3GPP TSG CN Plenary Meeting #14 **NP-010621**
Kyoto, JAPAN, 12th -14th December 2001

Source: TSG CN WG4

Title: CRs on Rel-4 Location Service Enhancement

Agenda item: 8.8

Document for: APPROVAL

Introduction:

This document contains 3 CRs on Rel-4 Work Item "LCS1", that have been agreed by TSG CN WG4, and are forwarded to TSG CN Plenary meeting #14 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
24.030	011		N4-011145	Rel-4	Correction of MO-LR procedure	F	4.1.0
29.002	316		N4-011285	Rel-4	Corrections on the SDL diagrams for LCS	F	4.5.0
29.002	344		N4-011262	Rel-4	Correction of the priority for "SRI for LCS"	F	4.5.0

3GPP TSG-CN4 Meeting #10 **Tdoc N4-011145**
Brighton, UK
15 - 19 October 2001

CR-Form-v3

CHANGE REQUEST

⌘ **24.030** **CR** **011** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Correction of MO-LR procedure
Source:	⌘	CN4
Work item code:	⌘	LCS1
Date:	⌘	15 Oct 2001
Category:	⌘	**F**
Release:	⌘	REL-4

Use one of the following categories:
F *(essential 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)*

Reason for change: ⌘ In the CN4 meeting of March 2000 (Tdoc N2-000085), CR 1 on 24.030 was approved and the reason for such a change was that “Mobile station based positioning methods are not supported in UMTS LCS for release 99”.

However, the radio measurements related to UE positioning methods are supported in R99 as specified in stage 2 TS 25.305 and stage 3 TS 25.331 R99.

Moreover as specified in TS 23.171 v340 the MO-LR procedure allows an UE to request broadcast assistance data message ciphering keys from the network. This MO-LR procedure may "follow-on" after location update procedure described in TS 24.008. The ciphering key enables the UE to decipher location assistance data broadcast periodically by the network. Additionally the MO-LR procedure may be used to request additional assistance data for GPS based method.

This assistance data may be used for UE-based as well as for UE-assisted positioning methods as described in TS 25.305 R99.

Summary of change: ⌘ The UE is allowed to use the MO-LR procedure to request the ciphering key

Consequences if not approved: ⌘ The broadcast of assistance data can not be ciphered and operators can not rely on this function since there is no mean to charge the service. In this case UTRAN will need to use point-to-point signalling to deliver assistance data leading to unnecessary signalling over the radio interface.

Clauses affected: ⌘ 5.1.1

Other specs affected: ⌘
☐ Other core specifications
☐ Test specifications
☐ O&M Specifications
⌘

Other comments: ⌘

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

5 Mobile initiated location services operations

5.1 Mobile Originated Location Request (MO-LR)

5.1.1 Normal operation

The MS invokes a MO-LR by sending a REGISTER message to the network containing a LCS-MOLR invoke component. ~~In UMTS, the gpsAssistanceData and deCipheringKeys shall not be used as values of molr-Type parameter.~~

The receiving network entity shall initiate the handling of location request in the network. The network shall pass the result of the location procedure to the MS by sending a FACILITY message to the MS containing a LCS-MOLR return result component.

The network shall pass the result of the location procedure to the MS only if the location estimate is given in a format that the MS supports, as indicated by either the presence (and content) or the absence of the parameter supportedGADShapes, which may be sent by the MS in the LCS-MOLR operation.

The MS may terminate the dialogue by sending a RELEASE COMPLETE message in the case of single location request (see figure 5.1). The MS may also initiate another location request operation by sending a FACILITY message to the network containing a LCS-MOLR invoke component (see figure 5.2). After the last location request operation the MS shall terminate the dialogue by sending a RELEASE COMPLETE message.

If the network is unable to successfully fulfil the request received from the MS (e.g. to provide a location estimate or location assistance information), it shall clear the transaction by sending a RELEASE COMPLETE message containing a return error component. Error values are specified in 3G TS 24.080. The network shall pass the result of the location procedure to the MS only if the location estimate is given in a format that the MS supports, as indicated by either the presence (and content) or the absence of the parameter supportedGADShapes, which may be sent by the MS in the LCS-MOLR operation.

If the network has returned a result to the MS in a FACILITY message but, after some PLMN administered time period has elapsed, has not received either a new location request operation in a FACILITY message or a RELEASE COMPLETE message from the MS, the network may clear the transaction by sending a RELEASE COMPLETE message.

