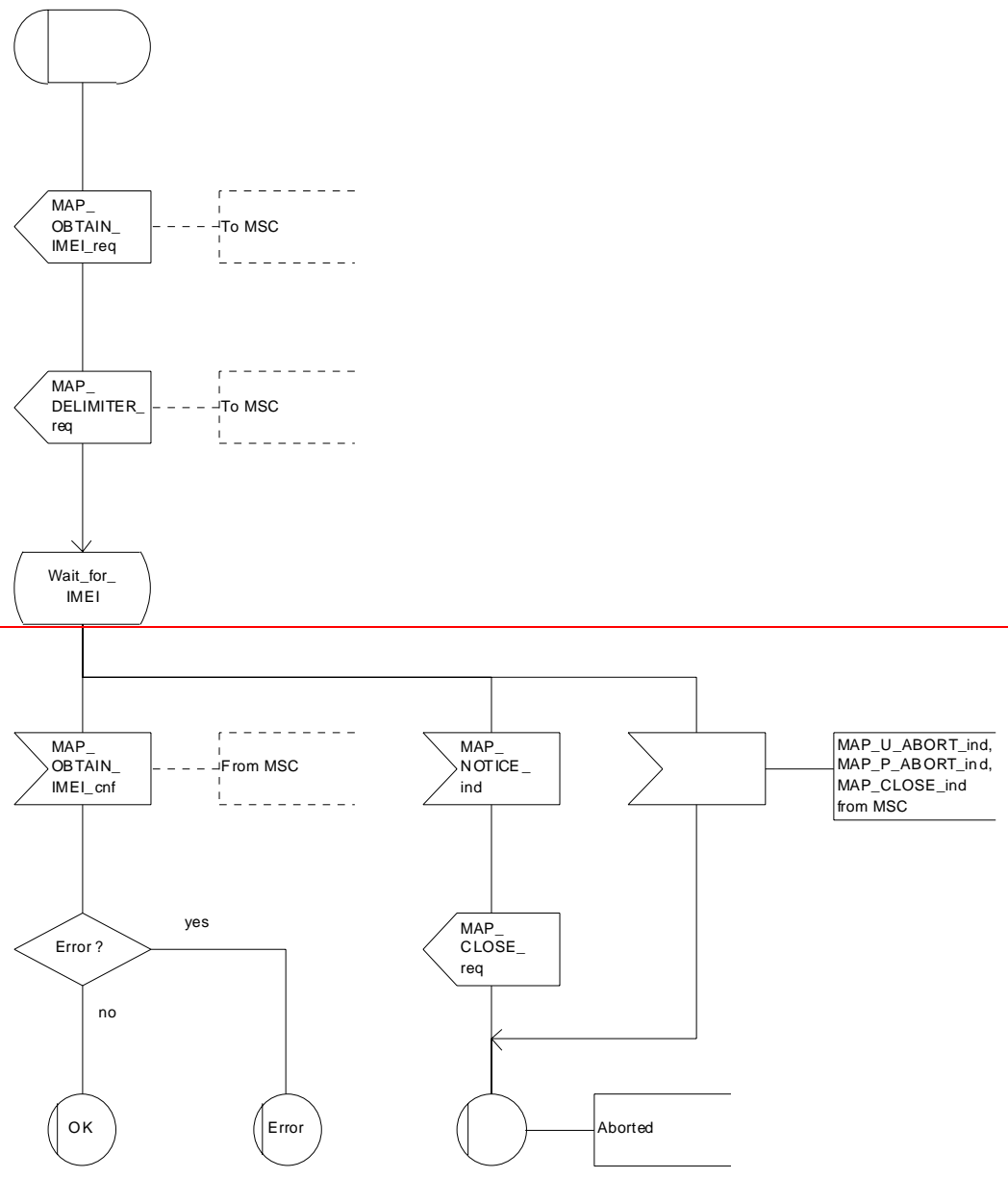


Figure 25.6/4: MacroProcess Obtain_IMEI_MSC

Figure 25.6/5: Obtain IMEI macro in the VLR, controlling the request towards the MSC



macrodefinition Obtain_IMEI_VLR

Obt_IMEI_VLR1(1)

Macro in the VLR to instruct the MSC to obtain the IMEI of the MS and handle the report of the result

Signals to/from the left are to/from the MSC

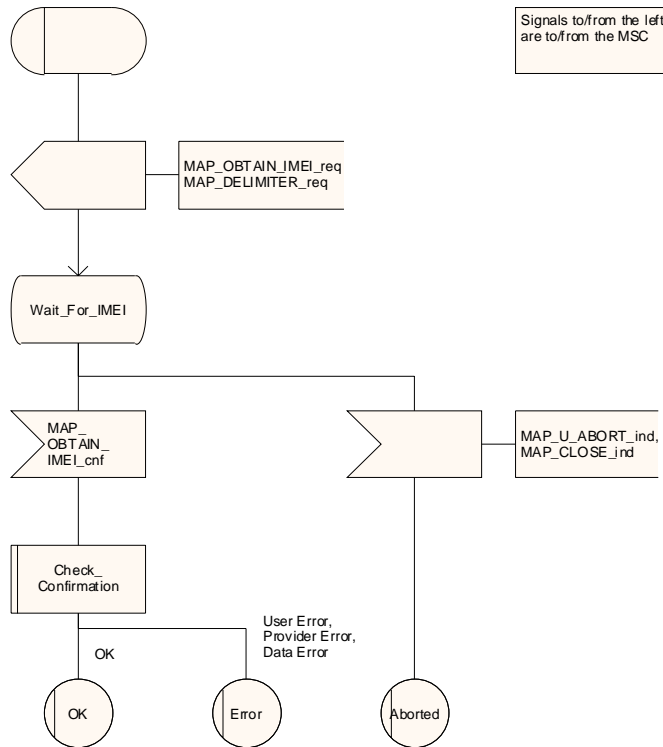


Figure 25.6/5: MacroProcess Obtain_IMEI_VLR

25.6.6 Process Check_IMEI_SGSN

This process is used by the SGSN to control the check of a mobile equipment's IMEI. [It may also be used to obtain the BMUEF from the EIR.](#) The process proceeds as follows:

~~— if the MS does not complete successfully the procedure, the "Error" exit of the macro is used;~~

- when the IMEI is known, a connection is set up towards the EIR, and a MAP_CHECK_IMEI service request is sent including the IMEI;
- if the opening of the dialogue fails, a System Failure is set. Otherwise, the SGSN waits for a response from the EIR;
- if a MAP_CHECK_IMEI service confirm including either:
 - the IMEI and the Equipment Status; [and/or the IMEISV and the BMUEF](#) or
 - an error;

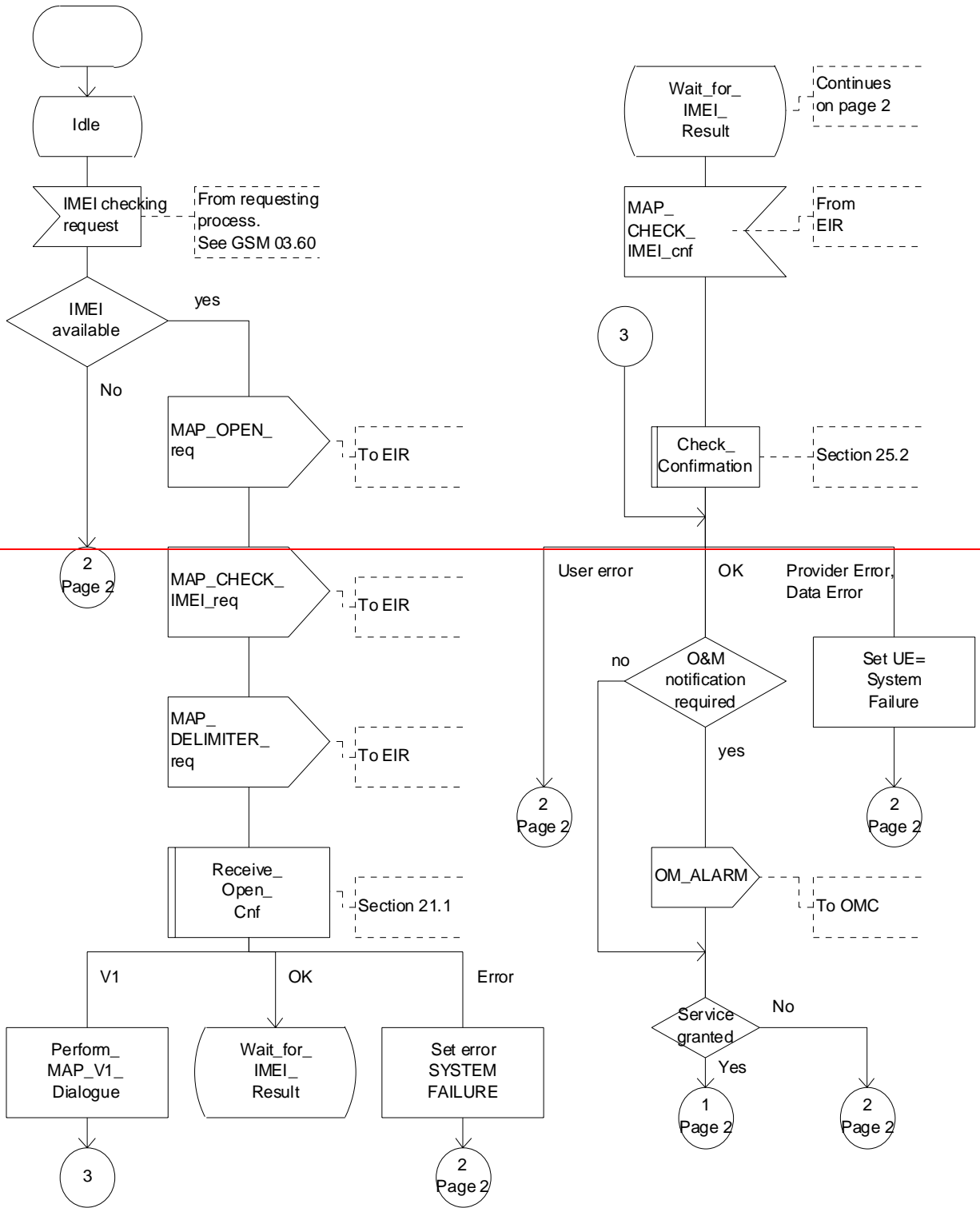
is received, the SGSN checks whether the response requires that an alarm be generated on the Operation and Maintenance interface. The criteria for such alarms are PLMN operator dependent;

- the SGSN then checks whether the response from the EIR means that service is granted to the MS. The criteria for granting service depending on the equipment status or errors received in the MAP_CHECK_IMEI service response are also PLMN operator dependent;

If the dialogue with the EIR drops back to version 1 [or version 2](#), the result or error returned by the EIR is checked. ~~The use of the "Check_Confirmation" macro in the SDL diagram indicates that the checks carried out on the result returned by the EIR in a MAP v1 dialogue are functionally equivalent to those carried out on the parameters of the MAP_CHECK_IMEI confirm received from the EIR in a MAP v2 dialogue.~~

The process is described in figure 25.6/6.

Figure 25.6/6: Check IMEI process in the SGSN



process Check_IMEI_SGSN

Chk_IMEI_SGSN1(1)

Process in the SGSN to check the IMEI of an MS

Signals to/from the left are to/from the application process in the SGSN (see 3GPP TS 23.060); signals to/from the right are to/from the EIR

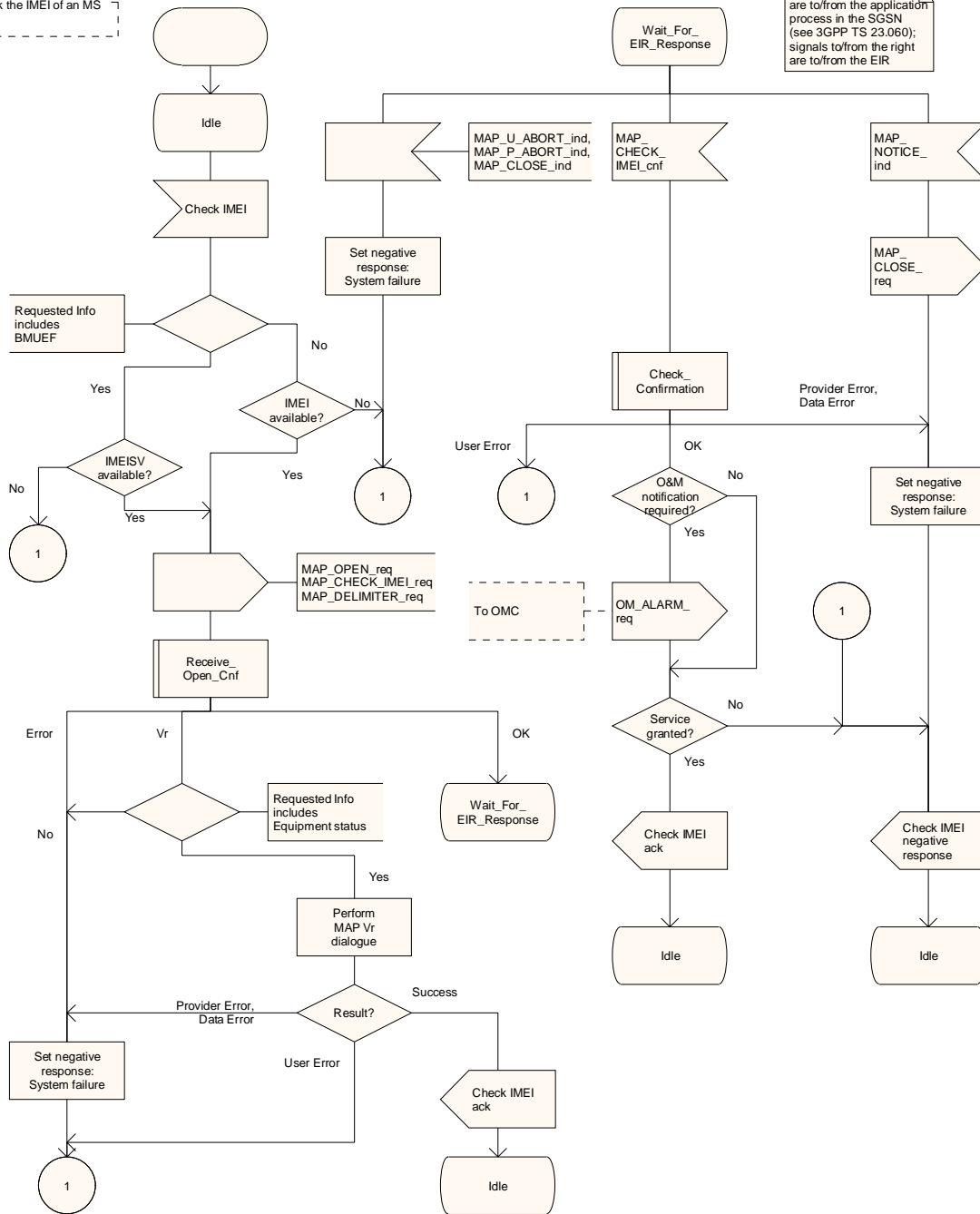


Figure 25.6/6 (sheet 1 of 2): Process Check_IMEI_SGSN

Figure 25.6/6: Check IMEI process in the SGSN

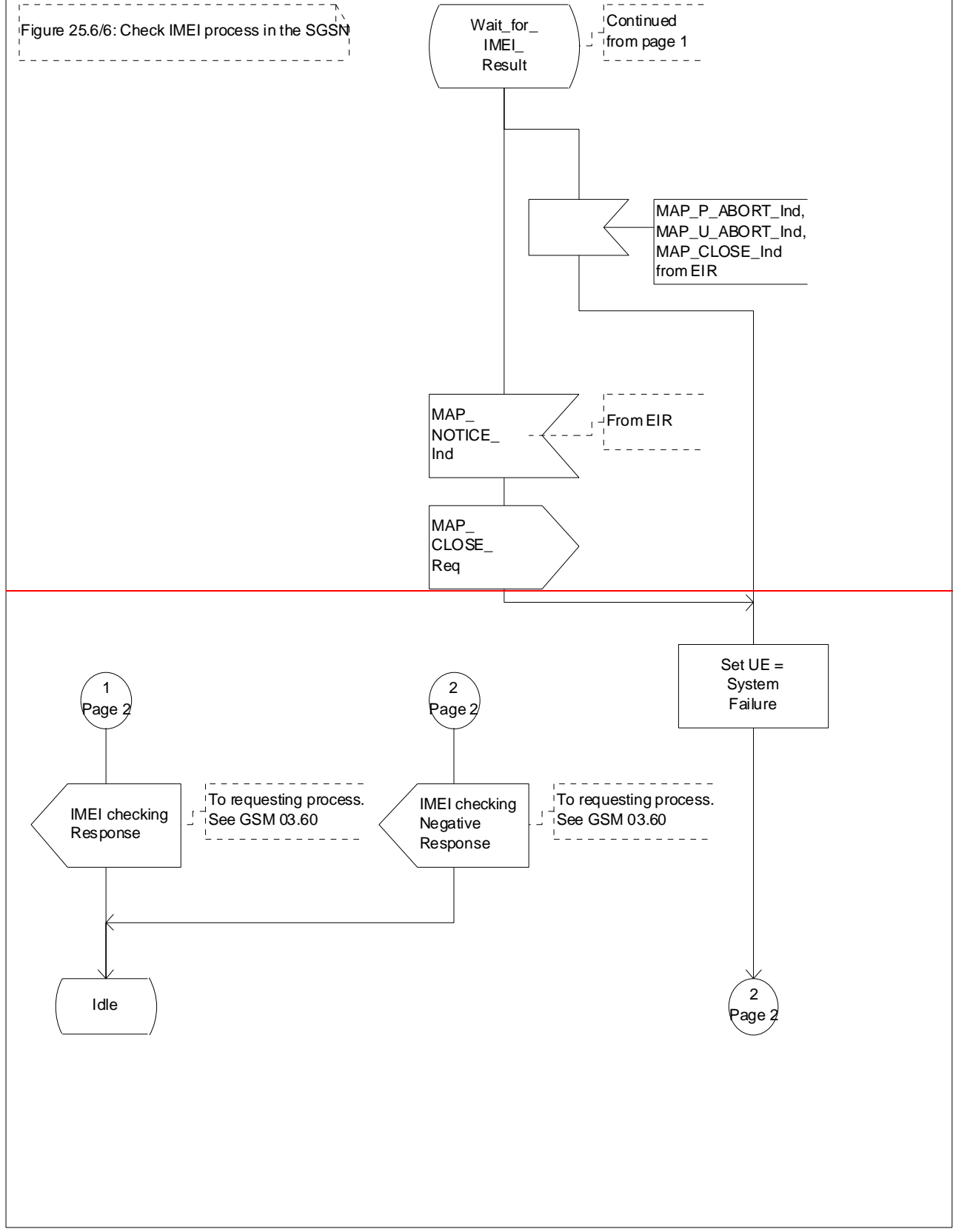


Figure 25.6/6 (sheet 2 of 2): Process Check_IMEI_SGSN

CHANGE REQUEST

⌘ **29.002 CR 612** ⌘ rev **1** ⌘ Current version: **6.1.0** ⌘

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

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

Title:	⌘ Enhancement of the CheckIMEI operation to retrieve the BMUEF		
Source:	⌘ CN4		
Work item code:	⌘ Late UE	Date:	⌘ 22/05/2003
Category:	⌘ A	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	2	(GSM Phase 2)
	A (corresponds to a correction in an earlier release)	R96	(Release 1996)
	B (addition of feature),	R97	(Release 1997)
	C (functional modification of feature)	R98	(Release 1998)
	D (editorial modification)	R99	(Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Rel-4	(Release 4)
		Rel-5	(Release 5)
		Rel-6	(Release 6)

Reason for change:	⌘ In order for the MSC and SGSN to understand the functional limitations for a particular UE they need to receive data to indicate the UE specific behaviour. These data (BMUEF) may be retrieved from the EIR.
Summary of change:	⌘ Raise the AC version for the CheckIMEI operation. Add requestedEquipmentInfo and IMEISV to the request. Add BMUEF to the response
Consequences if not approved:	⌘ BMUEF information cannot be transferred from a central database to the serving node

Clauses affected:	⌘ 7.6.2.3a (new), 7.6.3.2a (new), 8.7.1, 17.1.6, 17.2.2.14, 17.3.2.14, 17.3.3, 17.6.1, 17.7.1, 25										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;">⌘</td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
		Test specifications									
		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.

7.6.2.3 IMEI

This parameter is the International Mobile Equipment Identity defined in 3GPP TS 23.003 [17].

[7.6.2.3a IMEISV](#)

[This parameter is the International Mobile Equipment Identity and Software Version Number defined in 3GPP TS 23.003 \[17\].](#)

7.6.3.2 Equipment status

This parameter refers to the status of the mobile equipment as defined in 3GPP TS 22.016 [7].

[7.6.3.2a BMUEF](#)

[This parameter refers to the Bit Map of UE Faults and corresponds to the UESBI parameter defined in 3GPP TS 25.413 \[120\].](#)

8.7.1 MAP_CHECK_IMEI service

8.7.1.1 Definition

This service is used between the VLR and the MSC and between the MSC and the EIR and between the SGSN and EIR to request check of IMEI. If the IMEI is not available in the MSC or in the SGSN, it is requested from the MS and transferred to the EIR in the service request.

[This service may also be used to request the BMUEF from the EIR.](#)

The service is a confirmed service and consists of four service primitives.

8.7.1.2 Service primitives

The service primitives are shown in table 8.7/1.

Table 8.7/1: MAP_CHECK_IMEI parameters

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
IMEI	C	C(=)	C	C(=)
IMEISV	C	C(=)	C(=)	C(=)
Requested Equipment Info	M	M(=)		
Equipment status			C	C(=)
BMUEF			C	C(=)
User error			C	C(=)
Provider error				O

8.7.1.3 Parameter use

Invoke id

See clause 7.6.1 for the use of this parameter.

Requested Equipment Info

This parameter indicates whether Equipment Status or BMUEF or both is requested.

IMEI

See clause 7.6.2 for the use of this parameter. The parameter shall not be included in the service request between the VLR and the MSC, but one of IMEI and IMEISV is mandatory in the service request from the MSC to the EIR and from the SGSN to the EIR. It is not included in the service response from the EIR to the MSC or to the SGSN, but one of IMEI and IMEISV is mandatory in the service response from the MSC to the VLR on successful outcome.

IMEISV

See clause 7.6.2 for the use of this parameter. IMEISV shall be present if BMUEF is requested.

Equipment status

See clause 7.6.34 for the use of this parameter. This parameter is sent by the responder in case of successful outcome of the service if Equipment status was requested.

BMUEF

See clause 7.6.4 for the use of this parameter. This parameter is sent by the responder in case of successful outcome of the service if BMUEF was requested.

User error

One of the following error causes defined in clause 7.6.1 shall be sent by the user in case of unsuccessful outcome of the service, depending on the respective failure reason:

- unknown equipment;
this error is returned by the responder when the IMEI is not known in the EIR;
- system failure;
- unexpected data value.

Provider error

See clause 7.6.1 for the use of this parameter.

17.1.6 Application Contexts

The following informative table lists the latest versions of the Application Contexts used in this specification, with the operations used by them and, where applicable, whether or not the operation description is exactly the same as for previous versions. Information in 17.6 & 17.7 relates only to the ACs in this table.

