3GPP TSG CN Plenary Meeting #20 **NP-030224**
4th – 6th June 2003 Hämeenlinna, FINLAND.

Source: TSG CN WG4

Title: Corrections on Early UE; (No UESBI, Bitmap)

Agenda item: 8.8

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	609	1	N4-030641	Rel-5	Transfer of UE-specific behaviour bitmap at handover	F	5.5.0
29.002	610	1	N4-030642	Rel-6	Transfer of UE-specific behaviour bitmap at handover	A	6.1.0
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	089	1	N4-030650	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	Addition of procedure to retrieve UE-specific behaviour data	F	5.5.0

3GPP TSG CN WG4 Meeting #19 **N4-030641**
San Diego, CA, USA, 19th – 23rd May 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **609** ⌘ **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:	⌘	Transfer of UE-specific behaviour bitmap at handover
Source:	⌘	CN4
Work item code:	⌘	Late UE
Date:	⌘	21/05/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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

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

Reason for change:	⌘	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-Iu shall be sent from anchor to target MSC in inter-MSC handover and relocation.
Summary of change:	⌘	UESBI parameter containing Bit Map of UE Faults (BMUEF) is added to MAP Prepare Handover operation invoke when BSSAP is used as the access network protocol.
Consequences if not approved:	⌘	Misalignment with stage 2.

Clauses affected:	⌘	7.6, 8.4.1, 17.7			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	23.009 CR 097, 29.010 CR 089, 25.413 CR ???
		X /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

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

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

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

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

7.6 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in clause 7.3:

Application context name	7.3.1	Refuse reason	7.3.1
Destination address	7.3.1	Release method	7.3.2
Destination reference	7.3.1	Responding address	7.3.1
Diagnostic information	7.3.4	Result	7.3.1
Originating address	7.3.1	Source	7.3.5
Originating reference	7.3.1	Specific information	7.3.1/7.3.2/7.3.4
Problem diagnostic	7.3.6	User reason	7.3.4
Provider reason	7.3.5		

Following is an alphabetic list of parameters contained in this clause:

Absent Subscriber Diagnostic SM	7.6.8.9	Location Information	7.6.2.30
Access connection status	7.6.9.3	Location Information for GPRS	7.6.2.30a
Access signalling information	7.6.9.5	Location update type	7.6.9.6
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Long Forwarded-to Number	7.6.2.22A
Additional Location Estimate	7.6.11.21	Long FTN Supported	7.6.2.22B
Additional number	7.6.2.46	Lower Layer Compatibility	7.6.3.42
Additional signal info	7.6.9.10	LSA Information	7.6.3.56
Additional SM Delivery Outcome	7.6.8.11	LSA Information Withdraw	7.6.3.58
Age Indicator	7.6.3.72	MC Information	7.6.4.48
Alert Reason	7.6.8.8	MC Subscription Data	7.6.4.47
Alert Reason Indicator	7.6.8.10	Mobile Not Reachable Reason	7.6.3.51
Alerting Pattern	7.6.3.44	Modification request for CSI	7.6.3.81
All GPRS Data	7.6.3.53	Modification request for SS Information	7.6.3.82
All Information Sent	7.6.1.5	More Messages To Send	7.6.8.7
AN-apdu	7.6.9.1	MS ISDN	7.6.2.17
APN	7.6.2.42	MSC number	7.6.2.11
Authentication set list	7.6.7.1	MSIsdn-Alert	7.6.2.29
B-subscriber Address	7.6.2.36	Multicall Bearer Information	7.6.2.52
B subscriber Number	7.6.2.48	Multiple Bearer Requested	7.6.2.53
B subscriber subaddress	7.6.2.49	Multiple Bearer Not Supported	7.6.2.54
Basic Service Group	7.6.4.40	MWD status	7.6.8.3
Bearer service	7.6.4.38	NbrUser	7.6.4.45
BSSMAP Service Handover	7.6.6.5	Network Access Mode	7.6.3.50
BSSMAP Service Handover List	7.6.6.5A	Network node number	7.6.2.43
Call Barring Data	7.6.3.83	Network resources	7.6.10.1
Call barring feature	7.6.4.19	Network signal information	7.6.9.8
Call barring information	7.6.4.18	New password	7.6.4.20
Call Direction	7.6.5.8	No reply condition timer	7.6.4.7
Call Forwarding Data	7.6.3.84	North American Equal Access preferred Carrier Id	7.6.2.34
Call Info	7.6.9.9	Number Portability Status	7.6.5.14
Call reference	7.6.5.1	ODB Data	7.6.3.85
Call Termination Indicator	7.6.3.67	ODB General Data	7.6.3.9
Called number	7.6.2.24	ODB HPLMN Specific Data	7.6.3.10
Calling number	7.6.2.25	OMC Id	7.6.2.18
CAMEL Subscription Info	7.6.3.78	Originally dialled number	7.6.2.26
CAMEL Subscription Info Withdraw	7.6.3.38	Originating entity number	7.6.2.10
Cancellation Type	7.6.3.52	Override Category	7.6.4.4
Category	7.6.3.1	P-TMSI	7.6.2.47
CCBS Feature	7.6.5.8	PDP-Address	7.6.2.45
CCBS Request State	7.6.4.49	PDP-Context identifier	7.6.3.55
Channel Type	7.6.5.9	PDP-Type	7.6.2.44
Chosen Channel	7.6.5.10		

Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
GERAN Classmark	7.6.6.4
GGSN address	7.6.2.40
GGSN number	7.6.2.41
GMSC CAMEL Subscription Info	7.6.3.34
GPRS enhancements support indicator	7.6.3.73
GPRS Node Indicator	7.6.8.14
GPRS Subscription Data	7.6.3.46
GPRS Subscription Data Withdraw	7.6.3.45
GPRS Support Indicator	7.6.8.15
Group Id	7.6.2.33
GSM bearer capability	7.6.3.6
gsmSCF Address	7.6.2.58
gsmSCF Initiated Call	7.6.3.c
Guidance information	7.6.4.22
Handover number	7.6.2.21
High Layer Compatibility	7.6.3.43
HLR Id	7.6.2.15
HLR number	7.6.2.13
HO-Number Not Required	7.6.6.7
IMEI	7.6.2.3
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
LCS-Reference Number	7.6.11.23
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70
Super-Charger Supported in Serving Network Entity	7.6.3.71
Offered Camel4 CSIs	7.6.3.36D
Offered Camel4 CSIs in GMSC	7.6.3.36E
Offered Camel4 CSIs in VMSC	7.6.3.36F
Offered Camel4 CSIs in VLR	7.6.3.36B
Offered Camel4 CSIs in SGSN	7.6.3.36C
Offered Camel4 Functionalities	7.6.3.36G
Supported CAMEL Phases in VLR	7.6.3.36
Supported CAMEL Phases in SGSN	7.6.3.36A
Supported GAD Shapes	7.6.11.20
Supported LCS Capability Sets	7.6.11.17
Suppress Incoming Call Barring	7.6.3.b
Suppress T-CSI	7.6.3.33
Suppress VT-CSI	7.6.3.a
Suppression of Announcement	7.6.3.32
Target cell Id	7.6.2.8
Target location area Id	7.6.2.7
Target RNC Id	7.6.2.8A

IMSI	7.6.2.1	Target MSC number	7.6.2.12
Integrity Protection Information	7.6.6.8	Teleservice	7.6.4.39
Inter CUG options	7.6.3.27	TMSI	7.6.2.2
Intra CUG restrictions	7.6.3.28	Trace reference	7.6.10.2
Invoke Id	7.6.1.1	Trace type	7.6.10.3
		UESBI	7.6.6.X
ISDN Bearer Capability	7.6.3.41	User error	7.6.1.4
IST Alert Timer	7.6.3.66	USSD Data Coding Scheme	7.6.4.36
IST Information Withdrawn	7.6.3.68	USSD String	7.6.4.37
IST Support Indicator	7.6.3.69	UU Data	7.6.5.12
LCS Codeword	7.6.11.18	UUS CF Interaction	7.6.5.13
LCS Information	7.6.3.60	VBS Data	7.6.3.40
LCS Service Type Id	7.6.11.15	VGCS Data	7.6.3.39
Kc	7.6.7.4	VLR CAMEL Subscription Info	7.6.3.35
Linked Id	7.6.1.2	VLR number	7.6.2.14
LMSI	7.6.2.16	VPLMN address allowed	7.6.3.48
		Zone Code	7.6.2.28

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

7.6.6.X UESBI

This parameter refers to the UESBI (UE Specific Behaviour Information) information element defined in 3GPP TS 25.413.

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

8.4.1 MAP_PREPARE_HANDOVER service

8.4.1.1 Definition

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

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

8.4.1.2 Service primitives

Table 8.4/1: MAP_PREPARE_HANDOVER

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Target Cell Id	C	C(=)		
Target RNC Id	C	C(=)		
HO-NumberNotRequired	C	C(=)		
IMSI	C	C(=)		
Integrity Protection Information	C	C(=)		
Encryption Information	C	C(=)		
Radio Resource Information	C	C(=)		
AN-APDU	C	C(=)	C	C(=)
Allowed GSM Algorithms	C	C(=)		
Allowed UMTS Algorithms	C	C(=)		

Radio Resource List	C	C(=)		
RAB ID	C	C(=)		
GERAN Classmark	C	C(=)		
BSSMAP Service Handover	C	C(=)		
BSSMAP Service Handover List	C	C(=)		
RANAP Service Handover	C	C(=)		
Currently Used Codec	C	C(=)		
Available Codecs List	C	C(=)		
RAB Configuration Indicator	C	C(=)		
ASCI Call Reference	C	C(=)		
UESBI	C	C(=)		
Handover Number			C	C(=)
Relocation Number List			C	C(=)
Multicall Bearer Information			C	C(=)
Multiple Bearer Requested	C	C(=)		
Multiple Bearer Not Supported			C	C(=)
Selected UMTS Algorithms			C	C(=)
Chosen Radio Resource Information			C	C(=)
Selected Codec			C	C(=)
User error			C	C(=)
Provider error				O

8.4.1.3 Parameter use

Invoke Id

For definition of this parameter see clause 7.6.1.

Target Cell Id

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

Target RNC Id

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

HO-Number Not Required

For definition of this parameter see clause 7.6.6.

IMSI

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

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

Integrity Protection Information

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

Encryption Information

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

Radio Resource Information

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

AN-APDU

For definition of this parameter see clause 7.6.9.

Allowed GSM Algorithms

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

- the service is a part of the Inter-MSC SRNS Relocation procedure and
- Ciphering or Security Mode Setting procedure has been performed.and
- there is an indication that the UE also supports GSM.

Allowed UMTS Algorithms

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

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

Ciphering or Security Mode Setting procedure has been performed.

Radio Resource List

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

RAB ID

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

GERAN Classmark

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

BSSMAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is RANAP. If the parameter BSSMAP Service Handover List is sent, the parameter BSSMAP Service Handover shall not be sent.

BSSMAP Service Handover List

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is RANAP. This parameter shall be sent when MSC-A requests multiple bearers to MSC-B. If the parameter BSSMAP Service Handover is sent, the parameter BSSMAP Service Handover List shall not be sent.

RANAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is BSSAP.

Currently Used Codec

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

Available Codecs List

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

RAB Configuration Indicator

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

ASCI Call Reference

This parameter contains either the broadcast call reference or group call reference. It shall be included if a subscriber is undergoing Signalling Only handover during a VGCS or VBS call, where MSC-B already has a Bearer established, so that MSC-B can determine the Group or Broadcast Call to which it shall attach the subscriber, see 3GPP TS 48.008 [49].

UESBI

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is BSSAP.

Handover Number

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

Relocation Number List

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

Multicall Bearer Information

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

Multiple Bearer Requested

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

Multiple Bearer Not Supported

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

Selected UMTS Algorithms

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

Chosen Radio Resource Information

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

Selected Codec

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

User error

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

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

Provider error

See definition of provider errors in clause 7.6.1.

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

17.7 MAP constants and data types

17.7.1 Mobile Service data types

…

```
PrepareHO-Arg ::= [3] SEQUENCE {
    targetCellId                    [0] GlobalCellId                 OPTIONAL,
    ho-NumberNotRequired            NULL                             OPTIONAL,
    targetRNCId                     [1] RNCId                        OPTIONAL,
    an-APDU                         [2] AccessNetworkSignalInfo      OPTIONAL,
    multipleBearerRequested         [3] NULL                         OPTIONAL,
    imsi                            [4] IMSI                         OPTIONAL,
    integrityProtectionInfo         [5] IntegrityProtectionInformation  OPTIONAL,
    encryptionInfo                  [6] EncryptionInformation         OPTIONAL,
    radioResourceInformation        [7] RadioResourceInformation     OPTIONAL,
    allowedGSM-Algorithms           [9]  AllowedGSM-Algorithms       OPTIONAL,
    allowedUMTS-Algorithms          [10] AllowedUMTS-Algorithms      OPTIONAL,
    radioResourceList               [11] RadioResourceList           OPTIONAL,
    extensionContainer              [8] ExtensionContainer           OPTIONAL,
    ... ,
    rab-Id                          [12] RAB-Id                      OPTIONAL,
    bssmap-ServiceHandover          [13] BSSMAP-ServiceHandover      OPTIONAL,
    ranap-ServiceHandover           [14] RANAP-ServiceHandover       OPTIONAL,
    bssmap-ServiceHandoverList      [15] BSSMAP-ServiceHandoverList  OPTIONAL,
    asciCallReference               [20] ASCI-CallReference          OPTIONAL,
    geran-classmark                 [16] GERAN-Classmark             OPTIONAL,
    currentlyUsedCodec              [17] Codec                       OPTIONAL,
    availableCodecsList             [18] AvailableCodecsList         OPTIONAL,
    rab-ConfigurationIndicator      [19] NULL                        OPTIONAL,
    uesbi                           [xx] UESBI                       OPTIONAL   }
```

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

```
BSSMAP-ServiceHandoverList ::= SEQUENCE SIZE (1.. maxNumOfServiceHandovers) OF
                                    BSSMAP-ServiceHandoverInfo
```

```
BSSMAP-ServiceHandoverInfo ::= SEQUENCE {
     bssmap-ServiceHandover              BSSMAP-ServiceHandover,
     rab-Id                              RAB-Id,
     -- RAB Identity is needed to relate the service handovers with the radio access bearers.
     ...}
```

```
maxNumOfServiceHandovers  INTEGER ::= 7
```

```
BSSMAP-ServiceHandover ::= OCTET STRING (SIZE (1))
     -- Octets are coded according the Service Handover information element in
     -- 3GPP TS 48.008.
```

```
RANAP-ServiceHandover ::= OCTET STRING (SIZE (1))
     -- Octet contains a complete Service-Handover data type
     -- as defined in 3GPP TS 25.413, encoded according to the encoding scheme
     -- mandated by 3GPP TS 25.413
     -- Padding bits are included in the least significant bits.
```

...

3GPP TSG CN WG4 Meeting #19 **N4-030642**
San Diego, CA, USA, 19th – 23rd May 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **610** ⌘**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:	⌘	Transfer of UE-specific behaviour bitmap at handover
Source:	⌘	CN4
Work item code:	⌘	Late UE
Date:	⌘	21/05/2003
Category:	⌘	**A**
Release:	⌘	Rel-6

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

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

Reason for change:	⌘	In 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-Iu shall be sent from anchor to target MSC in inter-MSC handover and relocation.
Summary of change:	⌘	UESBI parameter containing Bit Map of UE Faults (BMUEF) is added to MAP Prepare Handover operation invoke when BSSAP is used as the access network protocol.
Consequences if not approved:	⌘	Misalignment with stage 2.

Clauses affected:	⌘	7.6, 8.4.1, 17.7			
Other specs affected:	⌘	**Y**	**N**		
		X		Other core specifications	⌘ 23.009 CR 097, 29.010 CR 089, 25.413 CR ???
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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

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

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

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

7.6 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in clause 7.3:

Application context name	7.3.1	Refuse reason	7.3.1
Destination address	7.3.1	Release method	7.3.2
Destination reference	7.3.1	Responding address	7.3.1
Diagnostic information	7.3.4	Result	7.3.1
Originating address	7.3.1	Source	7.3.5
Originating reference	7.3.1	Specific information	7.3.1/7.3.2/7.3.4
Problem diagnostic	7.3.6	User reason	7.3.4
Provider reason	7.3.5		

Following is an alphabetic list of parameters contained in this clause:

Absent Subscriber Diagnostic SM	7.6.8.9	Location Information for GPRS	7.6.2.30a
Access connection status	7.6.9.3	Location update type	7.6.9.6
Access signalling information	7.6.9.5	Long Forwarded-to Number	7.6.2.22A
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Long FTN Supported	7.6.2.22B
Additional Location Estimate	7.6.11.21	Lower Layer Compatibility	7.6.3.42
Additional number	7.6.2.46	LSA Information	7.6.3.56
Additional signal info	7.6.9.10	LSA Information Withdraw	7.6.3.58
Additional SM Delivery Outcome	7.6.8.11	MC Information	7.6.4.48
Age Indicator	7.6.3.72	MC Subscription Data	7.6.4.47
Alert Reason	7.6.8.8	Mobile Not Reachable Reason	7.6.3.51
Alert Reason Indicator	7.6.8.10	Modification request for CSI	7.6.3.81
Alerting Pattern	7.6.3.44	Modification request for SS Information	7.6.3.82
All GPRS Data	7.6.3.53	More Messages To Send	7.6.8.7
All Information Sent	7.6.1.5	MS ISDN	7.6.2.17
AN-apdu	7.6.9.1	MSC number	7.6.2.11
APN	7.6.2.42	MSIsdn-Alert	7.6.2.29
Authentication set list	7.6.7.1	Multicall Bearer Information	7.6.2.52
B-subscriber Address	7.6.2.36	Multiple Bearer Requested	7.6.2.53
B subscriber Number	7.6.2.48	Multiple Bearer Not Supported	7.6.2.54
B subscriber subaddress	7.6.2.49	MWD status	7.6.8.3
Basic Service Group	7.6.4.40	NbrUser	7.6.4.45
Bearer service	7.6.4.38	Network Access Mode	7.6.3.50
BSSMAP Service Handover	7.6.6.5	Network node number	7.6.2.43
BSSMAP Service Handover List	7.6.6.5A	Network resources	7.6.10.1
Call Barring Data	7.6.3.83	Network signal information	7.6.9.8
Call barring feature	7.6.4.19	New password	7.6.4.20
Call barring information	7.6.4.18	No reply condition timer	7.6.4.7
Call barring support indicator	7.6.3.92	North American Equal Accesspreferred Carrier Id	7.6.2.34
Call Direction	7.6.5.8	Number Portability Status	7.6.5.14
Call Forwarding Data	7.6.3.84	ODB Data	7.6.3.85
Call Info	7.6.9.9	ODB General Data	7.6.3.9
Call reference	7.6.5.1	ODB HPLMN Specific Data	7.6.3.10
Call Termination Indicator	7.6.3.67	OMC Id	7.6.2.18
Called number	7.6.2.24	Originally dialled number	7.6.2.26
Calling number	7.6.2.25	Originating entity number	7.6.2.10
CAMEL Subscription Info	7.6.3.78	Override Category	7.6.4.4
CAMEL Subscription Info Withdraw	7.6.3.38	P-TMSI	7.6.2.47
Cancellation Type	7.6.3.52	PDP-Address	7.6.2.45
Category	7.6.3.1	PDP-Context identifier	7.6.3.55
CCBS Feature	7.6.5.8	PDP-Type	7.6.2.44
CCBS Request State	7.6.4.49		
Channel Type	7.6.5.9	Pre-paging supported	7.6.5.15
Chosen Channel	7.6.5.10	Previous location area Id	7.6.2.4

Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
GERAN Classmark	7.6.6.4
GGSN address	7.6.2.40
GGSN number	7.6.2.41
GMSC CAMEL Subscription Info	7.6.3.34
GPRS enhancements support indicator	7.6.3.73
GPRS Node Indicator	7.6.8.14
GPRS Subscription Data	7.6.3.46
GPRS Subscription Data Withdraw	7.6.3.45
GPRS Support Indicator	7.6.8.15
Group Id	7.6.2.33
GSM bearer capability	7.6.3.6
gsmSCF Address	7.6.2.58
gsmSCF Initiated Call	7.6.3.c
Guidance information	7.6.4.22
Handover number	7.6.2.21
High Layer Compatibility	7.6.3.43
HLR Id	7.6.2.15
HLR number	7.6.2.13
HO-Number Not Required	7.6.6.7
IMEI	7.6.2.3
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
LCS-Reference Number	7.6.11.23
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70
Super-Charger Supported in Serving Network Entity	7.6.3.71
Offered Camel4 CSIs	7.6.3.36D
Offered Camel4 CSIs in GMSC	7.6.3.36E
Offered Camel4 CSIs in VMSC	7.6.3.36F
Offered Camel4 CSIs in VLR	7.6.3.36B
Offered Camel4 CSIs in SGSN	7.6.3.36C
Offered Camel4 Functionalities	7.6.3.36G
Supported CAMEL Phases in VLR	7.6.3.36
Supported CAMEL Phases in SGSN	7.6.3.36A
Supported GAD Shapes	7.6.11.20
Supported LCS Capability Sets	7.6.11.17
Suppress Incoming Call Barring	7.6.3.b
Suppress T-CSI	7.6.3.33
Suppress VT-CSI	7.6.3.a
Suppression of Announcement	7.6.3.32
Target cell Id	7.6.2.8
Target location area Id	7.6.2.7
Target RNC Id	7.6.2.8A
Target MSC number	7.6.2.12

IMSI	7.6.2.1	Teleservice	7.6.4.39
Integrity Protection Information	7.6.6.8	TMSI	7.6.2.2
Inter CUG options	7.6.3.27	Trace reference	7.6.10.2
Intra CUG restrictions	7.6.3.28	Trace type	7.6.10.3
		UESBI	7.6.6.X
Invoke Id	7.6.1.1	User error	7.6.1.4
ISDN Bearer Capability	7.6.3.41	USSD Data Coding Scheme	7.6.4.36
IST Alert Timer	7.6.3.66	USSD String	7.6.4.37
IST Information Withdrawn	7.6.3.68	UU Data	7.6.5.12
IST Support Indicator	7.6.3.69	UUS CF Interaction	7.6.5.13
LCS Codeword	7.6.11.18	VBS Data	7.6.3.40
LCS Information	7.6.3.60	VGCS Data	7.6.3.39
LCS Service Type Id	7.6.11.15	VLR CAMEL Subscription Info	7.6.3.35
Kc	7.6.7.4	VLR number	7.6.2.14
Linked Id	7.6.1.2	VPLMN address allowed	7.6.3.48
LMSI	7.6.2.16	Zone Code	7.6.2.28
Location Information	7.6.2.30		

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

7.6.6.X UESBI

This parameter refers to the UESBI (UE Specific Behaviour Information) information element defined in 3GPP TS 25.413.

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

8.4.1 MAP_PREPARE_HANDOVER service

8.4.1.1 Definition

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

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

8.4.1.2 Service primitives

Table 8.4/1: MAP_PREPARE_HANDOVER

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Target Cell Id	C	C(=)		
Target RNC Id	C	C(=)		
HO-NumberNotRequired	C	C(=)		
IMSI	C	C(=)		
Integrity Protection Information	C	C(=)		
Encryption Information	C	C(=)		
Radio Resource Information	C	C(=)		
AN-APDU	C	C(=)	C	C(=)
Allowed GSM Algorithms	C	C(=)		
Allowed UMTS Algorithms	C	C(=)		
Radio Resource List	C	C(=)		
RAB ID	C	C(=)		

GERAN Classmark	C	C(=)		
BSSMAP Service Handover	C	C(=)		
BSSMAP Service Handover List	C	C(=)		
RANAP Service Handover	C	C(=)		
Currently Used Codec	C	C(=)		
Available Codecs List	C	C(=)		
RAB Configuration Indicator	C	C(=)		
ASCI Call Reference	C	C(=)		
UESBI	C	C(=)		
Handover Number			C	C(=)
Relocation Number List			C	C(=)
Multicall Bearer Information			C	C(=)
Multiple Bearer Requested	C	C(=)		
Multiple Bearer Not Supported			C	C(=)
Selected UMTS Algorithms			C	C(=)
Chosen Radio Resource Information			C	C(=)
Selected Codec			C	C(=)
User error			C	C(=)
Provider error				O

8.4.1.3 Parameter use

Invoke Id

For definition of this parameter see clause 7.6.1.

Target Cell Id

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

Target RNC Id

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

HO-Number Not Required

For definition of this parameter see clause 7.6.6.

IMSI

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

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

Integrity Protection Information

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

Encryption Information

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

Radio Resource Information

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

AN-APDU

For definition of this parameter see clause 7.6.9.

Allowed GSM Algorithms

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

- the service is a part of the Inter-MSC SRNS Relocation procedure and
- Ciphering or Security Mode Setting procedure has been performed.and
- there is an indication that the UE also supports GSM.

Allowed UMTS Algorithms

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

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

Ciphering or Security Mode Setting procedure has been performed.

Radio Resource List

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

RAB ID

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

GERAN Classmark

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

BSSMAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is RANAP. If the parameter BSSMAP Service Handover List is sent, the parameter BSSMAP Service Handover shall not be sent.

BSSMAP Service Handover List

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is RANAP. This parameter shall be sent when MSC-A requests multiple bearers to MSC-B. If the parameter BSSMAP Service Handover is sent, the parameter BSSMAP Service Handover List shall not be sent.

RANAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is BSSAP.

Currently Used Codec

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

Available Codecs List

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

RAB Configuration Indicator

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

ASCI Call Reference

This parameter contains either the broadcast call reference or group call reference. It shall be included if a subscriber is undergoing Signalling Only handover during a VGCS or VBS call, where MSC-B already has a Bearer established, so that MSC-B can determine the Group or Broadcast Call to which it shall attach the subscriber, see 3GPP TS 48.008 [49].

UESBI

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the access network protocol is BSSAP.

Handover Number

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

Relocation Number List

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

Multicall Bearer Information

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

Multiple Bearer Requested

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

Multiple Bearer Not Supported

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

Selected UMTS Algorithms

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

Chosen Radio Resource Information

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

Selected Codec

For definition of this parameter see subclause 7.6.6. This parameter shall be included always if MSC-B supports the selection of codec based on Available Codecs List, even if Selected Codec is equal to the Currently Used Codec

received in the service request. This parameter shall not be included if Available Codecs List was not received in the service request.

User error

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

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

Provider error

See definition of provider errors in clause 7.6.1.

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

17.7 MAP constants and data types

17.7.1 Mobile Service data types

…

```
PrepareHO-Arg ::= [3] SEQUENCE {
    targetCellId                    [0] GlobalCellId                  OPTIONAL,
    ho-NumberNotRequired            NULL                              OPTIONAL,
    targetRNCId                     [1] RNCId                         OPTIONAL,
    an-APDU                         [2] AccessNetworkSignalInfo       OPTIONAL,
    multipleBearerRequested         [3] NULL                          OPTIONAL,
    imsi                            [4] IMSI                          OPTIONAL,
    integrityProtectionInfo         [5] IntegrityProtectionInformation  OPTIONAL,
    encryptionInfo                  [6] EncryptionInformation          OPTIONAL,
    radioResourceInformation        [7] RadioResourceInformation      OPTIONAL,
    allowedGSM-Algorithms           [9]  AllowedGSM-Algorithms        OPTIONAL,
    allowedUMTS-Algorithms          [10] AllowedUMTS-Algorithms       OPTIONAL,
    radioResourceList               [11] RadioResourceList            OPTIONAL,
    extensionContainer              [8] ExtensionContainer            OPTIONAL,
    ... ,
    rab-Id                          [12] RAB-Id                       OPTIONAL,
    bssmap-ServiceHandover          [13] BSSMAP-ServiceHandover       OPTIONAL,
    ranap-ServiceHandover           [14] RANAP-ServiceHandover        OPTIONAL,
    bssmap-ServiceHandoverList      [15] BSSMAP-ServiceHandoverList   OPTIONAL,
    asciCallReference               [20] ASCI-CallReference           OPTIONAL,
    geran-classmark                 [16] GERAN-Classmark              OPTIONAL,
    currentlyUsedCodec              [17] Codec                        OPTIONAL,
    availableCodecsList             [18] AvailableCodecsList          OPTIONAL,
    rab-ConfigurationIndicator      [19] NULL                         OPTIONAL,
    uesbi                           [xx] UESBI                        OPTIONAL   }
```

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

```
BSSMAP-ServiceHandoverList ::= SEQUENCE SIZE (1.. maxNumOfServiceHandovers) OF
                                    BSSMAP-ServiceHandoverInfo
```

```
BSSMAP-ServiceHandoverInfo ::= SEQUENCE {
    bssmap-ServiceHandover              BSSMAP-ServiceHandover,
    rab-Id                              RAB-Id,
    -- RAB Identity is needed to relate the service handovers with the radio access bearers.
    ...}
```

```
maxNumOfServiceHandovers  INTEGER ::= 7
```

```
BSSMAP-ServiceHandover ::= OCTET STRING (SIZE (1))
    -- Octets are coded according the Service Handover information element in
    -- 3GPP TS 48.008.
```

```
RANAP-ServiceHandover ::= OCTET STRING (SIZE (1))
    -- Octet contains a complete Service-Handover data type
    -- as defined in 3GPP TS 25.413, encoded according to the encoding scheme
    -- mandated by 3GPP TS 25.413
    -- Padding bits are included in the least significant bits.
```

...