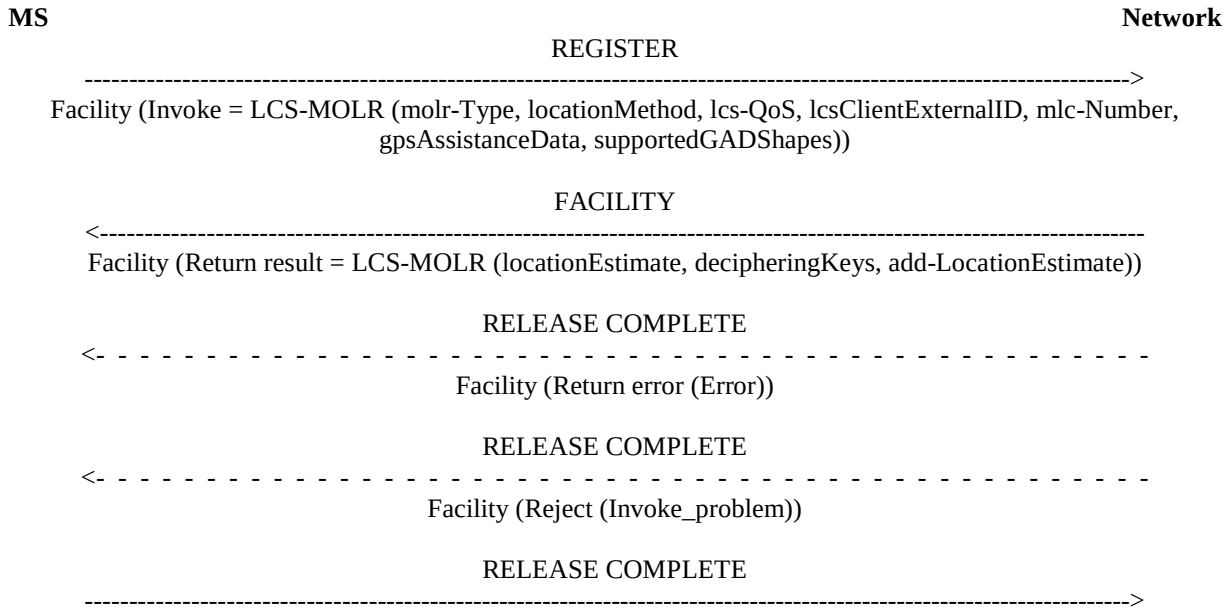


Figure 5.1: Single mobile originated location request

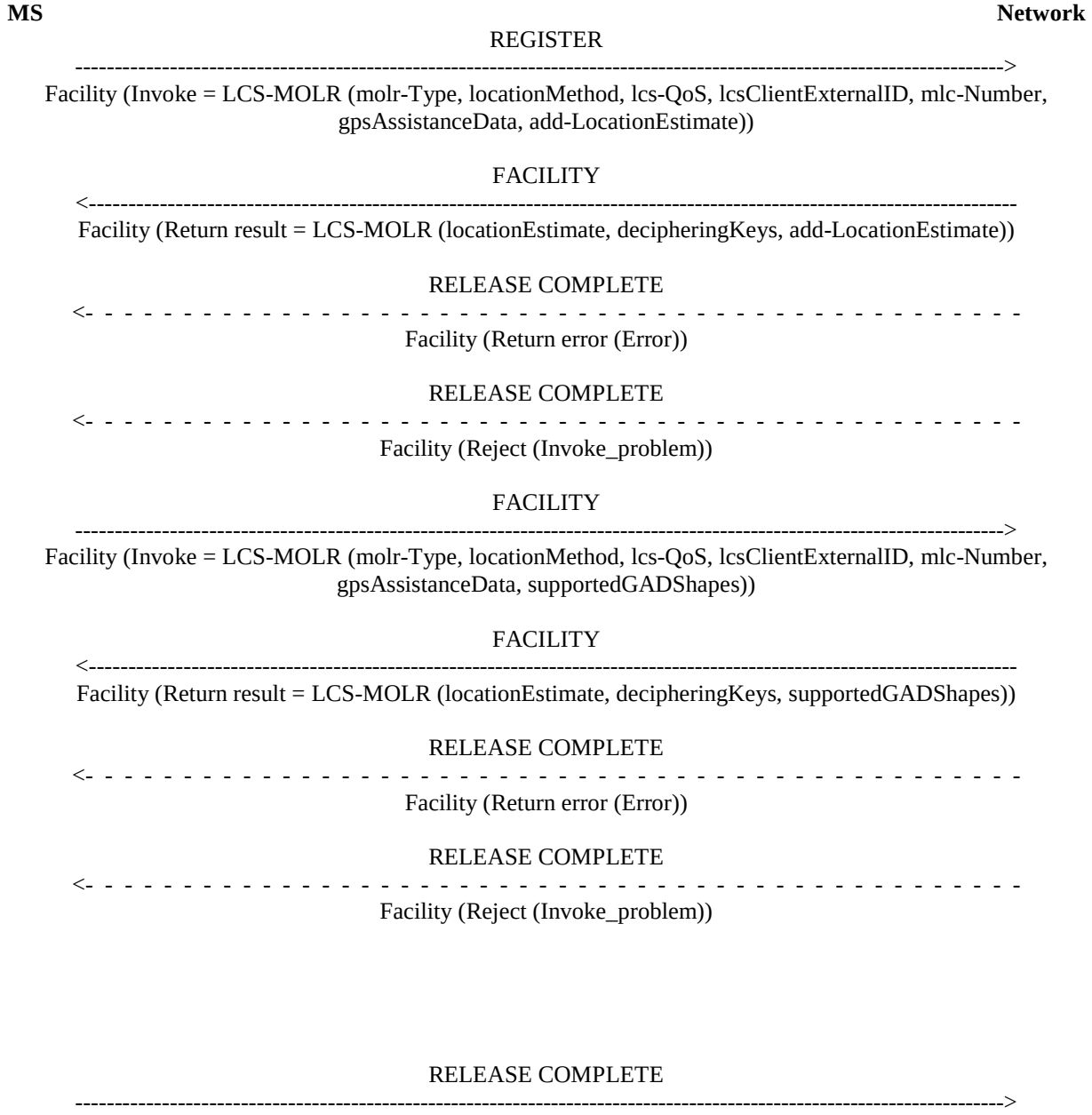


Figure 5.2: Multiple mobile originated location requests

3GPP TSG CN WG4 Meeting #11 **N4-011285**
Cancun, Mexico, 26th - 30th November 2001