AC Name	AC Version	Operations Used	Comments
locationCancellationContext	v3	cancelLocation	
equipmentMngtContext	V32	checkIMEI	
imsiRetrievalContext	v2	sendIMSI	
infoRetrievalContext	v3	sendAuthenticationInfo	
interVlrInfoRetrievalContext	v3	sendIdentification	
handoverControlContext	v3	prepareHandover forwardAccessSignalling sendEndSignal processAccessSignalling prepareSubsequentHandover	the syntax of this operation has been extended in comparison with release 98 version
mwdMngtContext	v3	readyForSM	
msPurgingContext	v3	purgeMS	

AC Name	AC Version	Operations Used	Comments
shortMsgAlertContext	v2	alertServiceCentre	
resetContext	v2	reset	
networkUnstructuredSsContext	v2	processUnstructuredSS-Request unstructuredSS-Request unstructuredSS-Notify	
tracingContext	v3	activateTraceMode deactivateTraceMode	
networkFunctionalSsContext	v2	registerSS eraseSS activateSS deactivateSS registerPassword interrogateSS getPassword	
shortMsgMO-RelayContext	v3	mo-forwardSM	
shortMsgMT-RelayContext	v3	mt-forwardSM	
shortMsgGatewayContext	v3	sendRoutingInfoForSM reportSM-DeliveryStatus InformServiceCentre	the syntax of this operation has been extended in comparison with release 96 version
networkLocUpContext	v3	updateLocation forwardCheckSs-Indication restoreData insertSubscriberData activateTraceMode	the syntax is the same in v1 & v2
gprsLocationUpdateContext	v3	updateGprsLocation insertSubscriberData activateTraceMode	
subscriberDataMngtContext	v3	insertSubscriberData deleteSubscriberData	
roamingNumberEnquiryContext	v3	provideRoamingNumber	
locationInfoRetrievalContext	v3	sendRoutingInfo	
gprsNotifyContext	v3	noteMsPresentForGprs	
gprsLocationInfoRetrievalContext	v4	sendRoutingInfoForGprs	
failureReportContext	v3	failureReport	
callControlTransferContext	v4	resumeCallHandling	
subscriberInfoEnquiryContext	v3	provideSubscriberInfo	
anyTimeEnquiryContext	v3	anyTimeInterrogation	
anyTimeInfoHandlingContext	v3	anyTimeSubscriptionInterrogation anyTimeModification	
ss-InvocationNotificationContext	v3	ss-InvocationNotification	
sIWFSAllocationContext	v3	provideSIWFSNumber sIWFSsignallingModify	
groupCallControlContext	v3	prepareGroupCall processGroupCallSignalling forwardGroupCallSignalling sendGroupCallEndSignal	
reportingContext	v3	setReportingState statusReport remoteUserFree	
callCompletionContext	v3	registerCC-Entry eraseCC-Entry	
istAlertingContext	v3	istAlert	
ImmediateTerminationContext	v3	istCommand	
locationSvcEnquiryContext	v3	provideSubscriberLocation subscriberLocationReport	
locationSvcGatewayContext	v3	sendRoutingInfoForLCS	
mm-EventReportingContext	v3	noteMM-Event	
subscriberDataModificationNotificationContext	v3	noteSubscriberDataModified	

AC Name	AC Version	Operations Used	Comments
authenticationFailureReportContext	v3	authenticationFailureReport	
secureTransportHandlingContext	v3	secureTransportClass1 secureTransportClass2 secureTransportClass3 secureTransportClass4	

NOTE (*): The syntax of the operations is not the same as in previous versions unless explicitly stated

17.2.2.14 Equipment management

This operation package includes the operations required for equipment management procedures between EIR and MSC or between EIR and SGSN.

```
equipmentMngtPackage-v32 OPERATION-PACKAGE ::= {
  -- Supplier is EIR if Consumer is MSC
  -- Supplier is EIR if Consumer is SGSN
  CONSUMER INVOKES {
    checkIMEI } }
```

The v1-equivalent [and v2-equivalent](#) packages can be determined according to the rules described in clause 17.2.1.

17.3.2.14 Equipment Management

This application context is used for equipment checking between MSC and EIR or between SGSN and EIR. For the SGSN - EIR interface version 1 and version 2 [and version 3](#) of this application context are applicable:

```
equipmentMngtContext-v3 APPLICATION-CONTEXT ::= {
  -- Responder is EIR if Initiator is MSC
  -- Responder is EIR if Initiator is SGSN
  INITIATOR CONSUMER OF {
    equipmentMngtPackage-v3 }
  ID {map-ac equipmentMngt(13) version3(3)} }
```

[The following application-context-name is assigned to the v2-equivalent application-context:](#)

```
equipmentMngtContext-v2 APPLICATION-CONTEXT ::= {
  -- Responder is EIR if Initiator is MSC
  -- Responder is EIR if Initiator is SGSN
  INITIATOR CONSUMER OF {
    equipmentMngtPackage-v2 }
  ID {map-ac equipmentMngt(13) version2(2)} }
```

[The following application-context-name is assigned to the v1-equivalent application-context:](#)

```
ID {map-ac equipmentMngt(13) version1(1)}
```

17.3.3 ASN.1 Module for application-context-names

.....

```
equipmentMngtContext-v32 OBJECT IDENTIFIER ::=
    {map-ac equipmentMngt(13) version32(32)}
```

.....

```
-- The following Object Identifiers are reserved for application-contexts
-- existing in previous versions of the protocol
```

AC Name & Version	Object Identifier	
-- networkLocUpContext-v1	map-ac networkLocUp (1)	version1 (1)
-- networkLocUpContext-v2	map-ac networkLocUp (1)	version2 (2)
-- locationCancellationContext-v1	map-ac locationCancellation (2)	version1 (1)
-- locationCancellationContext-v2	map-ac locationCancellation (2)	version2 (2)
-- roamingNumberEnquiryContext-v1	map-ac roamingNumberEnquiry (3)	version1 (1)
-- roamingNumberEnquiryContext-v2	map-ac roamingNumberEnquiry (3)	version2 (2)
-- locationInfoRetrievalContext-v1	map-ac locationInfoRetrieval (5)	version1 (1)
-- locationInfoRetrievalContext-v2	map-ac locationInfoRetrieval (5)	version2 (2)
-- resetContext-v1	map-ac reset (10)	version1 (1)
-- handoverControlContext-v1	map-ac handoverControl (11)	version1 (1)
-- handoverControlContext-v2	map-ac handoverControl (11)	version2 (2)
-- equipmentMngtContext-v1	map-ac equipmentMngt (13)	version1 (1)
-- equipmentMngtContext-v2	map-ac equipmentMngt (13)	version2 (2)
-- infoRetrievalContext-v1	map-ac infoRetrieval (14)	version1 (1)
-- infoRetrievalContext-v2	map-ac infoRetrieval (14)	version2 (2)
-- interVlrInfoRetrievalContext-v2	map-ac interVlrInfoRetrieval (15)	version2 (2)
-- subscriberDataMngtContext-v1	map-ac subscriberDataMngt (16)	version1 (1)
-- subscriberDataMngtContext-v2	map-ac subscriberDataMngt (16)	version2 (2)
-- tracingContext-v1	map-ac tracing (17)	version1 (1)
-- tracingContext-v2	map-ac tracing (17)	version2 (2)
-- <i>networkFunctionalSsContext-v1</i>	<i>map-ac networkFunctionalSs (18)</i>	<i>version1 (1)</i>
-- shortMsgGatewayContext-v1	map-ac shortMsgGateway (20)	version1 (1)
-- shortMsgGatewayContext-v2	map-ac shortMsgGateway (20)	version2 (2)
-- shortMsgRelayContext-v1	map-ac shortMsgRelay (21)	version1 (1)
-- shortMsgAlertContext-v1	map-ac shortMsgAlert (23)	version1 (1)
-- <i>mwdMngtContext-v1</i>	<i>map-ac mwdMngt (24)</i>	<i>version1 (1)</i>
-- mwdMngtContext-v2	map-ac mwdMngt (24)	version2 (2)
-- shortMsgMT-RelayContext-v2	map-ac shortMsgMT-Relay (25)	version2 (2)
-- msPurgingContext-v2	map-ac msPurging (27)	version2 (2)
-- callControlTransferContext-v3	map-ac callControlTransferContext (6)	version3 (3)
-- gprsLocationInfoRetrievalContext-v3	map-ac gprsLocationInfoRetrievalContext (33)	version3 (3)

17.6.1 Mobile Service Operations

```

MAP-MobileServiceOperations {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MobileServiceOperations (5)
    version9 (9)}

DEFINITIONS

 ::=

BEGIN

EXPORTS

    -- location registration operations
    updateLocation,
    cancelLocation,
    purgeMS,
    sendIdentification,

    -- gprs location registration operations
    updateGprsLocation,

    -- subscriber information enquiry operations
    provideSubscriberInfo,

    -- any time information enquiry operations
    anyTimeInterrogation,

    -- any time information handling operations
    anyTimeSubscriptionInterrogation,
    anyTimeModification,

    -- subscriber data modification notification operations
    noteSubscriberDataModified,

    -- handover operations
    prepareHandover,
    sendEndSignal,
    processAccessSignalling,
    forwardAccessSignalling,
    prepareSubsequentHandover,

    -- authentication management operations
    sendAuthenticationInfo,
    authenticationFailureReport,

    -- IMEI management operations
    checkIMEI,

    -- subscriber management operations
    insertSubscriberData,
    deleteSubscriberData,

    -- fault recovery operations
    reset,
    forwardCheckSS-Indication,
    restoreData,

-- gprs location information retrieval operations
    sendRoutingInfoForGprs,

    -- failure reporting operations
    failureReport,

    -- gprs notification operations
    noteMsPresentForGprs,

    -- Mobility Management operations
    noteMM-Event

;

IMPORTS
    OPERATION
FROM Remote-Operations-Information-Objects {

```

```
joint-iso-itu-t remote-operations(4)
informationObjects(5) version1(0)}
```

```
systemFailure,
dataMissing,
unexpectedDataValue,
unknownSubscriber,
unknownMSC,
unidentifiedSubscriber,
unknownEquipment,
roamingNotAllowed,
ati-NotAllowed,
noHandoverNumberAvailable,
subsequentHandoverFailure,
absentSubscriber,
mm-EventNotSupported,
atsi-NotAllowed,
atm-NotAllowed,
bearerServiceNotProvisioned,
teleserviceNotProvisioned,
callBarred,
illegalSS-Operation,
ss-ErrorStatus,
ss-NotAvailable,
ss-Incompatibility,
ss-SubscriptionViolation,
informationNotAvailable,
targetCellOutsideGroupCallArea
```

```
FROM MAP-Errors {
itu-t identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-Errors (10) version9 (9)}
```

```
UpdateLocationArg,
UpdateLocationRes,
CancelLocationArg,
CancelLocationRes,
PurgeMS-Arg,
PurgeMS-Res,
SendIdentificationArg,
SendIdentificationRes,
UpdateGprsLocationArg,
UpdateGprsLocationRes,
PrepareHO-Arg,
PrepareHO-Res,
ForwardAccessSignalling-Arg,
ProcessAccessSignalling-Arg,
SendEndSignal-Arg,
SendEndSignal-Res,
PrepareSubsequentHO-Res,
PrepareSubsequentHO-Arg,
SendAuthenticationInfoArg,
SendAuthenticationInfoRes,
AuthenticationFailureReportArg,
AuthenticationFailureReportRes,
EquipmentStatus,
CheckIMEI-Arg,
CheckIMEI-Res,
InsertSubscriberDataArg,
InsertSubscriberDataRes,
DeleteSubscriberDataArg,
DeleteSubscriberDataRes,
ResetArg,
RestoreDataArg,
RestoreDataRes,
ProvideSubscriberInfoArg,
ProvideSubscriberInfoRes,
AnyTimeSubscriptionInterrogationArg,
AnyTimeSubscriptionInterrogationRes,
AnyTimeModificationArg,
AnyTimeModificationRes,
NoteSubscriberDataModifiedArg,
NoteSubscriberDataModifiedRes,
AnyTimeInterrogationArg,
AnyTimeInterrogationRes,
SendRoutingInfoForGprsArg,
SendRoutingInfoForGprsRes,
FailureReportArg,
```



```
FailureReportRes,  
NoteMsPresentForGprsArg,  
NoteMsPresentForGprsRes,  
NoteMM-EventArg,  
NoteMM-EventRes
```

```
FROM MAP-MS-DataTypes {  
  itu-t identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}
```

```
-----IMEI  
FROM MAP-CommonDataTypes {  
  itu-t identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}  
;
```

.....

-- IMEI management operations

```
checkIMEI OPERATION ::= {                                     --Timer m  
  ARGUMENT  
    CheckIMEI-Arg  
  RESULT  
    CheckIMEI-ResEquipmentStatus  
  ERRORS {  
    systemFailure |  
    dataMissing |  
    unknownEquipment}  
  CODE local:43 }
```

.....

17.7.1 Mobile Service data types

```

MAP-MS-DataTypes {
    itu-t identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

DEFINITIONS

IMPLICIT TAGS

 ::=

BEGIN

EXPORTS

    -- location registration types
    UpdateLocationArg,
    UpdateLocationRes,
    CancelLocationArg,
    CancelLocationRes,
    PurgeMS-Arg,
    PurgeMS-Res,
    SendIdentificationArg,
    SendIdentificationRes,
    UpdateGprsLocationArg,
    UpdateGprsLocationRes,
    IST-SupportIndicator,
    SupportedLCS-CapabilitySets,

    -- gprs location registration types
    GSN-Address,

    -- handover types
    ForwardAccessSignalling-Arg,
    PrepareHO-Arg,
    PrepareHO-Res,
    PrepareSubsequentHO-Arg,
    PrepareSubsequentHO-Res,
    ProcessAccessSignalling-Arg,
    SendEndSignal-Arg,
    SendEndSignal-Res,

    -- authentication management types
    SendAuthenticationInfoArg,
    SendAuthenticationInfoRes,
    AuthenticationFailureReportArg,
    AuthenticationFailureReportRes,

    -- security management types
    EquipmentStatus,
    KC,

    -- equipment management types
    CheckIMEI-Arg,
    CheckIMEI-Res,

    -- subscriber management types
    InsertSubscriberDataArg,
    InsertSubscriberDataRes,
    LSAIdentity,
    DeleteSubscriberDataArg,
    DeleteSubscriberDataRes,
    Ext-QoS-Subscribed,
    SubscriberData,
    ODB-Data,
    SubscriberStatus,
    ZoneCodeList,
    maxNumOfZoneCodes,
    O-CSI,
    D-CSI,
    O-BcsmCamelTDPCriteriaList,
    T-BCSM-CAMEL-TDP-CriteriaList,
    SS-CSI,
    ServiceKey,
    DefaultCallHandling,
    CamelCapabilityHandling,
    BasicServiceCriteria,
    SupportedCamelPhases,
    OfferedCamel4CSIs,

```

```

OfferedCamel4Functionalities,
maxNumOfCamelTDPData,
CUG-Index,
CUG-Info,
CUG-Interlock,
InterCUG-Restrictions,
IntraCUG-Options,
NotificationToMSUser,
QoS-Subscribed,
IST-AlertTimerValue,
T-CSI,
T-BcsmTriggerDetectionPoint,
APN,

-- fault recovery types
ResetArg,
RestoreDataArg,
RestoreDataRes,

```

.....

-- ~~equipment security~~ management types

```

CheckIMEI-Arg ::= SEQUENCE {
    imei                IMEI,
    requestedEquipmentInfo RequestedEquipmentInfo,
    extensionContainer  ExtensionContainer OPTIONAL,
    ...}

```

```

CheckIMEI-Res ::= SEQUENCE {
    equipmentStatus      EquipmentStatus OPTIONAL,
    bmuef                UESBIBMUEF
    OPTIONAL,
    extensionContainer  ExtensionContainer OPTIONAL,
    ...}

```

```

RequestedEquipmentInfo ::= BIT STRING {
    equipmentStatus (0),
    bmuef (1)} (SIZE (2..8))
-- exception handling: reception of unknown bit assignments in the
-- RequestedEquipmentInfo data type shall be discarded by the receiver

```

```

BMUEF ::= OCTET STRING (SIZE (10))
-- The internal structure is defined in 3GPP TS 25.413

```

```

UESBI ::= OCTET STRING (SIZE (10))
-- Octets are coded according the UESBI information element in 3GPP TS 25.413.

```

```

EquipmentStatus ::= ENUMERATED {
    whiteListed (0),
    blackListed (1),
    greyListed (2)}

```

25.6 IMEI Handling Macros

The following macros are used in the ~~GSM~~ network in order to enable handling and checking of the mobile equipment identity.

25.6.1 Macro Check_IMEI_MSC

This macro is used by the MSC to receive a request from the VLR, relay it to the EIR, and pass the result from the EIR back to the VLR. The macro proceeds as follows:

- a MAP_CHECK_IMEI service indication containing Requested Equipment Info and ~~only the~~ Invoke Id is received from the VLR;
- if the IMEI/IMEISV is not available in the MSC, it is requested from the MS using the IDENTITY REQUEST message;

- if the MS releases the radio resources, a MAP_U_ABORT request indicating "Application procedure Cancellation" is sent to the VLR, and the "Error" exit of the macro is used;
- when the IMEI/IMEISV is known, a connection is set up towards the EIR, and a MAP_CHECK_IMEI service request is sent including the [Requested Equipment Info. If BMUEF is requested, IMEISV shall be included; otherwise IMEI or IMEISV shall be included](#);
- if the opening of the dialogue fails, a System Failure is reported to the VLR. Otherwise, the MSC waits for a response from the EIR;
- when the MAP_CHECK_IMEI service confirm is received, it is checked for errors. Any errors discovered in the MSC lead to the System Failure error to be reported to the VLR in the MAP_CHECK_IMEI response. Any errors reported from the EIR are sent directly to the VLR in the MAP_CHECK_IMEI service response. If no errors are detected by or reported to the MSC, the IMEI/IMEISV is added to the MAP_CHECK_IMEI service response returned to the VLR. The "OK" exit is used in all cases;
- if a MAP_P_ABORT, MAP_U_ABORT, MAP_CLOSE or MAP_NOTICE service indication is received from the EIR, the MSC closes the transaction with the EIR (if necessary), reports a System Failure error back to the VLR in the MAP_CHECK_IMEI response, and uses the macro's "OK" exit;
- if a ~~MAP_P_ABORT, MAP_U_ABORT, or MAP_CLOSE or MAP_NOTICE~~ indication is received from the VLR, the MSC ~~closes the transaction with the VLR (if necessary) and~~ aborts the connections towards the EIR and the MS; the macro takes the "Error" exit.

If the dialogue with the EIR drops back to version 1 [or version 2](#), the result or error returned by the EIR is checked. [If the result is badly formed, the MSC reports a System Failure error to the VLR in the MAP_CHECK_IMEI response. If the EIR returns an error, the MSC relays the error to the VLR in the MAP_CHECK_IMEI response. The "OK" exit is used in all cases.](#) ~~The use of the "Check_Confirmation" macro in the SDL diagram indicates that the checks carried out on the result returned by the EIR in a MAP v1 dialogue are functionally equivalent to those carried out on the parameters of the MAP_CHECK_IMEI confirm received from the EIR in a MAP v2 dialogue.~~

The macro is described in figure 25.6/1.

25.6.2 Macro Check_IMEI_VLR

This macro is used by the VLR to control the check of a mobile equipment's IMEI. [It may also be used to request the BMUEF from the EIR.](#) The macro proceeds as follows:

- a MAP_CHECK_IMEI service request is sent to the MSC, including [Requested Equipment Info and only the](#) Invoke Id;
- the VLR then waits for the response from the MSC;
- if a MAP_CHECK_IMEI service confirm including either:
 - the IMEI and the Equipment Status [and/or the IMEISV and the BMUEF](#); or
 - an error;
 is received, the VLR checks whether the response requires that an alarm be generated on the Operation and Maintenance interface. The criteria for such alarms are PLMN operator dependent;
- the VLR then checks whether the response from the MSC means that service is granted to the MS. The criteria for granting service depending on the equipment status or errors received in the MAP_CHECK_IMEI service response are also PLMN operator dependent;
- if a ~~MAP_P_ABORT, MAP_U_ABORT or~~ MAP_CLOSE ~~or MAP_NOTICE~~ indication is received from the MSC, then ~~the MSC connection is closed (if necessary) and~~ the macro takes the "Aborted" exit.

The macro is described in figure 25.6/2.

25.6.3 Process Check_IMEI_EIR

This process is used by the EIR to obtain the status of a piece of mobile equipment, upon request from the MSC or from the SGSN. [This process may also be used to obtain the BMUEF](#). The process acts as follows:

- a MAP_OPEN service indication is received (macro Receive_Open_Ind, clause 25.1.1). If the dialogue opening fails, the process [returns to the Null state](#)~~terminates~~;
- otherwise, a MAP_CHECK_IMEI indication is received by the EIR, containing the [Requested Equipment Info and theIMEI/IMEISV](#) to be checked;
- the EIR checks the service indication for errors. If there are any, they are reported to the MSC or to the SGSN in the MAP_CHECK_IMEI response. If no errors are detected, [and if the EIR supports equipment status interrogation and/or BMUEF interrogation](#) the EIR data-base function is interrogated for the status of the given equipment [and/or the BMUEF](#). Further details are found in 3GPP TS 22.016 [7];
- the status of the equipment (white-listed, grey-listed, black-listed or unknown) [and/or the BMUEF](#) is returned to the MSC or to the SGSN in the MAP_CHECK_IMEI service response;
- if a MAP_U_ABORT, MAP_P_ABORT, MAP_NOTICE or MAP_CLOSE indication is received from the MSC or from the SGSN at any time during this process, the process in the EIR [returns to the Null state](#) ~~terminates~~.

The process is described in figure 25.6/3.

25.6.4 Macro Obtain_IMEI_MSC

This macro is used by the MSC to respond to a request from the VLR to provide the IMEI. The macro proceeds as follows:

- a MAP_OBTAIN_IMEI service indication containing only the Invoke Id is received from the VLR;
- if the IMEI is not available in the MSC, it is requested from the MS using the IDENTITY REQUEST message;
- when the IMEI is known, it is returned to the VLR in the MAP_OBTAIN_IMEI service response. The macro terminates at the "OK" exit;
- if the IMEI cannot be obtained by the MSC, the System Failure error is reported back to the VLR in the MAP_OBTAIN_IMEI service response. The macro terminates at the "OK" exit;
- if a ~~MAP_P_ABORT~~, MAP_U_ABORT or MAP_CLOSE indication is received from the VLR, the macro terminates at the "Error" exit.

The macro is described in figure 25.6/4.