3GPP TSG CN WG4 Meeting #19 **N4-030646**
San Diego, CA, USA, 19th – 23rd May 2003

CR-Form-v7

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

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

Reason for change:	⌘	In 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 fo 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:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	

Other comments: ⌘

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

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 7.6.3~~4~~ 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	V3~~2~~	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)
-- *networkFunctionalSsContext-v1*	*map-ac networkFunctionalSs (18)*	*version1 (1)*
-- 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)
-- *mwdMngtContext-v1*	*map-ac mwdMngt (24)*	*version1 (1)*
-- 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) version8 (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                       UESBI~~BMUEF~~
    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 the IMEI/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

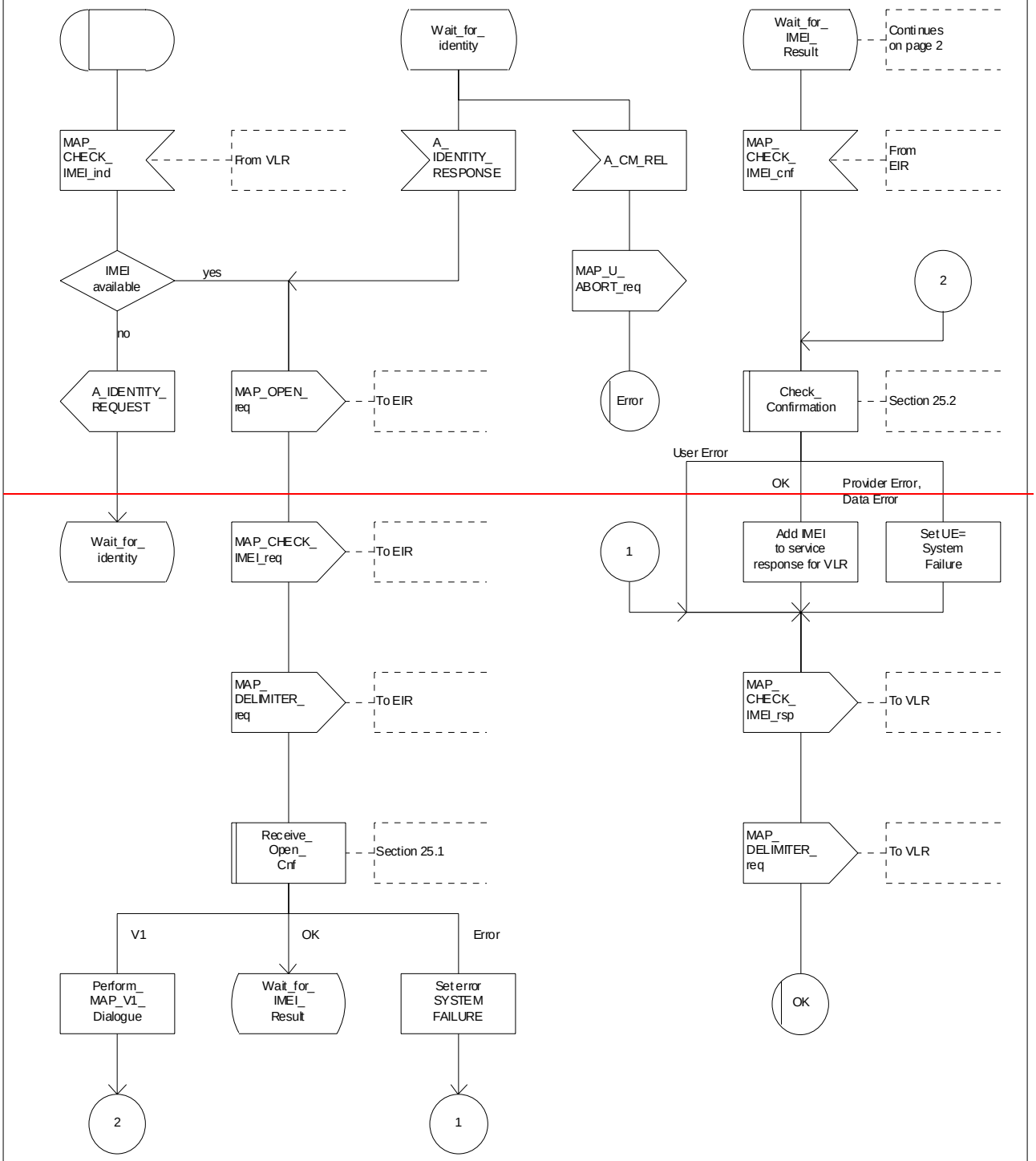
This macro is used by the VLR to obtain the IMEI from the MSC, e.~~g. to enable handling of emergency calls in case of authentication failure (in which case the IMEI may be used by some operators as an alternative to the IMSI)~~. It proceeds as follows:

- 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.

Macrodefinition Check_IMEI_MSC 25.6_1.1(2)

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



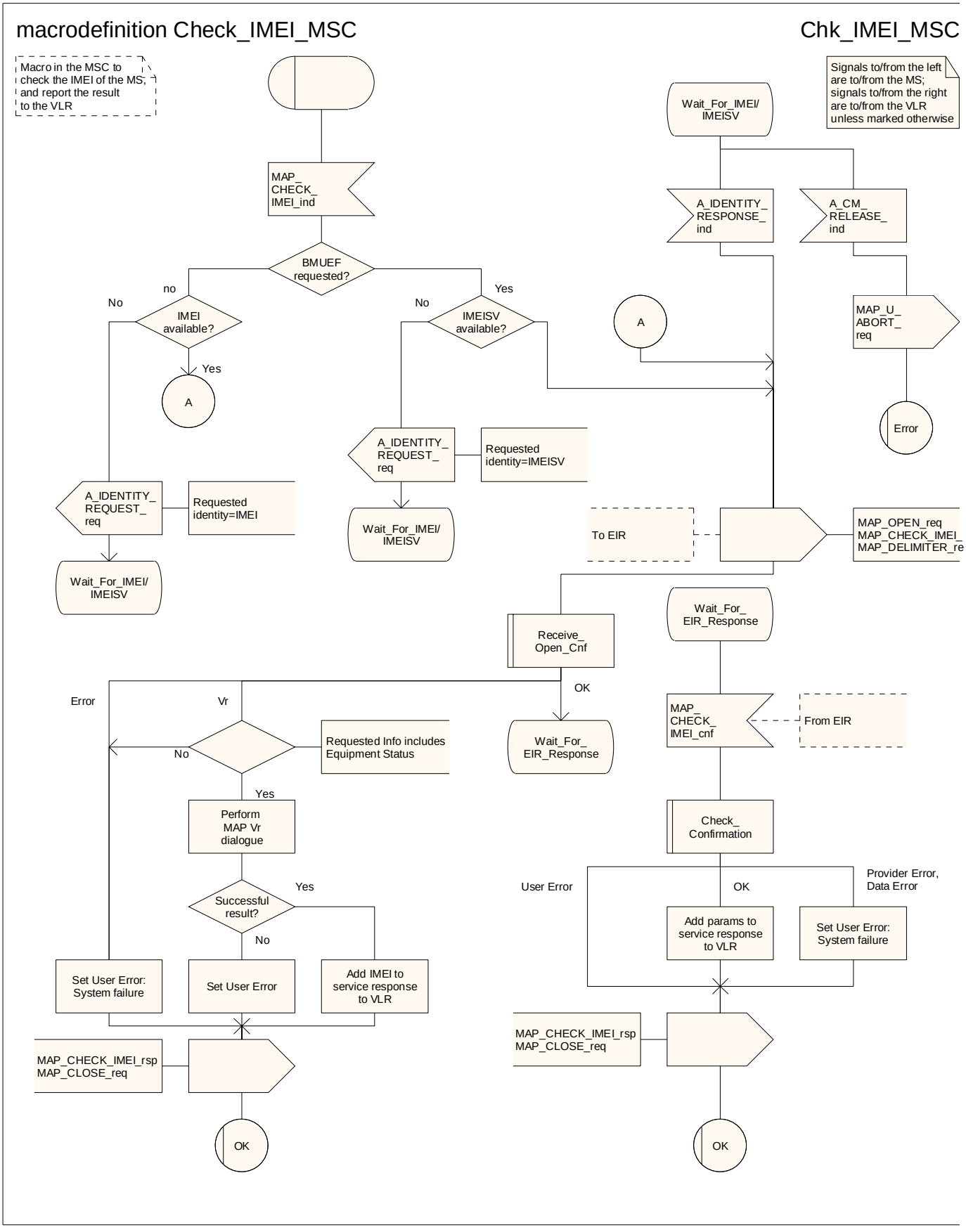
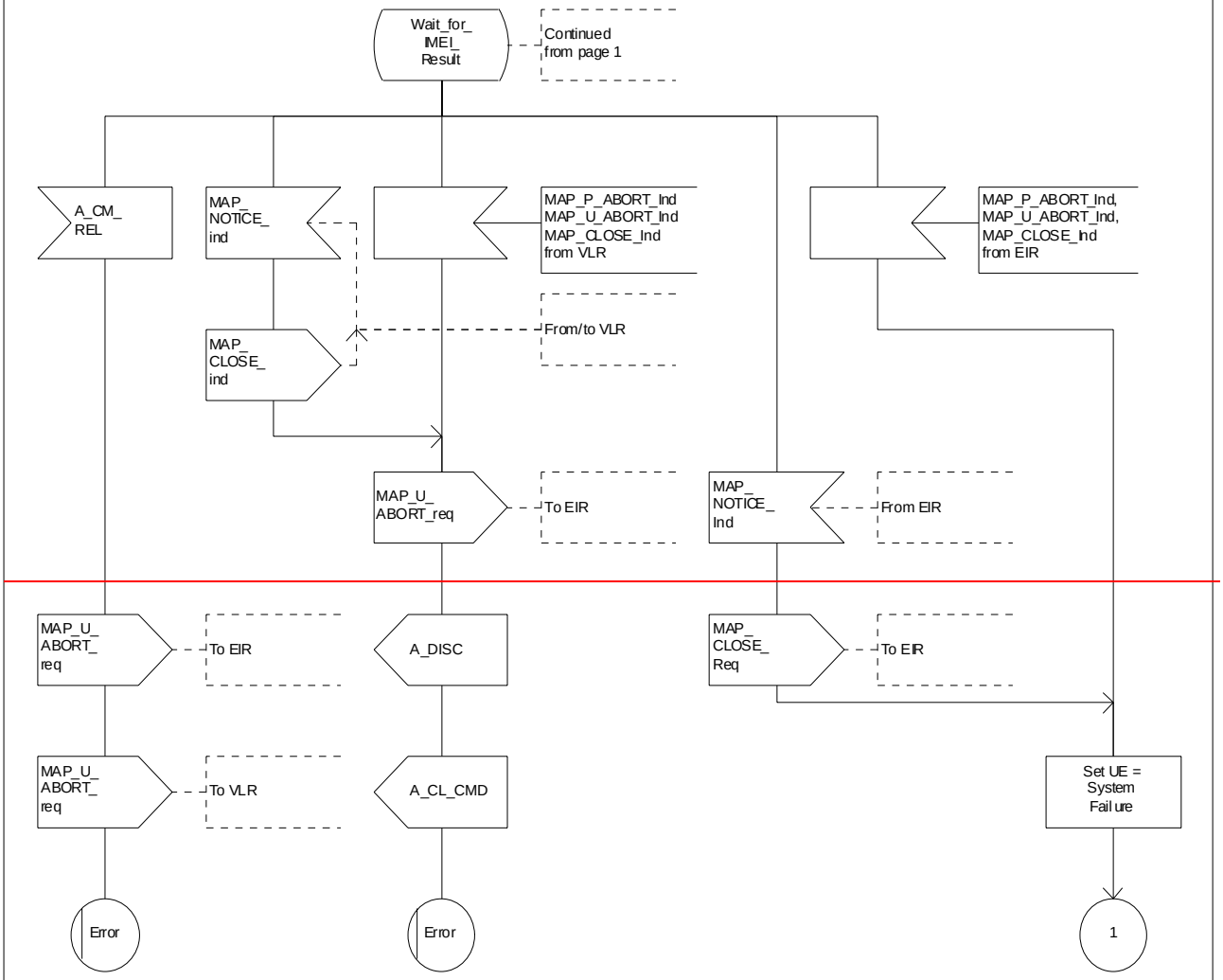


Figure 25.6/1 (sheet 1 of 2): Macro~~Process~~ Check_IMEI_MSC

Macrodefinition Check_IMEI_MSC 25.6_1.2(2)

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



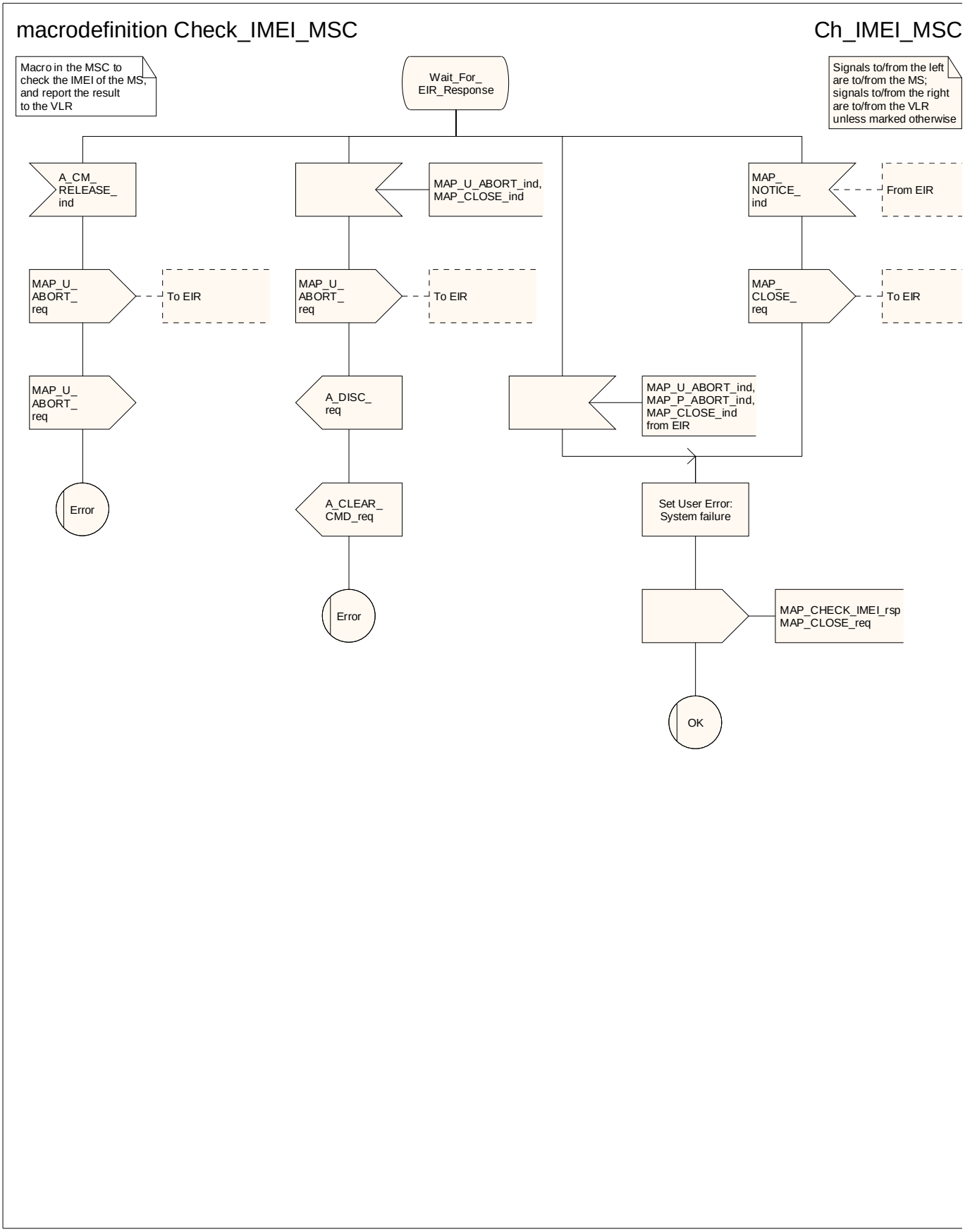
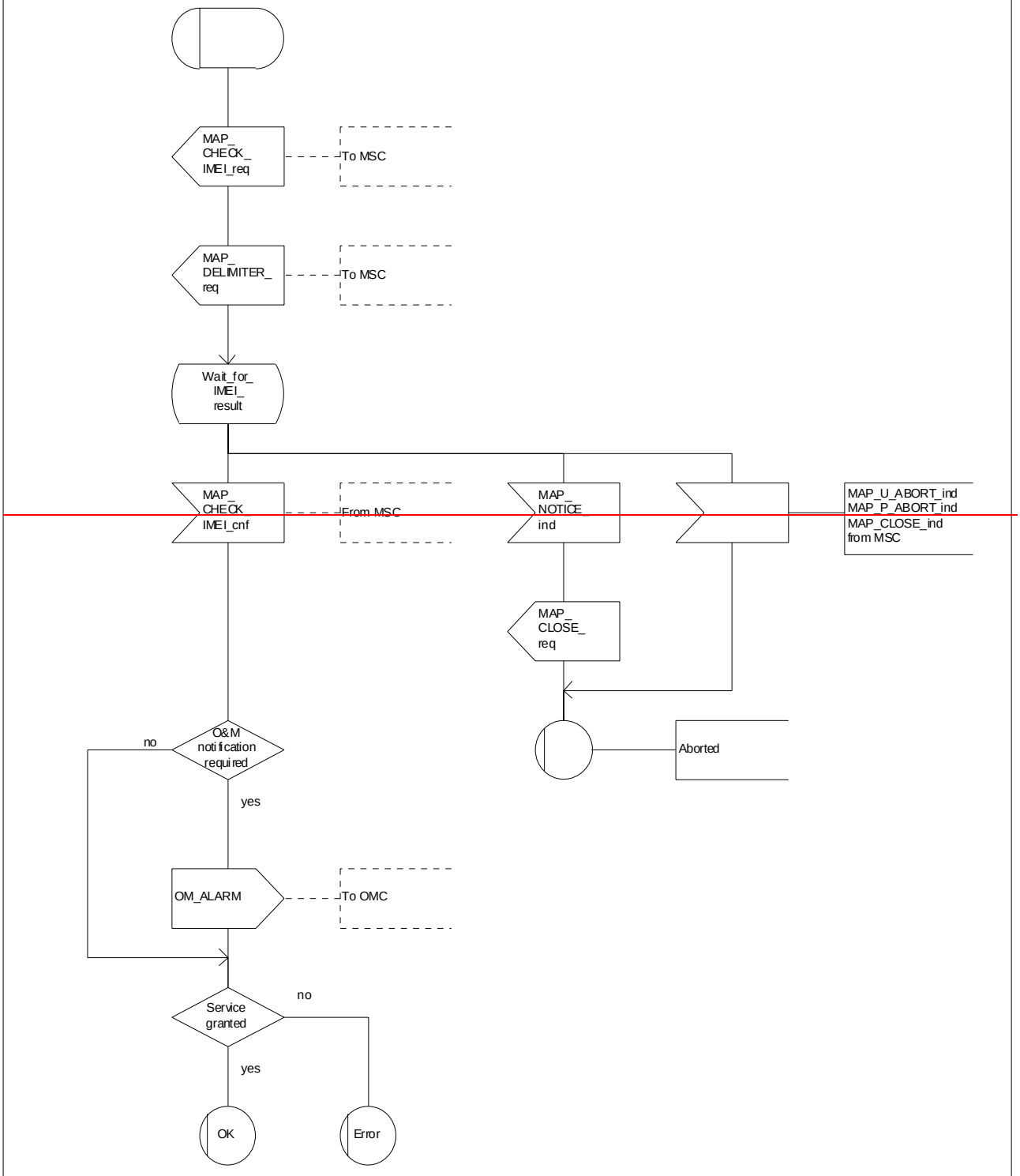


Figure 25.6/1 (sheet 2 of 2): Macro~~Process~~ Check_IMEI_MSC

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



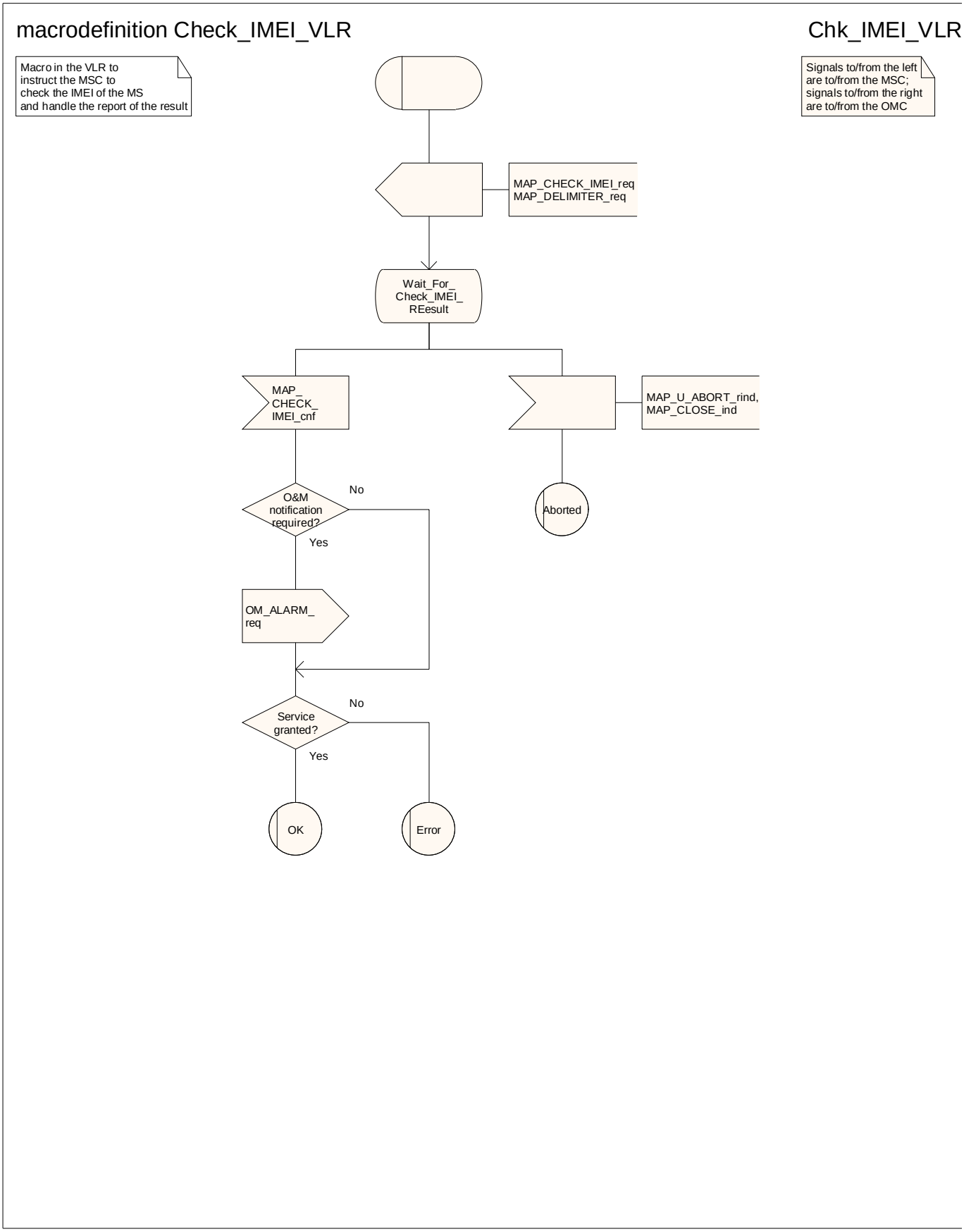
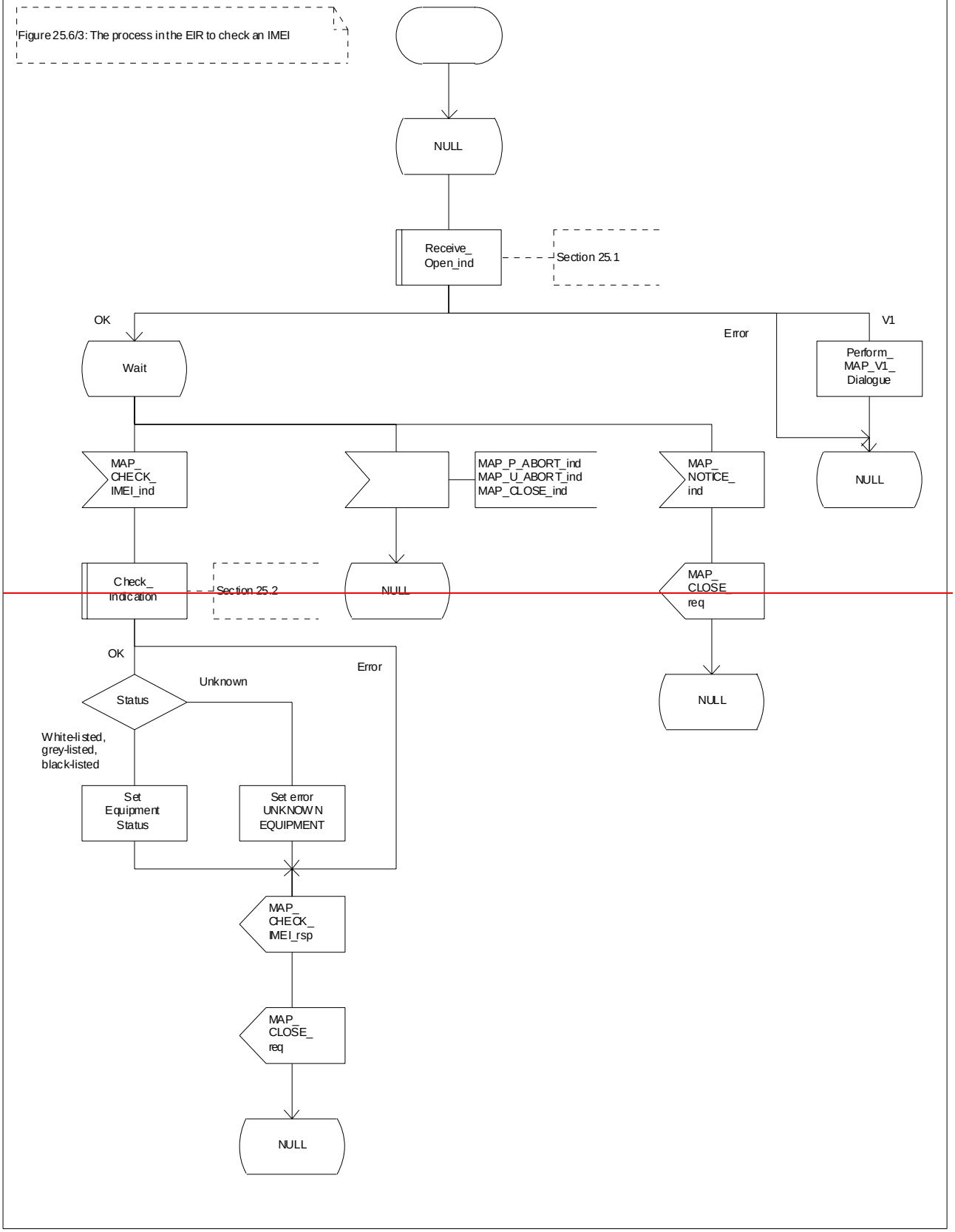