CR-Form-v4

CHANGE REQUEST

⌘ **29.002** **CR** **316** ⌘ rev **-** ⌘ Current version: **4.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Corrections on the SDL diagrams for LCS
Source:	⌘	CN4
Work item code:	⌘	LCS1 ***Date:*** ⌘ 8/10/2001
Category:	⌘	**F** Agreed by consensus ***Release:*** ⌘ REL-4

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)*

Reason for change:	⌘	There are some errors in current SDL diagrams for location services.
Summary of change:	⌘	1. In current SDL diagrams for location services, the initiating side never check the contents of the confirmation nor inform it to the application. These processes were added. 2. The box 'Set result' and 'Set error' is added when the receiving side receives a response from the application for the alignment with the existing SDL diagrams. 3. Some other editorial errors.
Consequences if not approved:	⌘	LCS application is not notified of the result of its request.

Clauses affected:	⌘	24B
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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://www.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

24B Location Service process description

24B.1 Routeing information retrieval procedure for LCS

24B.1.1 General

The message flows for successful retrieval of routeing information related to location services are shown in figure 24B.1/1.

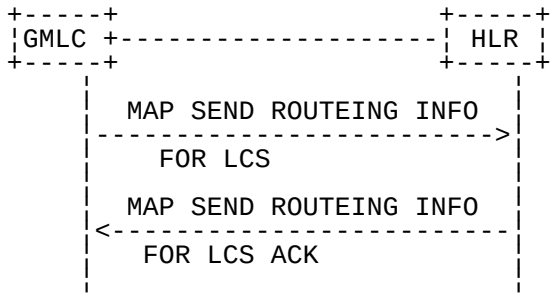
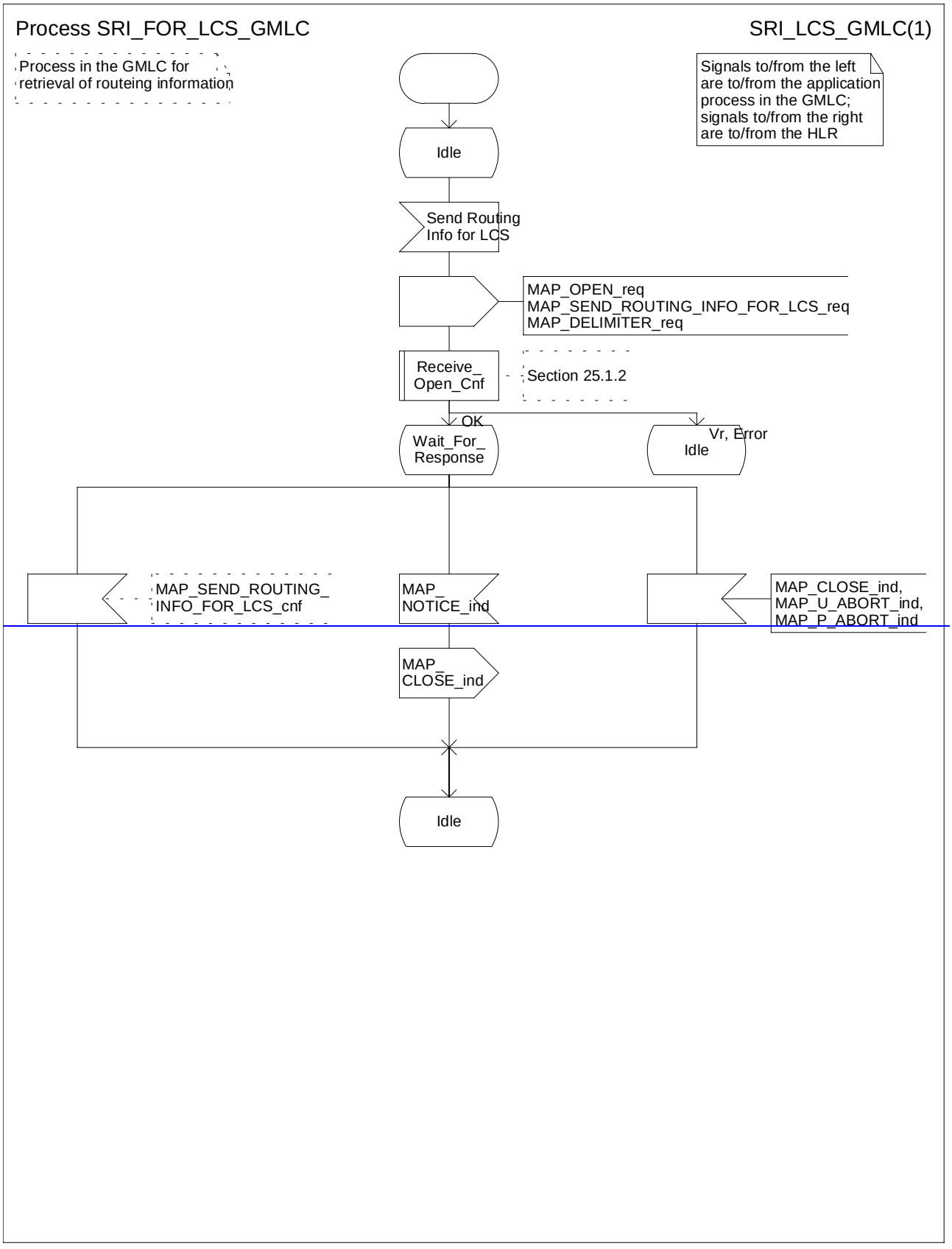


Figure 24B.1/1: Message flow for retrieval of routeing information for LCS

The following MAP services are used to retrieve ~~requested~~routeing information:

MAP_SEND_ROUTING_INFO_FOR_LCS see subclause 13A.1.