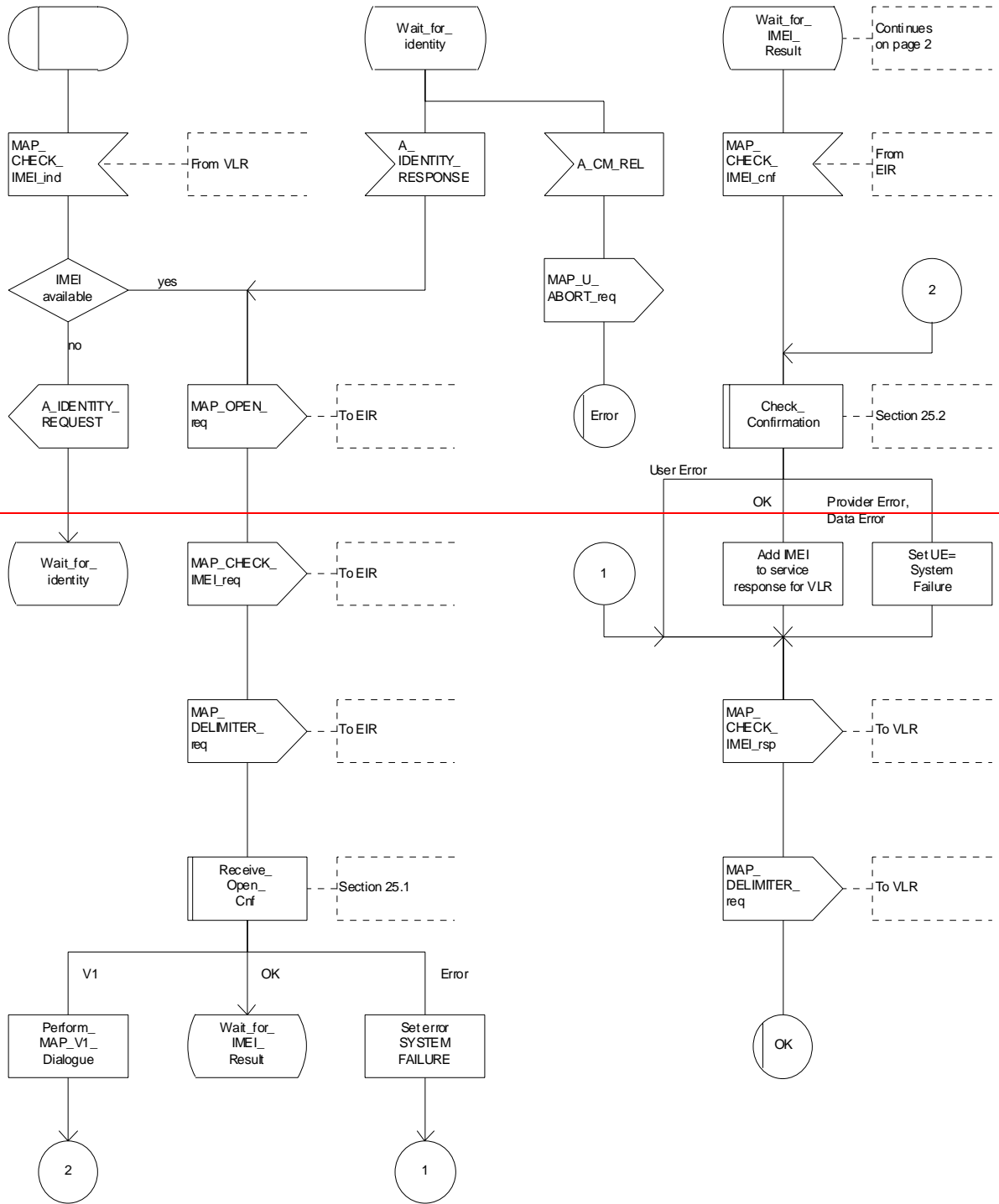
25.6.5 Macro Obtain_IMEI_VLR

This macro is used by the VLR to obtain the IMEI from the MSC, e.g. ~~to enable handling of emergency calls in case of authentication failure (in which case the IMEI may be used by some operators as an alternative to the IMSI)~~. It proceeds as follows:

- the MAP_OBTAIN_IMEI service request is sent to the MSC, including only the Invoke Id;
- the VLR then waits for the response from the MSC;
- if the IMEI is received in the MAP_OBTAIN_IMEI service response, the macro terminates at the "OK" exit;
- if ~~the System Failure~~ [an](#) error is reported in the MAP_OBTAIN_IMEI service response, the "Error" exit is used;
- if the MSC terminates the dialogue using a ~~MAP_P_ABORT~~, MAP_U_ABORT [or](#), MAP_CLOSE ~~or MAP_NOTICE~~ service indication, ~~the necessary connections are released, and~~ the "Aborted" exit is used for termination of the macro.

The macro is shown in figure 25.6/5.

Figure 25.6/1: Check IMEI macro in the MSC, relaying the IMEI check indication from the VLR to the MSC and relaying the confirmation from the EIR to the VLR



macrodefinition Check_IMEI_MSC

Chk_IMEI_MSC

Macro in the MSC to check the IMEI of the MS, and report the result to the VLR

Signals to/from the left are to/from the MS; signals to/from the right are to/from the VLR unless marked otherwise

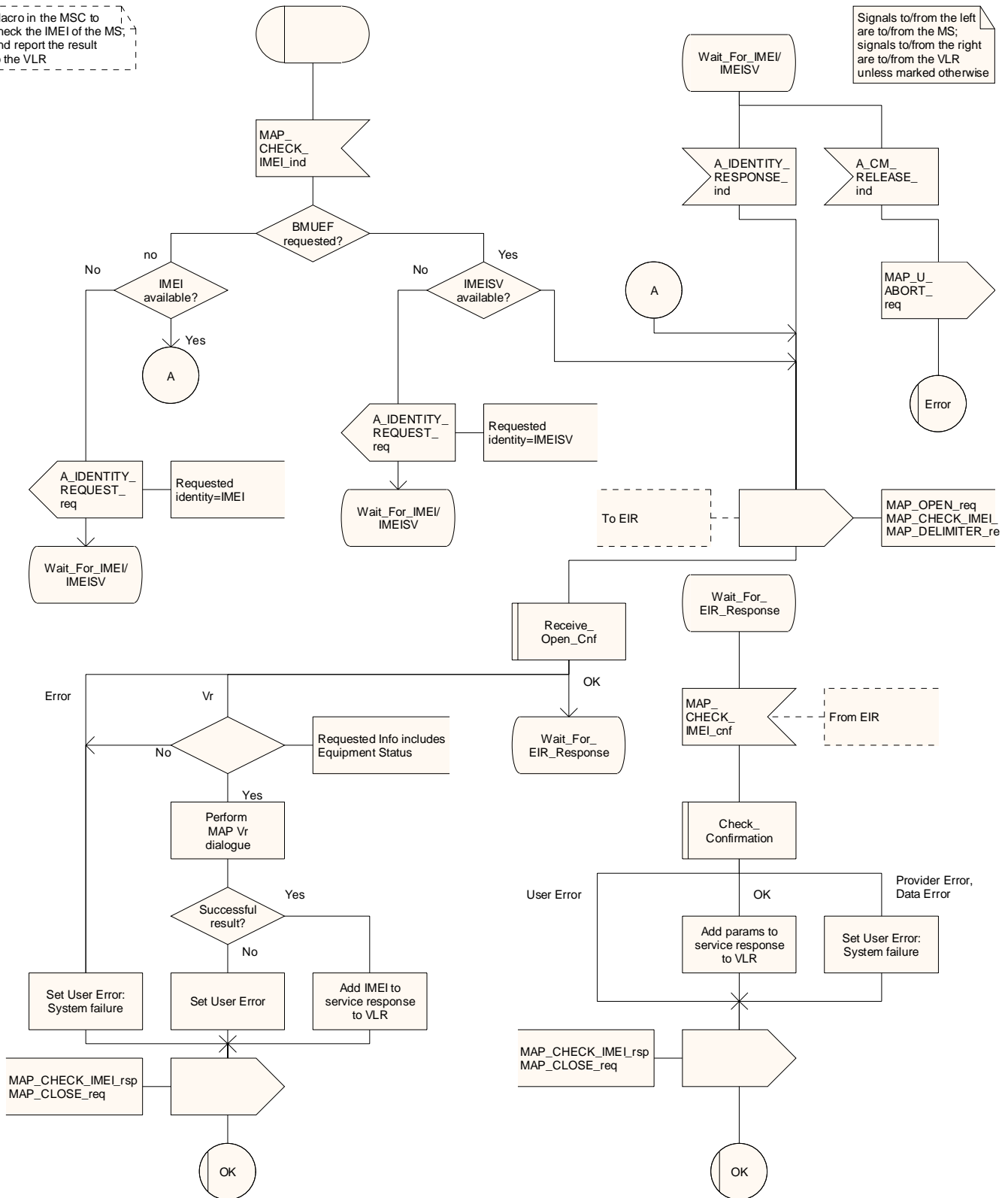
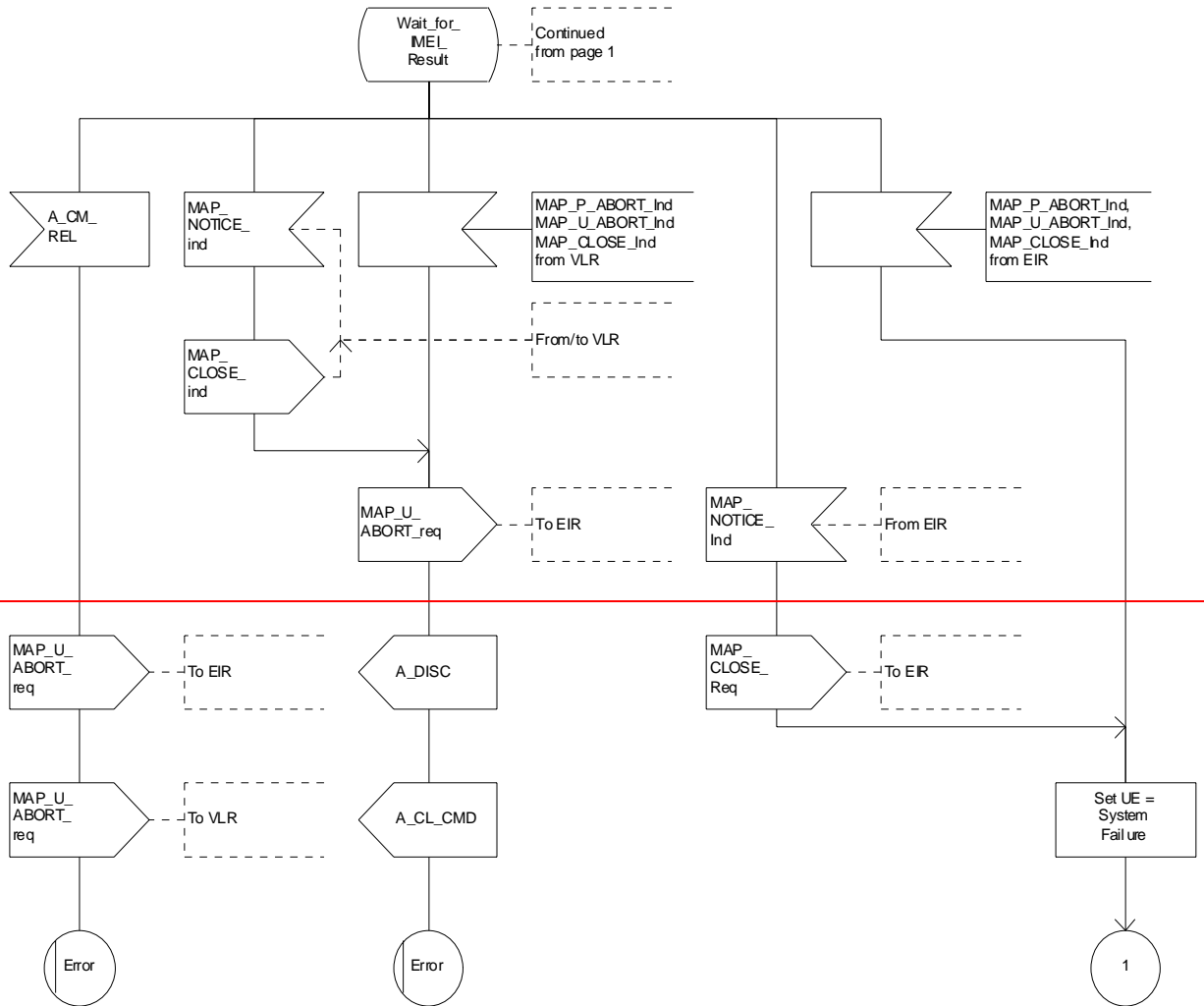


Figure 25.6/1 (sheet 1 of 2): MacroProcess Check_IMEI_MSC

Figure 25.6/1: Check IMEI macro in the MSC, relaying the IMEI check indication from the VLR to the MSC and relaying the confirmation from the EIR to the VLR



macrodefinition Check_IMEI_MSC

Ch_IMEI_MSC

Macro in the MSC to check the IMEI of the MS, and report the result to the VLR

Signals to/from the left are to/from the MS; signals to/from the right are to/from the VLR unless marked otherwise

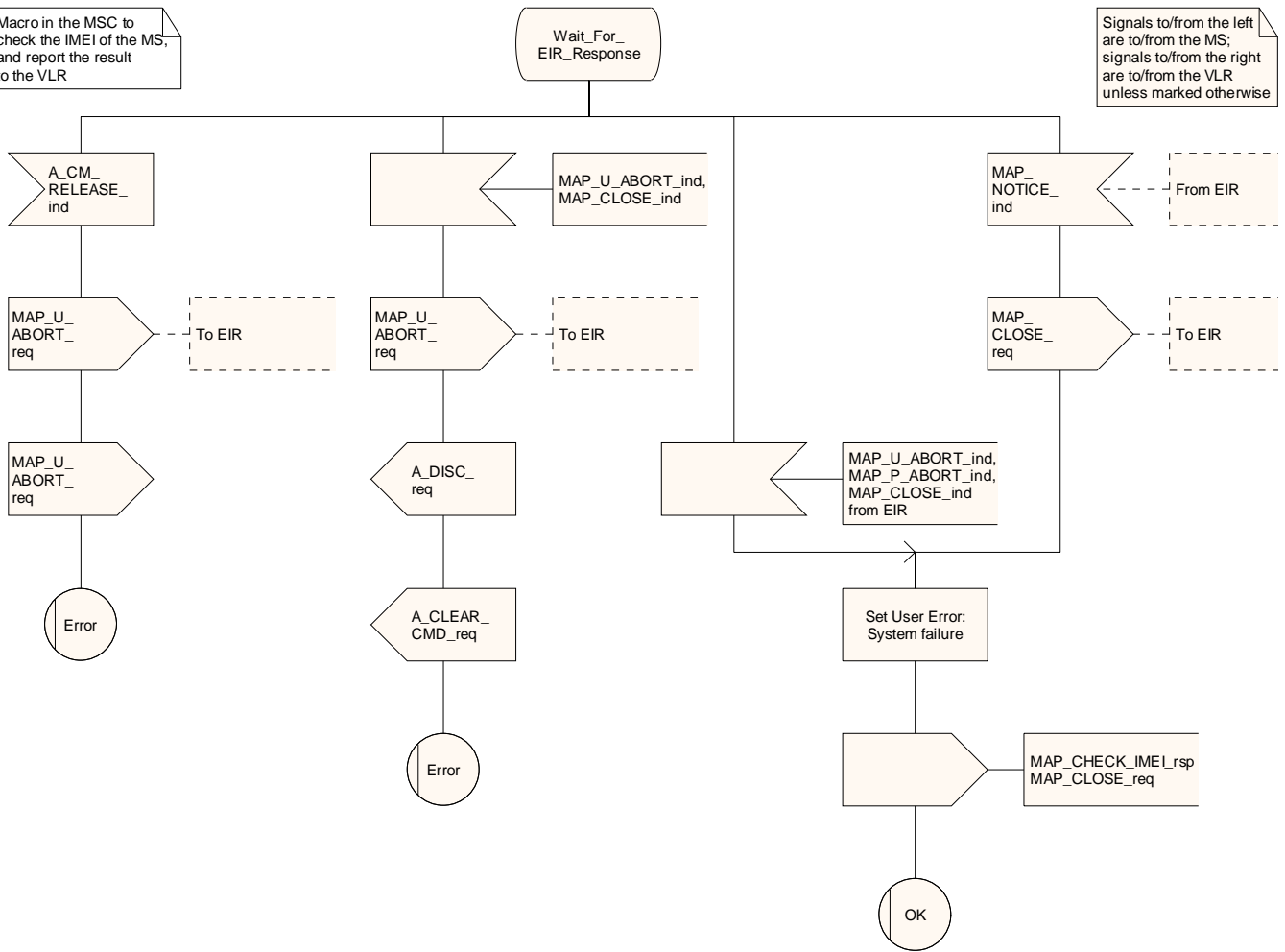
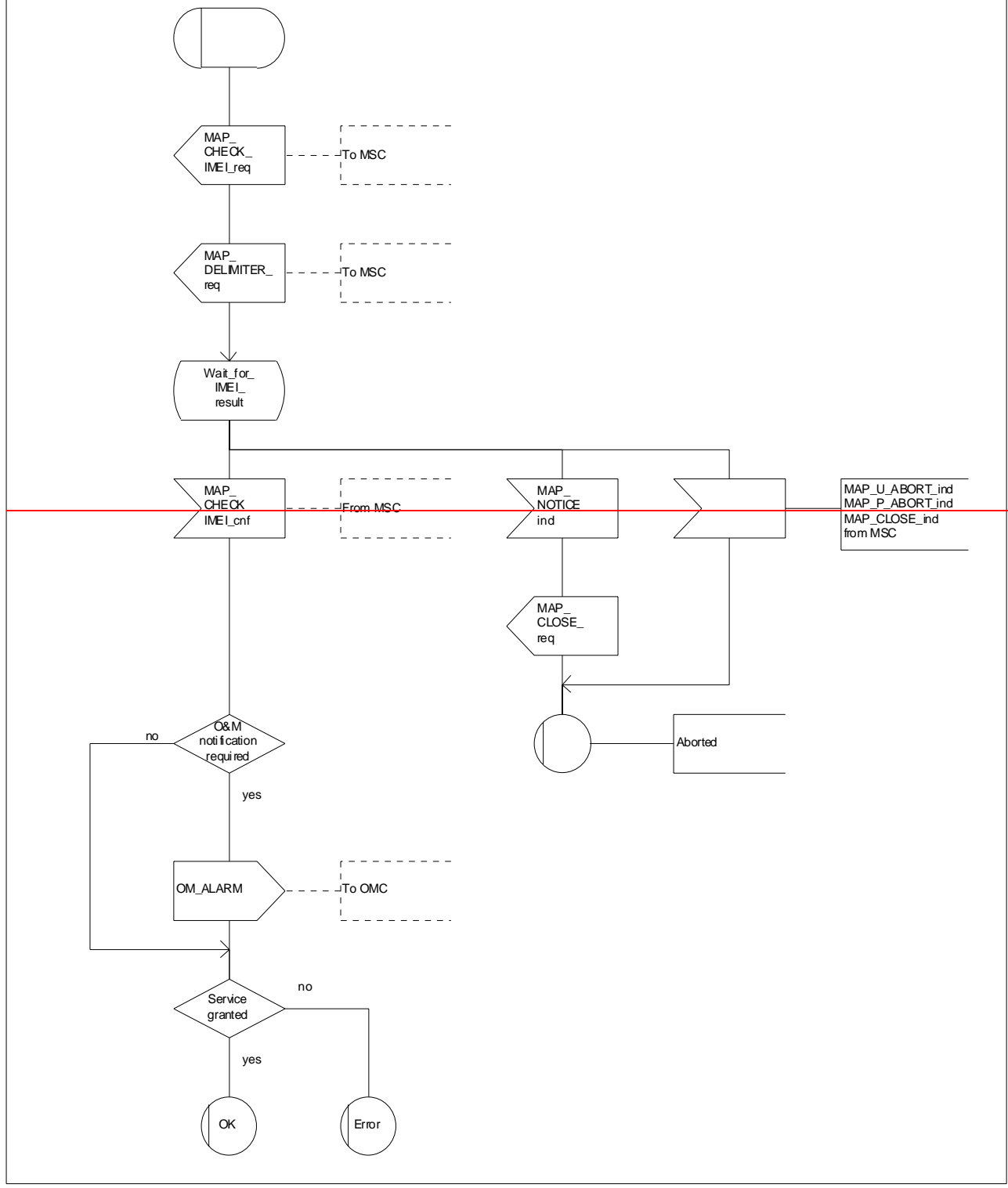


Figure 25.6/1 (sheet 2 of 2): **MacroProcess** Check_IMEI_MSC

Macrodefinition Check_IMEI_VLR

25.6_2(1)

Figure 25.6/2: Check IMEI macro in the VLR, containing the request towards the MSC/EIR



macrodefinition Check_IMEI_VLR

Chk_IMEI_VLR

Macro in the VLR to instruct the MSC to check the IMEI of the MS and handle the report of the result

Signals to/from the left are to/from the MSC; signals to/from the right are to/from the OMC

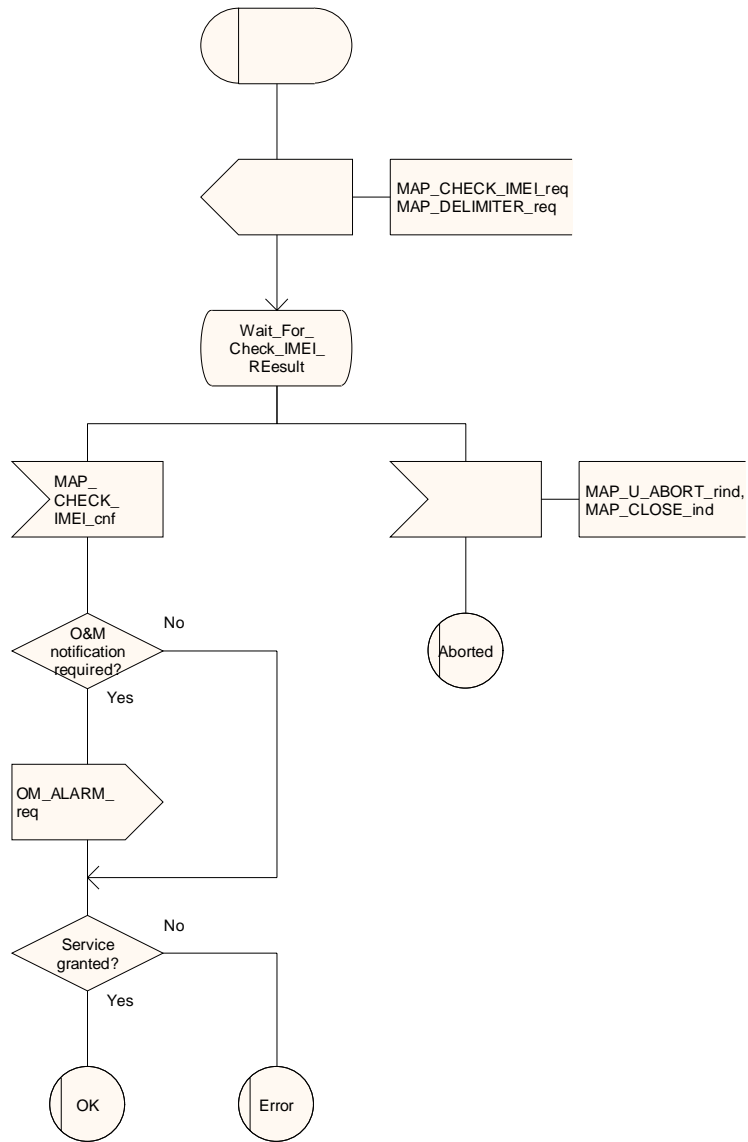
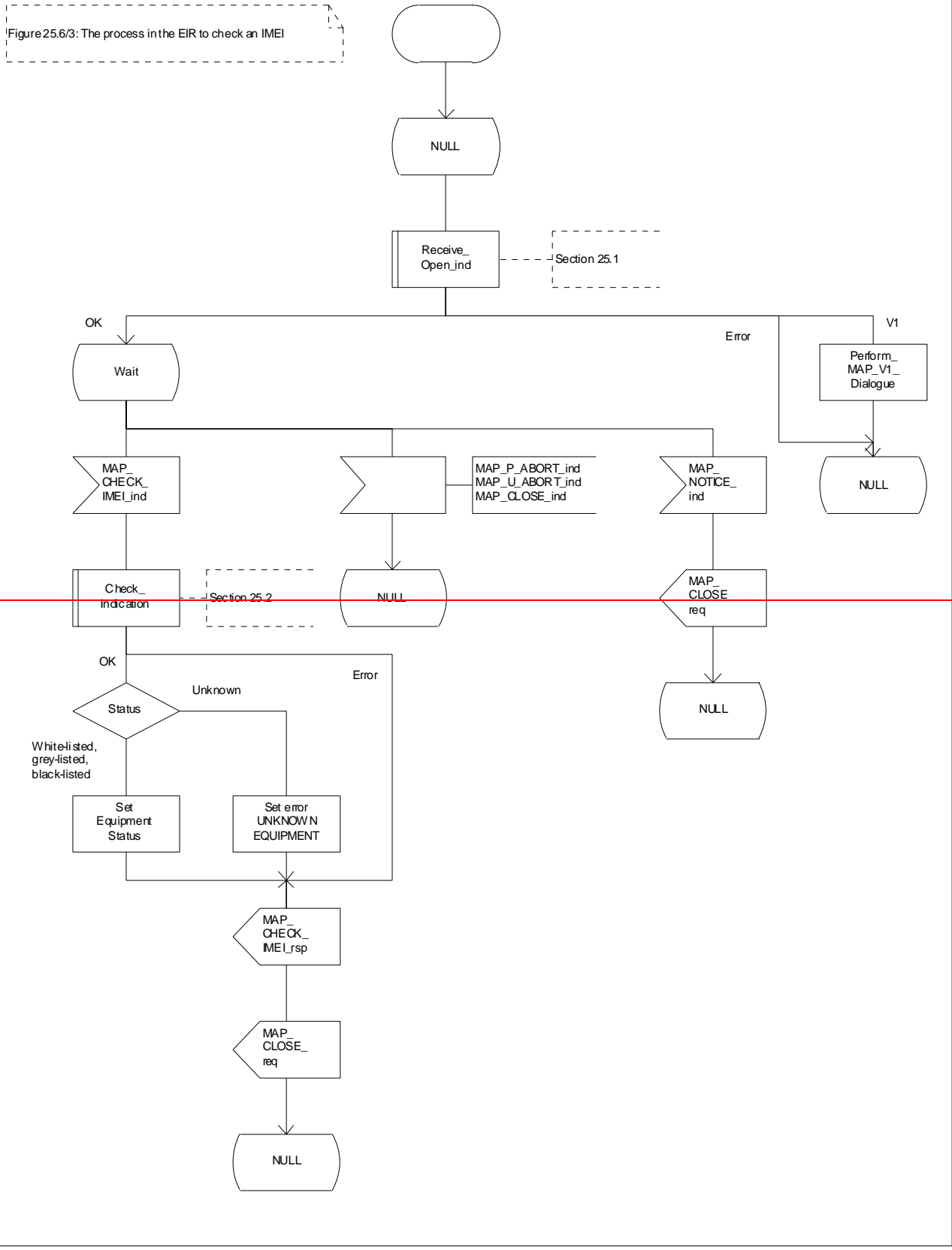