Figure 25.6/2: Macro~~Process~~ Check_IMEI_VLR

Process Check_IMEI_EIR 25.6_3(1)

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



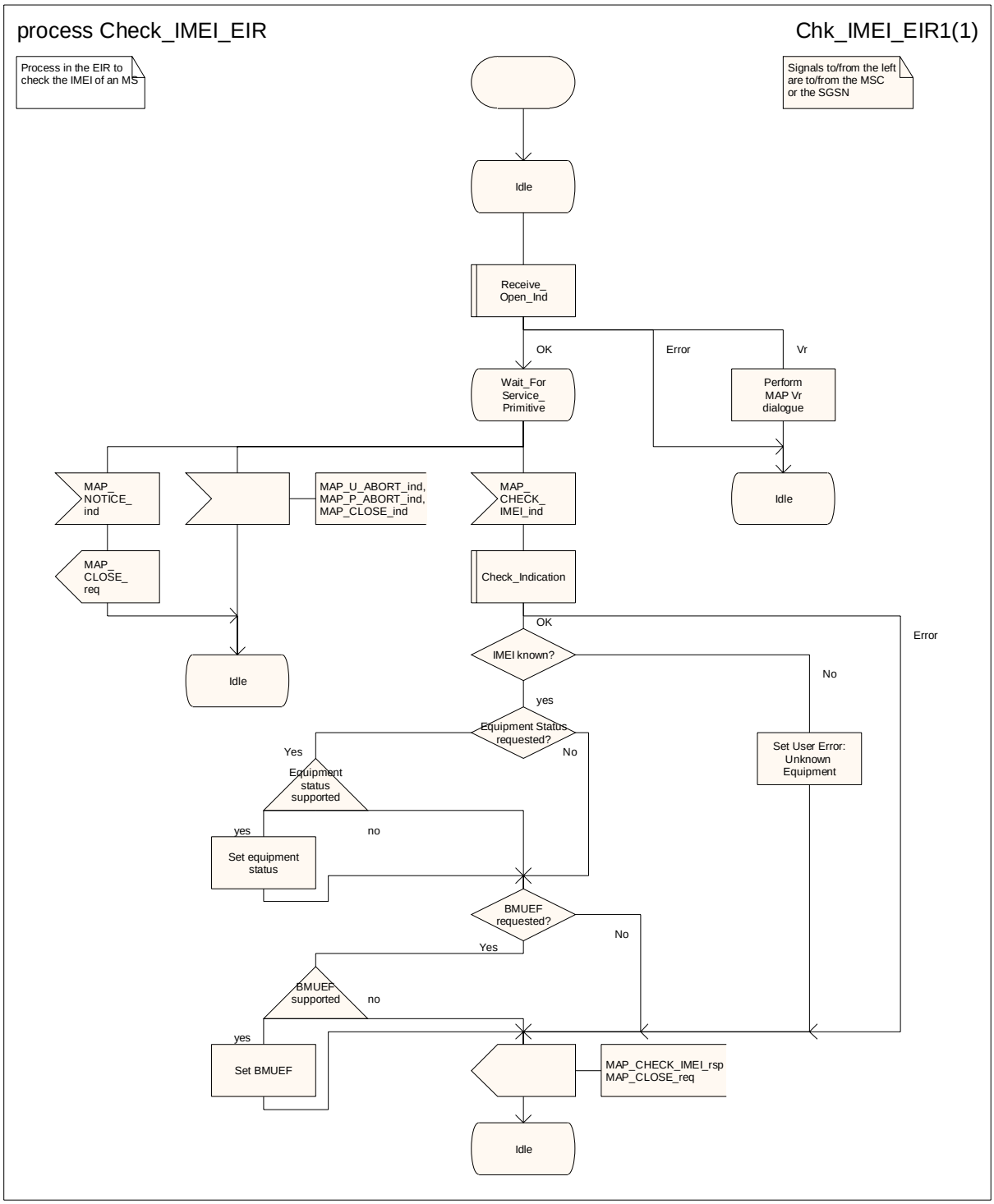
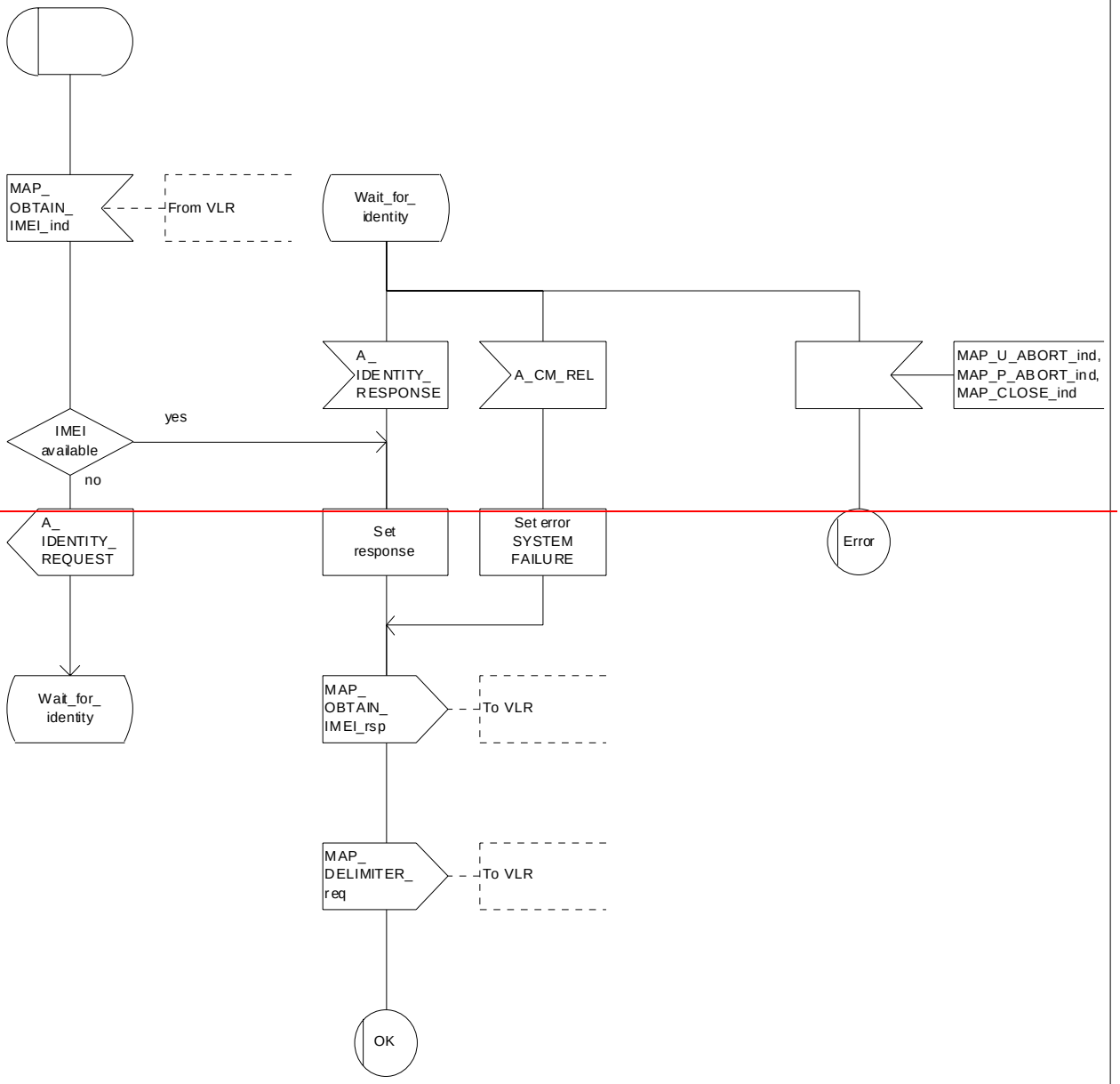


Figure 25.6/3: Process Check_IMEI_EIR

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



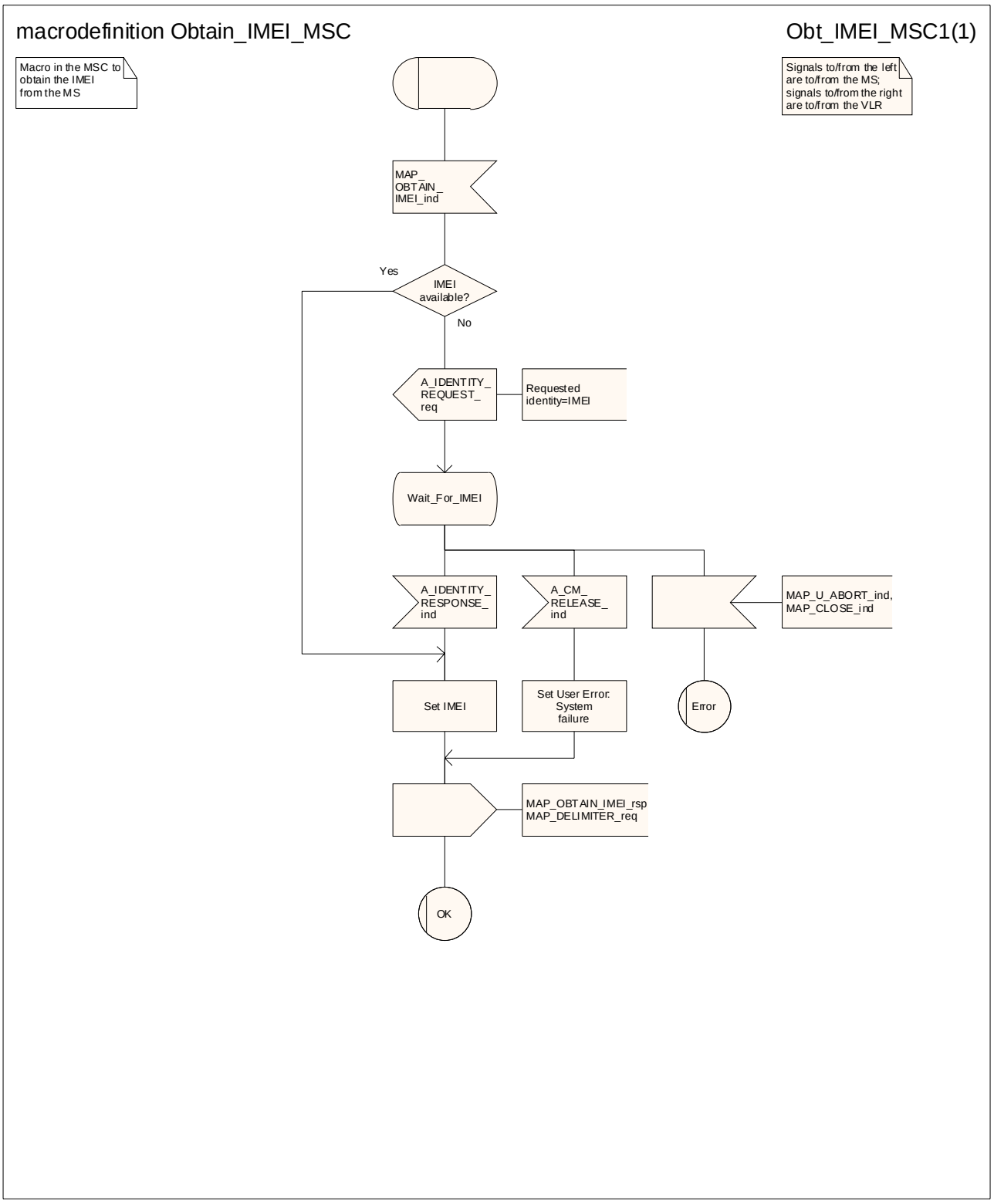
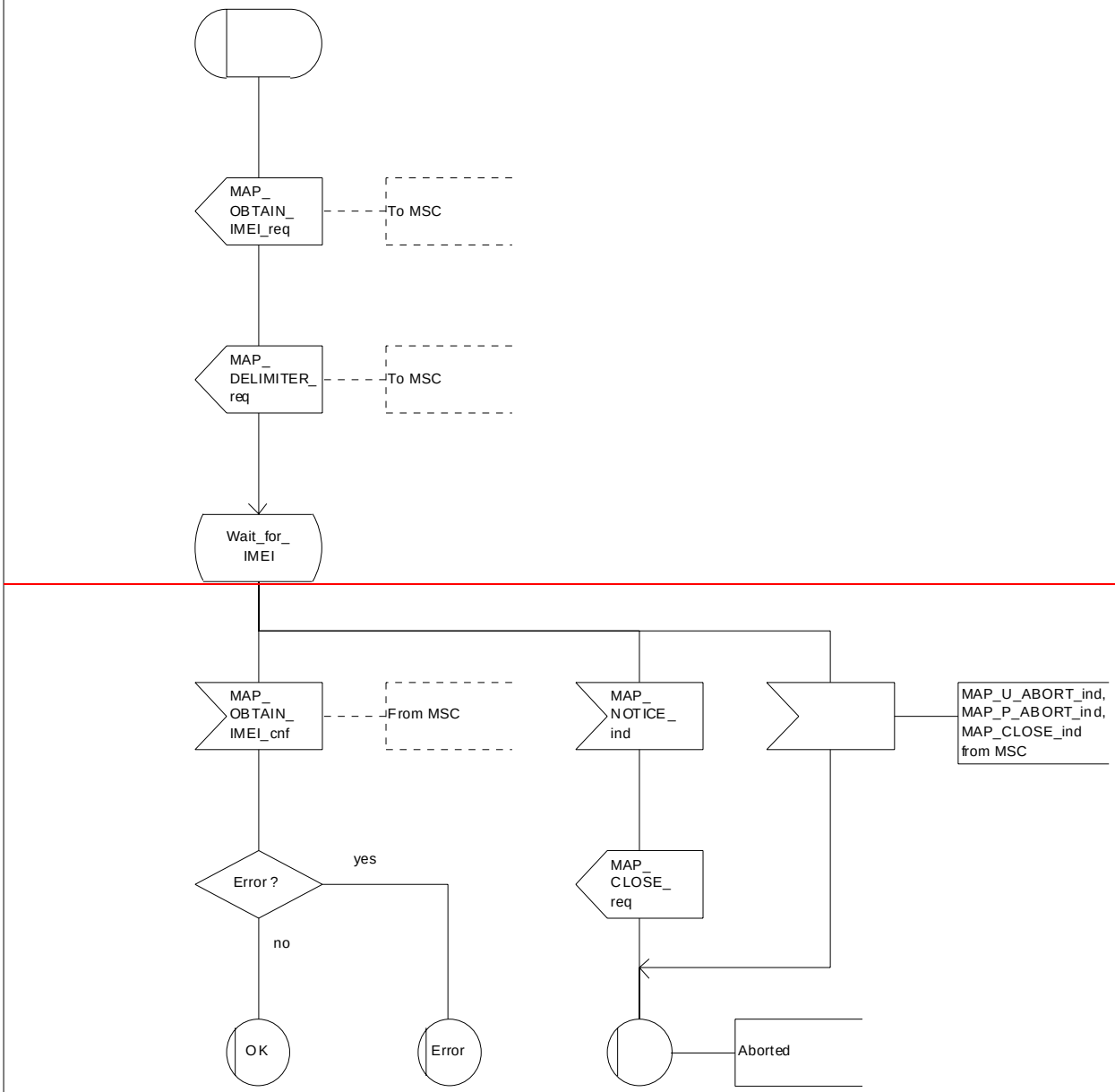


Figure 25.6/4: Macro~~Process~~ Obtain_IMEI_MSC

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



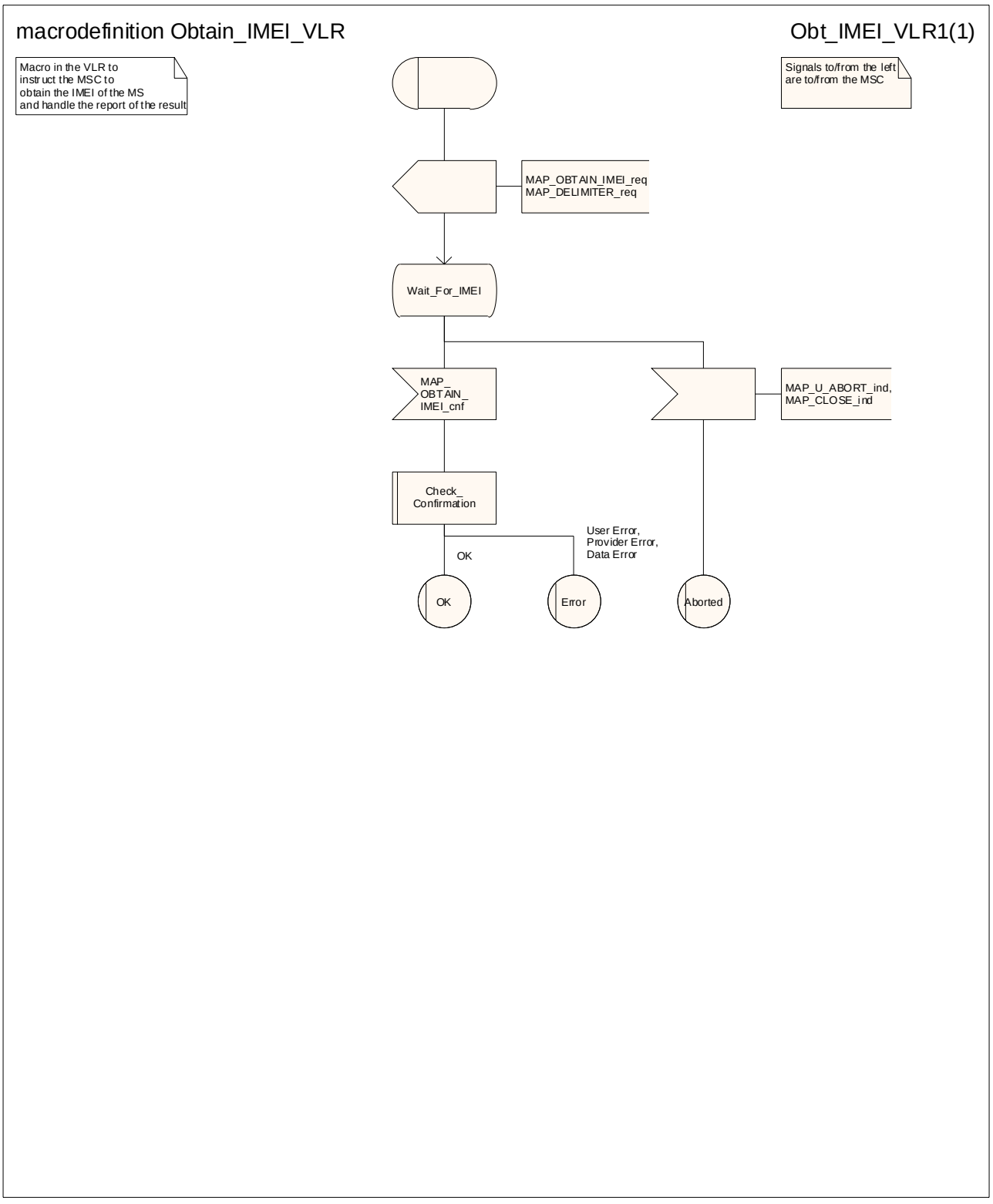


Figure 25.6/5: Macro~~Process~~ Obtain_IMEI_VLR

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~~;~~

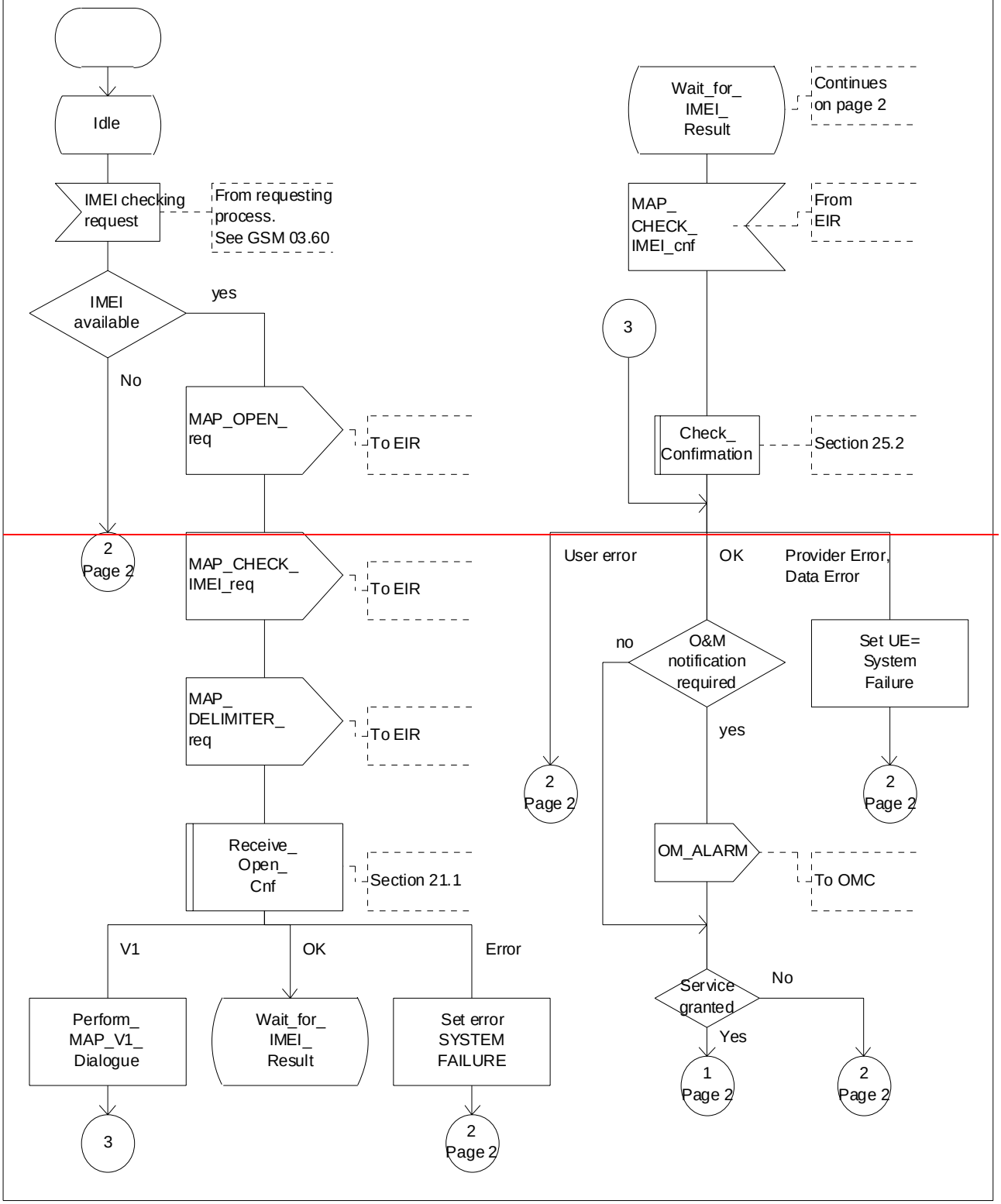
  is received, the SGSN checks whether the response requires that an alarm be generated on the Operation and Maintenance interface. The criteria for such alarms are PLMN operator dependent;

- 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



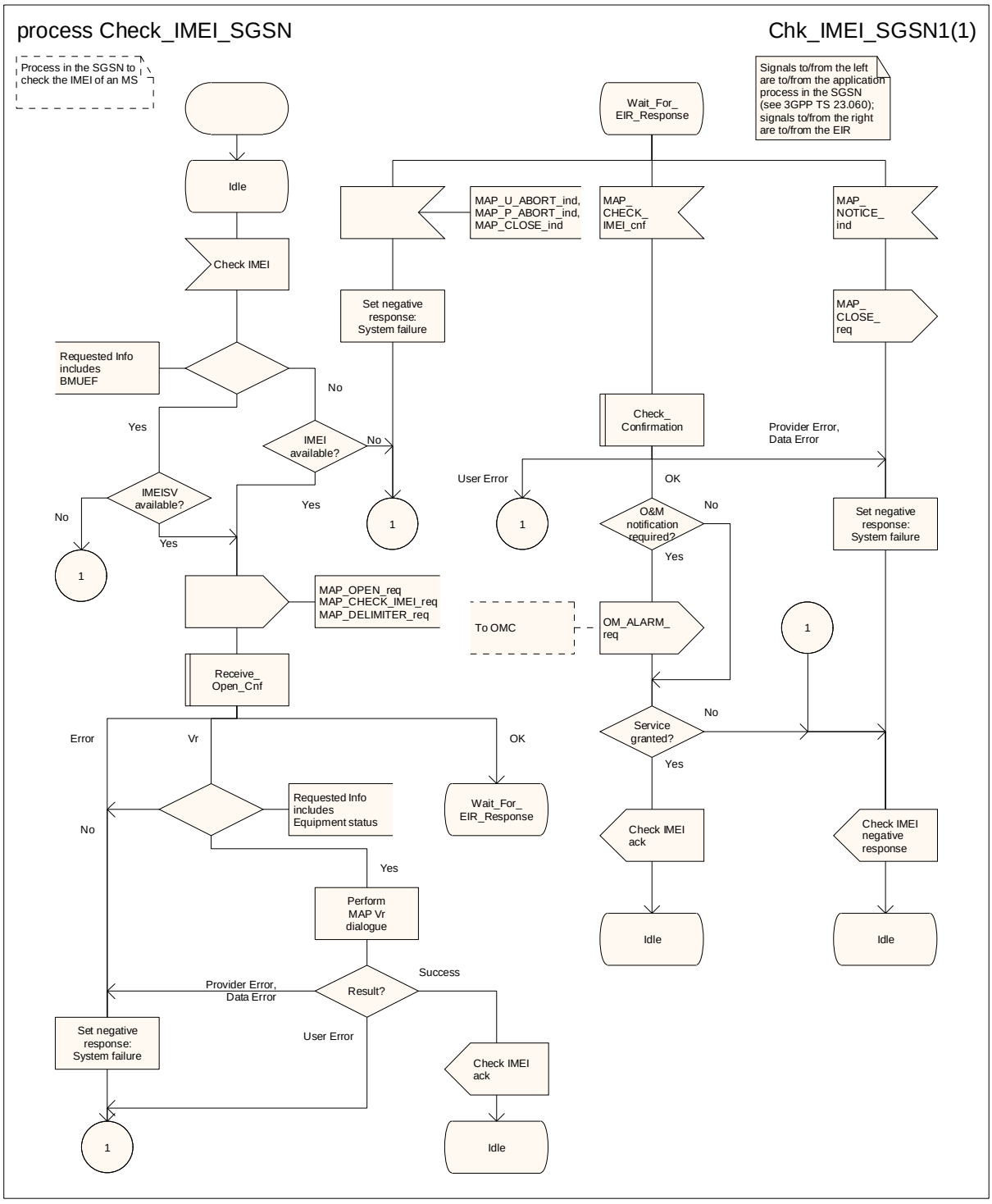
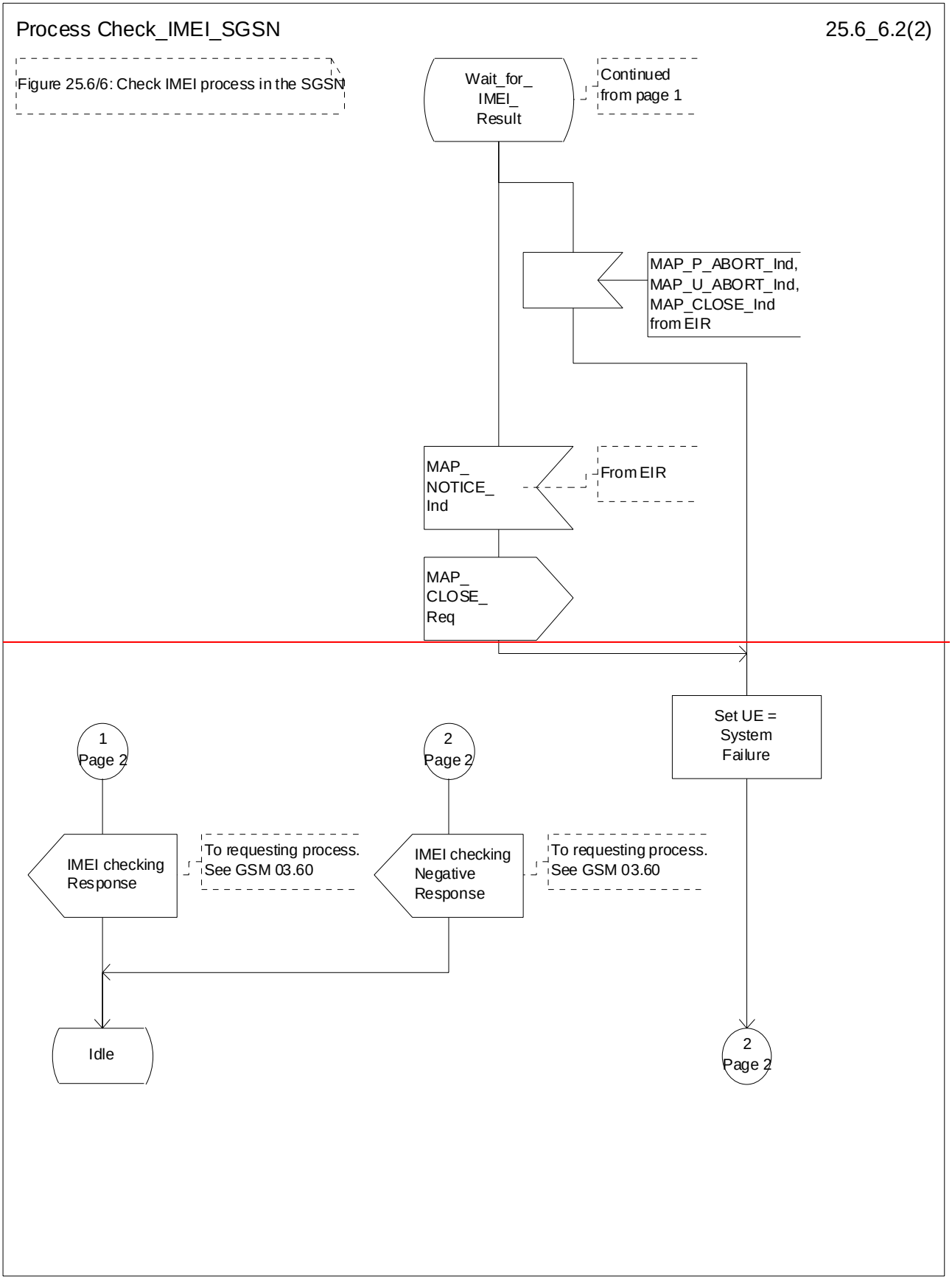