24B.1.2 Process in the GMLC



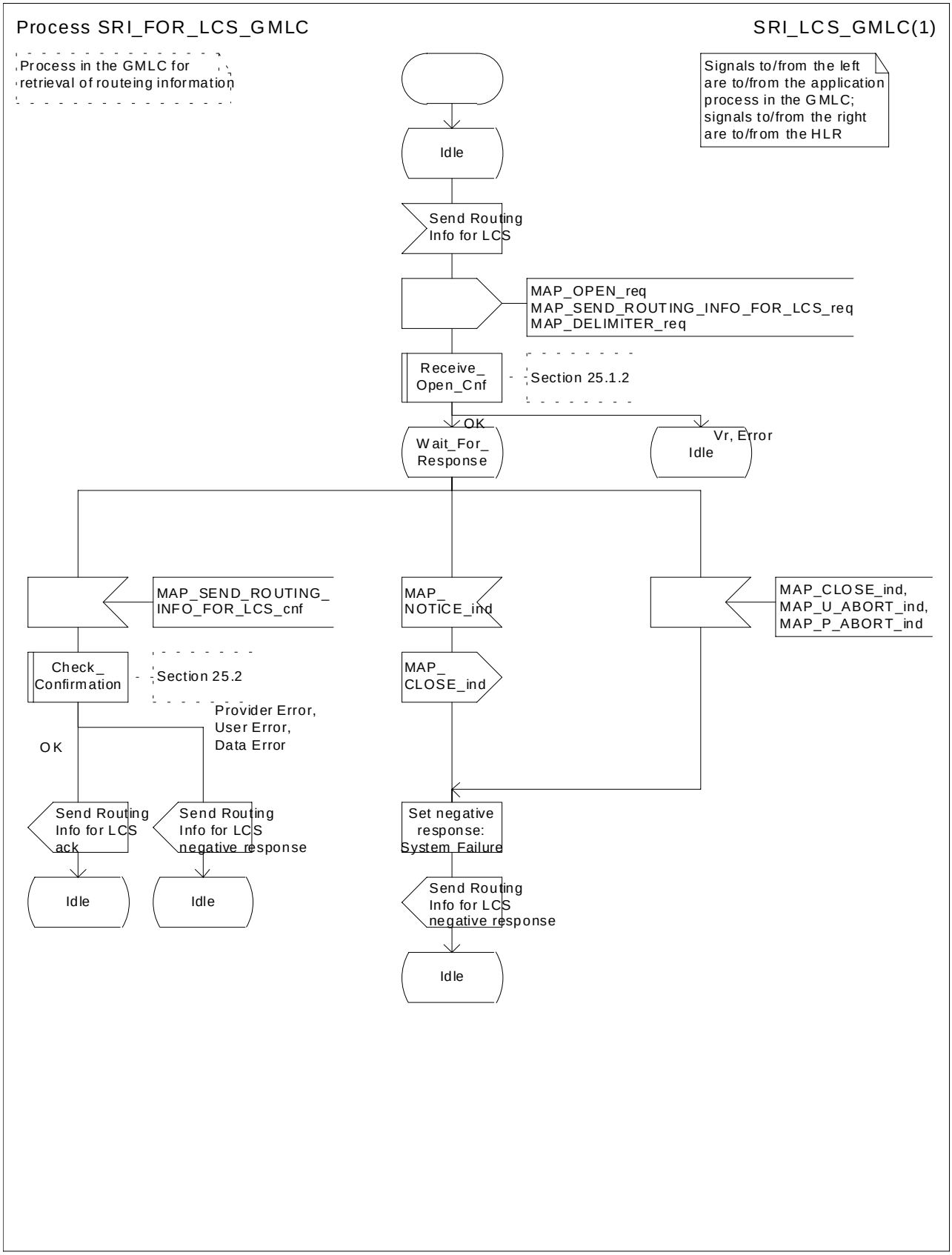
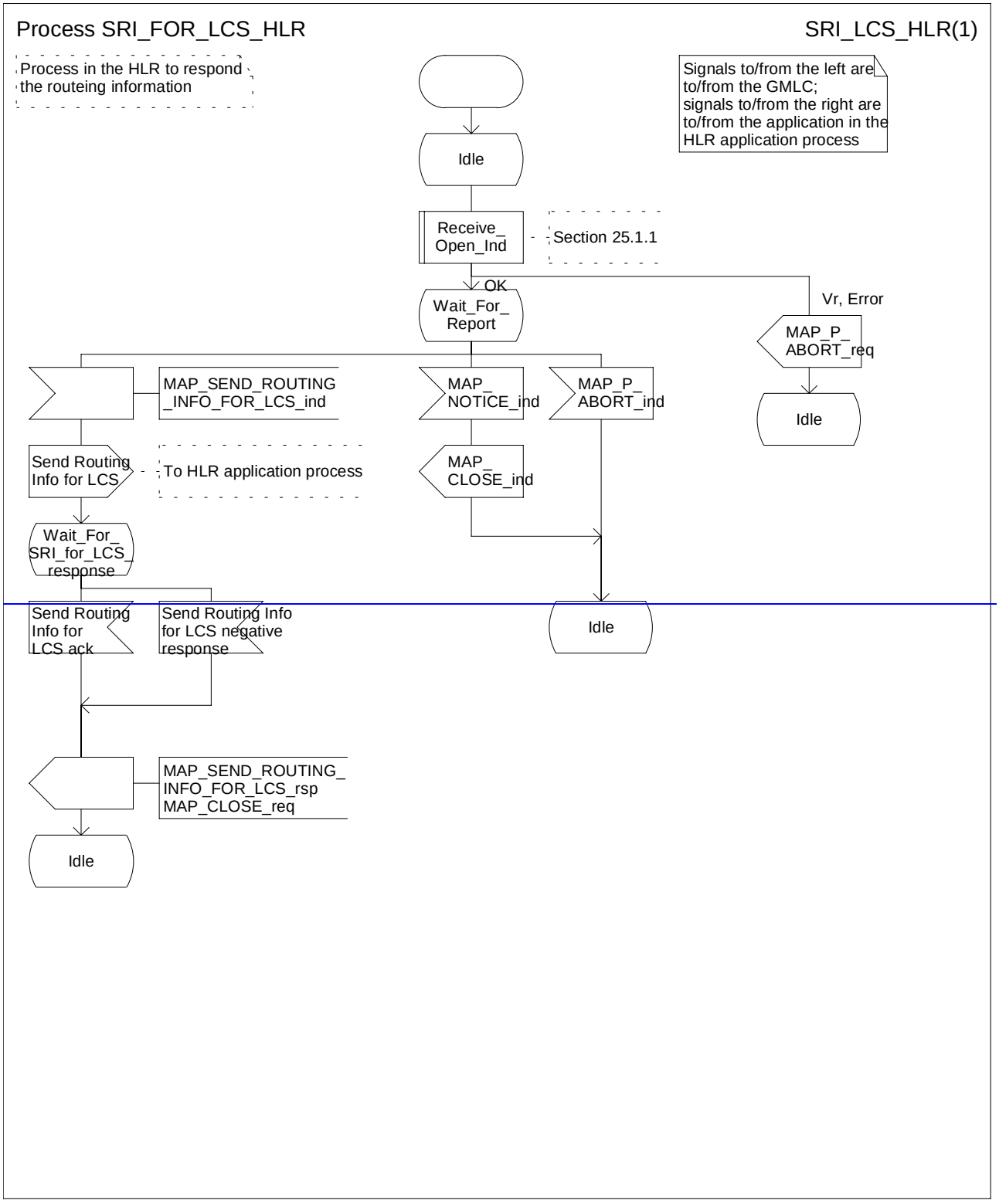