Figure 25.6/2: MacroProcess Check_IMEI_VLR

Process Check_IMEI_EIR

25.6_3(1)

Figure 25.6/3: The process in the EIR to check an IMEI



process Check_IMEI_EIR

Chk_IMEI_EIR1(1)

Process in the EIR to check the IMEI of an MS

Signals to/from the left are to/from the MSC or the SGSN

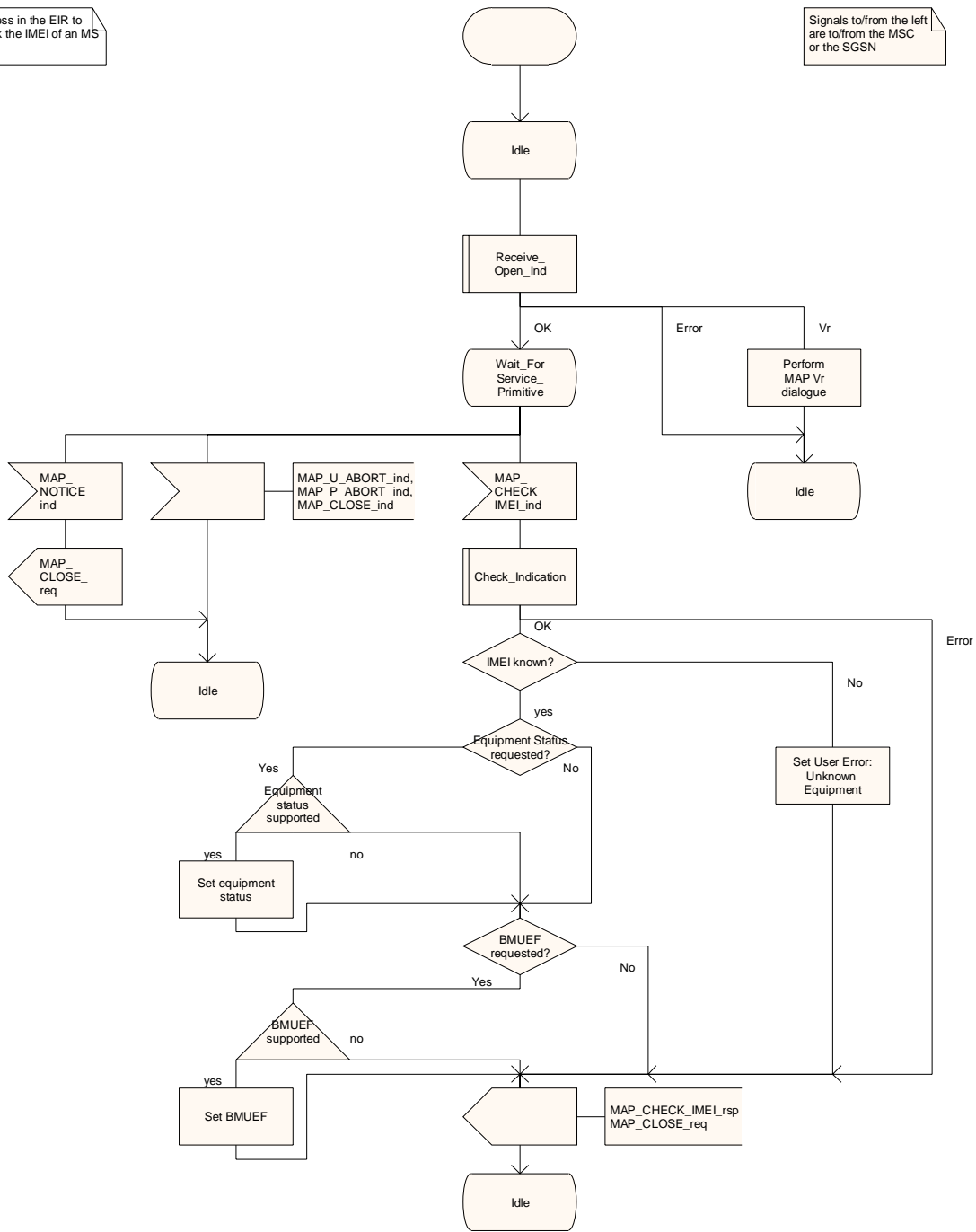
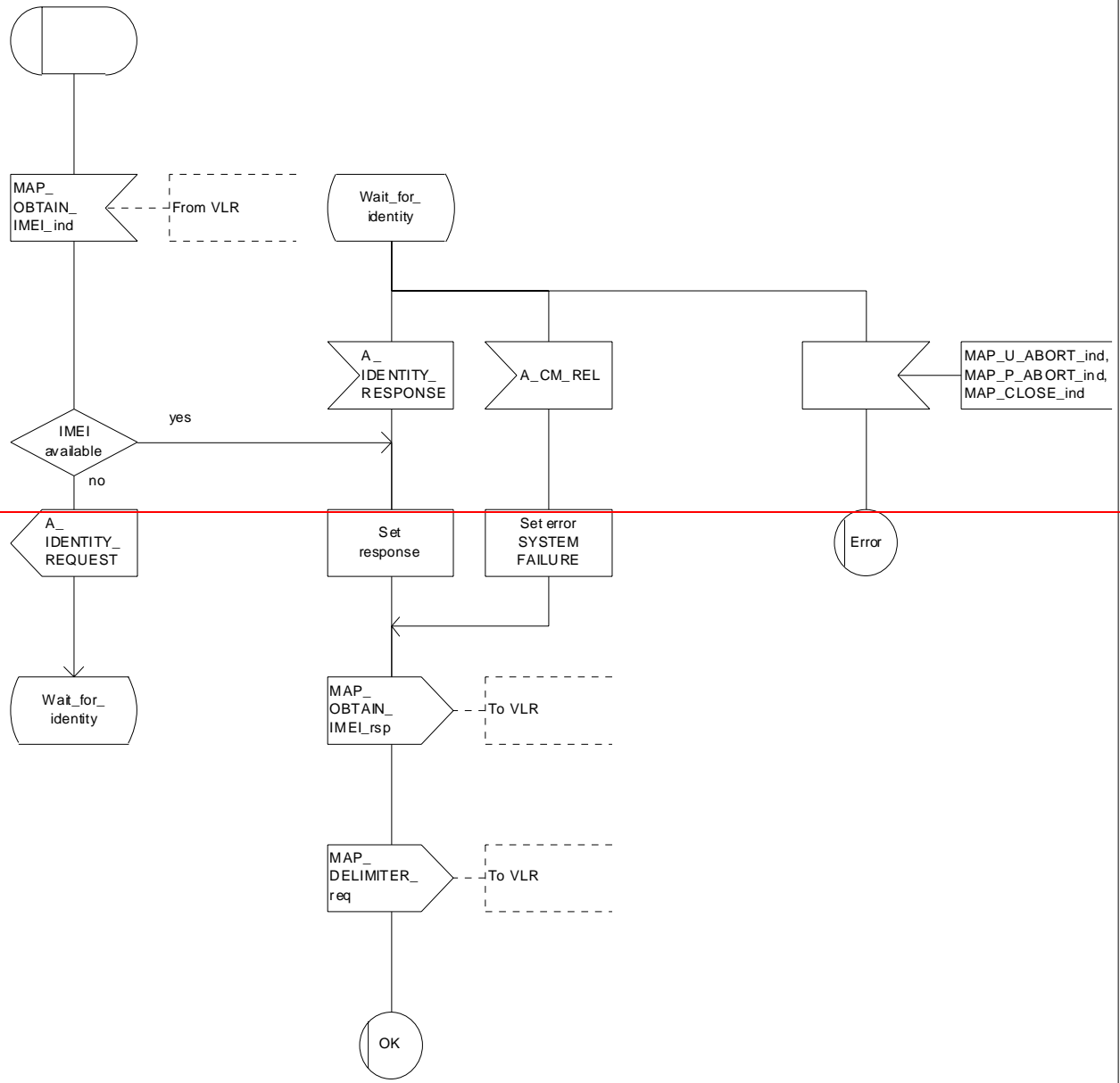


Figure 25.6/3: Process Check_IMEI_EIR

Macrodefinition Obtain_IMEI_MSC

25.6_4(1)

Figure 25.6/4: Obtain IMEI macro in the MSC, receiving the Obtain_IMEI indication from the VLR to the MSC and returning the confirmation to the VLR



macrodefinition Obtain_IMEI_MSC

Obt_IMEI_MSC1(1)

Macro in the MSC to obtain the IMEI from the MS

Signals to/from the left are to/from the MS; signals to/from the right are to/from the VLR

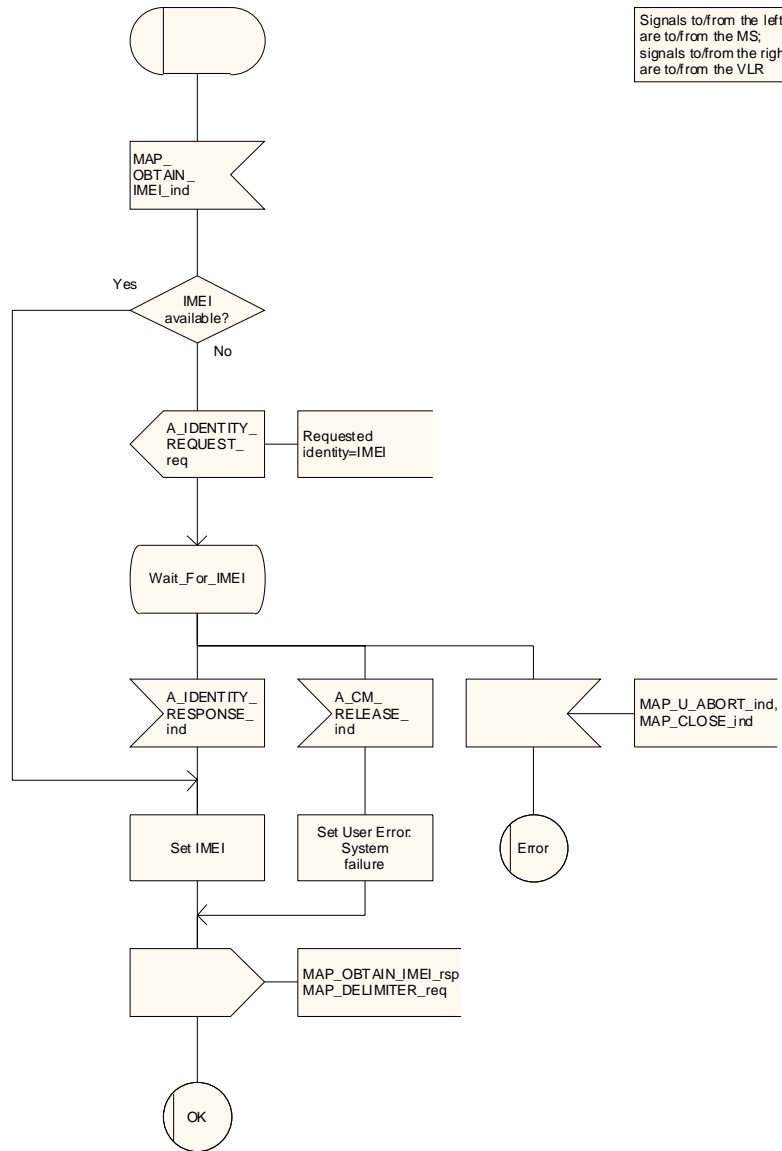
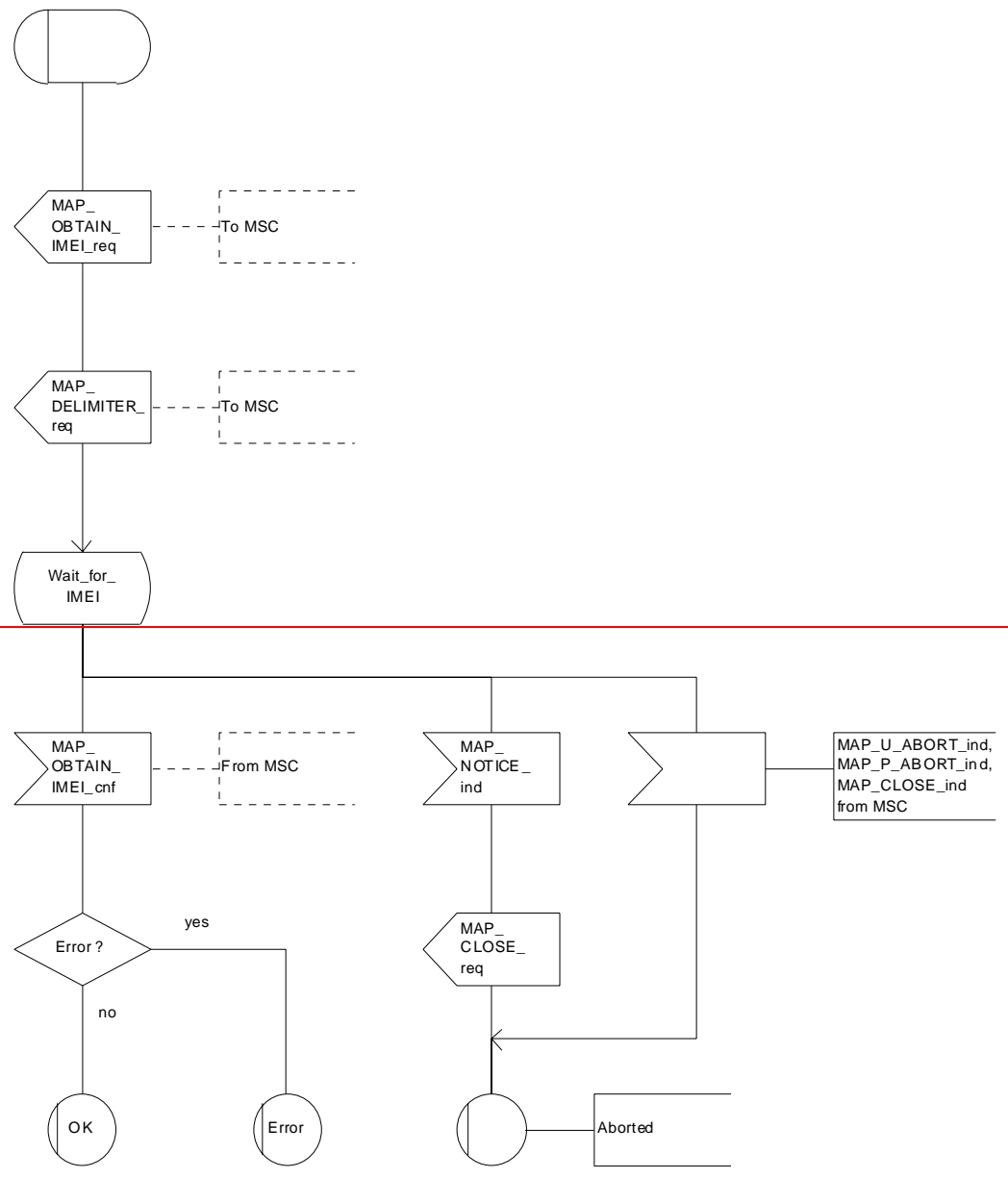


Figure 25.6/4: MacroProcess Obtain_IMEI_MSC

Figure 25.6/5: Obtain IMEI macro in the VLR, controlling the request towards the MSC



macrodefinition Obtain_IMEI_VLR

Obt_IMEI_VLR1(1)

Macro in the VLR to instruct the MSC to obtain the IMEI of the MS and handle the report of the result

Signals to/from the left are to/from the MSC

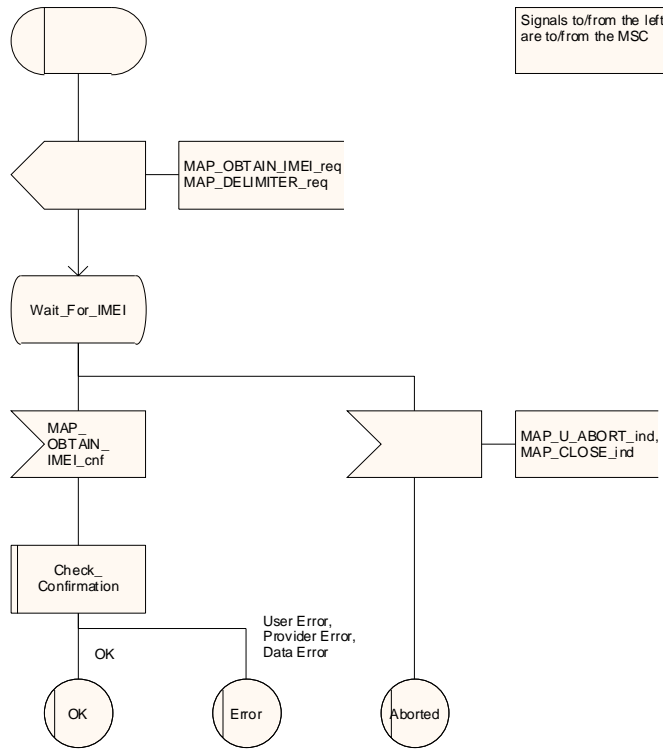


Figure 25.6/5: MacroProcess Obtain_IMEI_VLR

25.6.6 Process Check_IMEI_SGSN

This process is used by the SGSN to control the check of a mobile equipment's IMEI. [It may also be used to obtain the BMUEF from the EIR.](#) The process proceeds as follows:

~~— if the MS does not complete successfully the procedure, the "Error" exit of the macro is used;~~

- when the IMEI is known, a connection is set up towards the EIR, and a MAP_CHECK_IMEI service request is sent including the IMEI;
- if the opening of the dialogue fails, a System Failure is set. Otherwise, the SGSN waits for a response from the EIR;
- if a MAP_CHECK_IMEI service confirm including either:
 - the IMEI and the Equipment Status; [and/or the IMEISV and the BMUEF](#) or
 - an error;

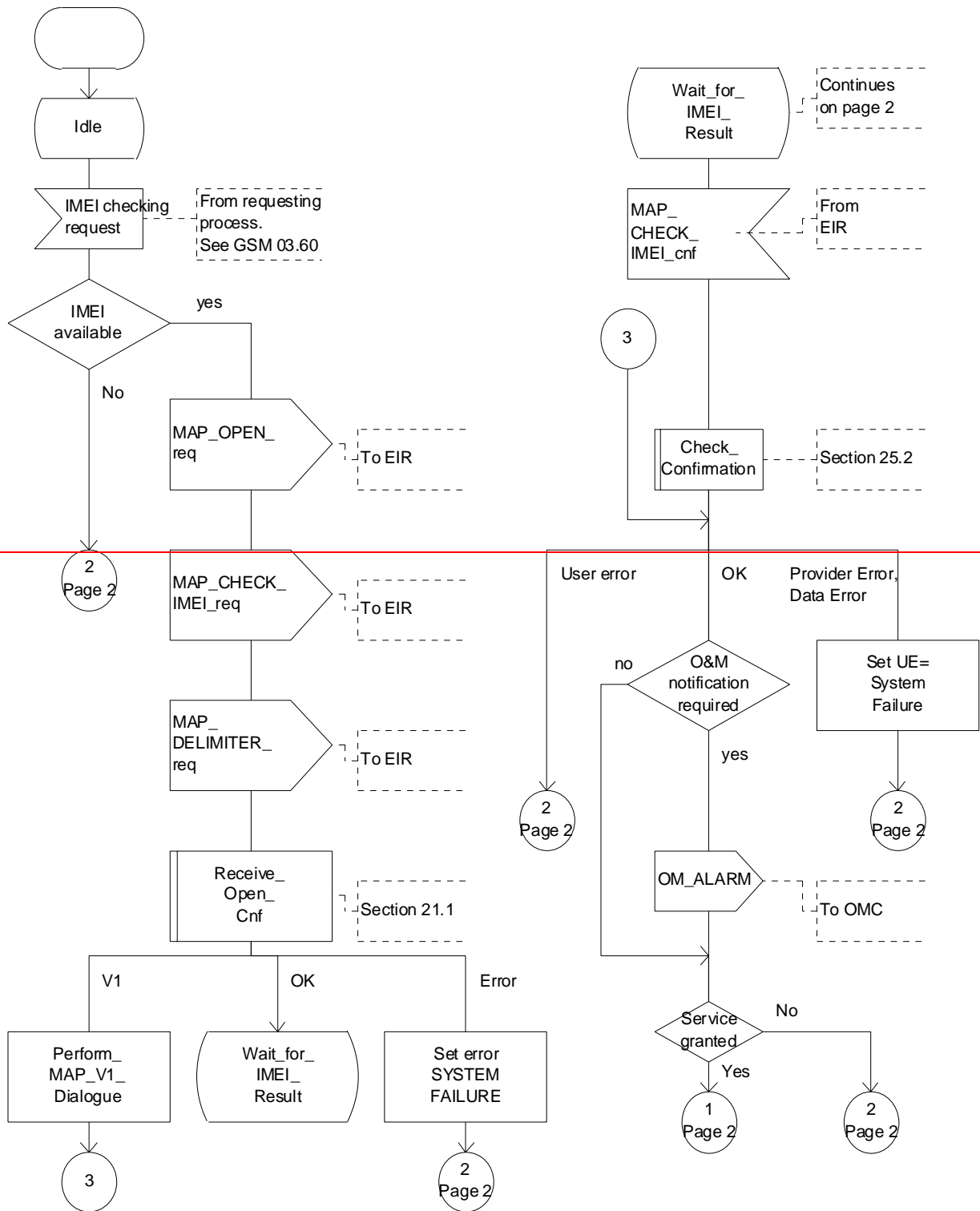
is received, the SGSN checks whether the response requires that an alarm be generated on the Operation and Maintenance interface. The criteria for such alarms are PLMN operator dependent;

- the SGSN then checks whether the response from the EIR means that service is granted to the MS. The criteria for granting service depending on the equipment status or errors received in the MAP_CHECK_IMEI service response are also PLMN operator dependent;

If the dialogue with the EIR drops back to version 1 [or version 2](#), the result or error returned by the EIR is checked. ~~The use of the "Check_Confirmation" macro in the SDL diagram indicates that the checks carried out on the result returned by the EIR in a MAP v1 dialogue are functionally equivalent to those carried out on the parameters of the MAP_CHECK_IMEI confirm received from the EIR in a MAP v2 dialogue.~~

The process is described in figure 25.6/6.