Figure 25.6/6 ~~(sheet 1 of 2)~~: Process Check_IMEI_SGSN



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

3GPP TSG CN WG4 Meeting #19 **N4-030647**
San Diego, CA, USA, 19th – 23rd May 2003

CR-Form-v7

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

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

Reason for change:	⌘	In 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 fo 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

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

Other comments: ⌘

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

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 7.6.3~~4~~ 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	V3~~2~~	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)
-- *networkFunctionalSsContext-v1*	*map-ac networkFunctionalSs (18)*	*version1 (1)*
-- 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)
-- *mwdMngtContext-v1*	*map-ac mwdMngt (24)*	*version1 (1)*
-- 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                       UESBI~~BMUEF~~
    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 the IMEI/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

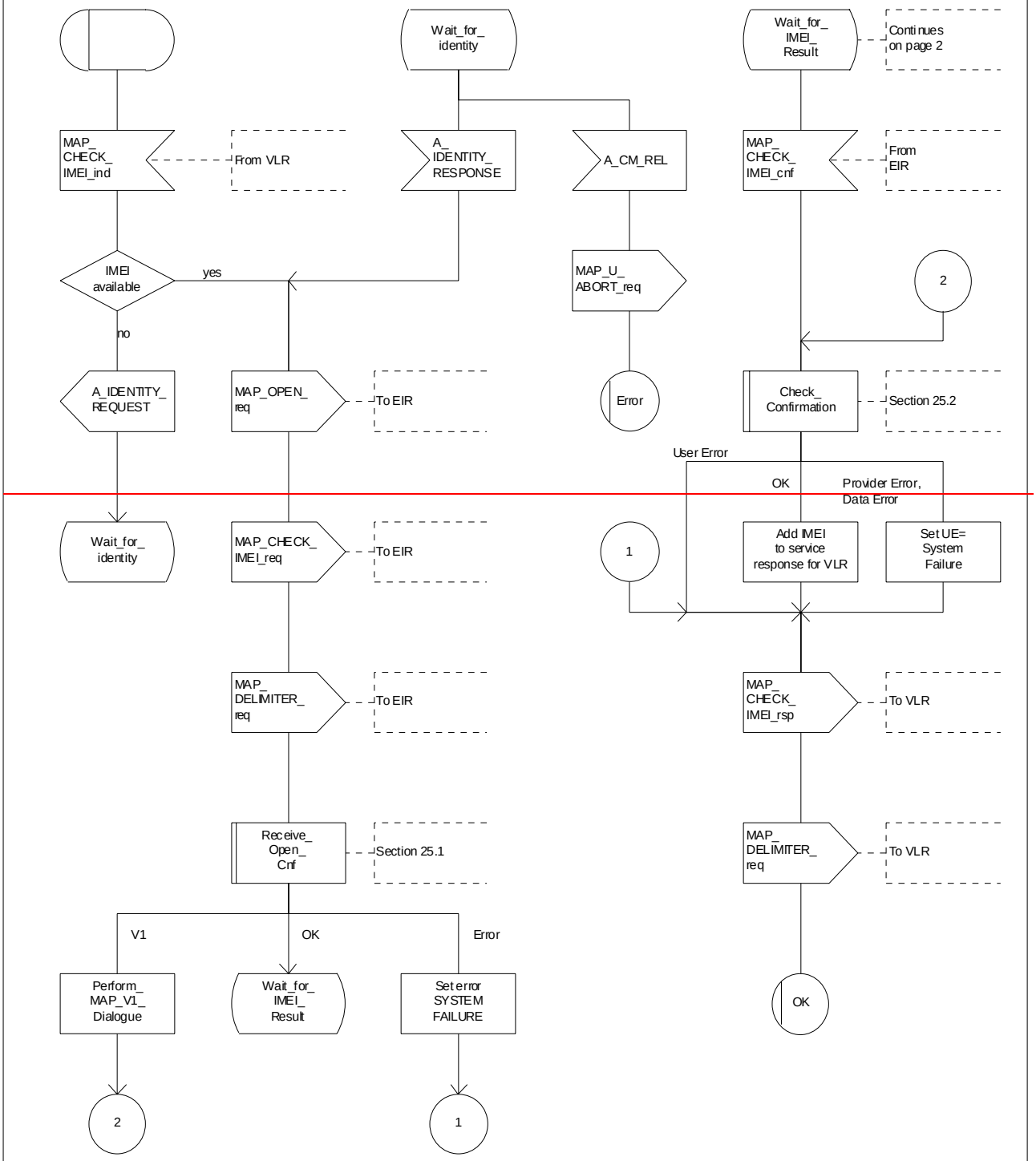
This macro is used by the VLR to obtain the IMEI from the MSC, e.~~g. to enable handling of emergency calls in case of authentication failure (in which case the IMEI may be used by some operators as an alternative to the IMSI)~~. It proceeds as follows:

- 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.

Macrodefinition Check_IMEI_MSC 25.6_1.1(2)

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



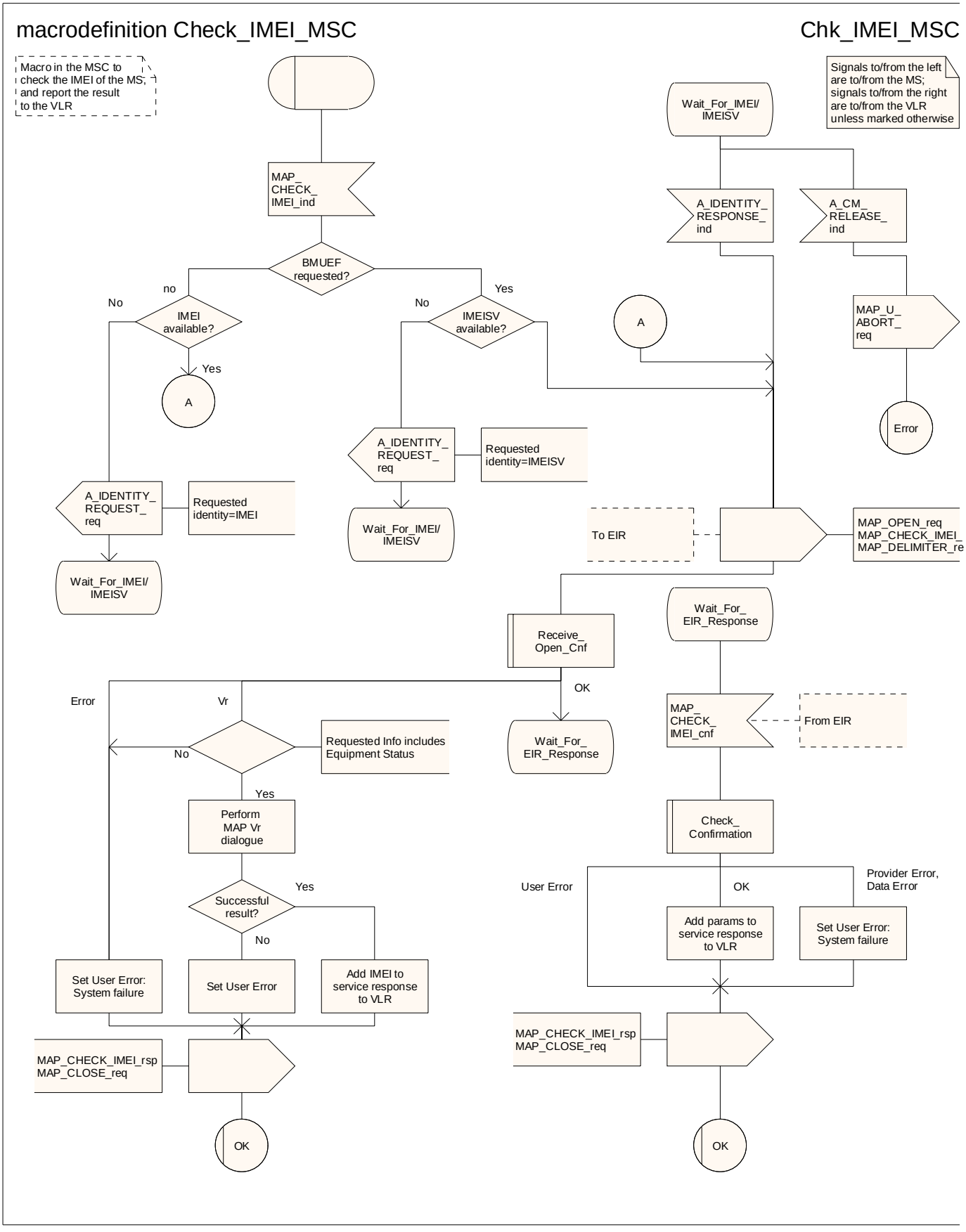
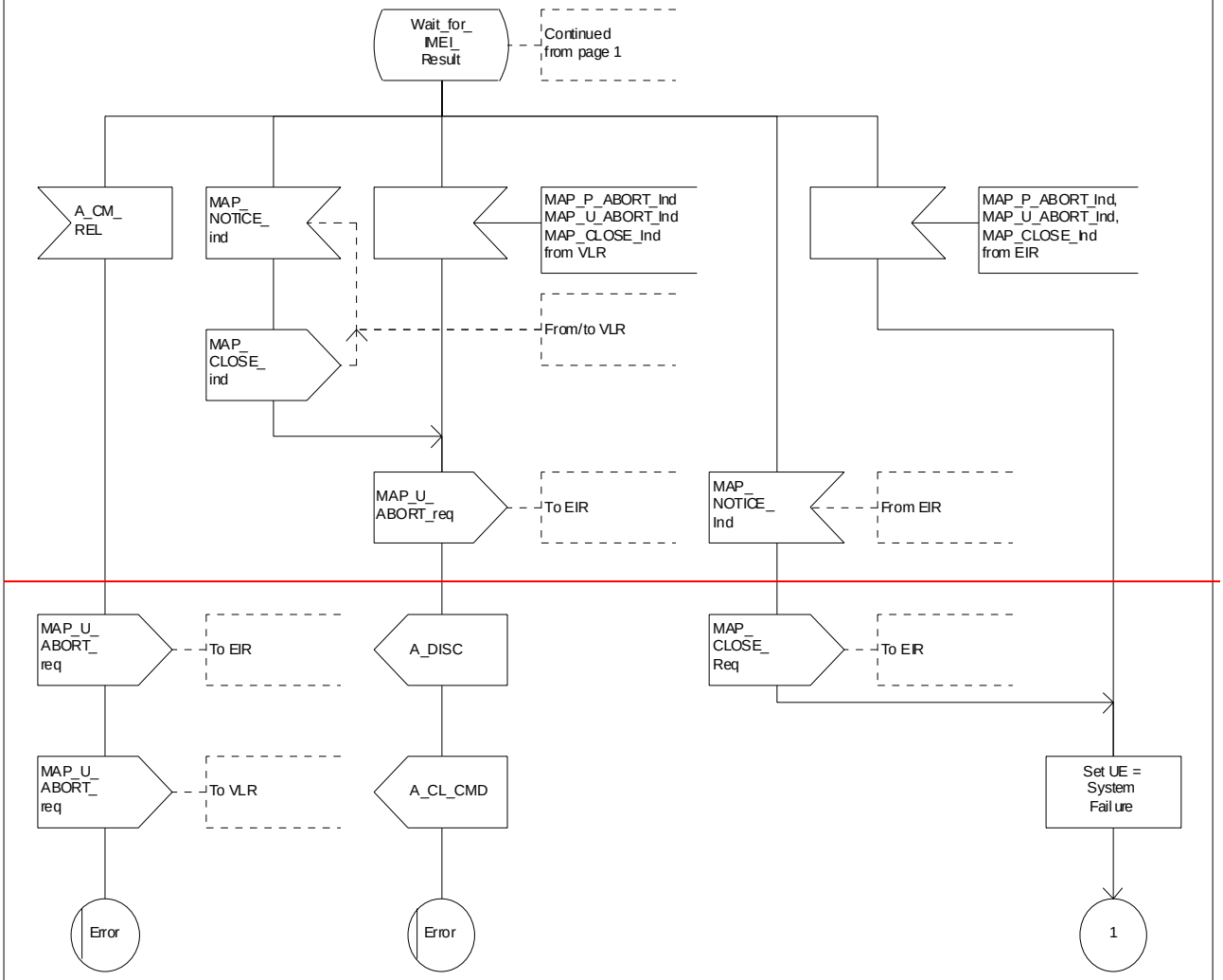


Figure 25.6/1 (sheet 1 of 2): Macro~~Process~~ Check_IMEI_MSC

Macrodefinition Check_IMEI_MSC 25.6_1.2(2)

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



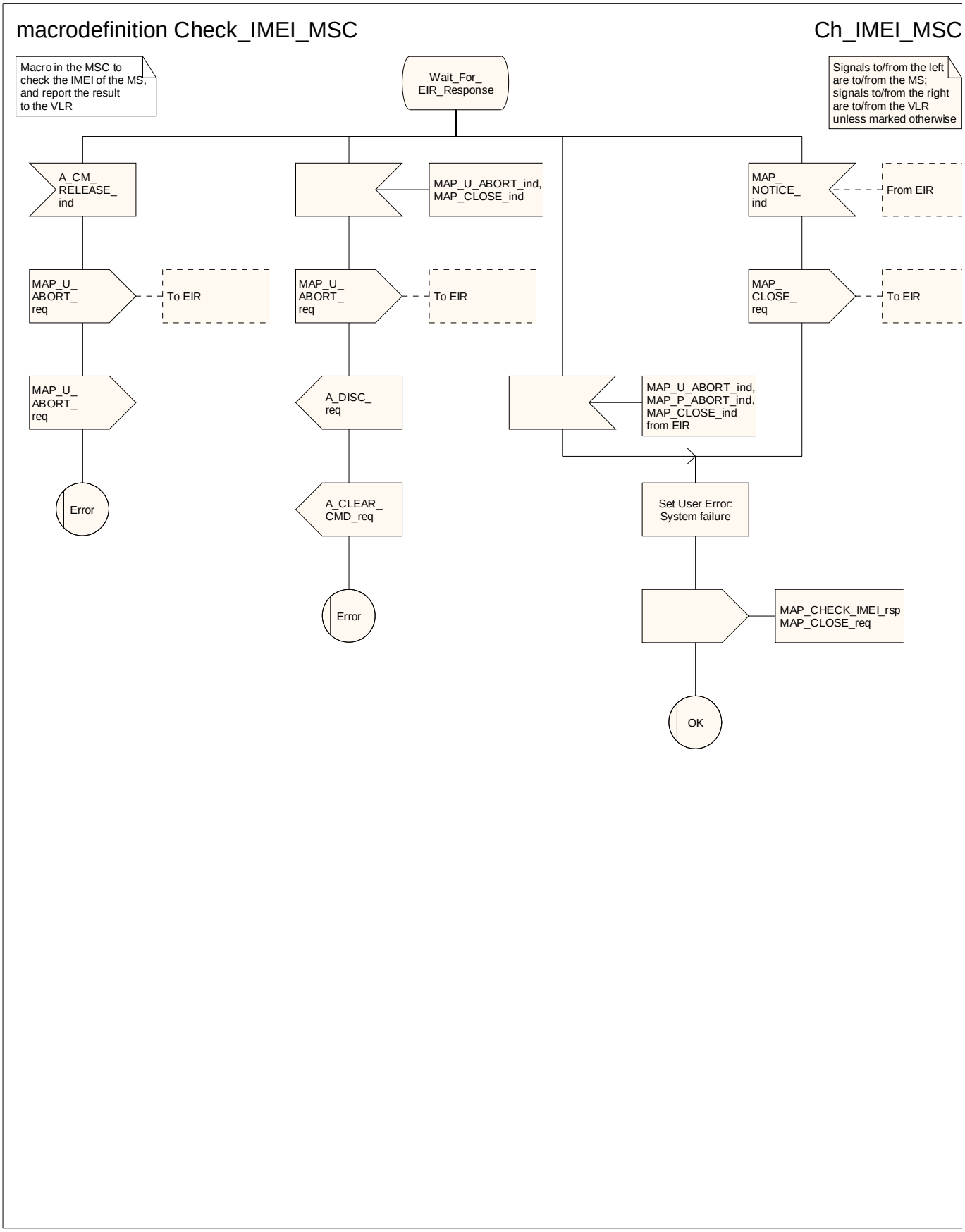
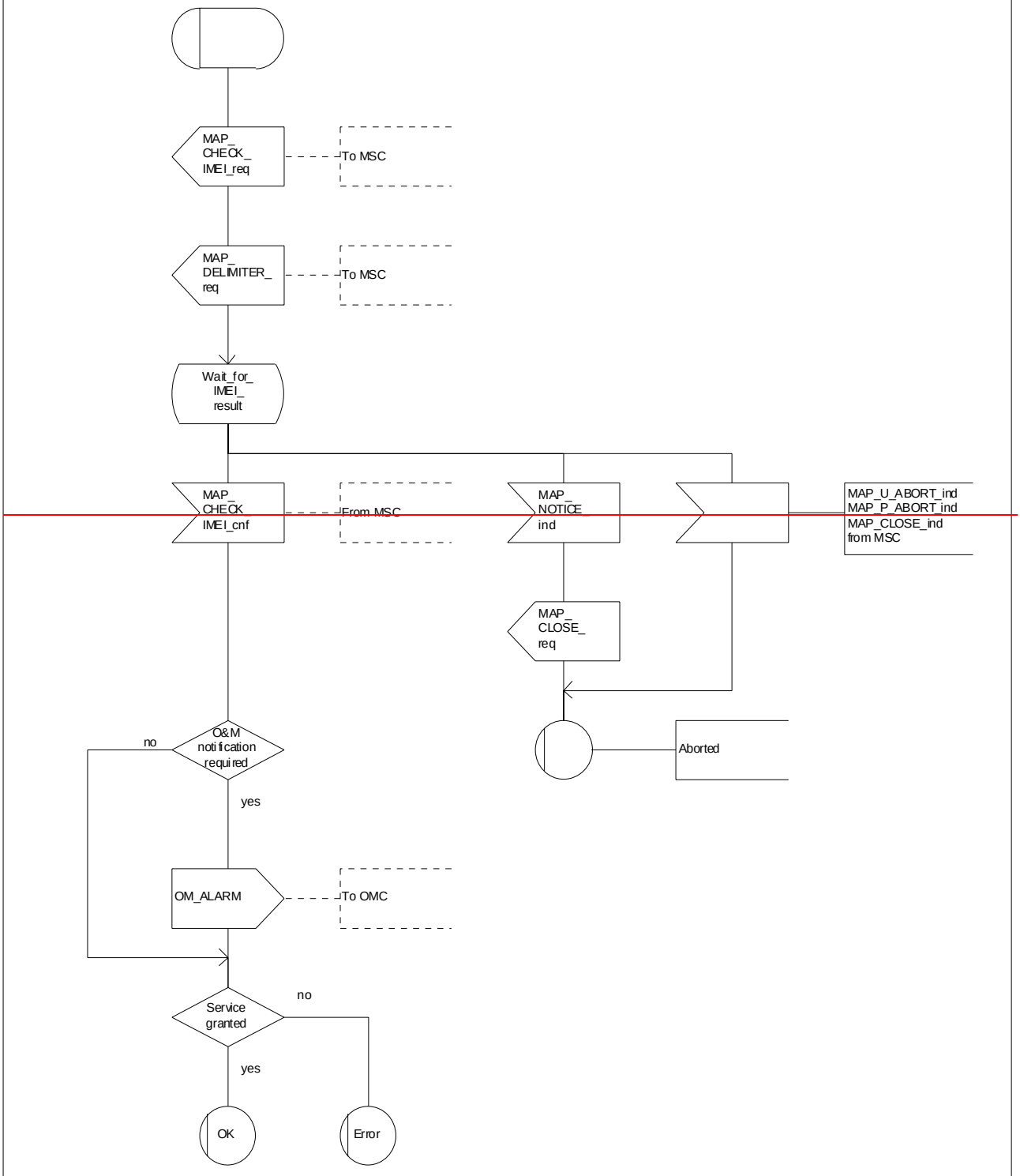


Figure 25.6/1 (sheet 2 of 2): Macro~~Process~~ Check_IMEI_MSC

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



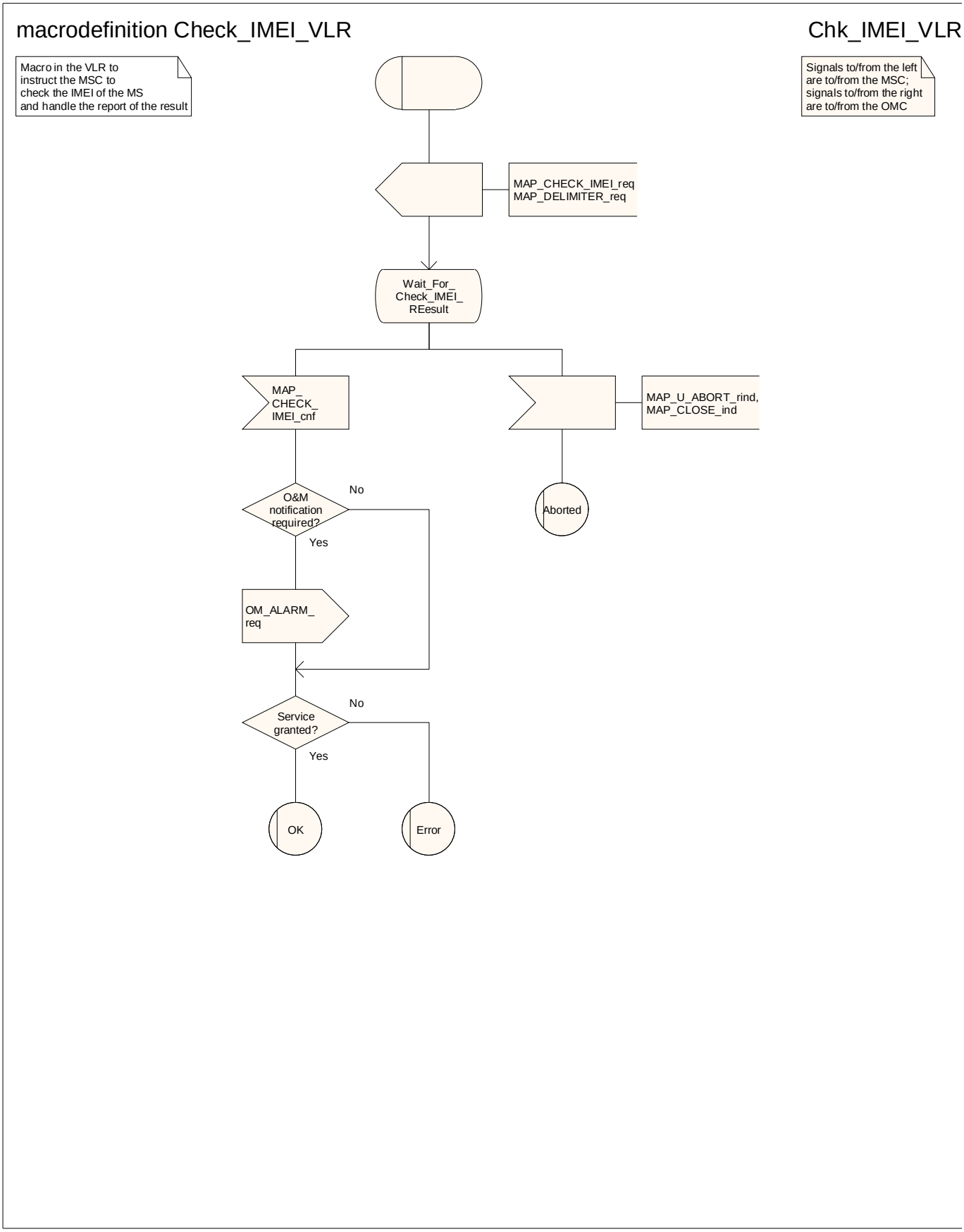
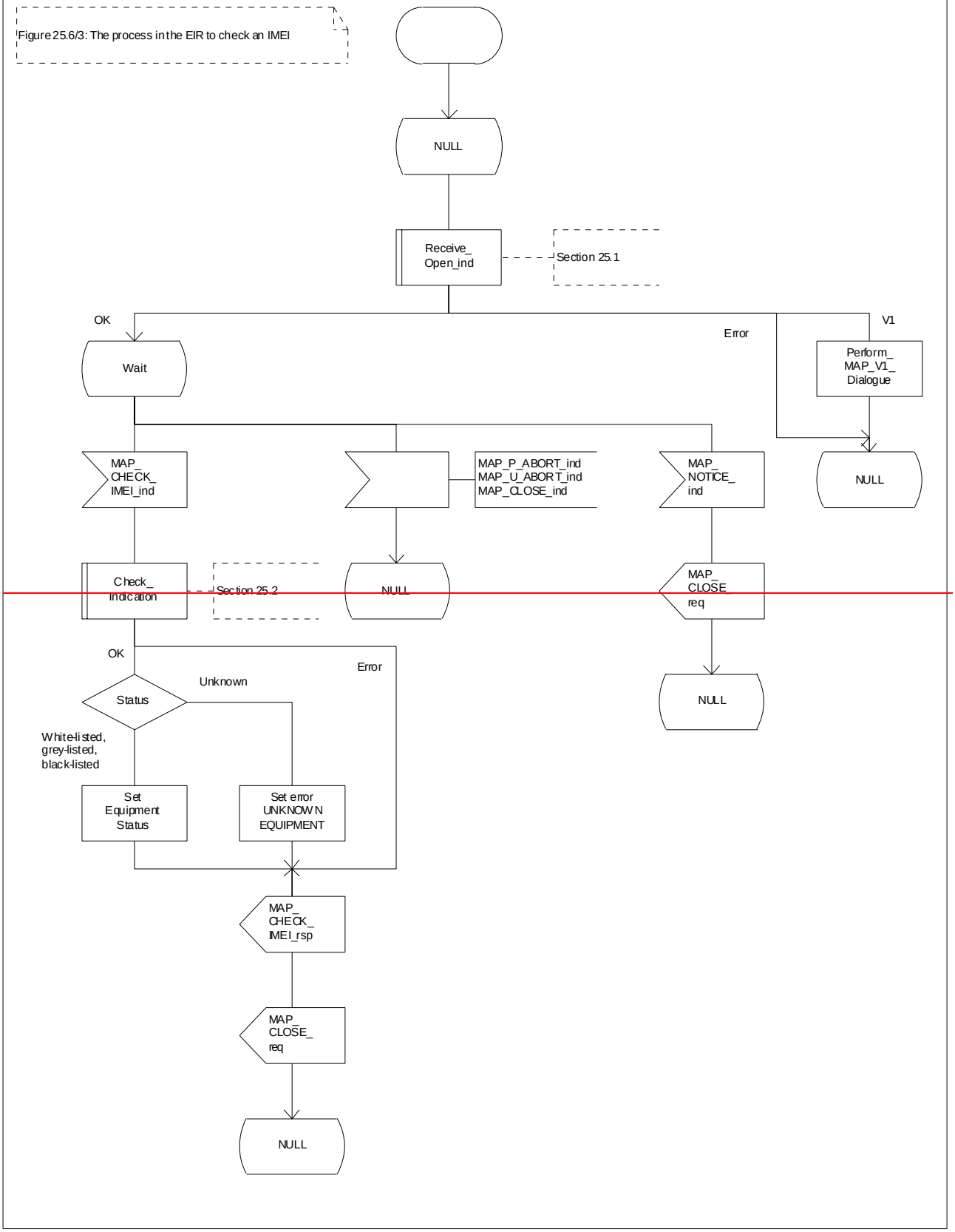