Figure 24B.1/2: Process SRI_FOR_LCS_GMLC

24B.1.3 Process in the HLR


Process SRI_FOR_LCS_HLR
SRI_LCS_HLR(1)
Process in the HLR to respond the routeing information
Signals to/from the left are to/from the GMLC; signals to/from the right are to/from the application in the HLR application process
Idle
Receive_ Open_Ind
Section 25.1.1
OK
Vr, Error
Wait_For_ Report
MAP_P_ ABORT_req
Idle
MAP_SEND_ROUTING _INFO_FOR_LCS_ind
MAP_ NOTICE_ind
MAP_P_ ABORT_ind
Send Routing Info for LCS
To HLR application process
MAP_ CLOSE_ind
Wait_For_ SRI_for_LCS response
Send Routing Info for LCS ack
Send Routing Info for LCS negative response
Idle
MAP_SEND_ROUTING_ INFO_FOR_LCS_rsp MAP_CLOSE_req
Idle

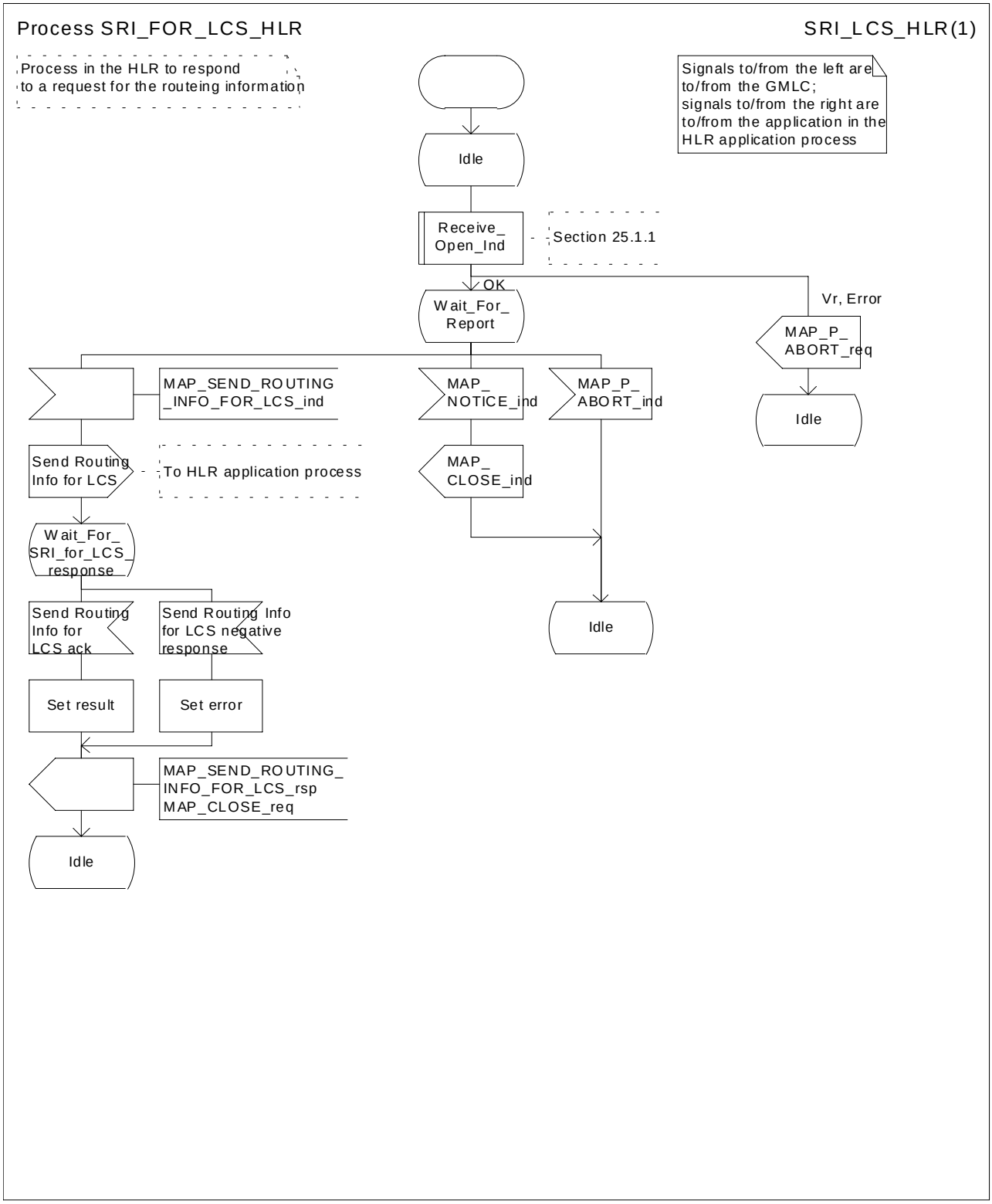


Figure 24B.1/3: Process SRI_FOR_LCS_HLR

24B.2 Provide Subscriber Location procedure

24B.2.1 General

The message flows for successful retrieval of the location information of a target MS related to location services are shown in figure 24B.1/1.

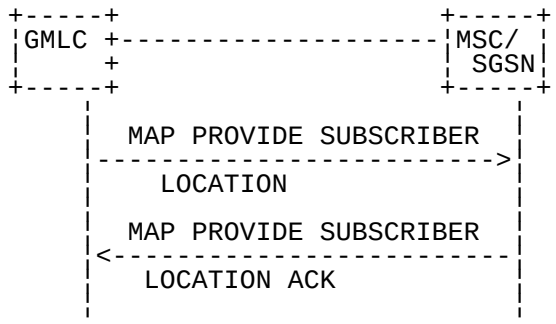
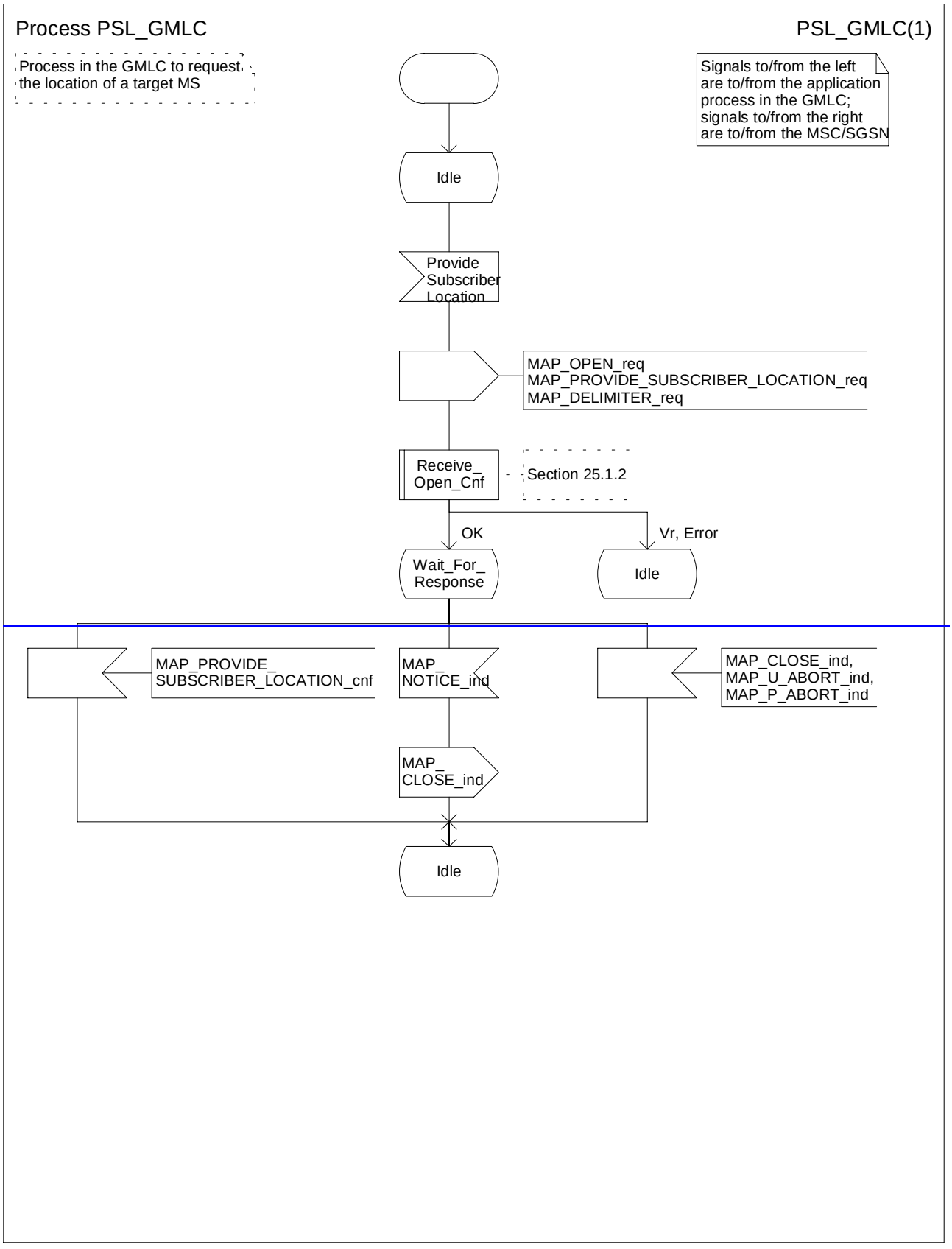