Figure 25.6/6: Check IMEI process in the SGSN



process Check_IMEI_SGSN

Chk_IMEI_SGSN1(1)

Process in the SGSN to check the IMEI of an MS

Signals to/from the left are to/from the application process in the SGSN (see 3GPP TS 23.060); signals to/from the right are to/from the EIR

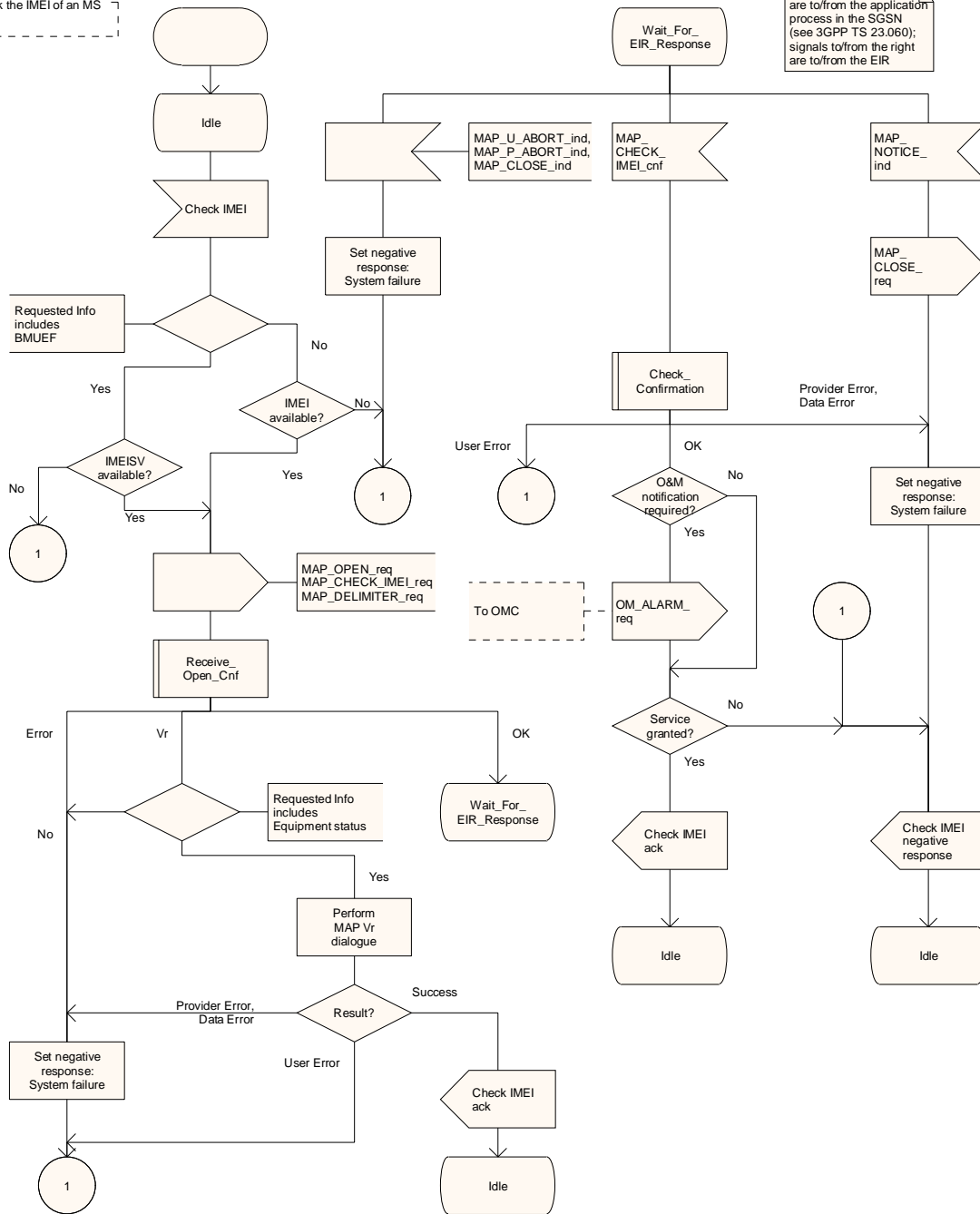


Figure 25.6/6 (sheet 1 of 2): Process Check_IMEI_SGSN

Figure 25.6/6: Check IMEI process in the SGSN

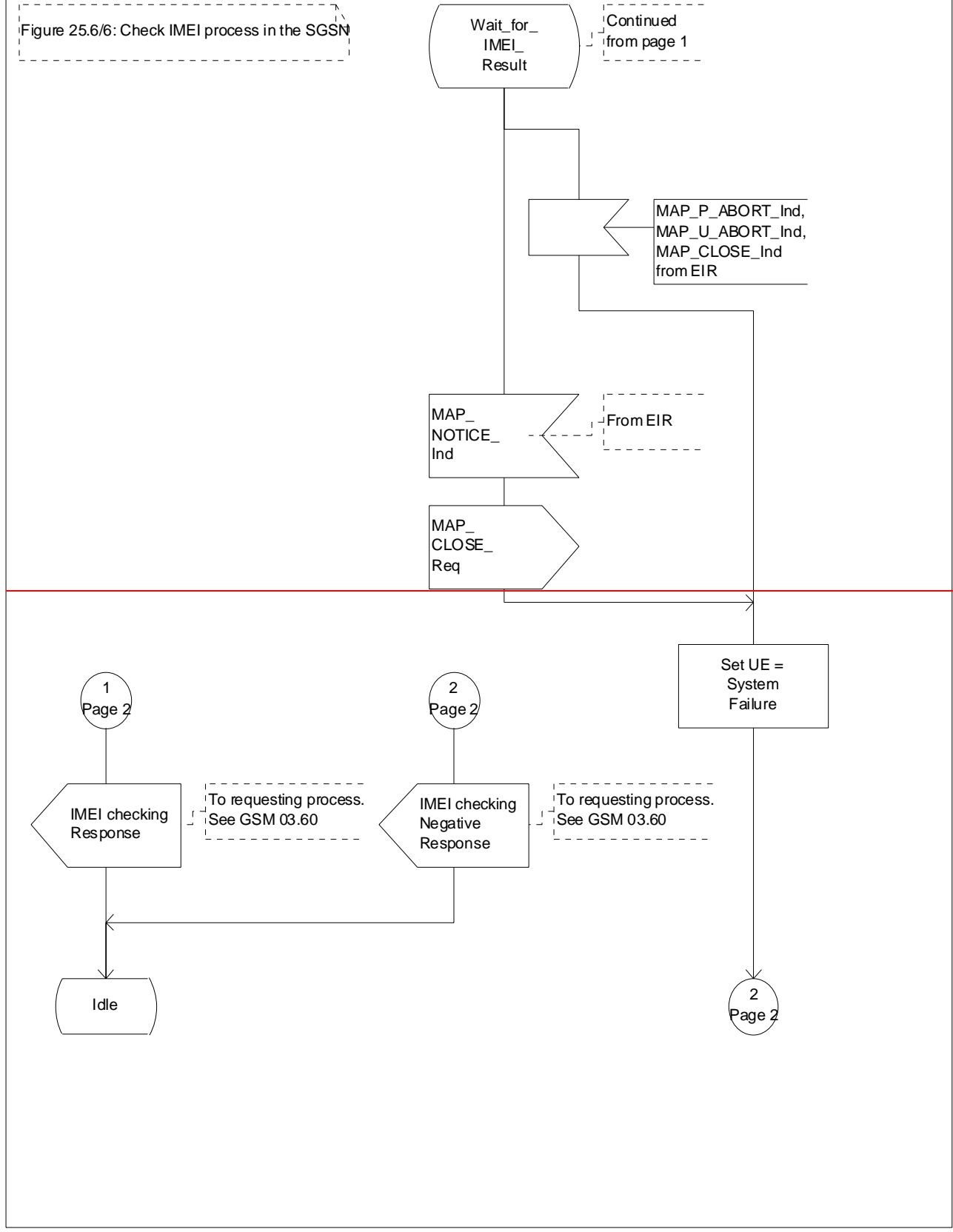


Figure 25.6/6 (sheet 2 of 2): Process Check_IMEI_SGSN

CHANGE REQUEST

⌘ **29.010 CR 090** ⌘ rev **-** ⌘ Current version: **5.2.0** ⌘

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:	⌘ Handling of UE-specific behaviour data in the relay MSC		
Source:	⌘ CN4		
Work item code:	⌘ Late UE	Date:	⌘ 21/05/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘ In SA2#31 the signaling principles for the "Provision of UE Specific Behaviour Information to Network Entities" were agreed in TS 23.195 v 1.1.0. Regarding handover and relocation procedures it was agreed that: - UESBI-lu shall be sent from anchor to target MSC in inter-MSC handover and relocation.
Summary of change:	⌘ The description of the transfer of UE-specific behaviour data (UESBI) between MSC-A and MSC-B and handling of the data in MSC-B are added.
Consequences if not approved:	⌘ Misalignment with stage 2.

Clauses affected:	⌘ 4.5.5, 4.7.1, 4.7.5, 4.8.5										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	X			X		X	⌘ 23.009 CR 097, 29.002 CR 609 or 627, 48.008 CR ???	
Y	N										
X											
	X										
	X										
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.

4.5.5.X UESBI

This information shall be stored by 3G_MSC-B and sent to an RNS in Relocation Request, when 3G_MSC-B performs relocation or handover to UMTS.

Transfer of information:

The UESBI information is transferred to 3G_MSC-B in:

- the Handover Request BSSMAP message.

**** NEXT MODIFIED SECTION ****

4.7.1 Basic Inter-MSC Handover

When a Mobile Station is handed over between two MSCs, the establishment of a connection between them (described in 3GPP TS 23.009) requires interworking between A-Interface, Iu-Interface and E-Interface.

The signalling at initiation, execution and completion of the Basic Inter-MSC handover procedure is shown in figures 37 to 42 with both possible positive or negative outcomes.

Additionally figure 37b shows the possible interworking when the trace related message is transparently transferred on the E-Interface at Basic Inter-MSC Handover initiation.

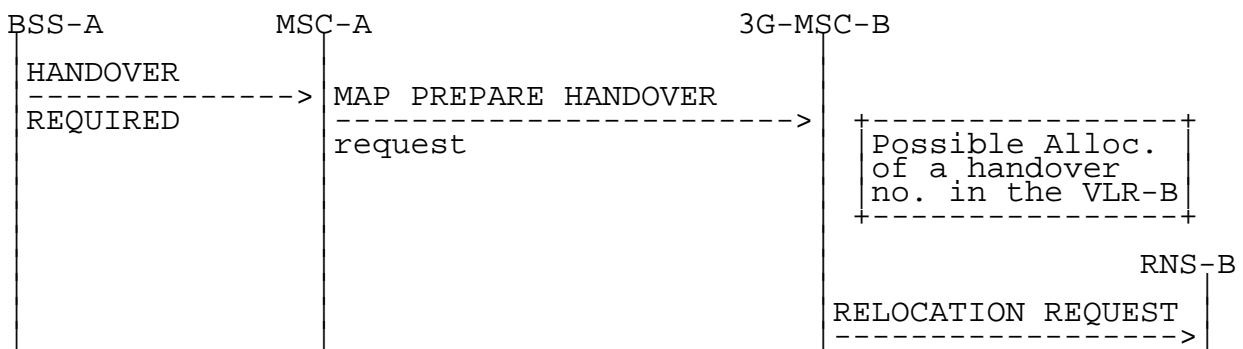


Figure 37a: Signalling for Basic Inter-MSC Handover initiation (no trace related messages transferred)

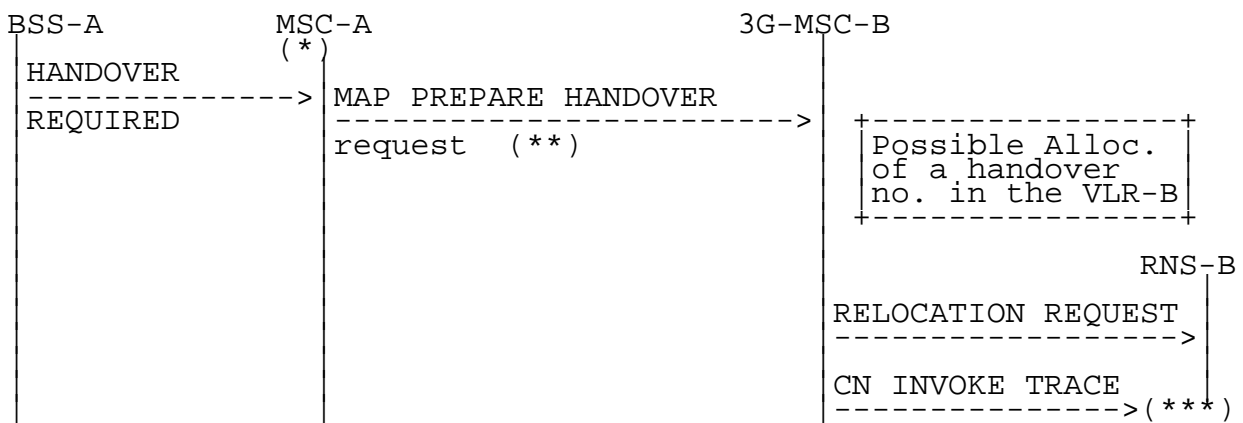


Figure 37b: Signalling for Basic Inter-MSC Handover initiation (CN invoke trace message transferred)

- (*): Tracing invocation has been received from VLR.
- (**): In that case, HANDOVER REQUEST and MSC INVOKE TRACE messages are included within the AN-apdu parameter.
- (***): CN INVOKE TRACE is forwarded to RNS-B if supported by 3G_MSC-B.

Possible Positive outcomes: successful radio resources allocation and handover number allocation (if performed):

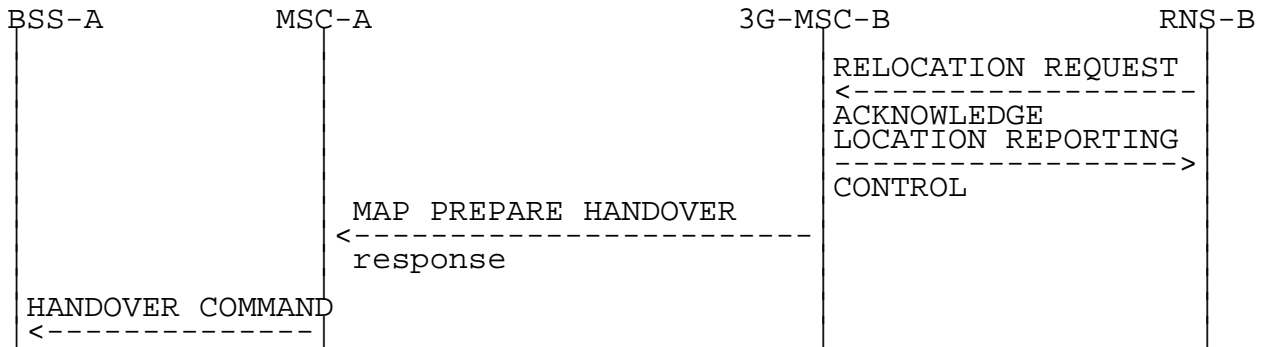
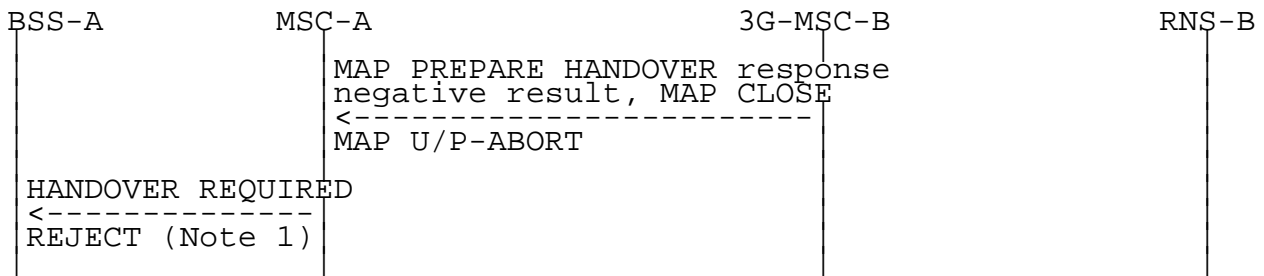


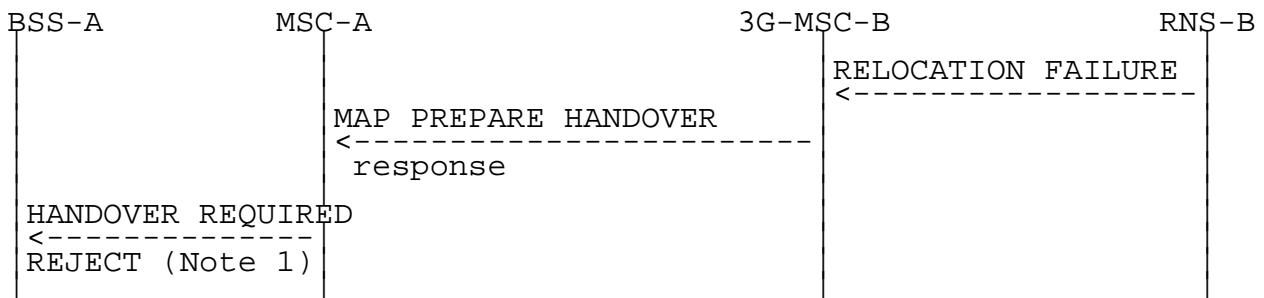
Figure 38: Signalling for Basic Inter-MSC Handover execution (Positive outcome)

Possible Negative outcomes:

- a) user error detected, or handover number allocation unsuccessful (if performed), or component rejection or dialogue abortion performed by 3G_MSC-B:



- b) radio resources allocation failure:



- c) unsuccessful handover execution (Reversion to the old radio resources):

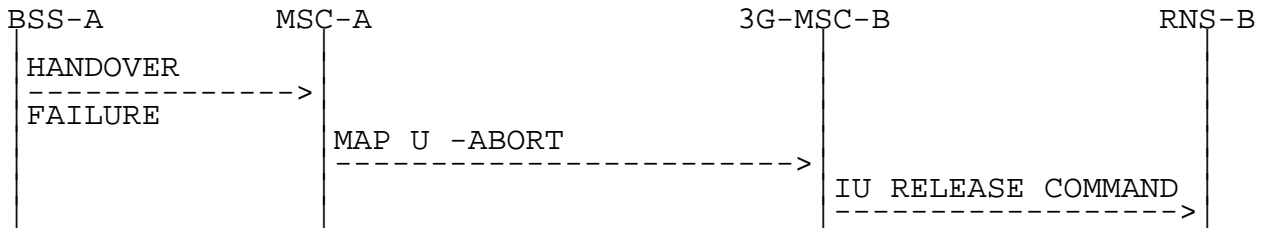


Figure 39: Signalling for Basic Inter-MSC Handover execution (Negative outcomes)

NOTE 1: Possible rejection of the handover because of the negative outcome of MAP or RANAP procedure.

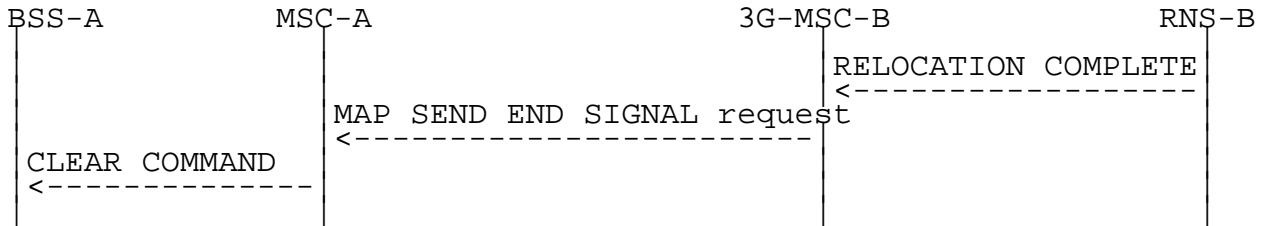


Figure 40: Signalling for Basic Inter-MSC Handover completion

Positive outcome:

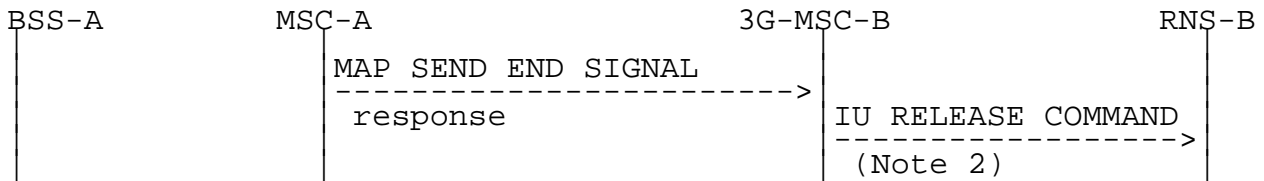


Figure 41: Signalling for Basic Inter-MSC Handover completion (Positive outcome)

Negative outcome:

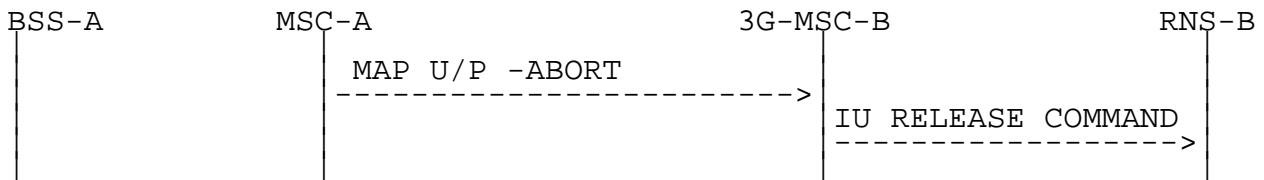


Figure 42: Signalling for Basic Inter-MSC Handover completion (Negative outcome)

NOTE 2: From interworking between MAP and RANAP point of view, when the call is released.



Figure 42a: Signalling for updating of anchor MSC after change of location in RNS

The handover procedure is normally triggered by BSS-A by sending a HANOVER REQUIRED message on A-Interface to MSC-A. The invocation of the Basic Inter-MSC handover procedure is performed and controlled by MSC-A. The sending of the MAP Prepare-Handover request to 3G_MSC-B is triggered in MSC-A upon receipt of the HANOVER REQUIRED message. The identity of the target RNC where the call is to be handed over in 3G_MSC-B area, provided in the HANOVER REQUIRED message in the information element Cell Identifier List (Preferred), is mapped to the target RNC Id MAP parameter and the HANOVER REQUEST message is encapsulated in the an-

APDU MAP parameter of the Prepare-Handover MAP request. 3G_MSC-B can invoke another operation towards the VLR-B (allocation of the handover number described in 3GPP TS 29.002).

Additionally, if tracing activity has been invoked, the trace related message can be transferred on the E-Interface encapsulated in the an-APDU MAP parameter of the Prepare-Handover Request. If transferred, one complete trace related message at a time shall be included in the an-APDU MAP parameter after the HANOVER REQUEST message. Note: UMTS supports only CN initiated tracing.

The interworking between Prepare Handover and HANOVER REQUIRED is as follows:

	48.008	29.002	Notes
Forward message	HANOVER REQUIRED	MAP PREPARE HANOVER request	
	BSSMAP information elements	-ho-NumberNotRequired -target RNC Id -IMSI	1
		-Integrity protection info -Encryption info -an-APDU(HANOVER REQUEST, MSC INVOKE TRACE)	2 3
	GERAN classmark	-GERAN classmark	4 7
Positive result		MAP PREPARE HANOVER response	5
		-handover number -an-APDU(HANOVER REQUEST ACKNOWLEDGE or HANOVER FAILURE)	
Negative result	HANOVER REQUIRED REJECT	MAP PREPARE HANOVER	6
	equipment failure	System Failure	
	equipment failure	No Handover Number available	
	equipment failure	UnexpectedDataValue Data Missing	
	equipment failure	MAP CLOSE	
	equipment failure	MAP U/P -ABORT	

NOTE 1: The ho-NumberNotRequired parameter is included by MSC-A, when MSC-A decides not to use any circuit connection with 3G_MSC-B. No handover number shall be present in the positive result. Any negative response from 3G_MSC-B shall not be due to handover number allocation problem.

NOTE 2: Integrity protection information, encryption information and IMSI parameters are included by MSC-A, only when the MSC-A uses 29.002 as per release 99. These IEs are not included if the MSC-A is R98 or earlier.