Figure 25.6/2: Macro~~Process~~ Check_IMEI_VLR

Process Check_IMEI_EIR 25.6_3(1)

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



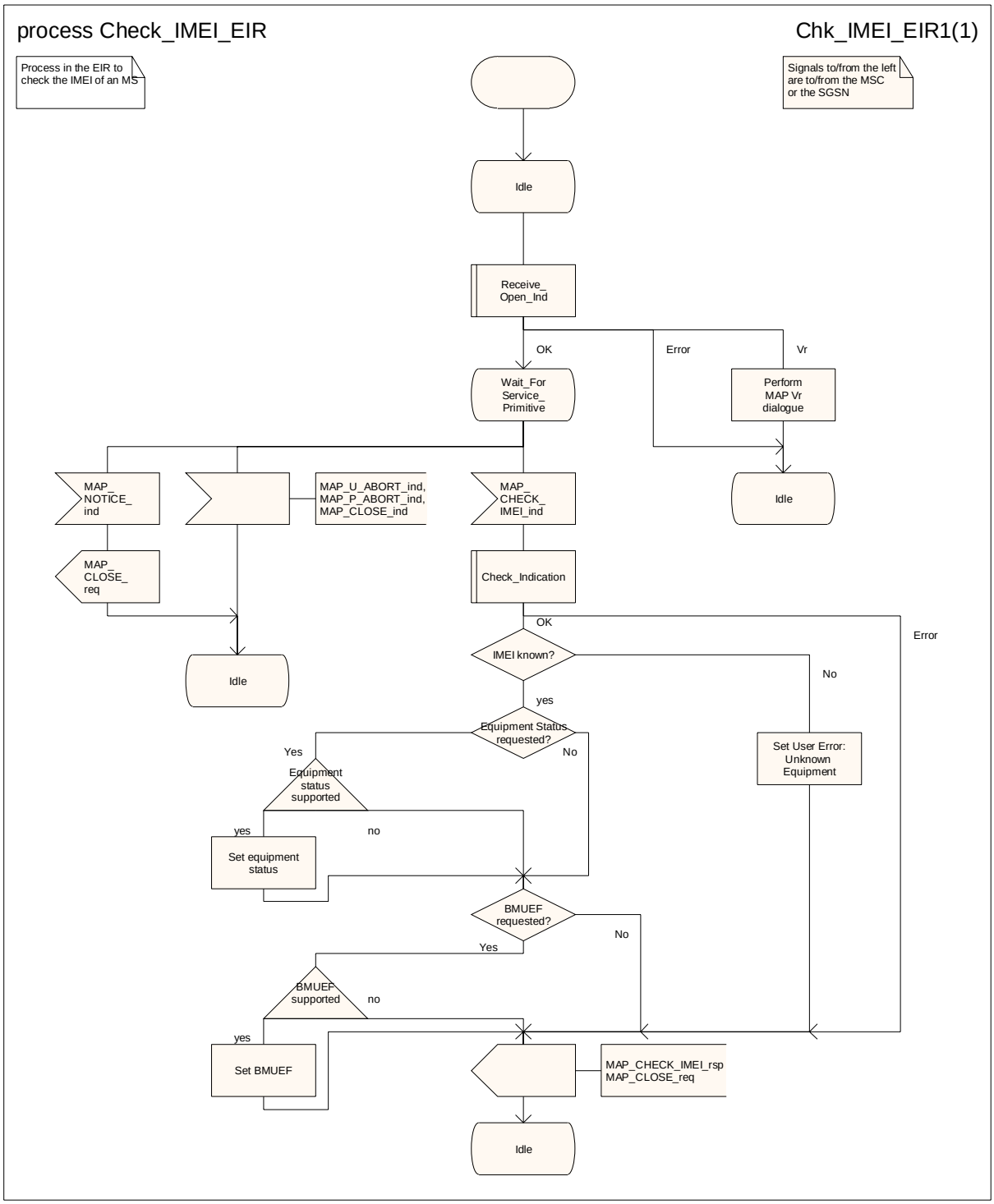
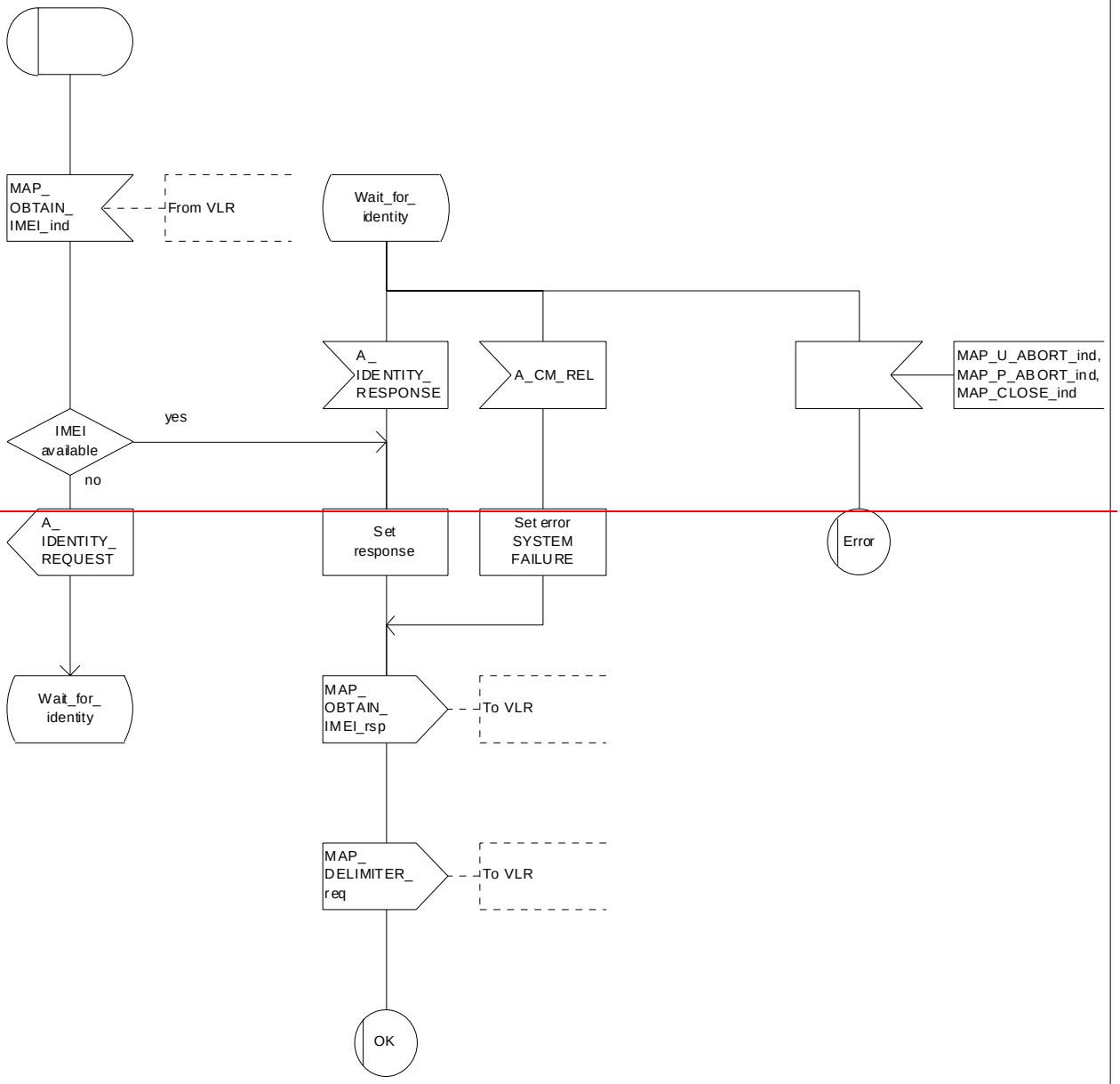


Figure 25.6/3: Process Check_IMEI_EIR

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



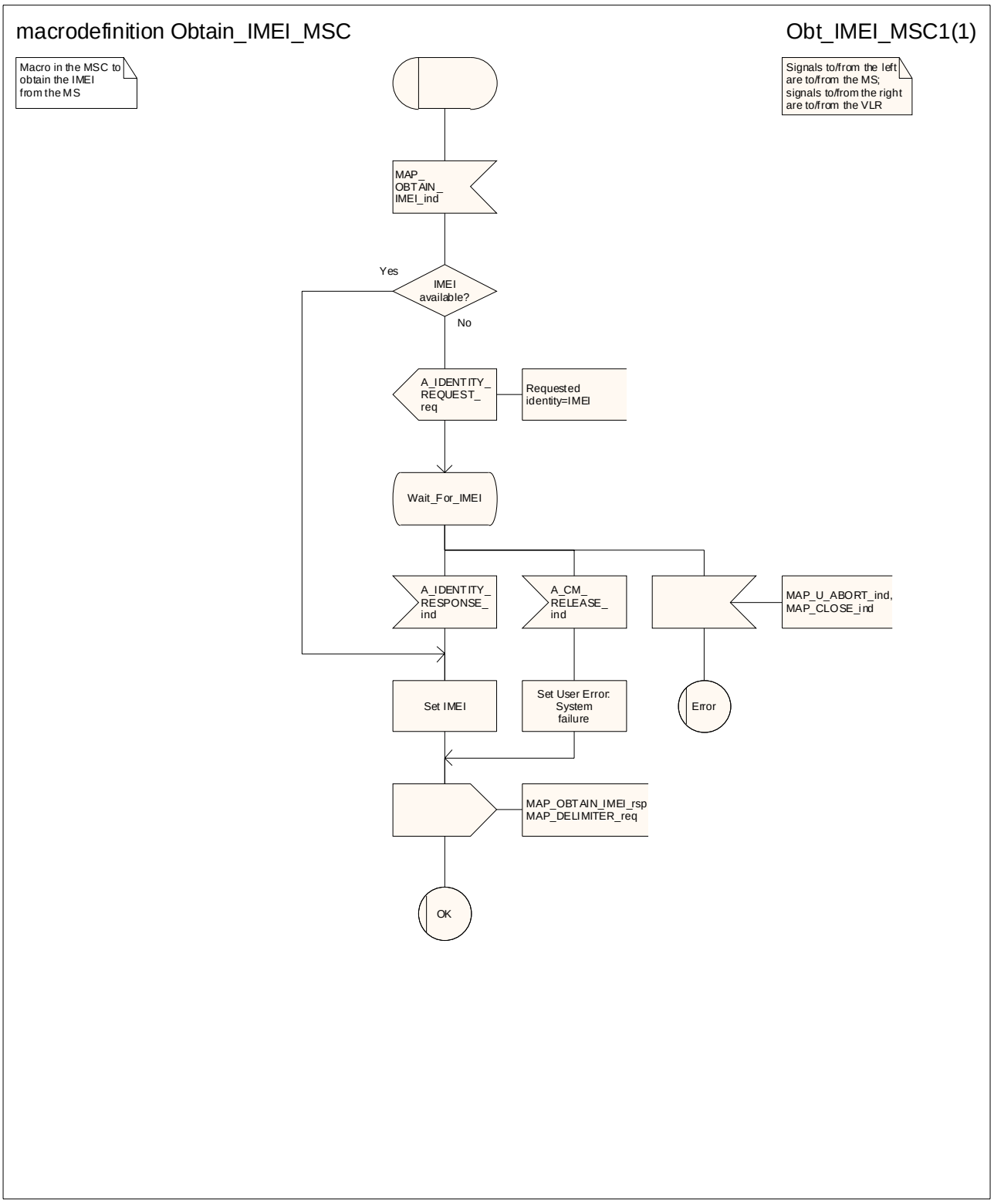
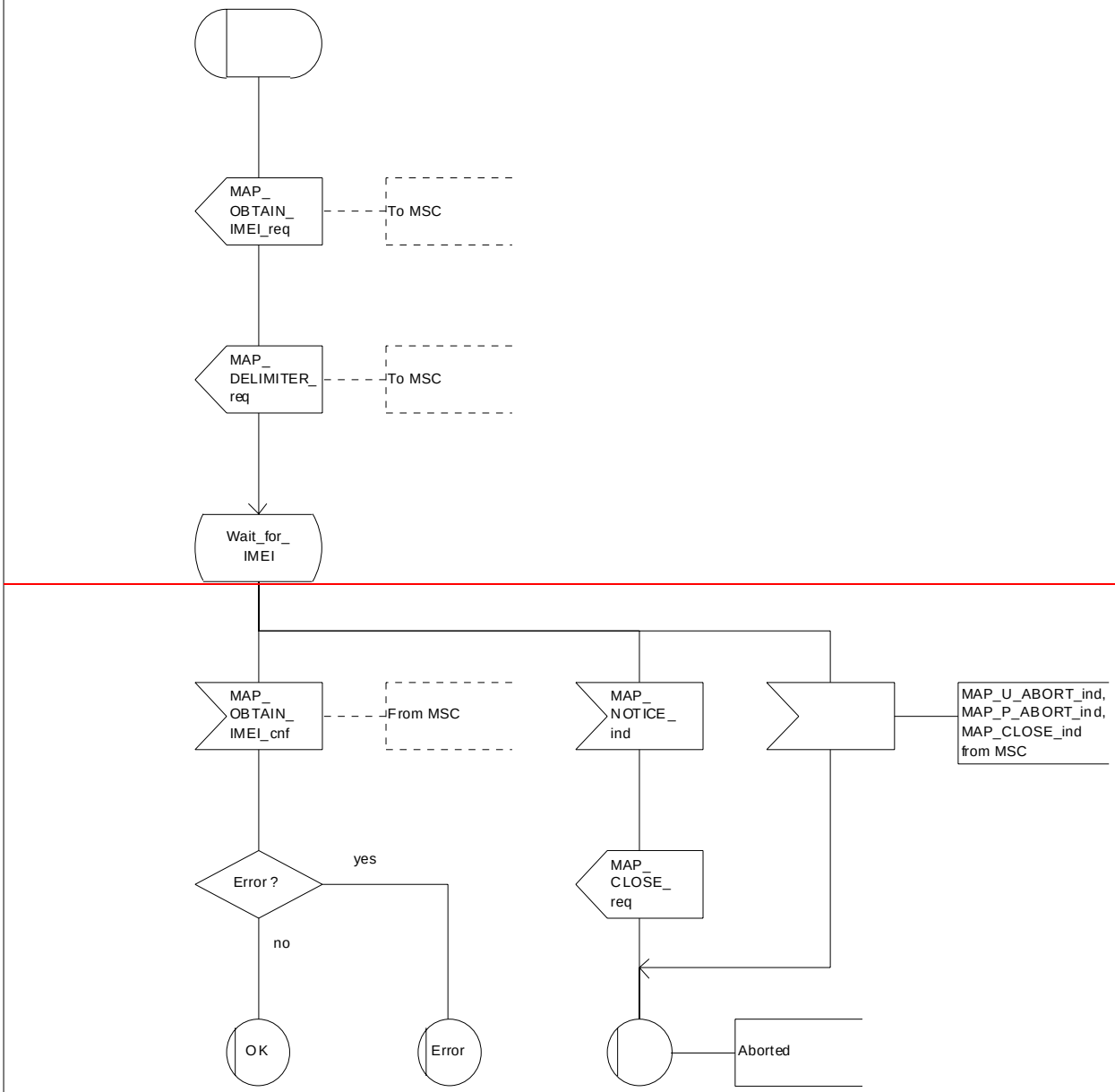


Figure 25.6/4: Macro~~Process~~ Obtain_IMEI_MSC

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



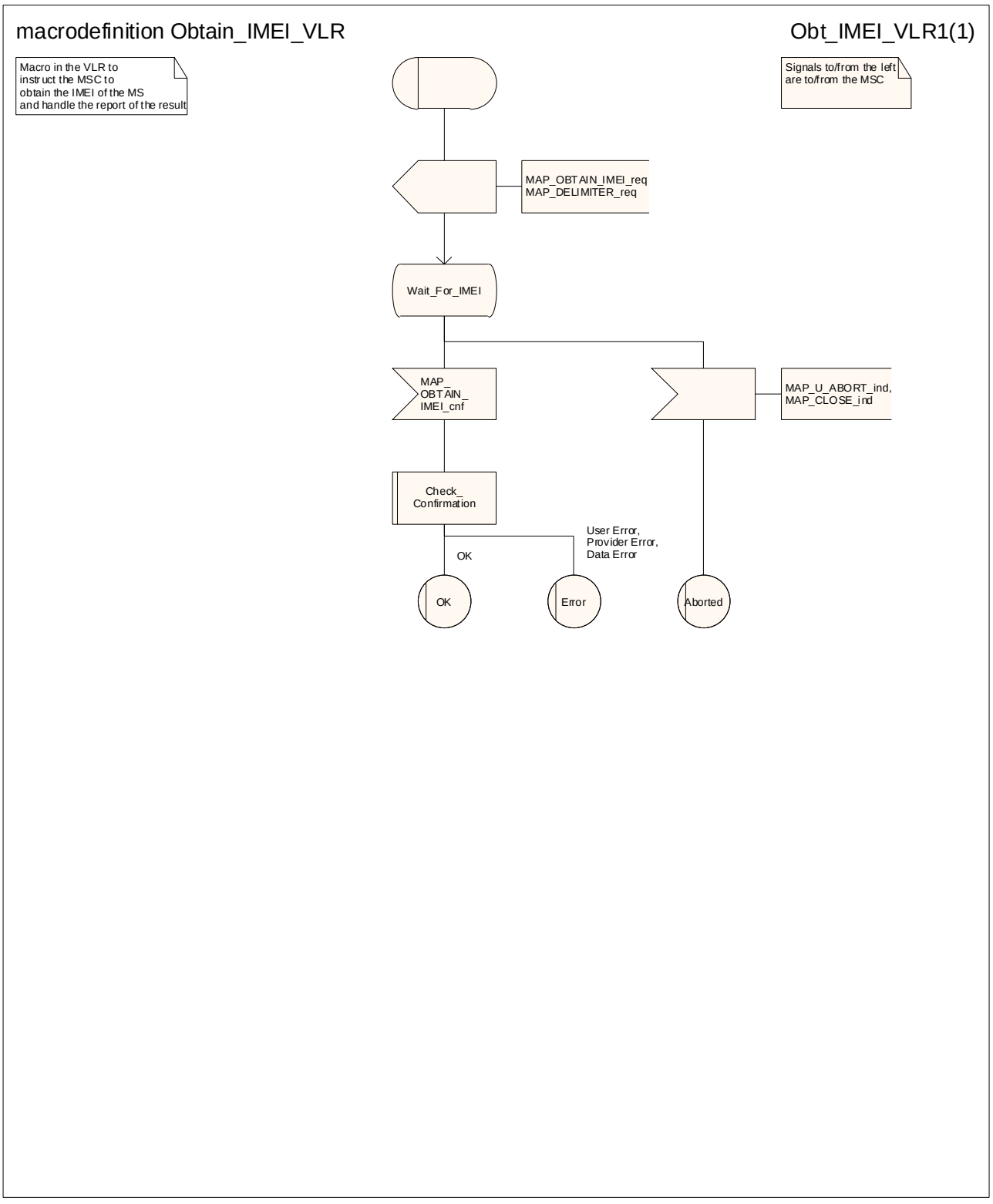


Figure 25.6/5: Macro~~Process~~ Obtain_IMEI_VLR

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~~;~~

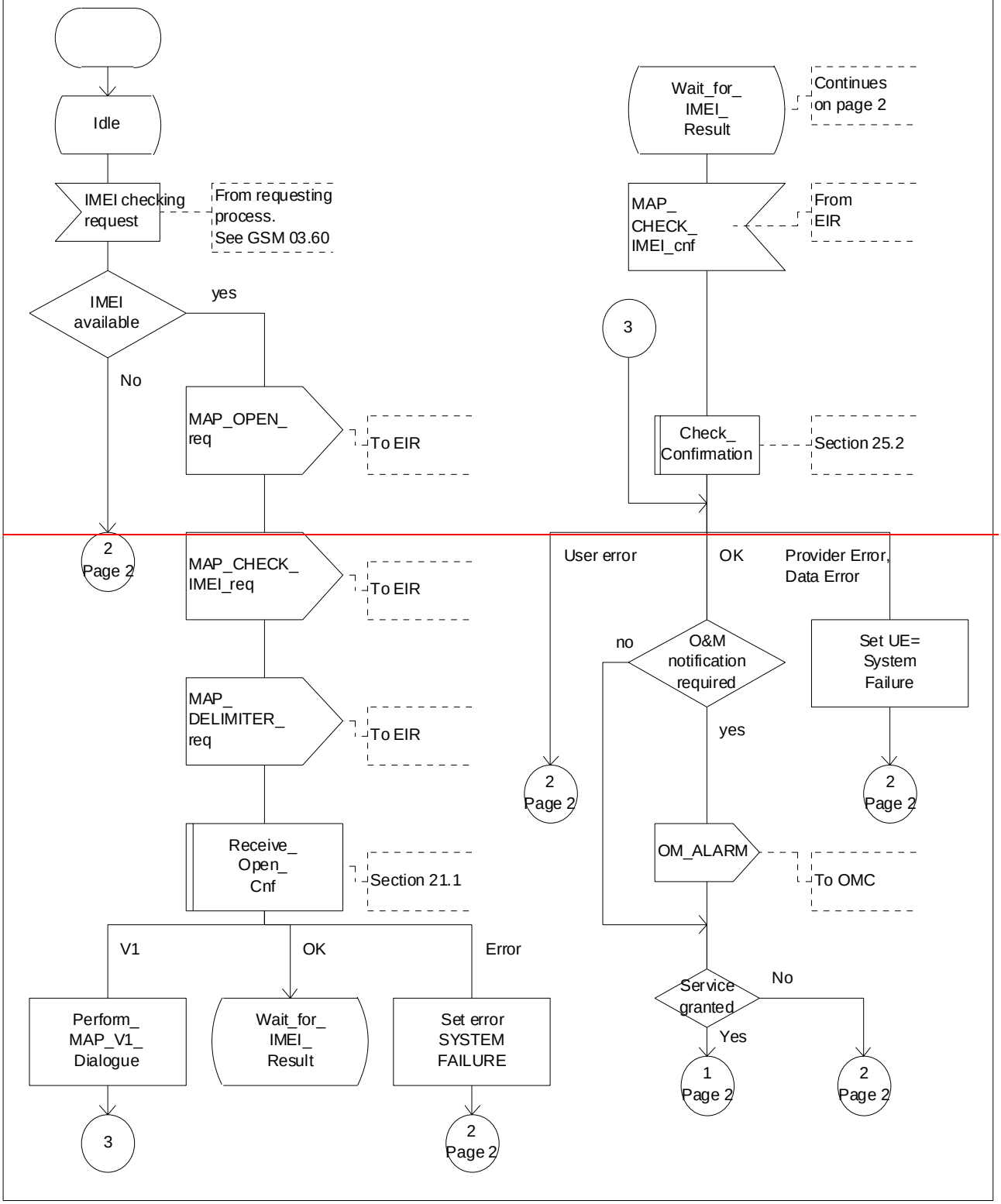
  is received, the SGSN checks whether the response requires that an alarm be generated on the Operation and Maintenance interface. The criteria for such alarms are PLMN operator dependent;