NOTE 3: NOTE 3: The process performed on the BSSMAP information elements received in the HANOVER REQUIRED message is described in the 3GPP TS 48.008.

NOTE 4: The process performed on the BSSMAP information elements received in the MSC INVOKE TRACE message is described in subclause 4.5.5.6.

NOTE 5: The response to the Prepare-Handover request can include in its an-APDU parameter, identifying the 3GPP TS 48.006 protocol, either a BSSMAP HANOVER REQUEST ACKNOWLEDGE or a BSSMAP HANOVER FAILURE.

In the first case, the positive result triggers in MSC-A the sending on A-Interface of the HANOVER COMMAND.

In the second case, the positive result triggers in MSC-A optionally the sending of the HANOVER REQUIRED REJECT.

(The possible sending of the HANDOVER REQUIRED REJECT message upon receipt of the HANDOVER FAILURE is out of the scope of 3GPP TS 29.010 and lies in 3GPP TS 48.008).

NOTE 6: The possible sending of the HANDOVER REQUIRED REJECT message is described in 3GPP TS 48.008.

NOTE 7: If the GERAN Classmark was not received with the HANDOVER REQUIRED message initiating the handover, MSC-A shall include any previously received GERAN Classmark. See 3GPP TS 43.051 [17].

The interworking between Prepare Handover and RELOCATION REQUEST in 3G_MSC-B is as follows:

	29.002	25.413	Notes
Forward message	MAP PREPARE HANDOVER request -ho-NumberNotRequired -target RNC Id -IMSI -Integrity protection info -Encryption info -RANAP service handover -an-APDU(HANDOVER REQUEST, MSC INVOKE TRACE) BSSMAP information elements: Channel Type Cause sRNC to tRNC container SNA Access Information UESBI	RELOCATION REQUEST RANAP information elements: RAB parameters Cause sRNC to tRNC container SNA Access Information UESBI	1 3
		info stored/generated in/by 3G MSC-B: CN domain indicator	
Positive result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER REQUEST ACK) BSSMAP information elements: Layer 3 info	RELOCATION REQUEST ACK RANAP information elements: tRNC to sRNC container	
Negative result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER FAILURE) BSSMAP information elements: GERAN classmark	RELOCATION FAILURE RANAP information elements: GERAN classmark	2

NOTE 1: Integrity protection information, encryption information, IMSI and RANAP service handover parameters are included by MSC-A; only when the MSC-A uses 29.002 as per release 99. These IEs are not included if the MSC-A is R98 or earlier.

NOTE 2: If a handover to GERAN Iu-mode failed, the target RNS may include a GERAN classmark in the RELOCATION FAILURE message. See 3GPP TS 43.051 [17].

NOTE 3: SNA Access Information parameter is included by MSC-A; only when the MSC-A uses 29.002 as per release 5. These IEs are not included if the MSC-A is release 4 or earlier.

The interworking between Send End Signal and RELOCATION COMPLETE in 3G_MSC-B is as follows:

	25.413	29.002	Notes
Forward message	RELOCATION COMPLETE MAP SEND END SIGNAL request -an-APDU(HANDOVER COMPLETE)		
Positive result	IU RELEASE COMMAND -Normal release	MAP SEND END SIGNAL response	1
Negative result	IU RELEASE COMMAND -Normal release -Normal release	MAP CLOSE MAP U/P -ABORT	2

NOTE 1: The positive empty result triggers the clearing of the Radio Resources on the Iu-Interface and the release of the SCCP connection between 3G_MSC-B and RNS-B. If a circuit connection is used between MSC-A and 3G_MSC-B, the 'Normal release' clearing cause shall only be given to RNS-B when 3G_MSC-B has received a clearing indication on its circuit connection with MSC-A.

NOTE 2: The abortion of the dialogue or the rejection of the component triggers in 3G_MSC-B the clearing of its circuit connection with MSC-A, if any, of the Radio Resources on the Iu-Interface and the release of the SCCP connection between 3G_MSC-B and RNS-B.

The interworking between Send End Signal and CLEAR COMMAND in MSC-A is as follows:

	29.002	48.008	Notes
Forward message	MAP SEND END SIGNAL request -an-APDU(HANDOVER COMPLETE)	CLEAR COMMAND - Handover Successful	
Positive result			
Negative result			

The interworking between HANDOVER FAILURE in case of reversion to old channel of the MS and User Abort in MSC-A is as follows:

	48.008	29.002	Notes
Forward message	HANDOVER FAILURE - Reversion to old channel	MAP U -ABORT	
Positive result			
Negative result			

**** NEXT MODIFIED SECTION ****

4.7.5.X UESBI

This information shall be stored by 3G_MSC-B and sent to an RNS in Relocation Request during the basic inter-MS handover or when 3G_MSC-B performs a subsequent relocation or handover to UMTS.

Transfer of information:

The UESBI information is transferred to 3G_MSC-B in:

- the Handover Request BSSMAP message.

**** NEXT MODIFIED SECTION ****

4.8.5.X UESBI

This information shall be stored by 3G_MSC-B and sent to an RNS in Relocation Request during the basic inter-MSC relocation or when 3G_MSC-B performs a subsequent intra-MSC relocation or handover to UMTS.

Transfer of information:

The UESBI information is transferred to 3G_MSC-B in:

- the Relocation Request RANAP message.

CR-Form-v7

CHANGE REQUEST

⌘ **23.012 CR 010** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

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:	⌘ Addition of procedure to retrieve UE-specific behaviour data		
Source:	⌘ Vodafone		
Work item code:	⌘ Late UE	Date:	⌘ 21/05/2003
Category:	⌘ B E	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900 .	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)	

Reason for change:	⌘ To allow the data for UE-specific behaviour to be retrieved at location updating		
Summary of change:	⌘		
Consequences if not approved:	⌘ Handling for "early" UEs will not work		

Clauses affected:	⌘ 1.1; figure 4.1.1.1; 4.1.2.1 ; figure 4.1. 2 .1-2; 4.1.2.1a (new); figure 4.1.2.1a (new)										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications Test specifications O&M Specifications	Y	N	X			X		X	⌘ 23.195 (new specification)	
Y	N										
X											
	X										
	X										
Other comments:	⌘ Two editorial errors in the list of references have been corrected. The SDL diagrams for the processes Update_Location_MSC and Update_Location_VLR have been completely redrawn because there was no SDL source available. The diagrams have been editorially rearranged to save one sheet for each process. This CR is for the variant of "Early UE" handling in which the CN sends the BMUEF to the AN										

*** First modified section ***

1.1 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 TR 21.905: "3G Vocabulary". |
| [2] | 3GPP TS 23.002: "Network architecture". |
| [3] | 3GPP TS 23.003: "Numbering, addressing and identification". |
| [4] | 3GPP TS 23.007: "Restoration procedures". |
| [5] | 3GPP TS 23.008: "Organization of subscriber data". |
| [6] | 3GPP TS 23.022: "Functions related to Mobile Station (MS) in idle mode". |
| [7] | 3GPP TS 23.116: "Super-Charger Technical Realisation; Stage 2". |
| [8] | 3GPP TS 29.002: "Mobile Application Part (MAP) specification". |
| [9] | 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)". |
| [10] | GSM 043.020 : " Digital cellular telecommunication system (Phase 2+) ; Security related network functions". |
| [11] | 3GPP TS 23.078: " <u>Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 43</u> – stage2 " |
| [11a] | <u>3GPP TS 23.195: "Provision of UE Specific Behaviour Information to Network Entities".</u> |
| [12] | 3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes" |

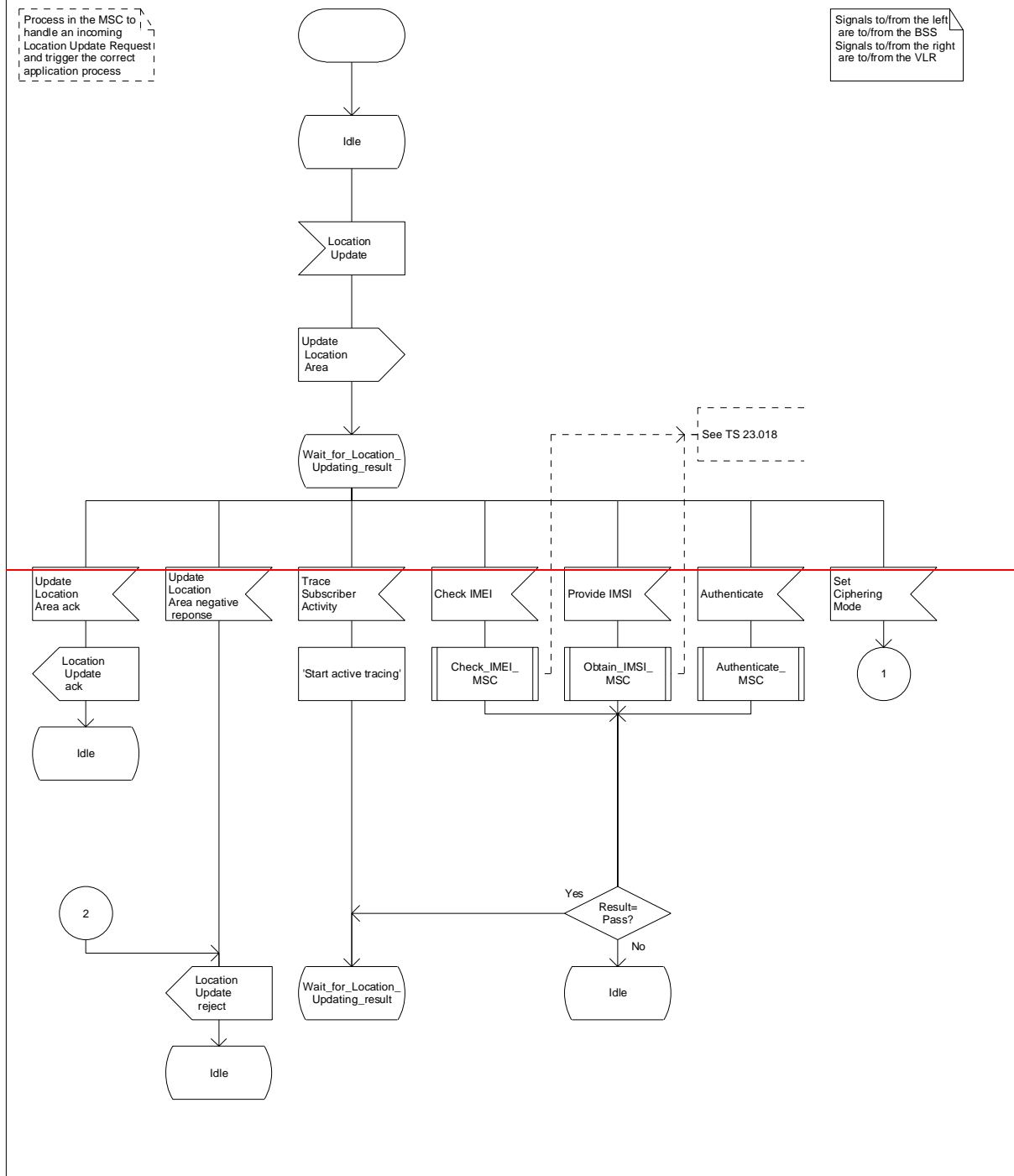
*** Next modified section ***

Process Update_Location_Area_MSC

1(3)

Process in the MSC to handle an incoming Location Update Request and trigger the correct application process

Signals to/from the left are to/from the BSS
Signals to/from the right are to/from the VLR



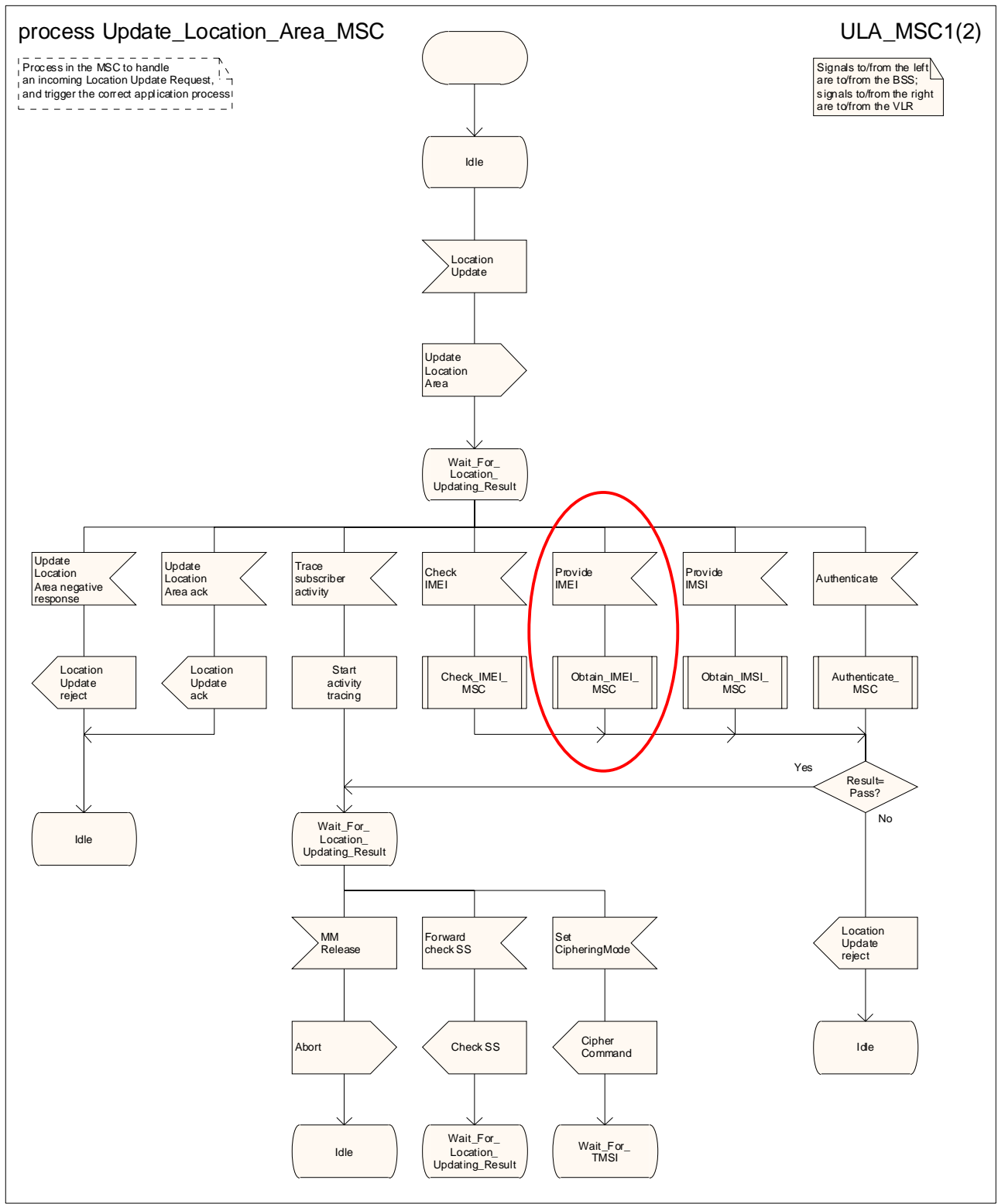


Figure 4.1.1.1 (sheet 1 of 23): Process Update_Location_Area_MSC

Process Update_Location_Area_MSC

2(3)

Process in the MSC to handle an incoming Location Update Request and trigger the correct application process

Signals to/from the left are to/from the BSS
Signals to/from the right are to/from the VLR

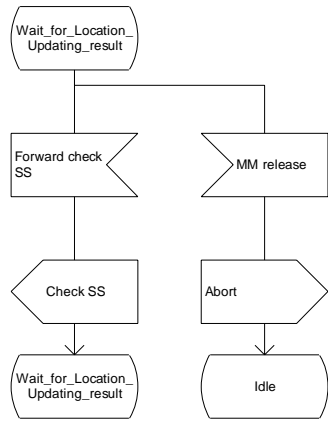


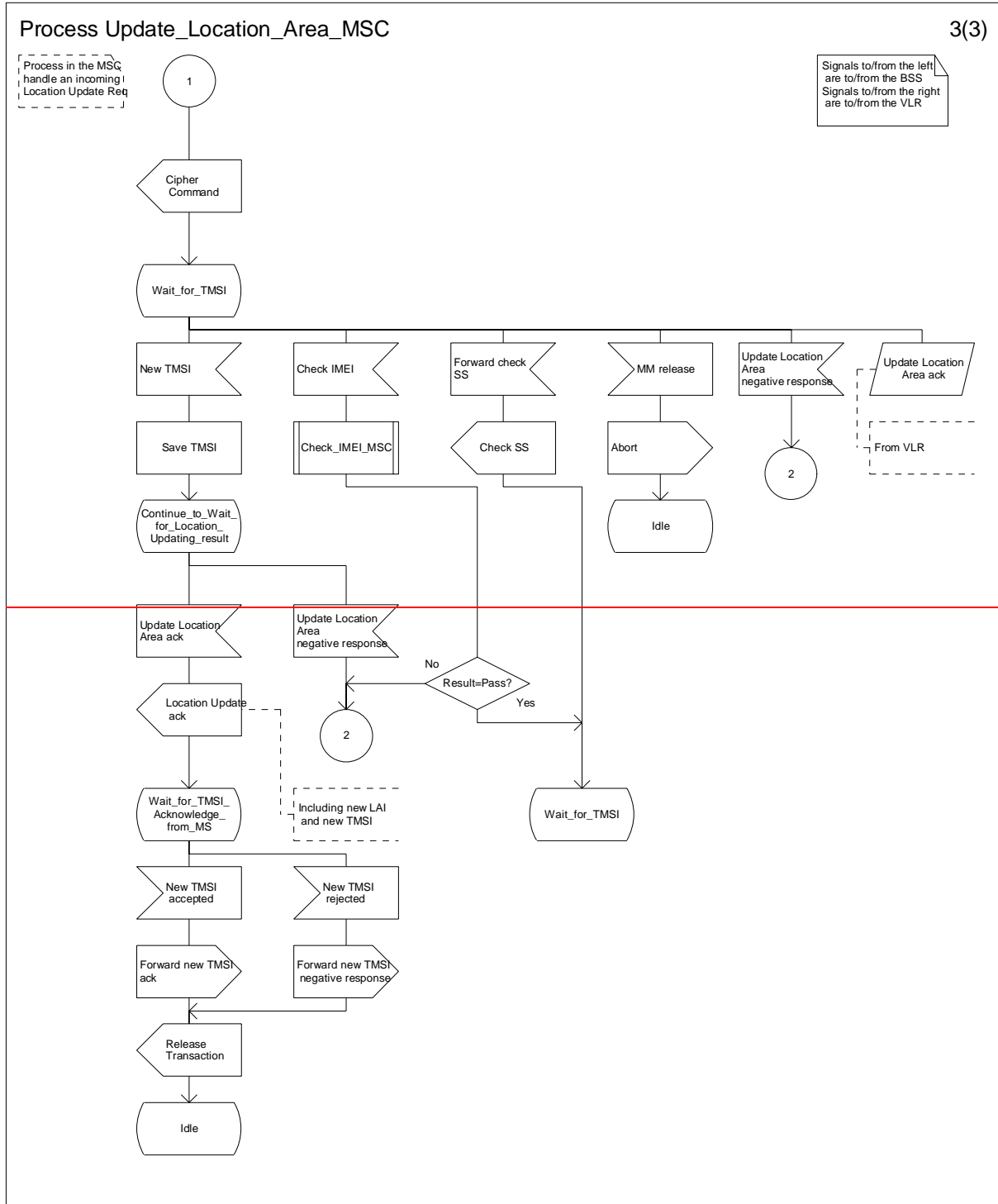
Figure 4.1.1.1 (sheet 2 of 3): Process Update_Location_Area_MSC

Process Update_Location_Area_MSC

3(3)

Process in the MSC handle an incoming Location Update Req

Signals to/from the left are to/from the BSS
Signals to/from the right are to/from the VLR



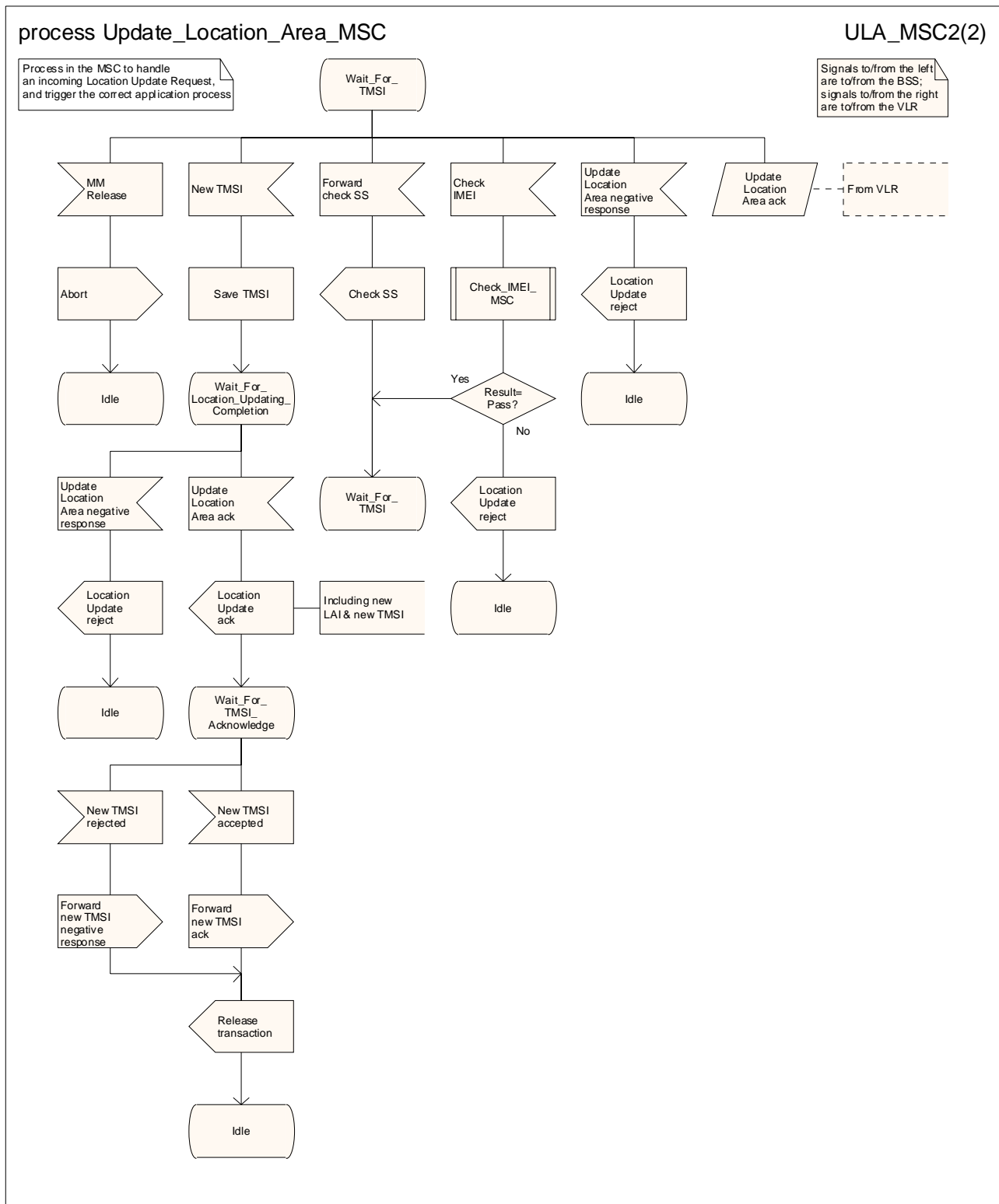


Figure 4.1.1.1 (sheet 23 of 23): Process Update_Location_Area_MSC

*** Next modified section ***

4.1.2.1 Process Update_Location_Area_VLR

General comment: at any stage in the location updating process the MSC may receive an indication from the BSS that the MM transaction has been released. The MSC then sends an Abort signal to the VLR. Upon receipt of this message, the VLR shall follow one of two possible courses of action.