- 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



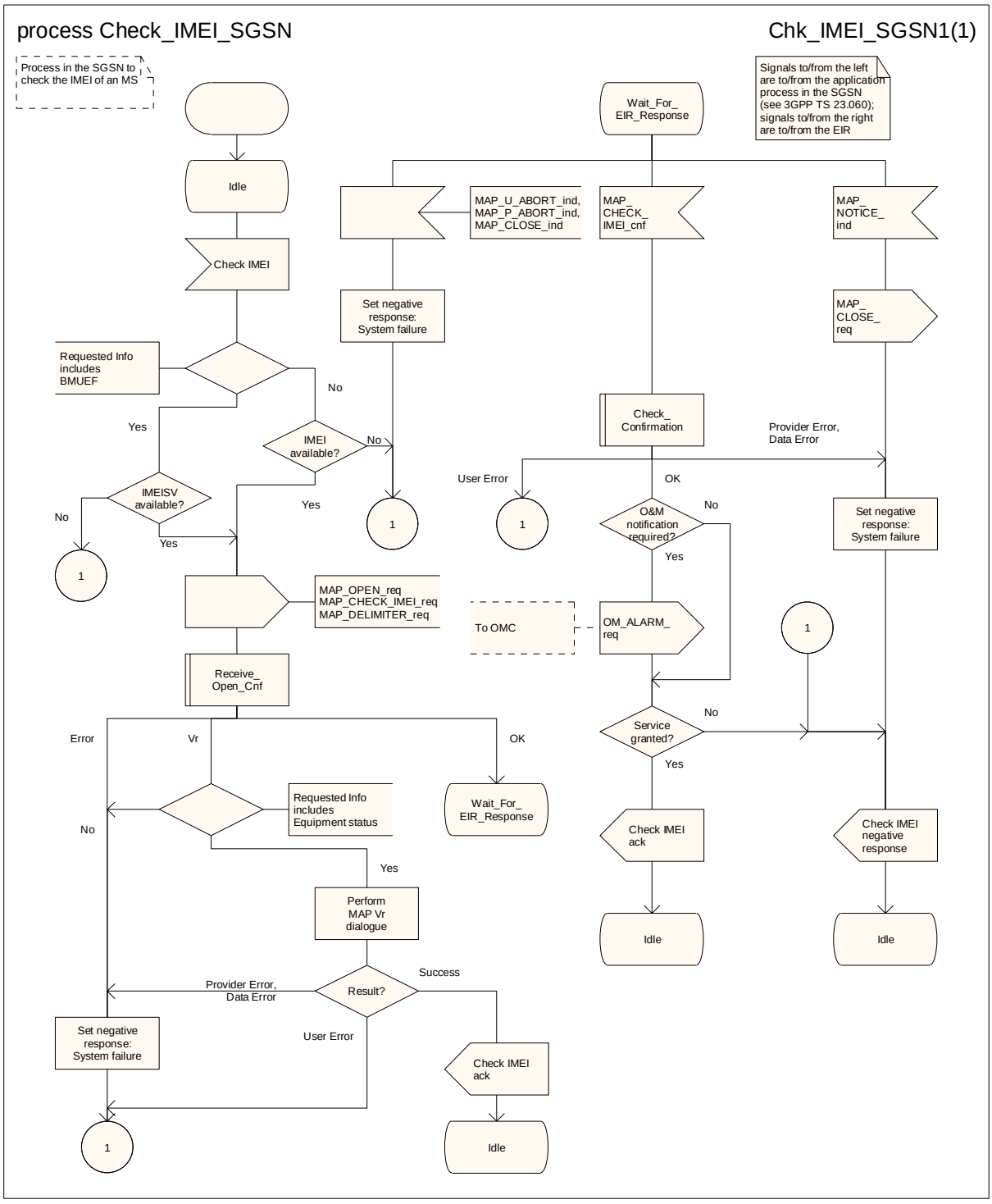
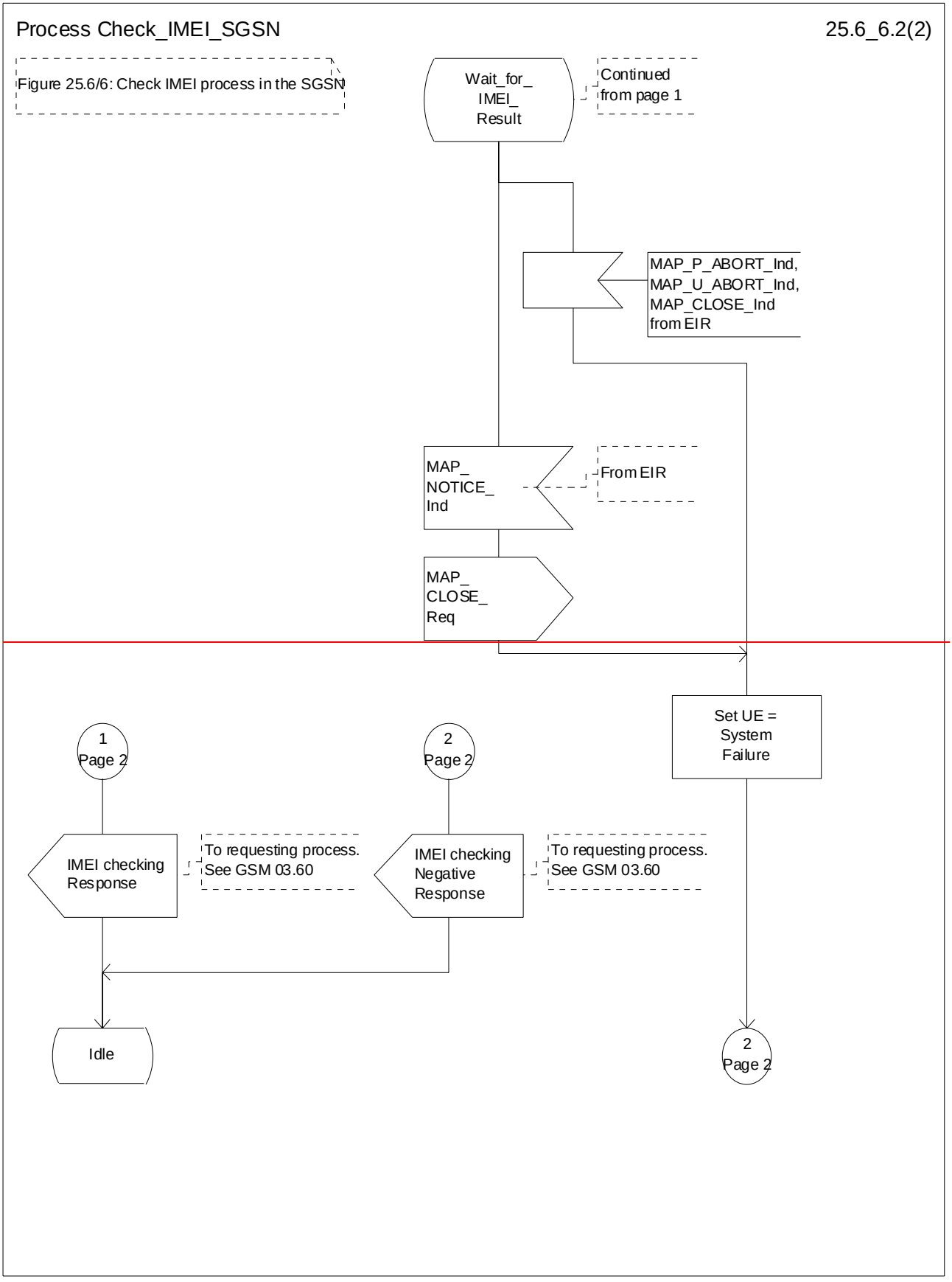


Figure 25.6/6 ~~(sheet 1 of 2)~~: Process Check_IMEI_SGSN



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

3GPP TSG CN WG4 Meeting #19 **N4-030650**
San Diego, CA, USA, 19th – 23rd May 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.010** **CR** **089** ⌘ **rev** **1** ⌘ 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 one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

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

Reason for change:	⌘	In 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-Iu 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

	Y	N			
Other specs affected:	X		Other core specifications	⌘	23.009 CR 097, 29.002 CR 609 or 627
		X	Test specifications		
		X	O&M Specifications		

Other comments:	⌘	

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

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

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

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

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 Prepare Handover Request MAP 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.

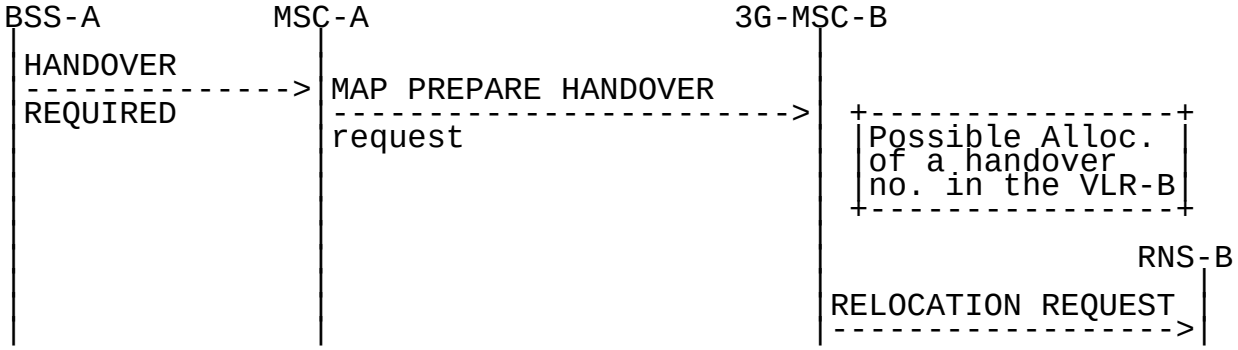


Figure 37a: Signalling for Basic Inter-MSC Handover initiation (no trace related messages transferred)

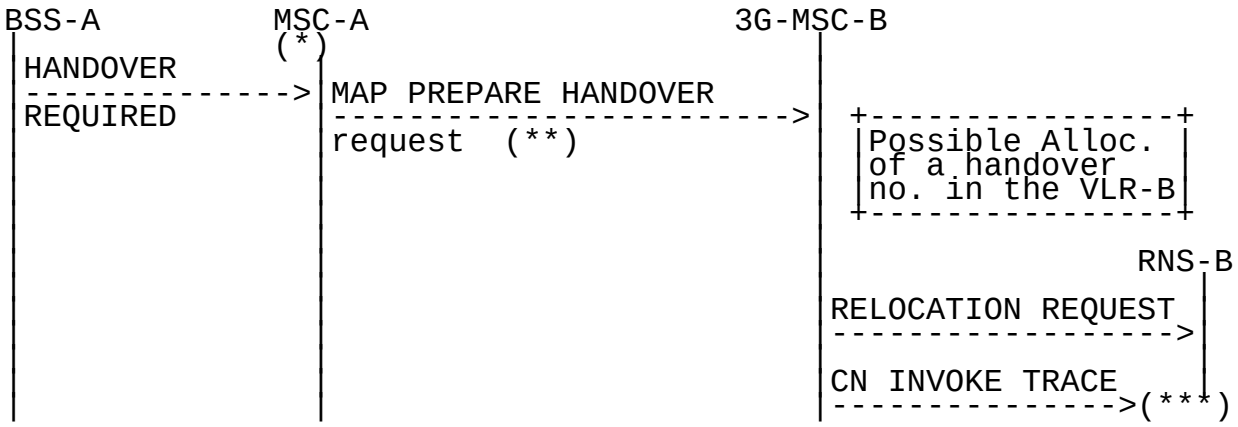


Figure 37b: Signalling for Basic Inter-MSC Handover initiation (CN invoke trace message transferred)

(*): 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):

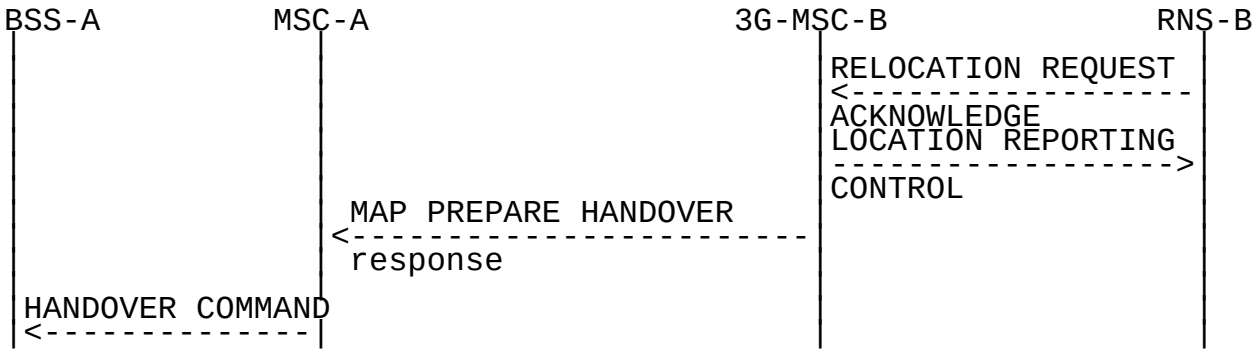
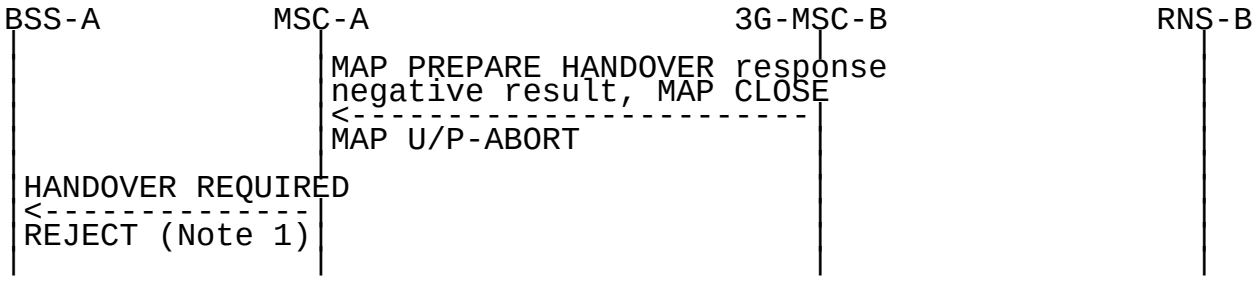


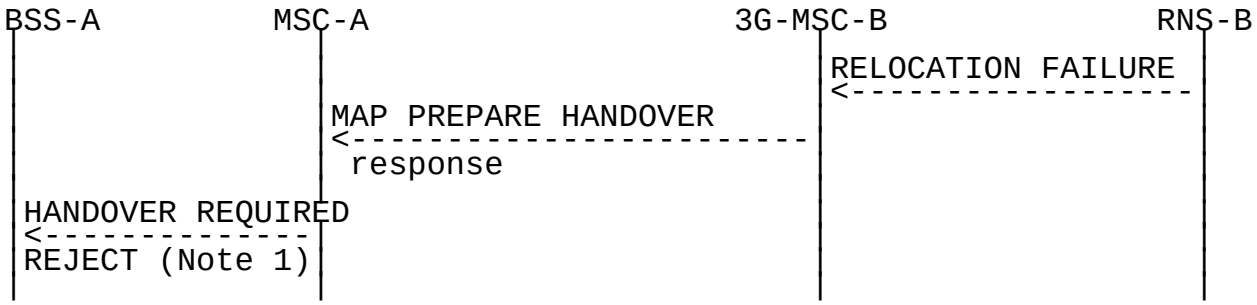
Figure 38: Signalling for Basic Inter-MSC Handover execution (Positive outcome)

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):

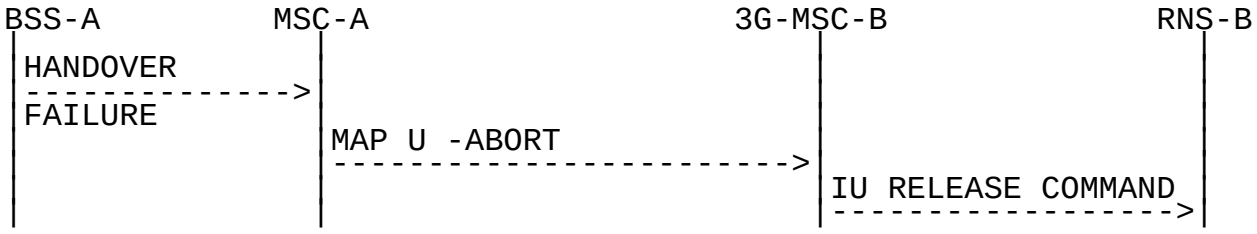


Figure 39: Signalling for Basic Inter-MSC Handover execution (Negative outcomes)

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

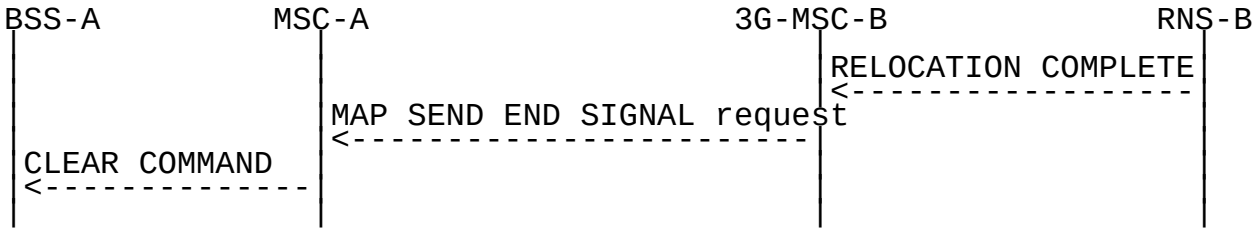


Figure 40: Signalling for Basic Inter-MSC Handover completion

Positive outcome:

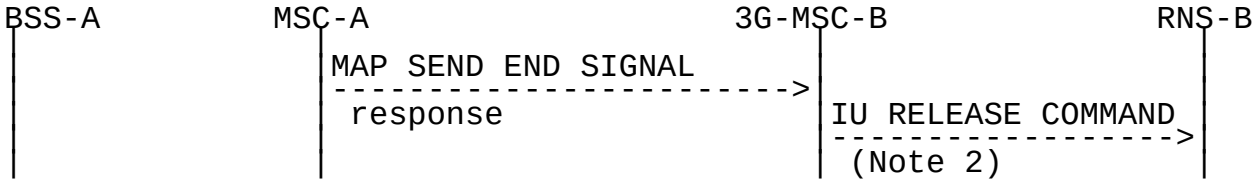


Figure 41: Signalling for Basic Inter-MSC Handover completion (Positive outcome)

Negative outcome:

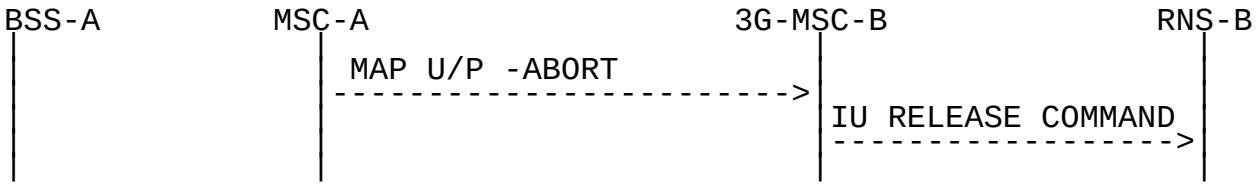


Figure 42: Signalling for Basic Inter-MSC Handover completion (Negative outcome)

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

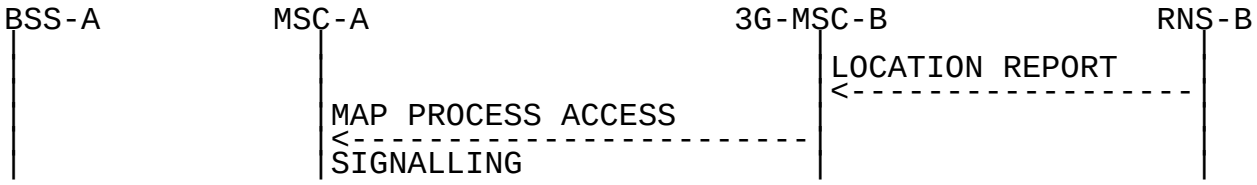


Figure 42a: Signalling for updating of anchor MSC after change of location in RNS

The handover procedure is normally triggered by BSS-A by sending a HANDOVER 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 HANDOVER REQUIRED message. The identity of the target RNC where the call is to be handed over in 3G_MSC-B area, provided in the HANDOVER REQUIRED message in the information element Cell Identifier List (Preferred), is mapped to the target RNC Id MAP parameter and the HANDOVER 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 HANDOVER REQUEST message. Note: UMTS supports only CN initiated tracing.

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

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

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

In the second case, the positive result triggers in MSC-A optionally the sending of the HANDOVER 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 -UESBI -an-APDU(HANDOVER REQUEST, MSC INVOKE TRACE)	RELOCATION REQUEST	1
	BSSMAP information elements: Channel Type Cause sRNC to tRNC container SNA Access Information	RANAP information elements: RAB parameters Cause sRNC to tRNC container SNA Access Information info stored/generated in/by 3G_MSC-B: CN domain indicator	3
Positive result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER REQUEST ACK)	RELOCATION REQUEST ACK	
	BSSMAP information elements: Layer 3 info	RANAP information elements: tRNC to sRNC container	
Negative result	MAP PREPARE HANDOVER response -an-APDU(HANDOVER FAILURE)	RELOCATION FAILURE	
	BSSMAP information elements: GERAN classmark	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. Th~~ese~~is IE~~s are~~is 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-MSC 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 Prepare Handover Request MAP 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.

3GPP TSG CN WG4 Meeting #19
San Diego, CA, USA, 19th – 23rd May 2003

N4-030652
(Revision of N4-030555)

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:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	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)

	Y	N			
Other specs affected: ⌘	X		Other core specifications	⌘	23.195 (new specification)
		X	Test specifications		
		X	O&M Specifications		

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)".

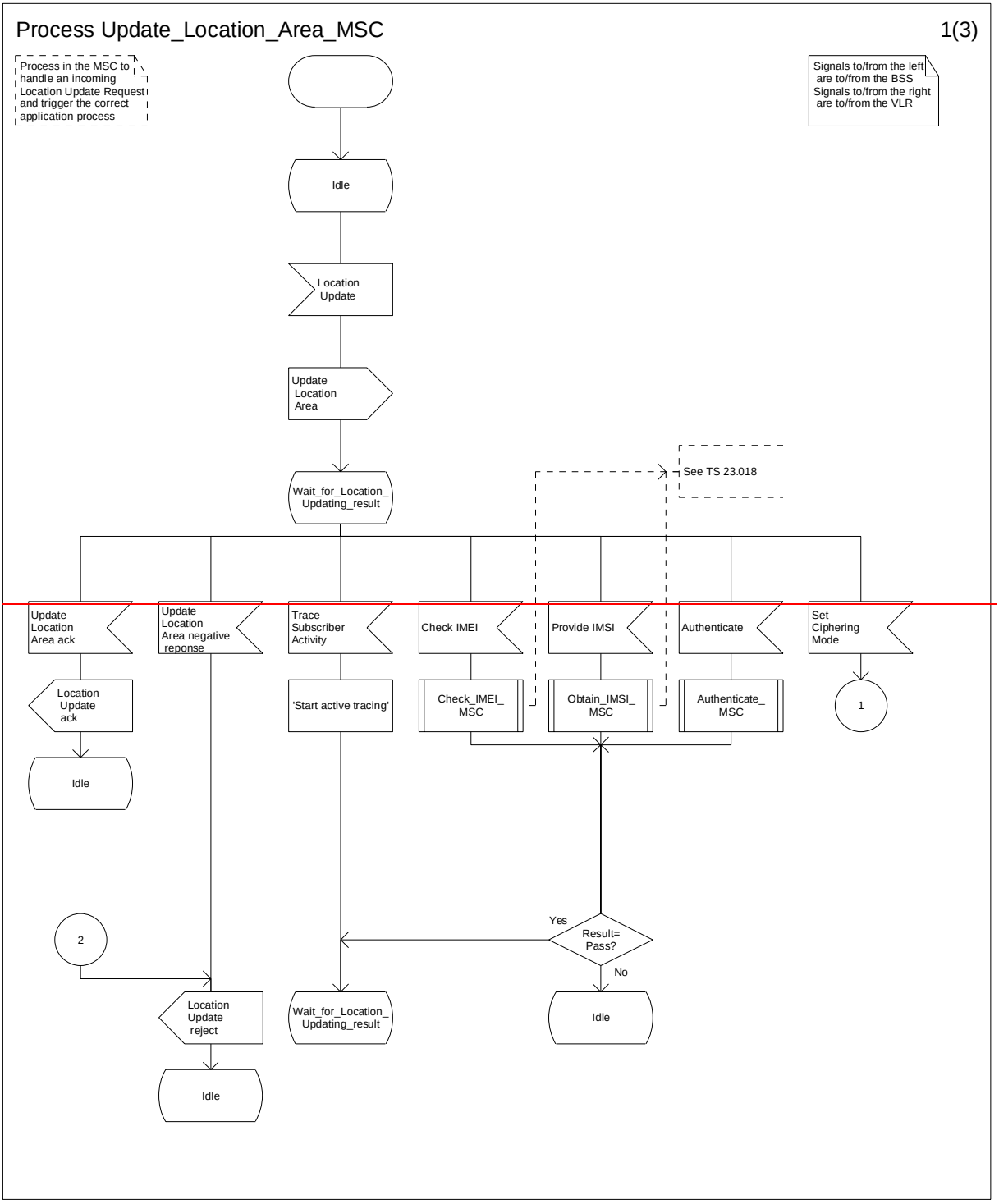
[10] ~~GSM~~3GPP TS ~~0~~4~~3~~.0~~2~~0: "~~Digital cellular telecommunication system (Phase 2+);~~ Security related network functions".

[11] 3GPP TS 23.078: " Customised Applications for Mobile network Enhanced Logic (CAMEL) ~~p~~Phase 4~~3~~ – stage2 "

[11a] 3GPP TS 23.195: "Provision of UE Specific Behaviour Information to Network Entities".

[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
Idle
Location Update
Update Location Area
Wait_for_Location_ Updating_result
See TS 23.018
Update Location Area ack
Update Location Area negative reponse
Trace Subscriber Activity
Check IMEI
Provide IMSI
Authenticate
Set Ciphering Mode
Location Update ack
'Start active tracing'
Check_IMEI_ MSC
Obtain_IMSI_ MSC
Authenticate_ MSC
1
Idle
2
Yes
Result= Pass?
No
Location Update reject
Wait_for_Location_ Updating_result
Idle
Idle

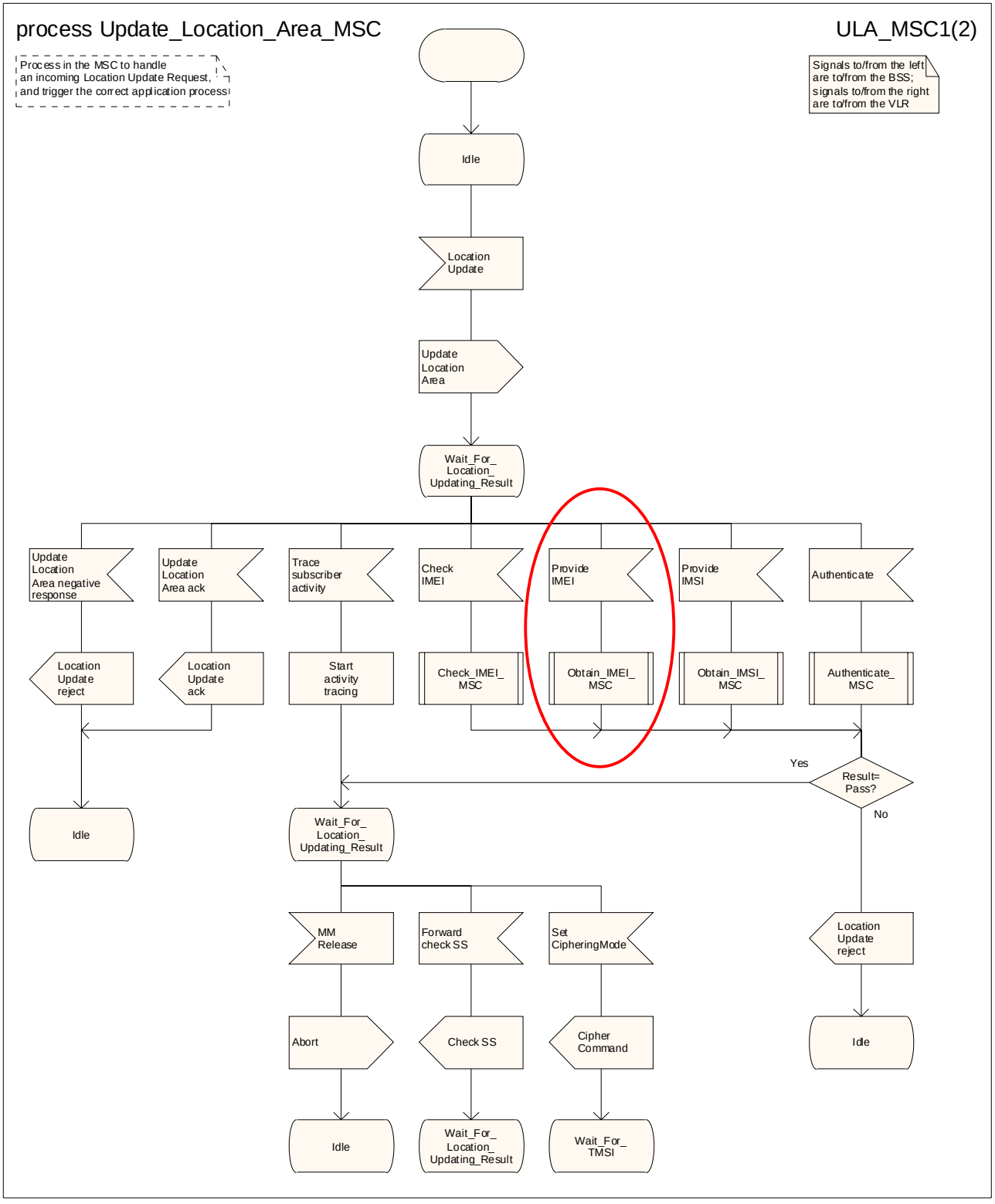
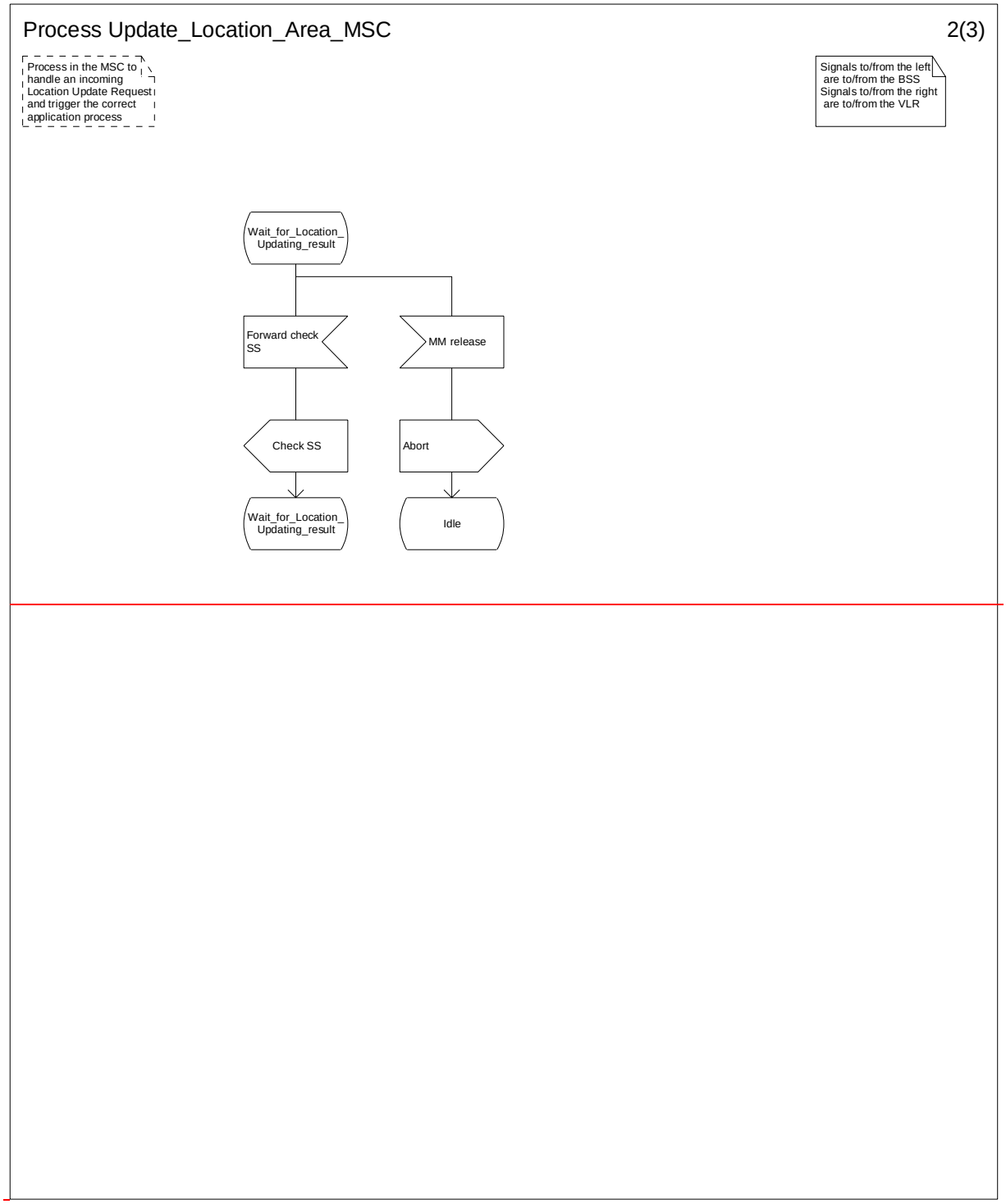
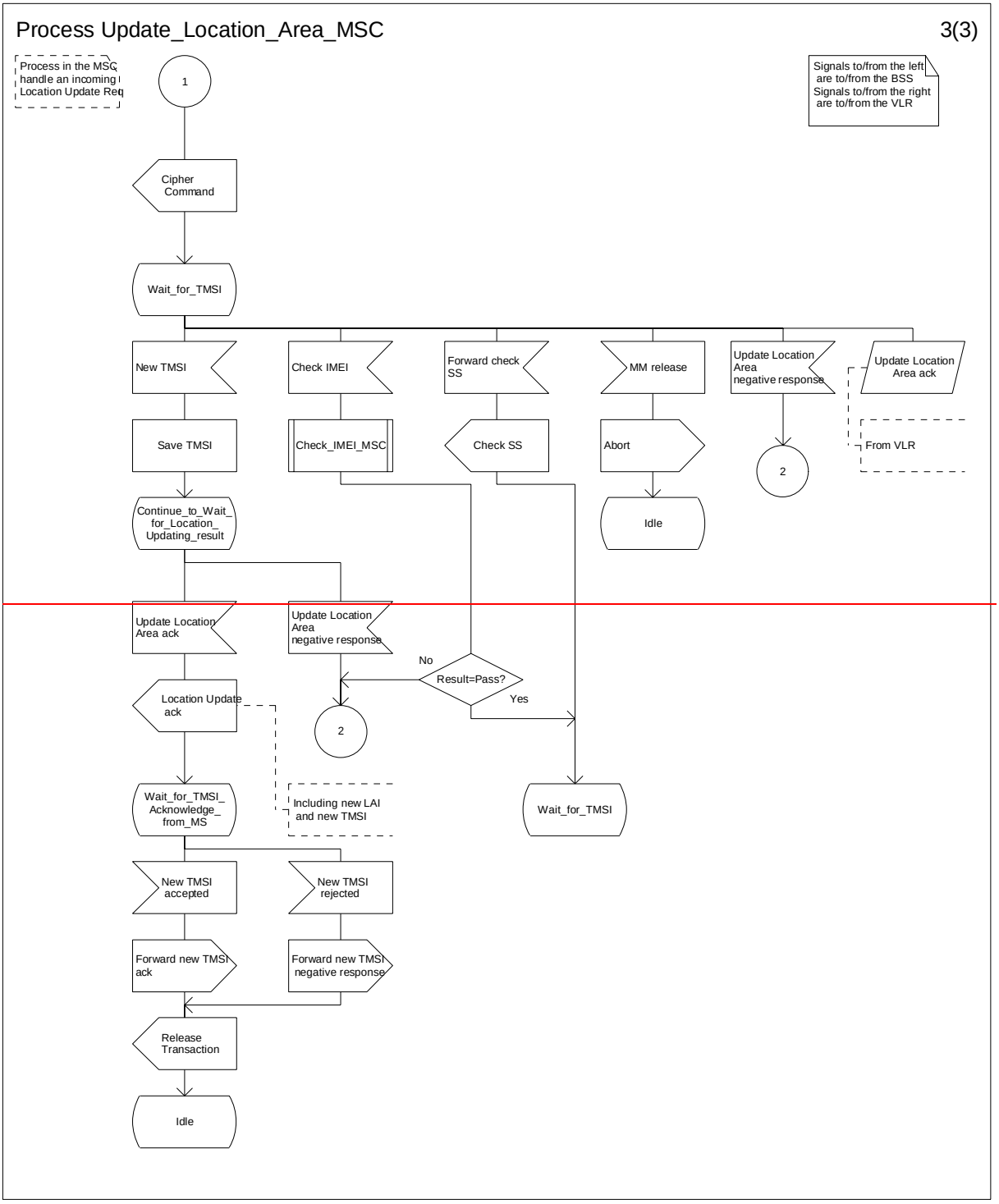


Figure 4.1.1.1 (sheet 1 of 2~~3~~): Process Update_Location_Area_MSC



~~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
1
Signals to/from the left are to/from the BSS
Signals to/from the right are to/from the VLR
Cipher Command
Wait_for_TMSI
New TMSI
Check IMEI
Forward check SS
MM release
Update Location Area negative response
Update Location Area ack
Save TMSI
Check_IMEI_MSC
Check SS
Abort
From VLR
2
Continue_to_Wait_for_Location_Updating_result
Idle
Update Location Area ack
Update Location Area negative response
No
Result=Pass?
Yes
Location Update ack
2
Wait_for_TMSI_Acknowledge_from_MS
Including new LAI and new TMSI
Wait_for_TMSI
New TMSI accepted
New TMSI rejected
Forward new TMSI ack
Forward new TMSI negative response
Release Transaction
Idle

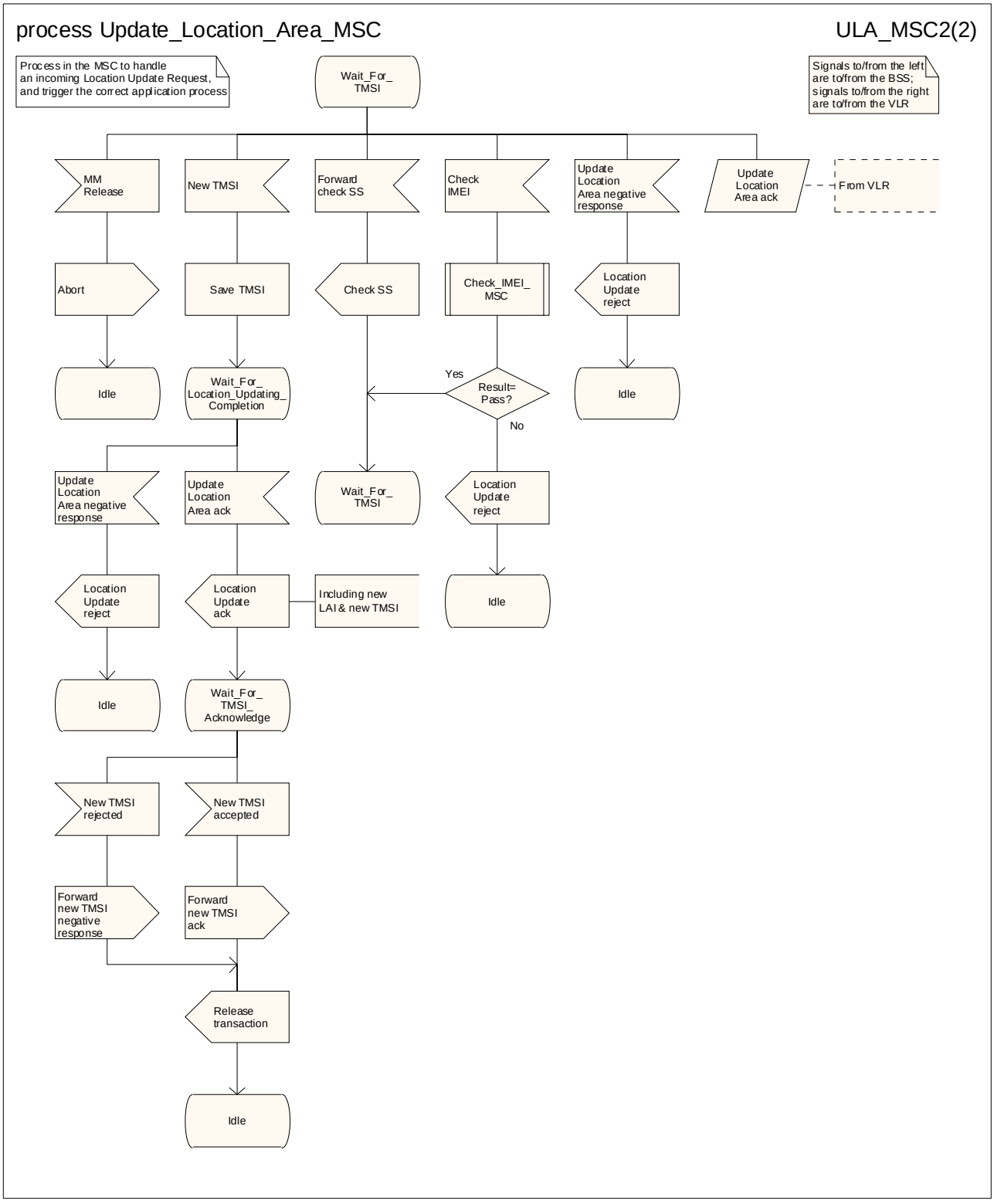


Figure 4.1.1.1 (sheet 2~~3~~ of 2~~3~~): Process Update_Location_Area_MSC

***** 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?".

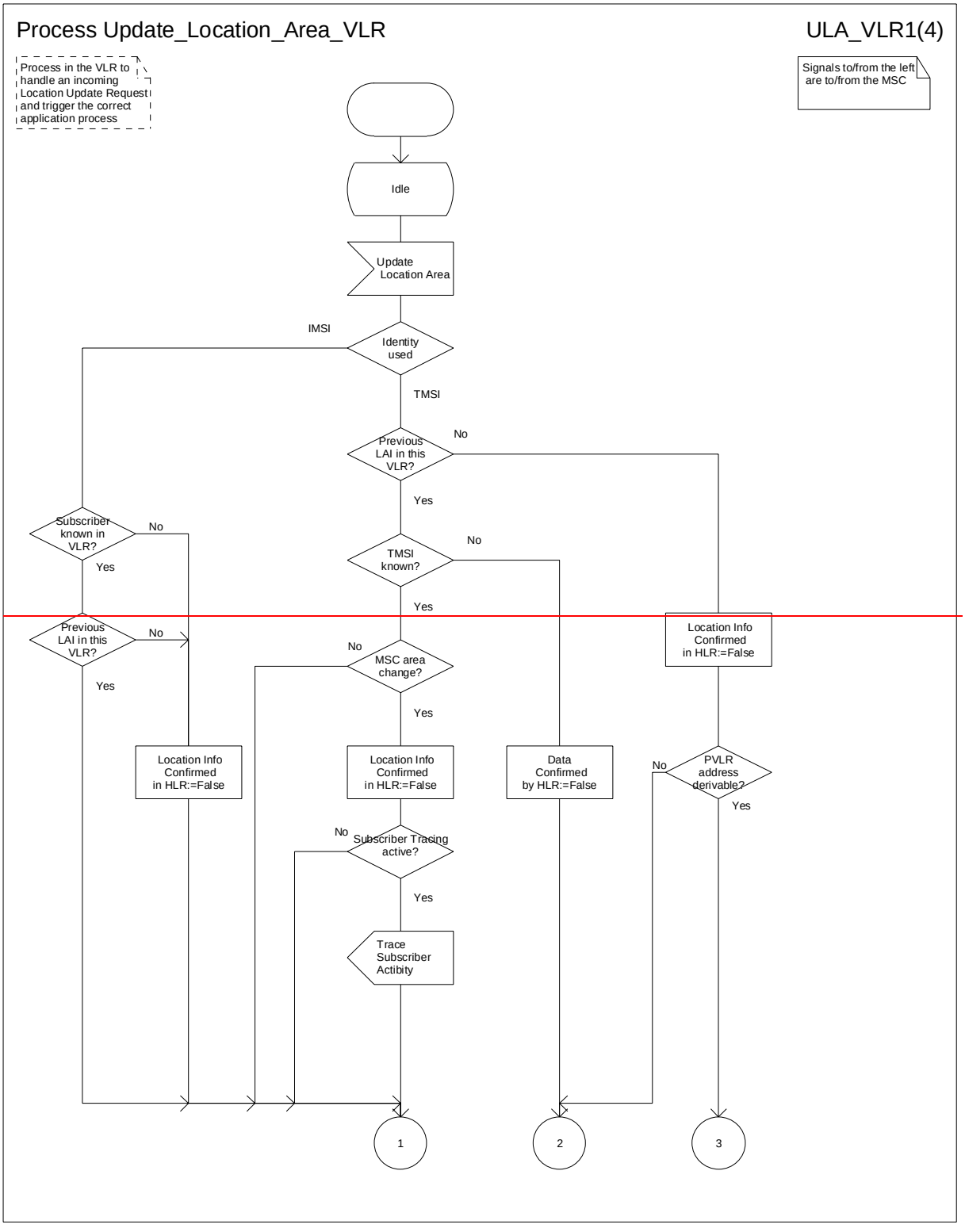
Sheet 2: at the decision "HLR updating required?" the "True" branch shall be taken if and only if one or more of the following conditions is true:

(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
Idle
Update Location Area
Identity used
IMSI
TMSI
Previous LAI in this VLR?
No
Yes
Subscriber known in VLR?
No
Yes
TMSI known?
No
Yes
Previous LAI in this VLR?
No
Yes
MSC area change?
No
Yes
Location Info Confirmed in HLR:=False
Location Info Confirmed in HLR:=False
Data Confirmed by HLR:=False
Location Info Confirmed in HLR:=False
PVLR address derivable?
No
Yes
Subscriber Tracing active?
No
Yes
Trace Subscriber Actibity
1
2
3

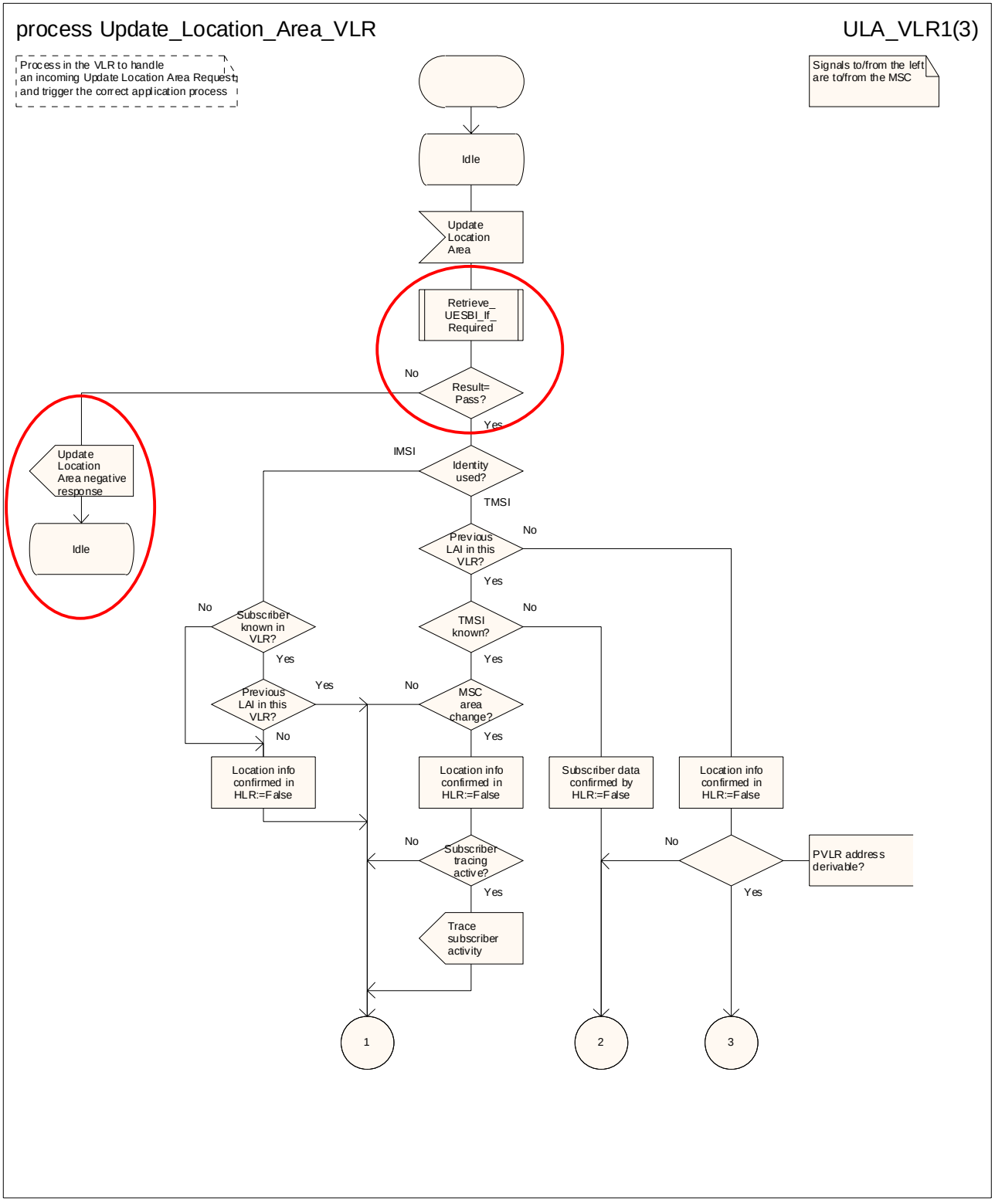
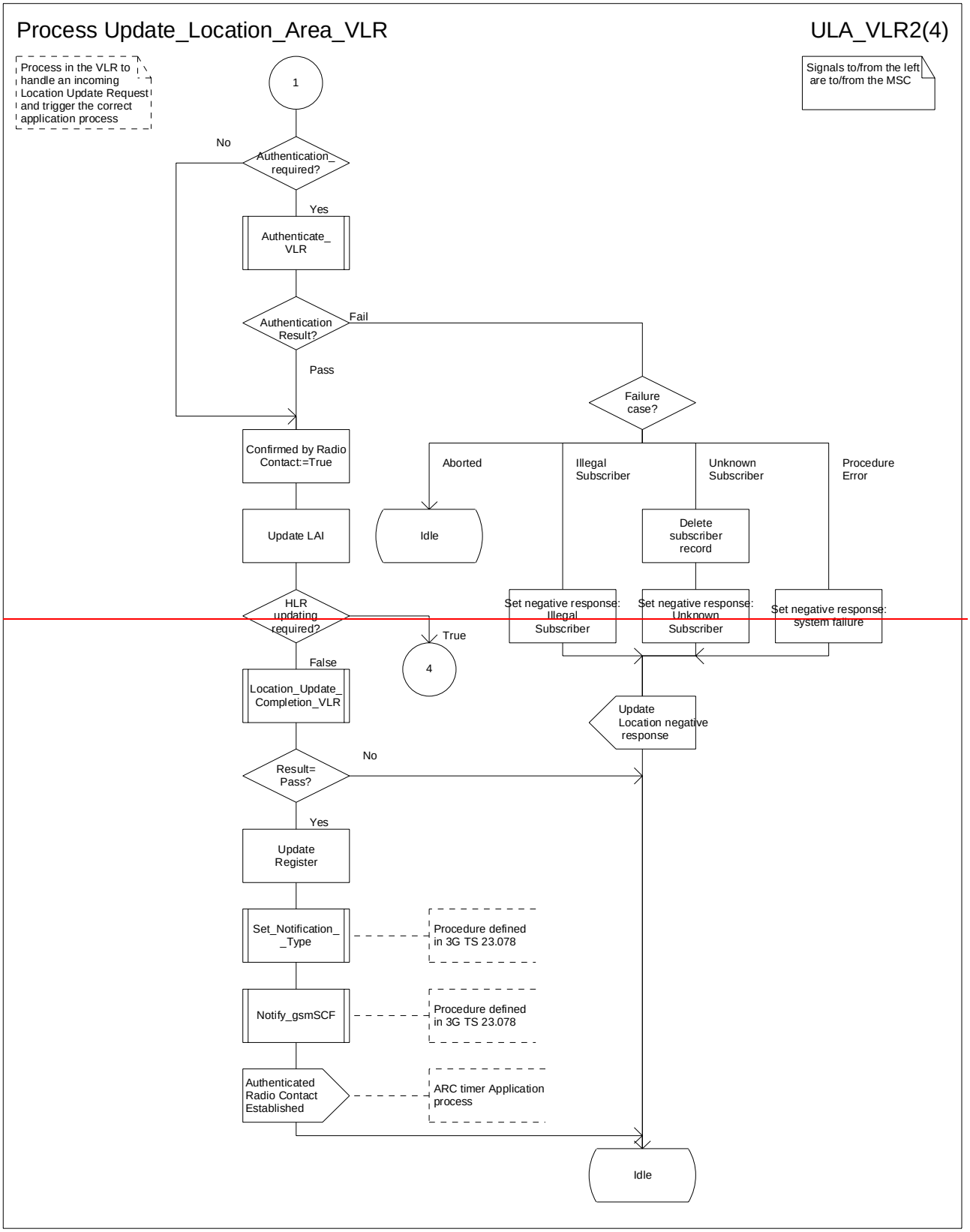


Figure 4.1.2.1 (sheet 1 of 34): Process Update_Location_Area_VLR


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
1
No
Authentication_ required?
Yes
Authenticate_ VLR
Authentication Result?
Fail
Pass
Failure case?
Confirmed by Radio Contact:=True
Aborted
Illegal Subscriber
Unknown Subscriber
Procedure Error
Update LAI
Idle
Delete subscriber record
HLR updating required?
Set negative response: Illegal Subscriber
Set negative response: Unknown Subscriber
Set negative response: system failure
True
4
False
Location_Update_ Completion_VLR
Update Location negative response
No
Result= Pass?
Yes
Update Register
Set_Notification_ _Type
Procedure defined in 3G TS 23.078
Notify_gsmSCF
Procedure defined in 3G TS 23.078
Authenticated Radio Contact Established
ARC timer Application process
Idle