The two possible courses of action and the conditions determining which course shall be taken are as follows:

1. If a successfully authenticated radio connection is already established before the Abort message is received, the VLR shall ignore the message.
2. If a successfully authenticated radio connection has not been established before the Abort message is received, the VLR shall abort the Update Location Area process and return to the idle state.

Sheet 1: the location area updating process will be activated by receiving an Update Location Area indication from the MSC. If there are parameter errors in the indication, the process is terminated with the appropriate error sent in the Update Location Area response to the MSC. Else, the behaviour will depend on the subscriber identity received, either an IMSI or a TMSI.

Sheet 1: the procedure "Retrieve_UESBI_If_required" is specific to "Early UE" handling. If the VLR does not support "Early UE" handling, processing continues from the "Yes" exit of the test "Result=Pass?".

Sheet 2: at the decision "HLR updating required?" the "True" branch shall be taken if and only if one or more of the following conditions is true:

- (1) Location Info Confirmed in HLR is false.
- (2) Data Confirmed by HLR is false.

The type of Location Update is retrieved in 3G TS 23.078 procedure 'Set_Notification_Type' and is returned into the 'Notify' variable; this information is necessary for the CAMEL Mobility Management event notification procedure 3G TS 23.078 'Notify_gsmSCF'.

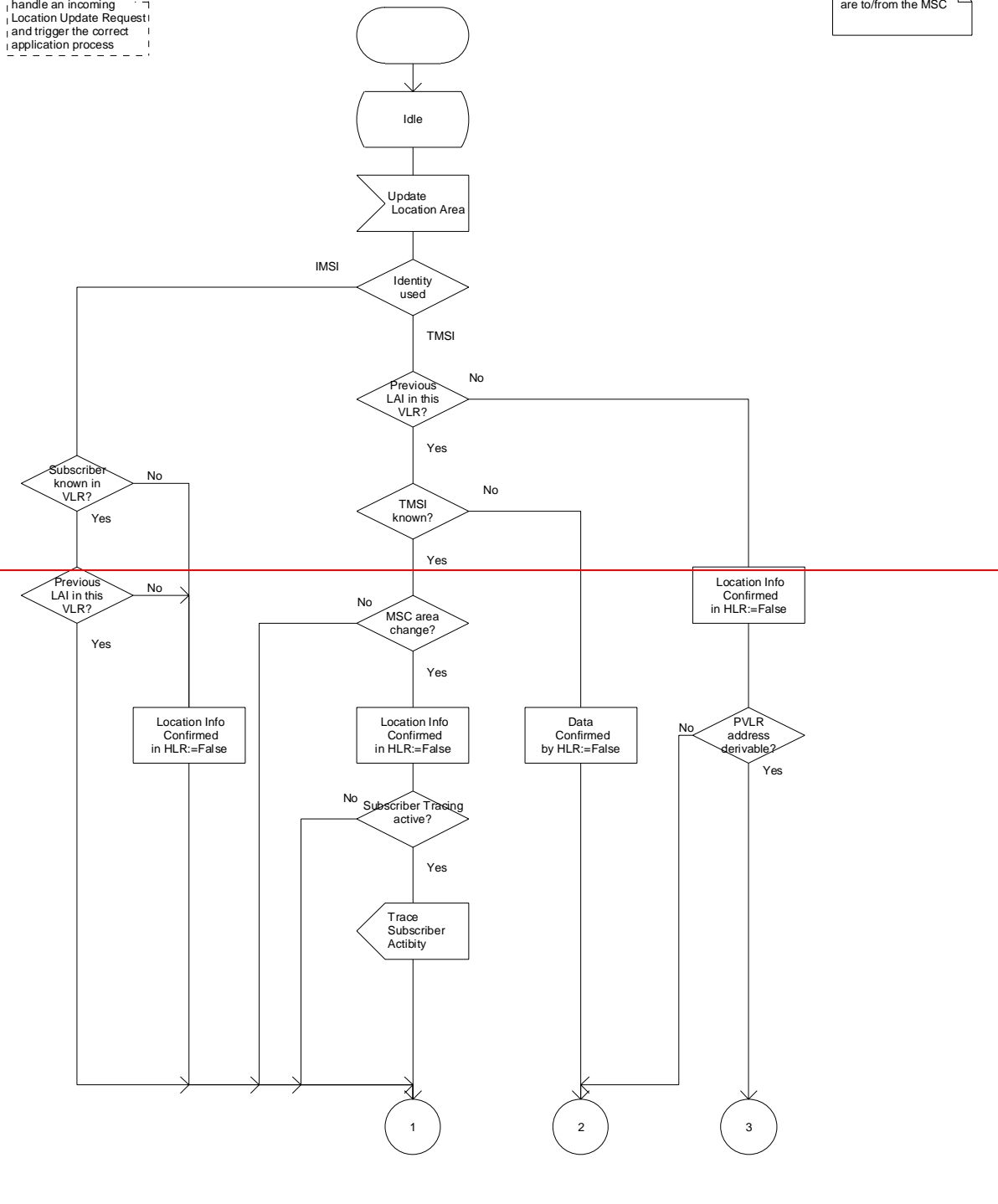
***** Next modified section *****

Process Update_Location_Area_VLR

ULA_VLR1(4)

Process in the VLR to handle an incoming Location Update Request and trigger the correct application process

Signals to/from the left are to/from the MSC



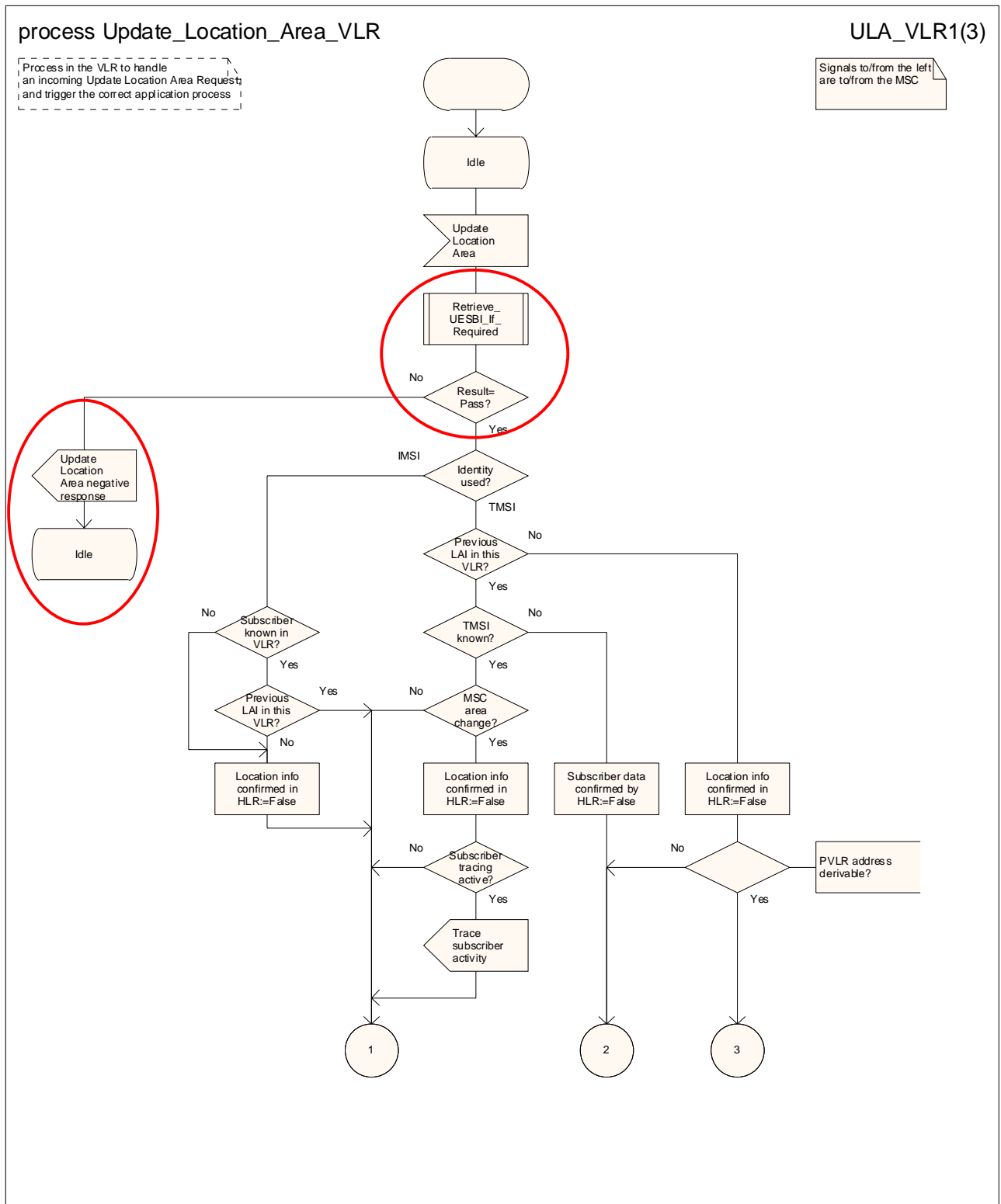


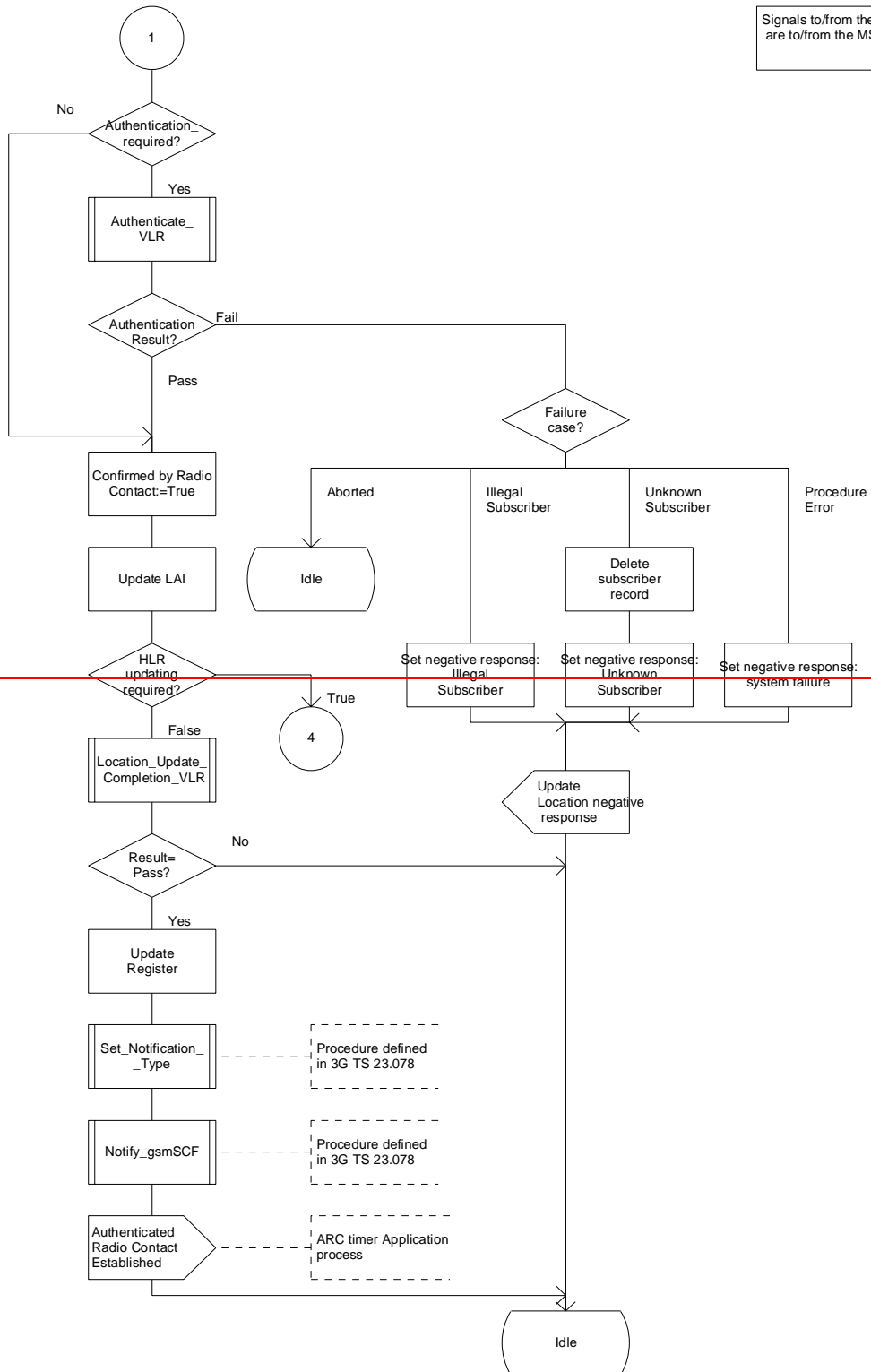
Figure 4.1.2.1 (sheet 1 of 34): Process Update_Location_Area_VLR

Process Update_Location_Area_VLR

ULA_VLR2(4)

Process in the VLR to handle an incoming Location Update Request and trigger the correct application process

Signals to/from the left are to/from the MSC



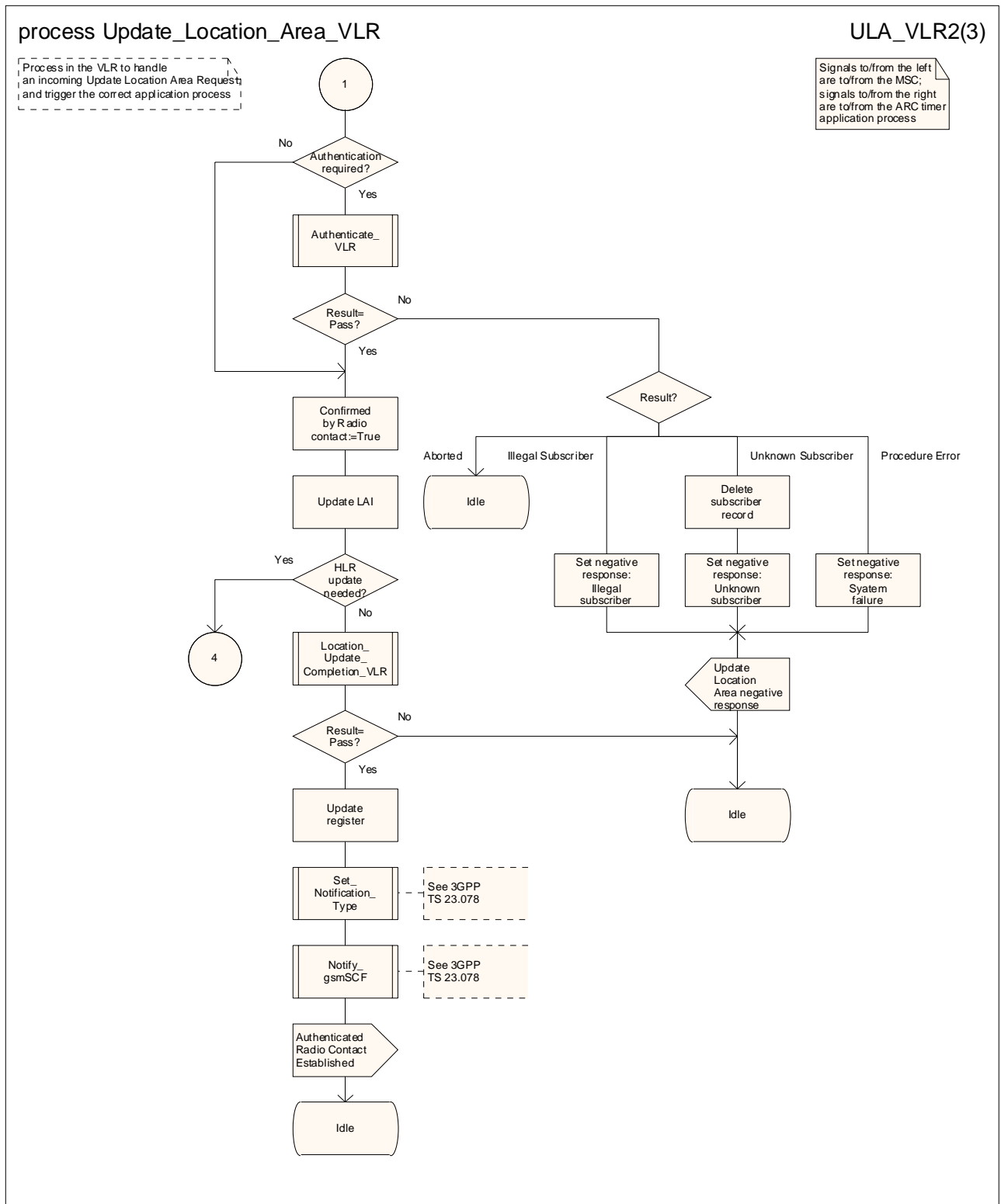


Figure 4.1.2.1 (sheet 2 of 34): Process Update_Location_Area_VLR

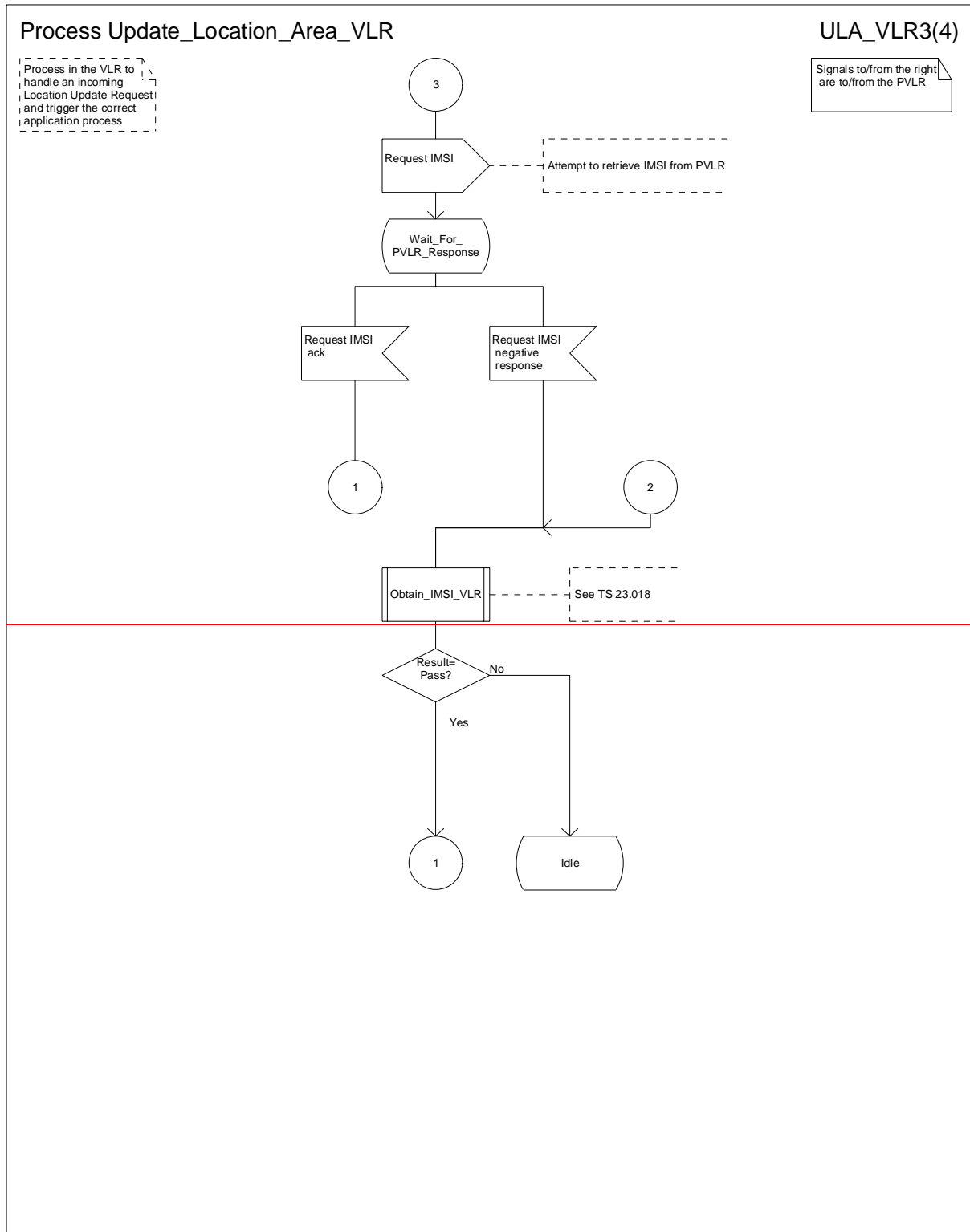


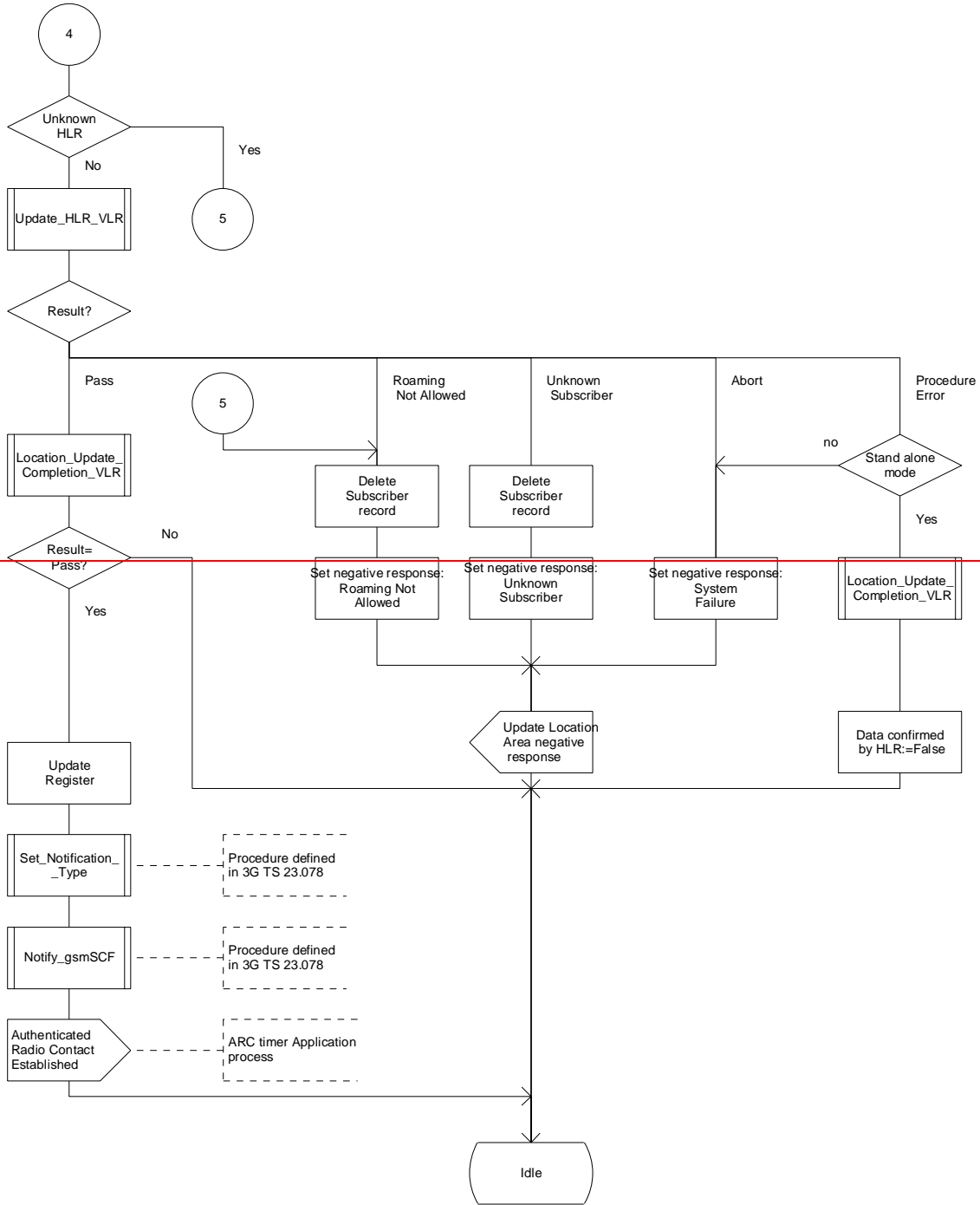
Figure 4.1.2.1 (sheet 3 of 4): Process Update_Location_Area_VLR

Process Update_Location_Area_VLR

ULA_VLR4(4)

Process in the VLR to handle an incoming Location Update Request and trigger the correct application process

Signals to/from the left are to/from the MSC



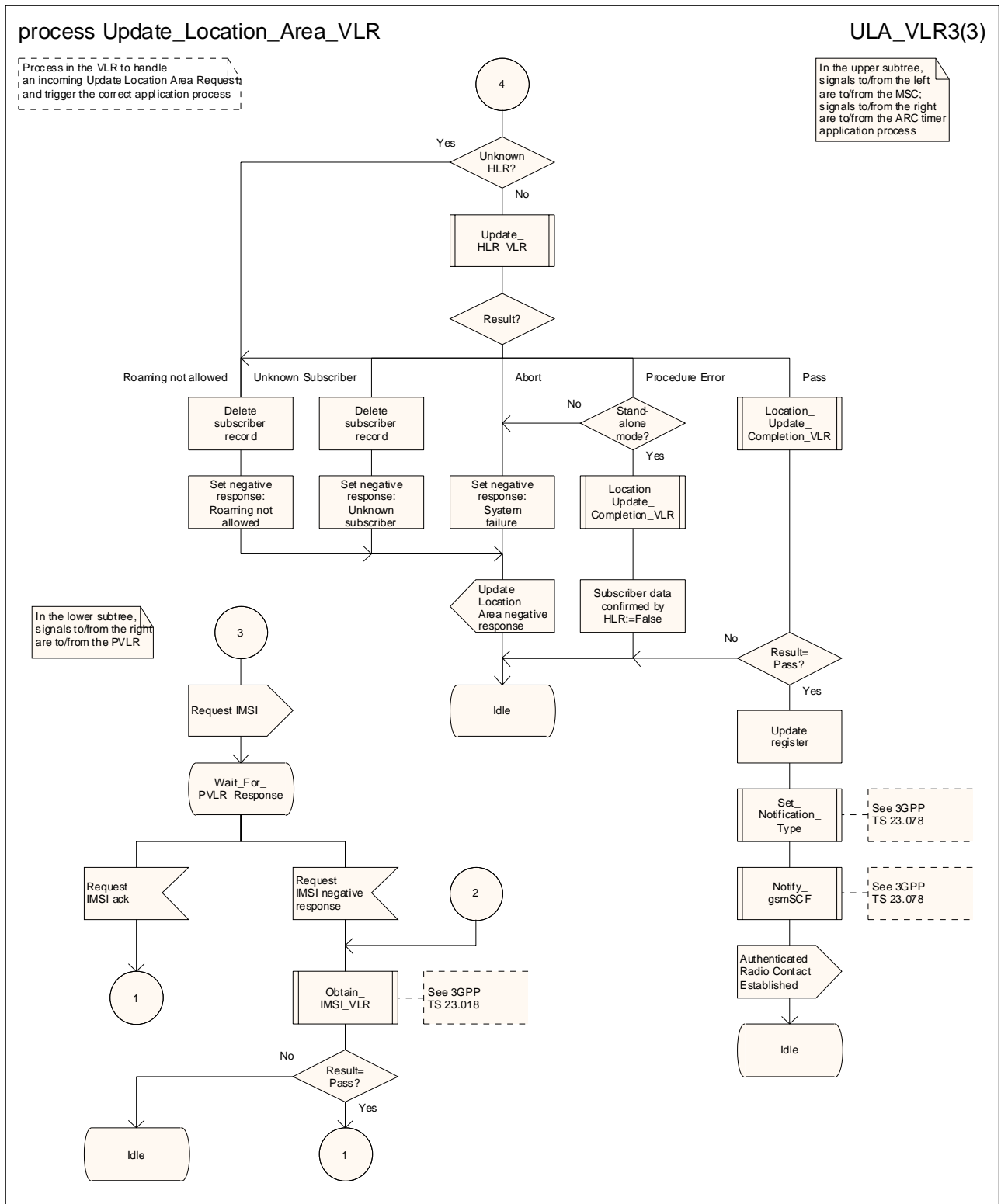


Figure 4.1.2.1 (sheet 34 of 34): Process Update_Location_Area_VLR

4.1.2.1a Procedure Retrieve UESBI If Required

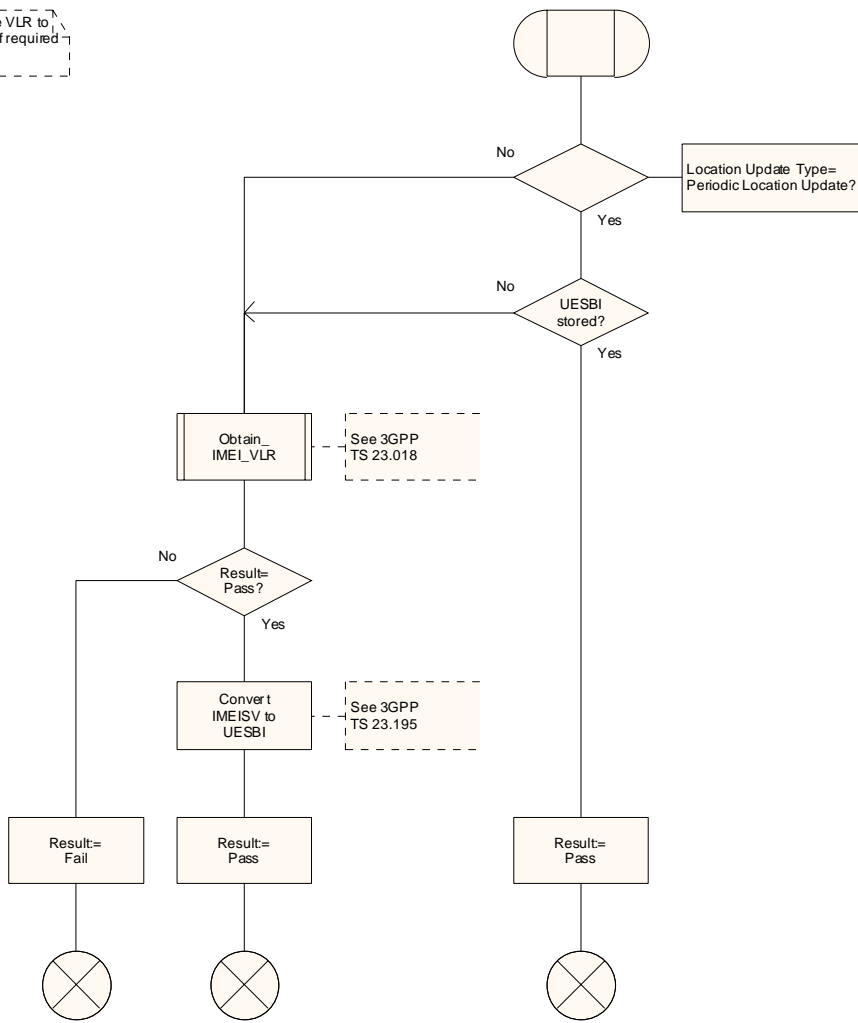
The task "Convert IMEISV to UESBI" is defined in detail in 3GPP TS 23.195 [25a].

procedure Retrieve_UESBI_If_Required

R_UESBI_IR1(1)

Procedure in the VLR to retrieve UESBI if required

Signals to/from the left are to/from the MSC



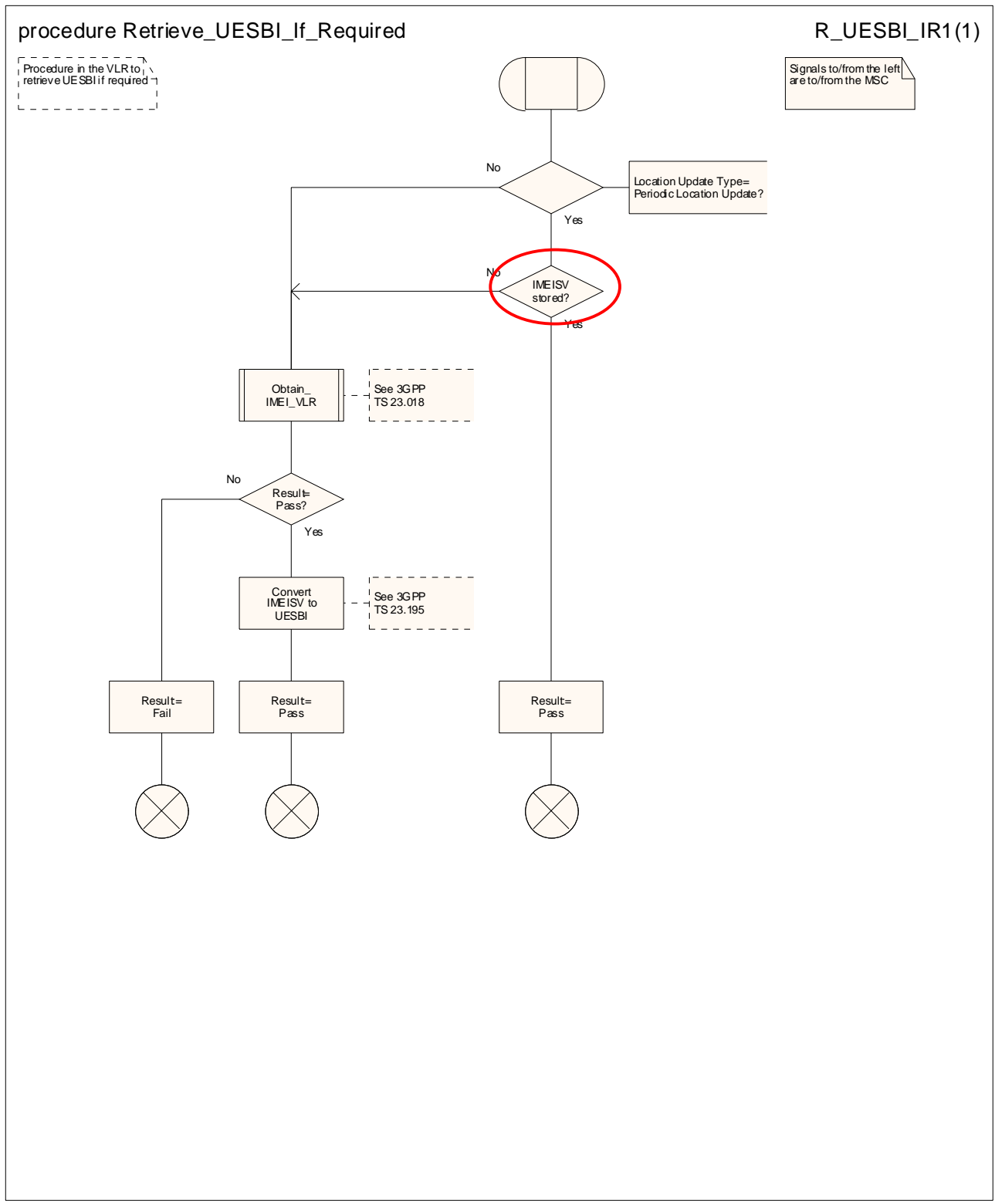


Figure 4.1.2.1a: Procedure Retrieve UESBI If Required

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

CR-Form-v7

CHANGE REQUEST

⌘ **23.018 CR 124** ⌘ rev **1** ⌘ Current version: **5.5.0** ⌘

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:	⌘ Addition of procedure to retrieve UE-specific behaviour data		
Source:	⌘ CN4		
Work item code:	⌘ Late UE	Date:	⌘ 21/05/2003
Category:	⌘ F	Release:	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ To allow the data for UE-specific behaviour to be retrieved when the UE requests access to the network		
Summary of change:	⌘ Add to the procedure Process_Access_Request_VLR the possibility to trigger retrieval of the UE-specific behaviour data.		
Consequences if not approved:	⌘ Handling for "early" UEs will not work		

Clauses affected:	⌘ 2; 7.1.2.2; figure 7.1.2.2a										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 23.195 (new specification)
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ This CR is for the variant of "Early UE" handling in which the CN sends the BMUEF to the AN										

***** 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 43.020: "Security related Network Functions".
- [2] 3GPP TS 48.008: " Mobile-services Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".
- [3] GSM 12.08: "Digital cellular telecommunications system (Phase 2+); Subscriber and Equipment trace ".
- [4] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [5] 3GPP TS 23.003: "Numbering, Addressing and Identification".
- [6] 3GPP TS 23.012: "Location Management Procedures".
- [7] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".
- [8] 3GPP TS 23.054: "Shared Inter Working Function (SIWF) - Stage 2 ".
- [9] 3GPP TS 23.060: "General Packet Radio Service; Service description; Stage 2".
- [10] 3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical Realisation – Stage 2"
- [11] 3GPP TS 23.072: "Call Deflection (CD) supplementary service; Stage2".
- [12] 3GPP TS 23.078: "Customized Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3; Stage 2".
- [13] 3GPP TS 23.079: "Support of Optimal Routeing (SOR); Technical Realisation".
- [14] 3GPP TS 23.081: "Line identification Supplementary Services - Stage 2 ".
- [15] 3GPP TS 23.082: "Call Forwarding (CF) Supplementary Services - Stage 2".
- [16] 3GPP TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 2".
- [17] 3GPP TS 23.084: "Multi Party (MPTY) Supplementary Service - Stage 2".
- [18] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Service - Stage 2".
- [19] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Service - Stage 2".
- [20] 3GPP TS 23.087: "User –to-User Signalling (UUS) Supplementary Service - Stage 2".
- [21] 3GPP TS 23.088: "Call Barring (CB) Supplementary Service - Stage 2".
- [22] 3GPP TS 23.091: "Explicit Call Transfer (ECT) supplementary service - Stage 2"

- [23] 3GPP TS 23.093: "Technical realisation of Completion of Calls to Busy Subscriber (CCBS) - Stage 2".
- [24] 3GPP TS 23.116: "Super-Charger Technical Realisation; Stage 2".
- [25] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".
- [\[25a\] 3GPP TS 23.195: "Provision of UE Specific Behaviour Information to Network Entities".](#)
- [26] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".
- [27] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".
- [28] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".
- [29] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [30] 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)".
- [31] 3GPP TS 29.010: "Information Element Mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC) Signalling Procedures and the Mobile Application Part (MAP)".
- [32] 3GPP TS 33.102: "3G Security; Security Architecture".
- [33] ITU-T Recommendation Q.761 (1999): "Signalling System No. 7 - ISDN User Part functional description".
- [34] ITU-T Recommendation Q.762 (1999): "Signalling System No. 7 - ISDN User Part general functions of messages and signals".
- [35] ITU-T Recommendation Q.763 (1999): "Signalling System No. 7 - ISDN User Part formats and codes".
- [36] ITU-T Recommendation Q.764 (1999): "Signalling System No. 7 - ISDN user part signalling procedures".
- [37] ITU-T Recommendation Q.850 (1996): "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".

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

7.1.2 Functional requirements of VLR

7.1.2.1 Process OCH_VLR

7.1.2.2 Procedure Process_Access_Request_VLR

[Sheet 1: the processing starting with the test "IMEISV stored" and finishing with the task "Convert IMEISV to UESBI" is specific to "Early UE" handling. If the VLR does not support "Early UE" handling, the processing starts with the test "Identity known?"](#)

[Sheet 1: the task "Convert IMEISV to UESBI" is defined in detail in 3GPP TS 23.195 \[25a\].](#)

Sheet 1: it is a network operator decision (subject to MoU requirements) how often an MS should be authenticated.

Sheet 2: the process Subscriber_Present_VLR is described in 3GPP TS 29.002 [29].

Sheet 2: it is a network operator decision (subject to MoU requirements) whether a GSM connection should be ciphered. A UMTS connection shall always be ciphered.

Sheet 3: it is a network operator decision (subject to MoU requirements) how often an IMEI should be checked.

Sheet 3, sheet 4, sheet 5: the procedure CCBS_Report_MS_Activity is specific to CCBS; it is specified in 3GPP TS 23.093 [23].

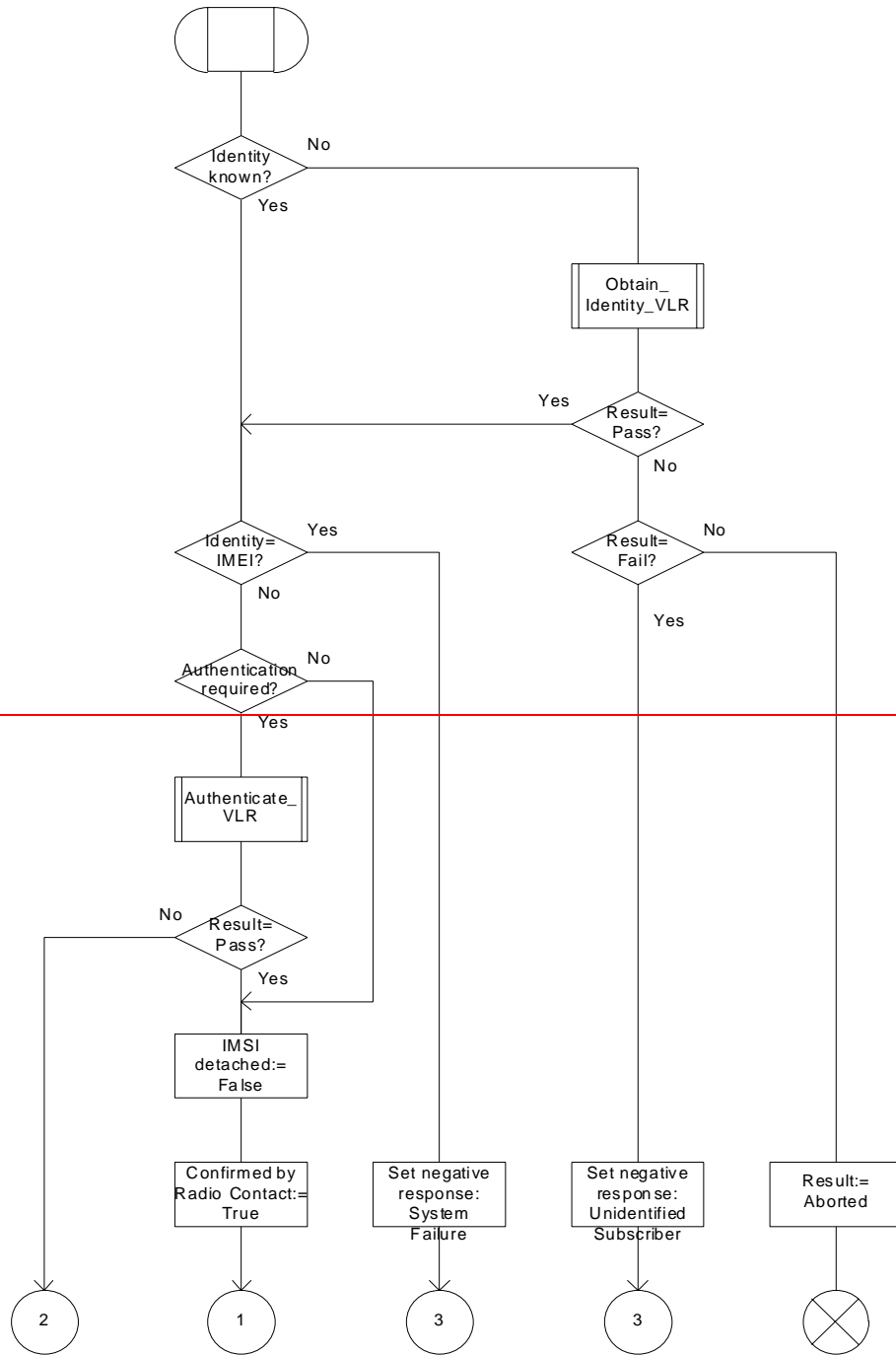
Sheet 5: it is a network operator decision whether emergency calls are allowed from an ME with no SIM.

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

Procedure Process_Access_Request_VLR

PAR_VLR1(5)

Procedure in the VLR to handle a request from the MS for system access



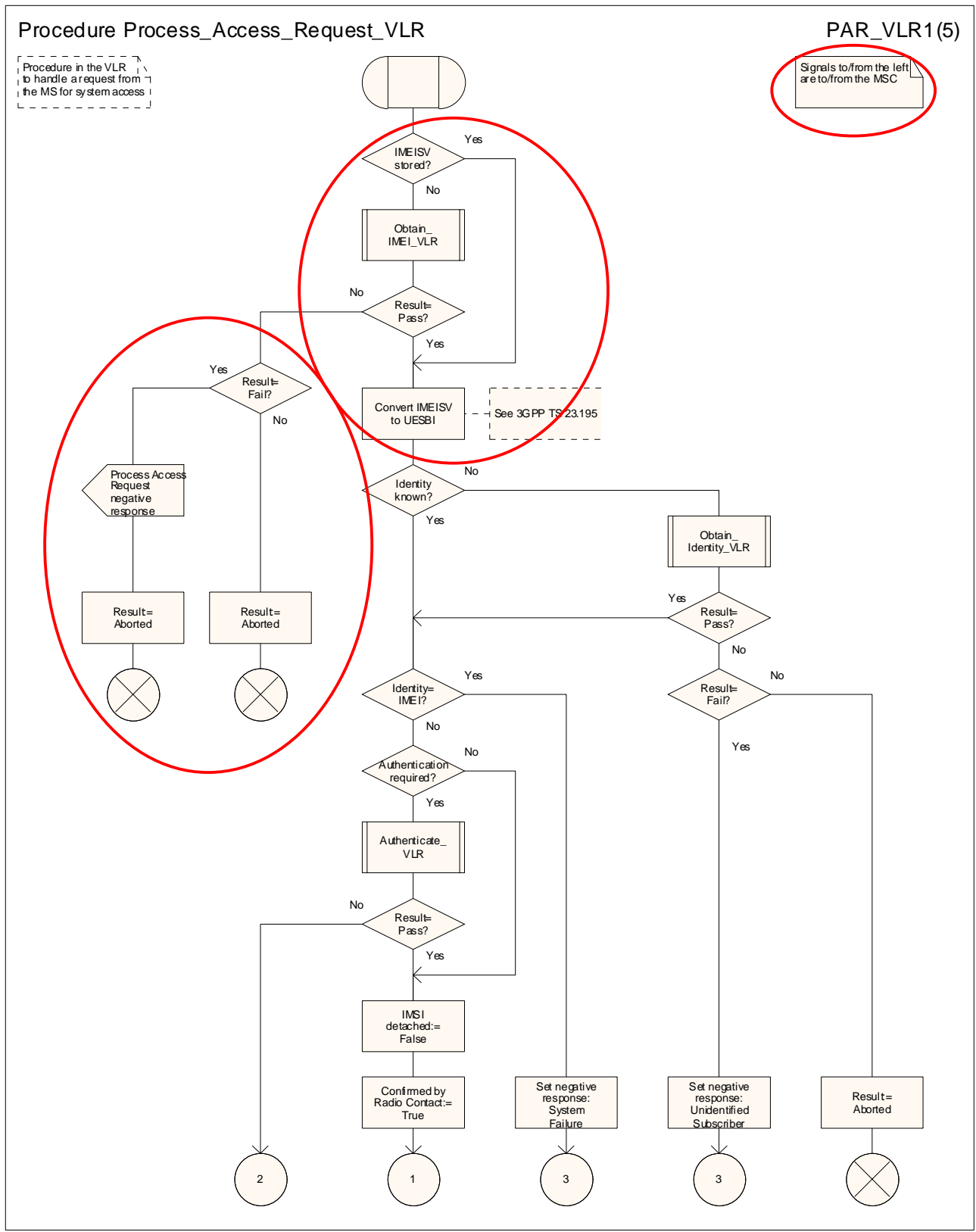


Figure 7.1.2.2a: Procedure Process_Access_Request_VLR (sheet 1)

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