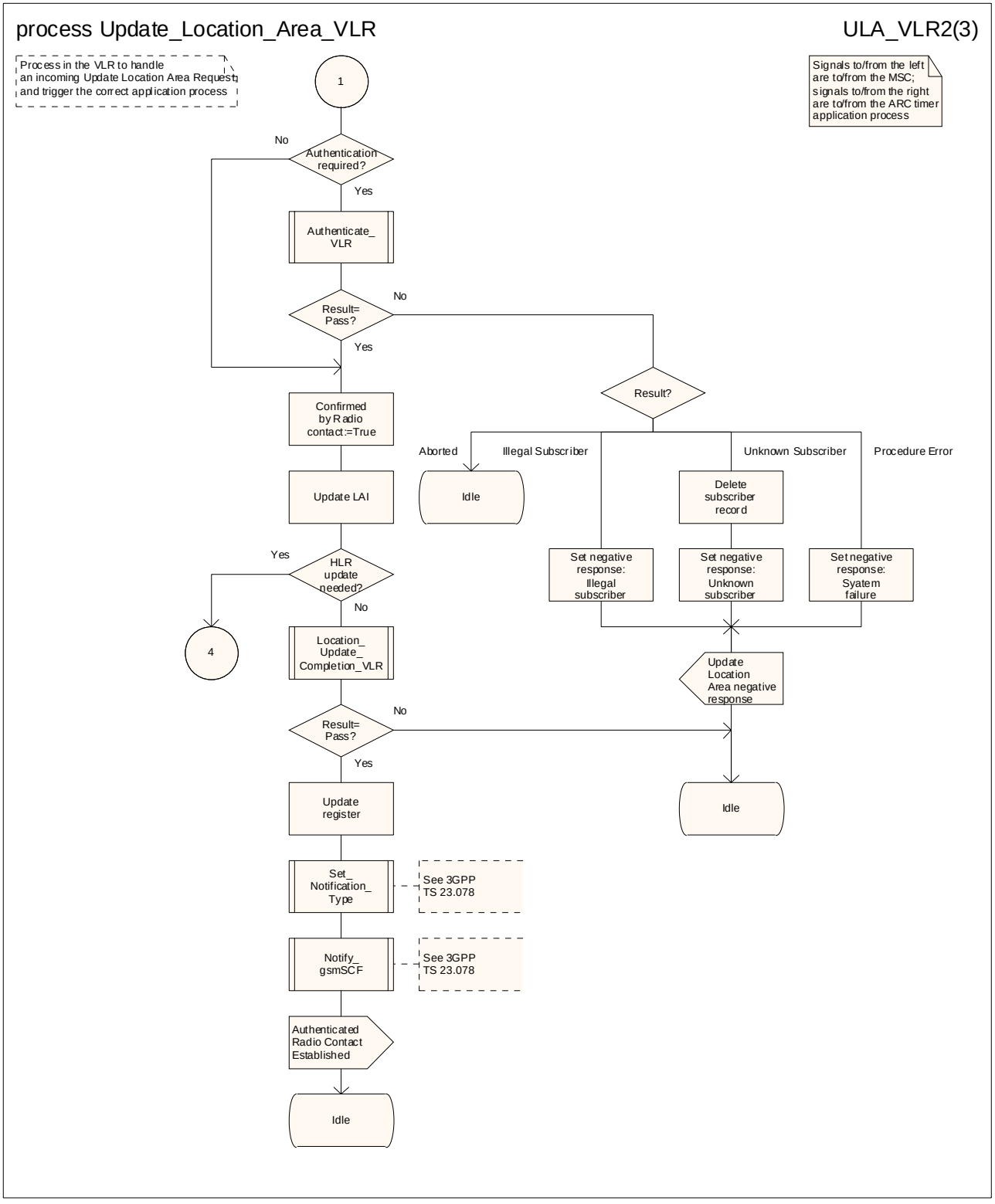
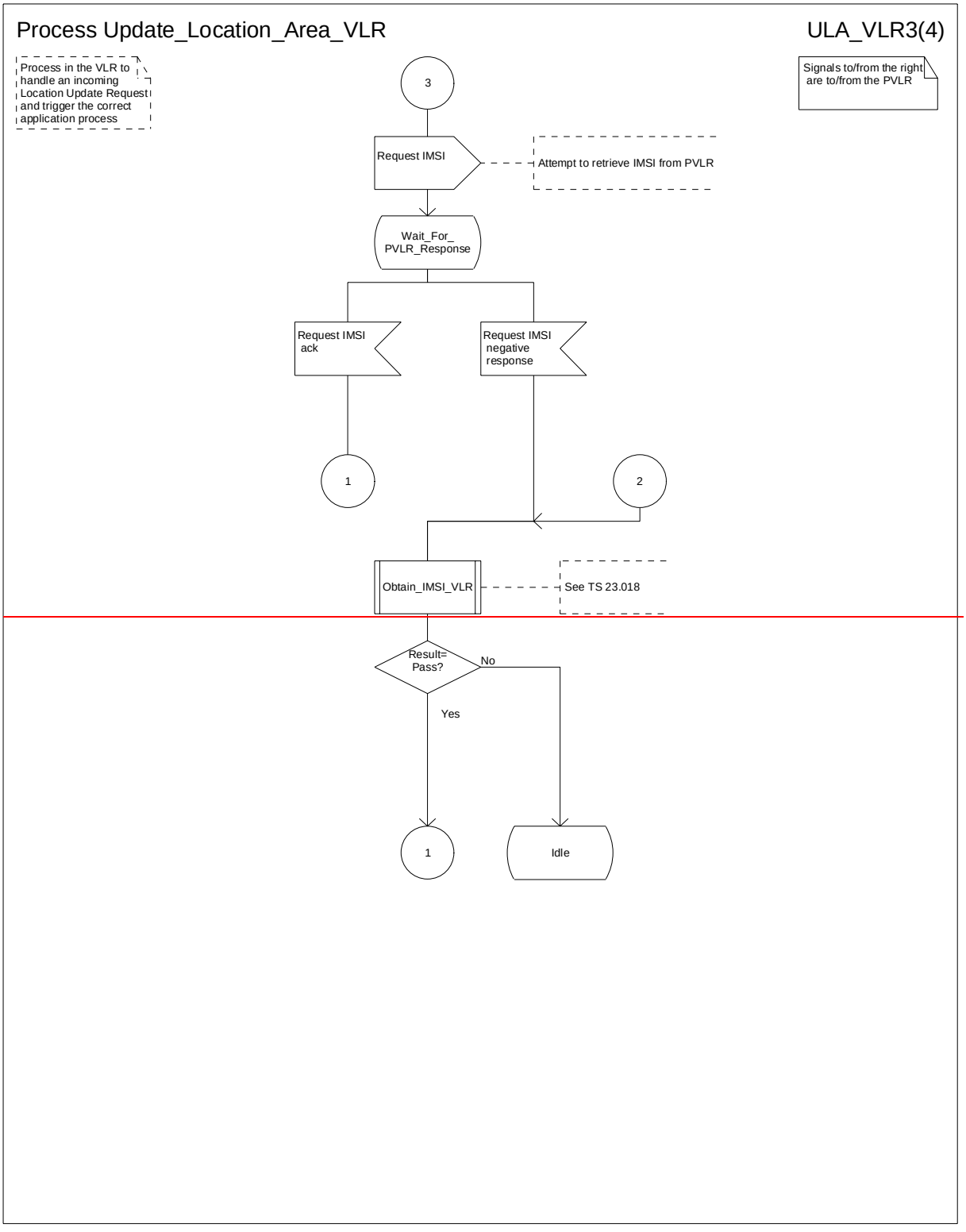
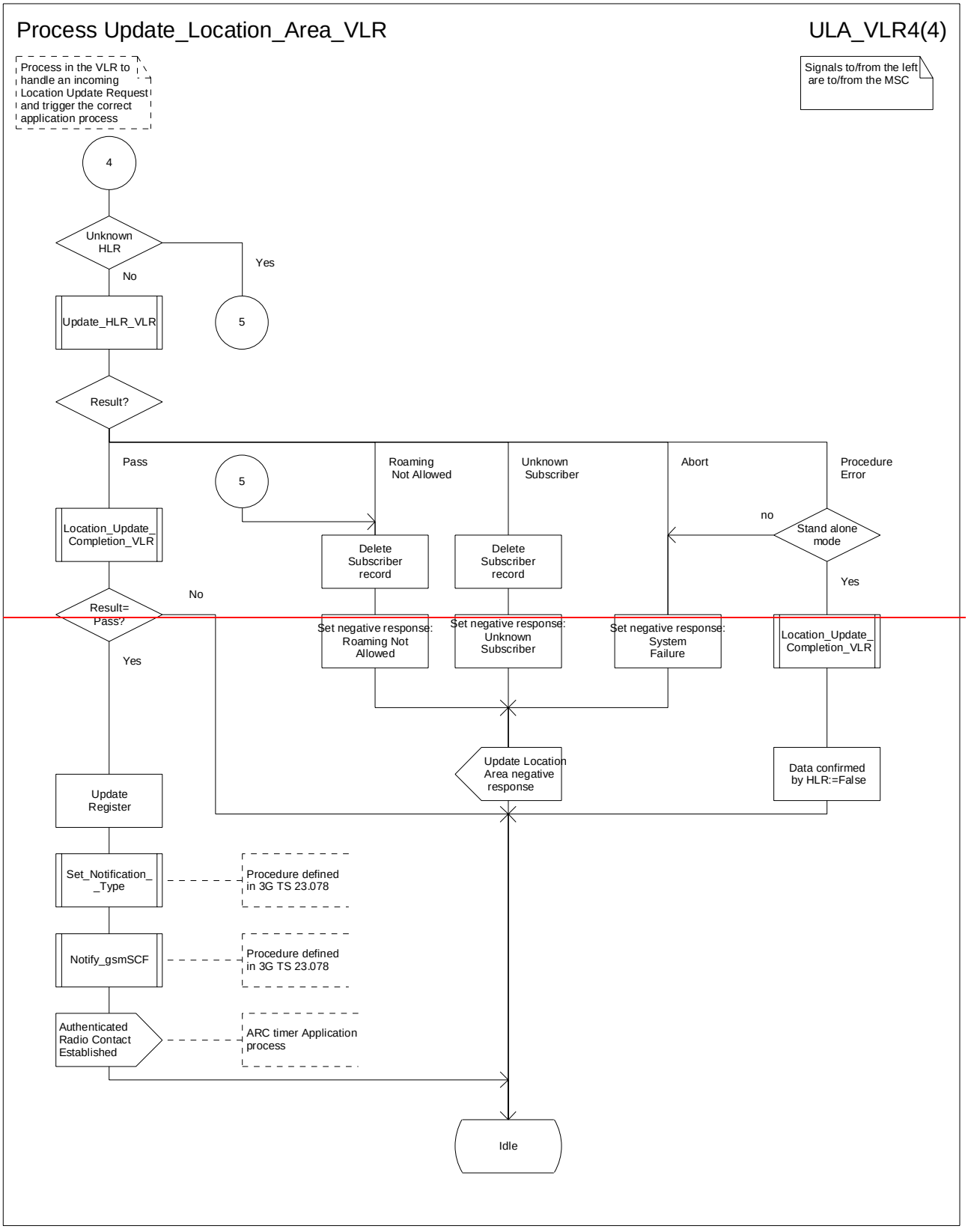


Figure 4.1.2.1 (sheet 2 of 34): Process Update_Location_Area_VLR



~~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
4
Unknown HLR
Yes
No
Update_HLR_VLR
5
Result?
Pass
5
Roaming Not Allowed
Unknown Subscriber
Abort
Procedure Error
no
Stand alone mode
Yes
Location_Update_ Completion_VLR
Delete Subscriber record
Delete Subscriber record
Result= Pass?
No
Yes
Set negative response: Roaming Not Allowed
Set negative response: Unknown Subscriber
Set negative response: System Failure
Location_Update_ Completion_VLR
Update Location Area negative response
Data confirmed by HLR:=False
Update Register
Set_Notification_ _Type
Procedure defined in 3G TS 23.078
Notify_gsmSCF
Procedure defined in 3G TS 23.078
Authenticated Radio Contact Established
ARC timer Application process
Idle

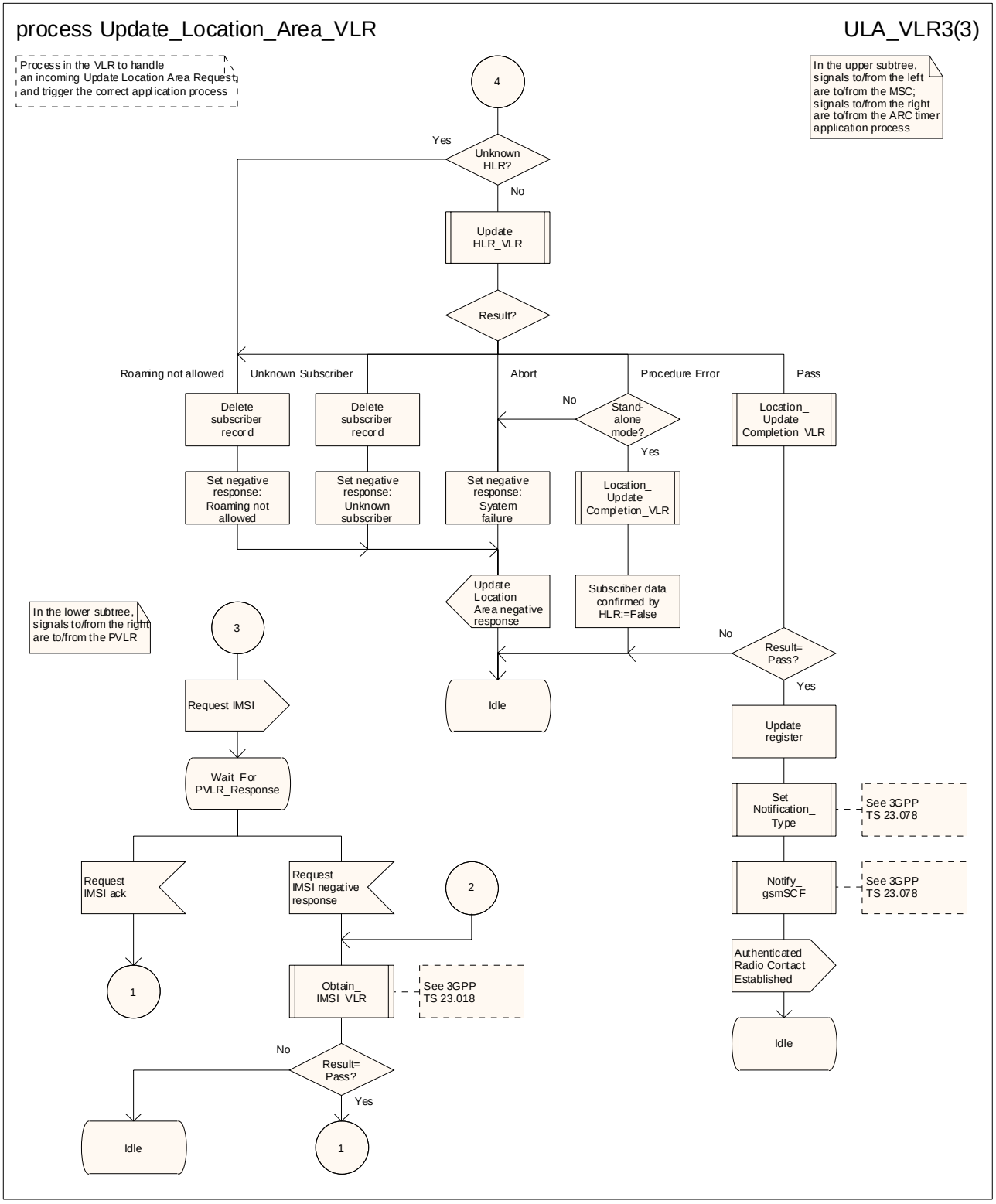
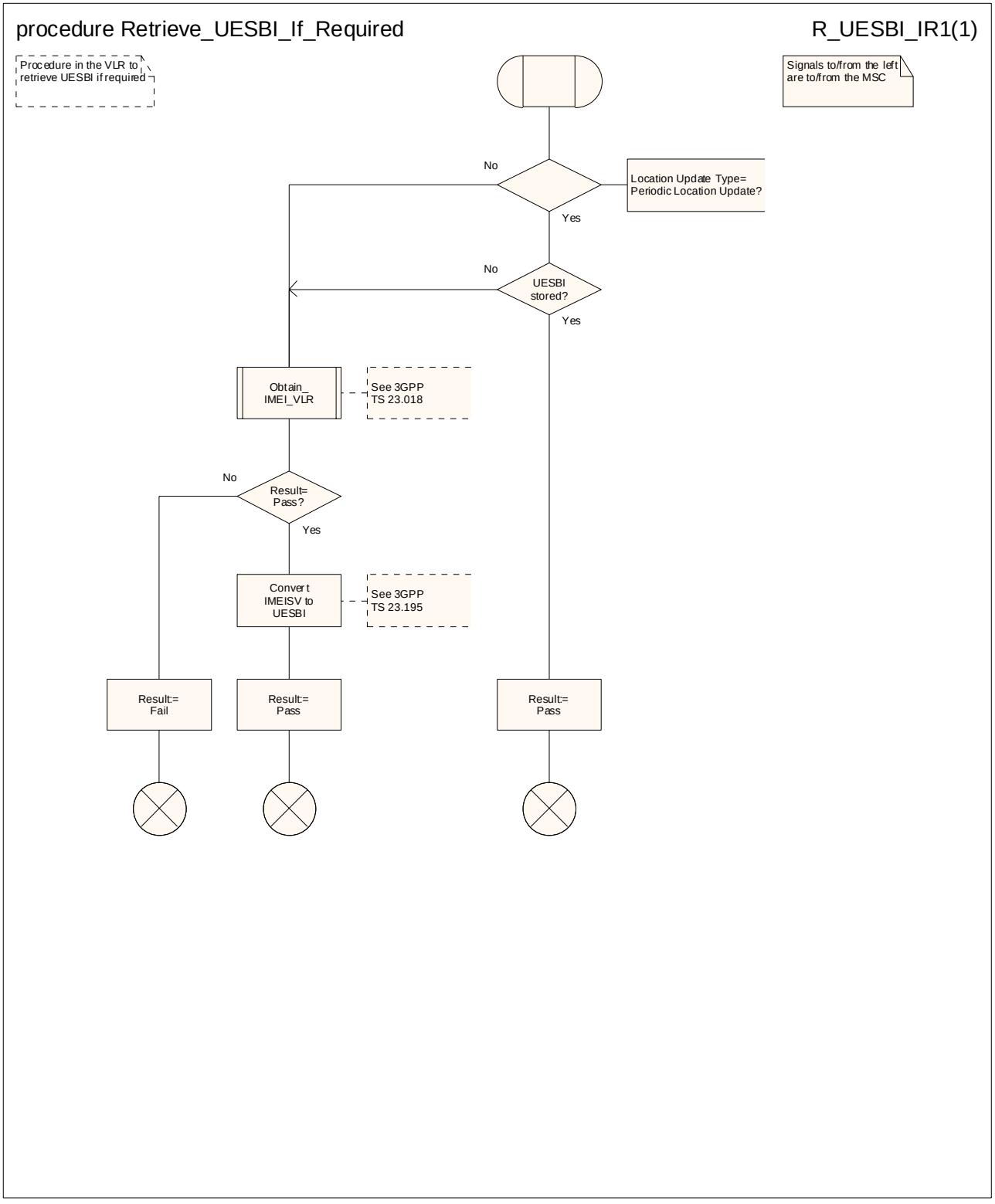


Figure 4.1.2.1 (sheet 34 of 34): Process Update_Location_Area_VLR

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
No
Location Update Type= Periodic Location Update?
Yes
No
UESBI stored?
Yes
Obtain_ IMEI_VLR
See 3GPP TS 23.018
No
Result= Pass?
Yes
Convert IMEISV to UESBI
See 3GPP TS 23.195
Result:= Fail
Result:= Pass
Result:= Pass

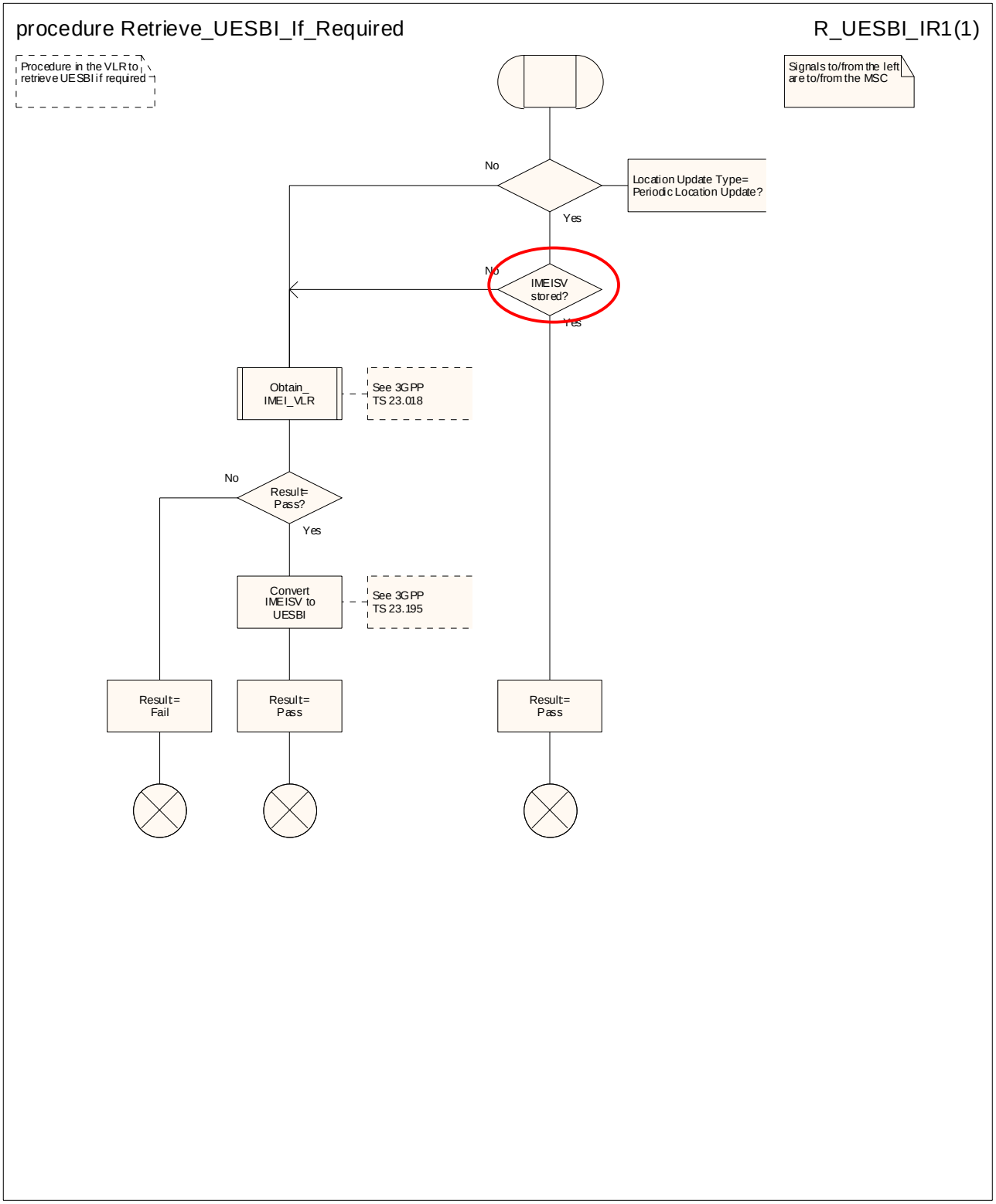


Figure 4.1.2.1a: Procedure Retrieve_UESBI_If_Required

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

3GPP TSG CN WG4 Meeting #19
San Diego, CA, USA, 19th – 23rd May 2003

N4-030660
(Revision of N4-030556)

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:	⌘	~~13~~21/05/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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

Reason for change:	⌘	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

	Y	N			
Other specs affected:	X		Other core specifications	⌘	23.195 (new specification)
		X	Test specifications		
		X	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].

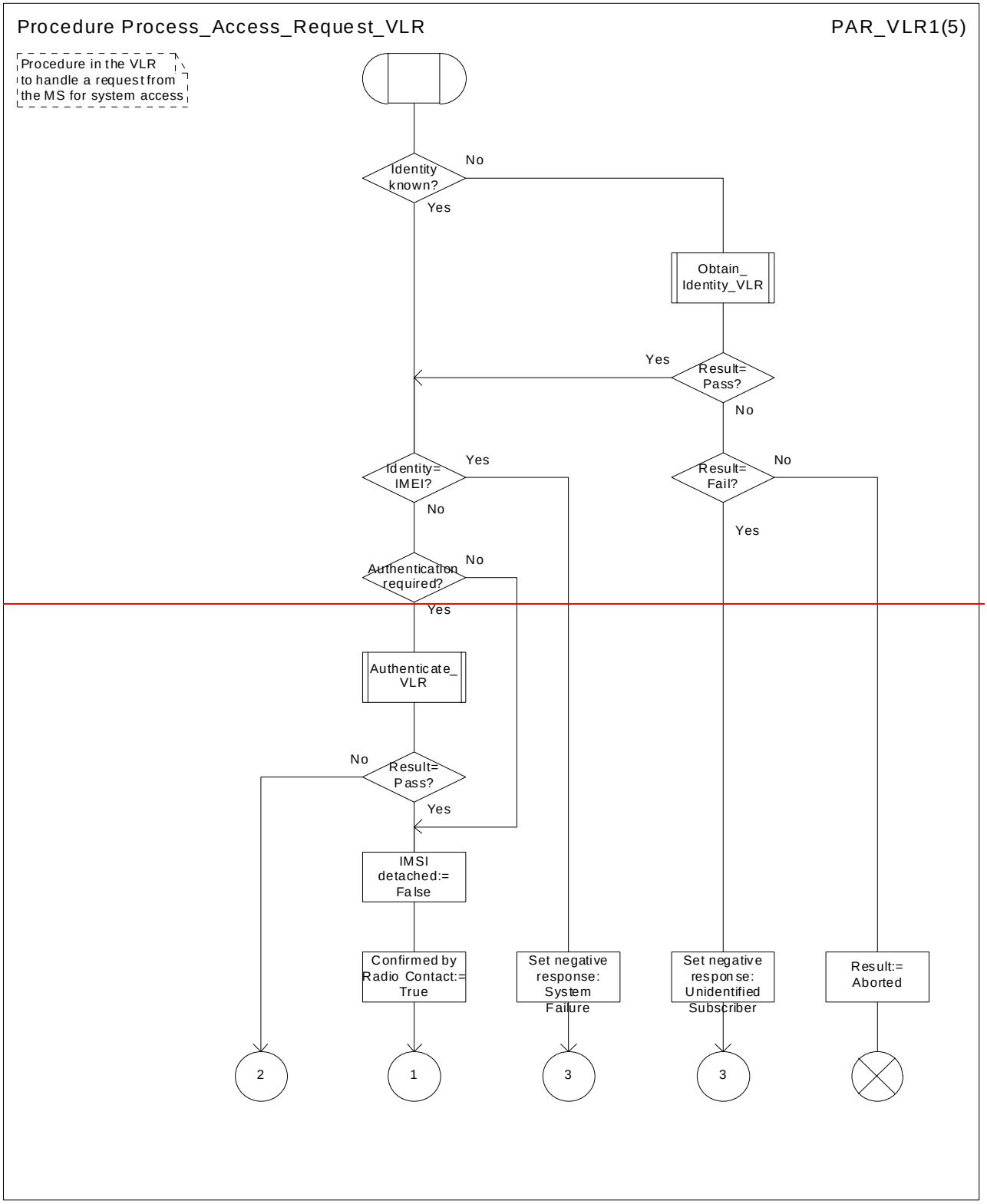
Sheet 2: it is a network operator decision (subject to MoU requirements) whether a GSM connection should be ciphered. A UMTS connection shall always be ciphered.

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
Identity known?
No
Yes
Obtain_ Identity_VLR
Result= Pass?
Yes
No
Identity= IMEI?
Yes
No
Result= Fail?
No
Yes
Authentication required?
No
Yes
Authenticate_ VLR
Result= Pass?
No
Yes
IMSI detached:= False
Confirmed by Radio Contact:= True
Set negative response: System Failure
Set negative response: Unidentified Subscriber
Result:= Aborted
2
1
3
3

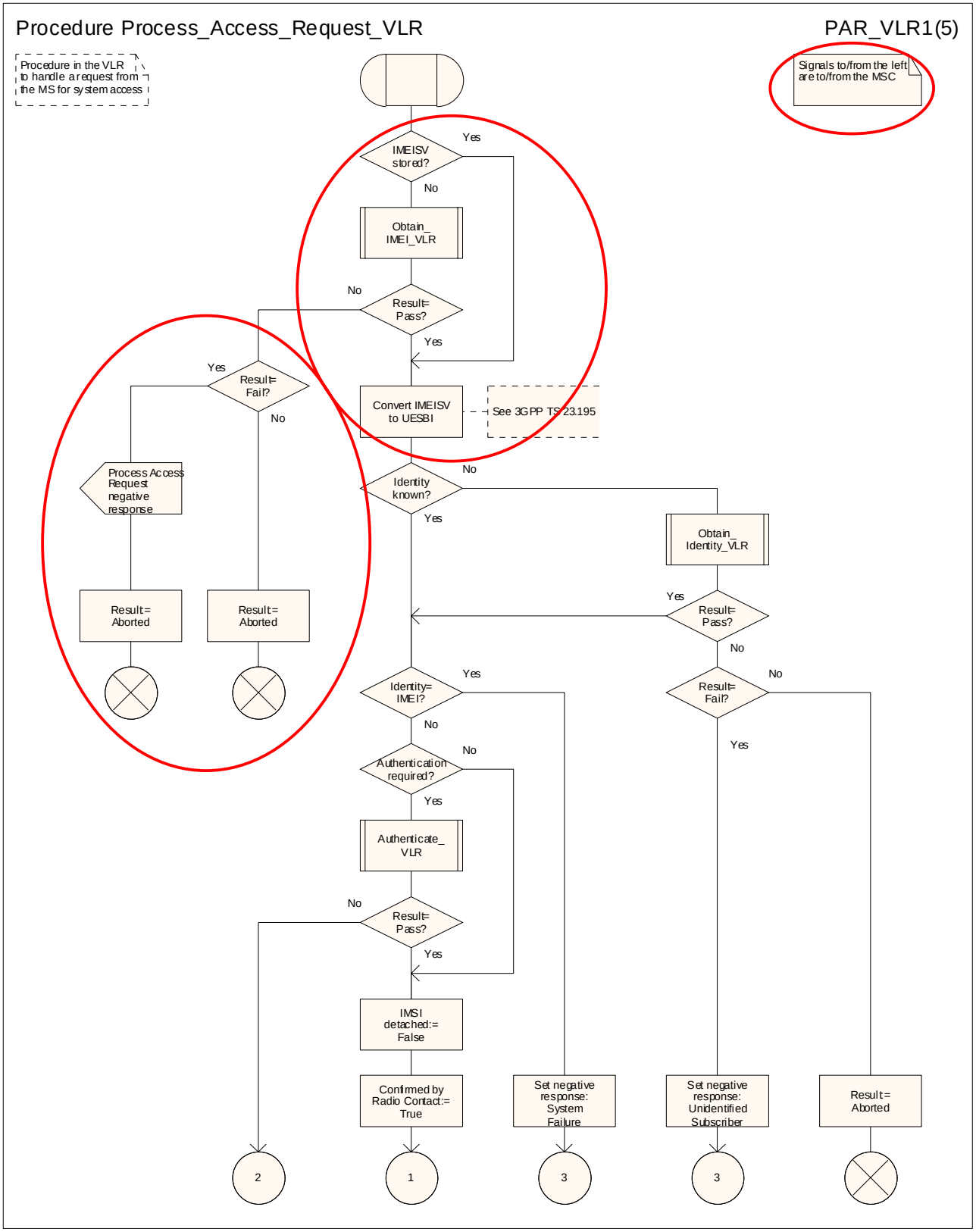


Figure 7.1.2.2a: Procedure Process_Access_Request_VLR (sheet 1)

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