Figure 24B.2/1: Message flow for request of the location information

The following MAP services are used to retrieve ~~requested~~location information:

MAP_PROVIDE_SUBSCRIBER_LOCATION see subclause 13A.2.

24B.2.2 Process in the GMLC



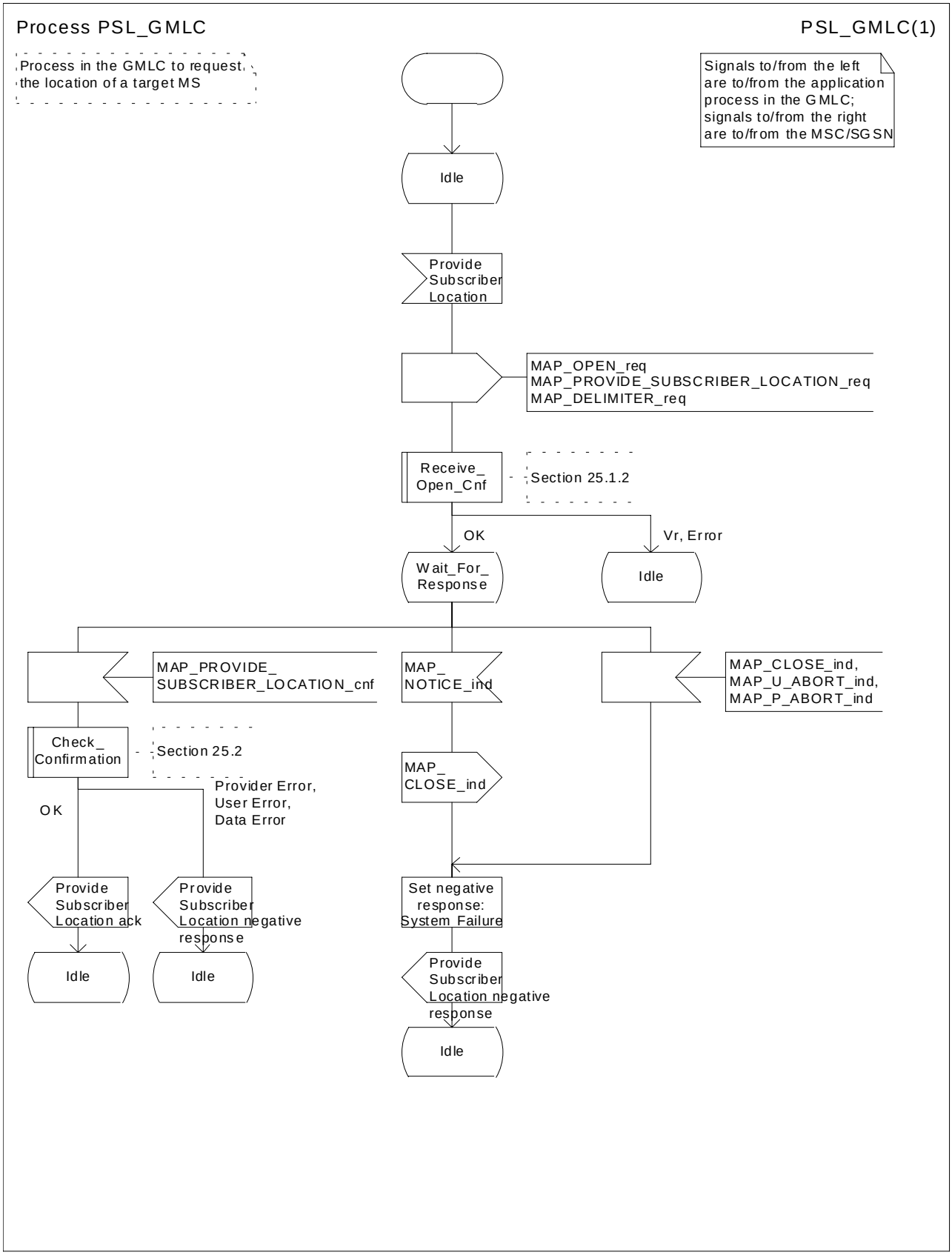
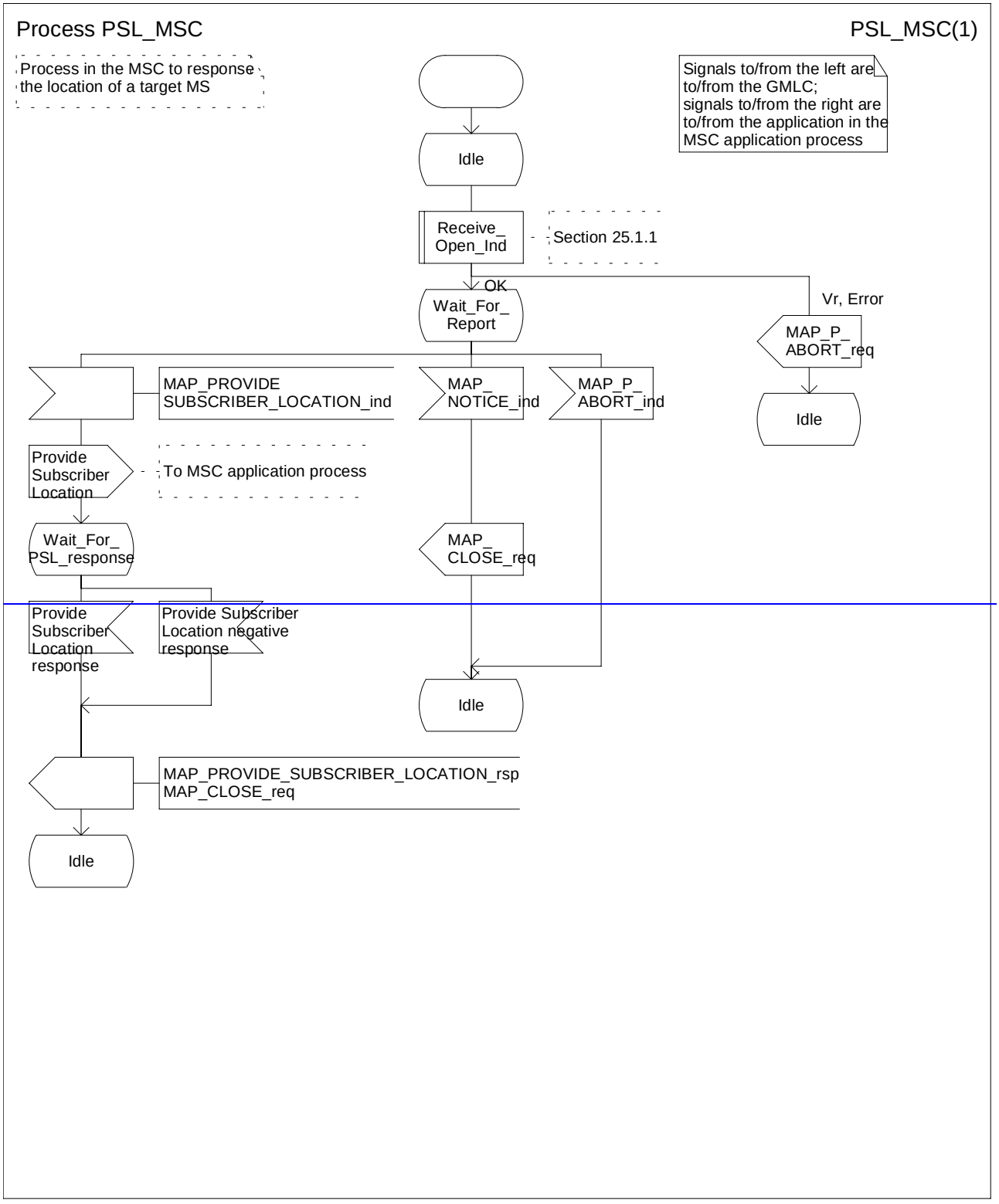


Figure 24B.2/2: Process PSL_GMLC

24B.2.3 Process in the MSC


Process PSL_MSC
PSL_MSC(1)
Process in the MSC to response the location of a target MS
Signals to/from the left are to/from the GMLC; signals to/from the right are to/from the application in the MSC application process
Idle
Receive_ Open_Ind
Section 25.1.1
OK
Vr, Error
Wait_For_ Report
MAP_P_ ABORT_req
Idle
MAP_PROVIDE SUBSCRIBER_LOCATION_ind
MAP_ NOTICE_ind
MAP_P_ ABORT_ind
Provide Subscriber Location
To MSC application process
Wait_For_ PSL_response
MAP_ CLOSE_req
Provide Subscriber Location response
Provide Subscriber Location negative response
Idle
MAP_PROVIDE_SUBSCRIBER_LOCATION_rsp
MAP_CLOSE_req
Idle

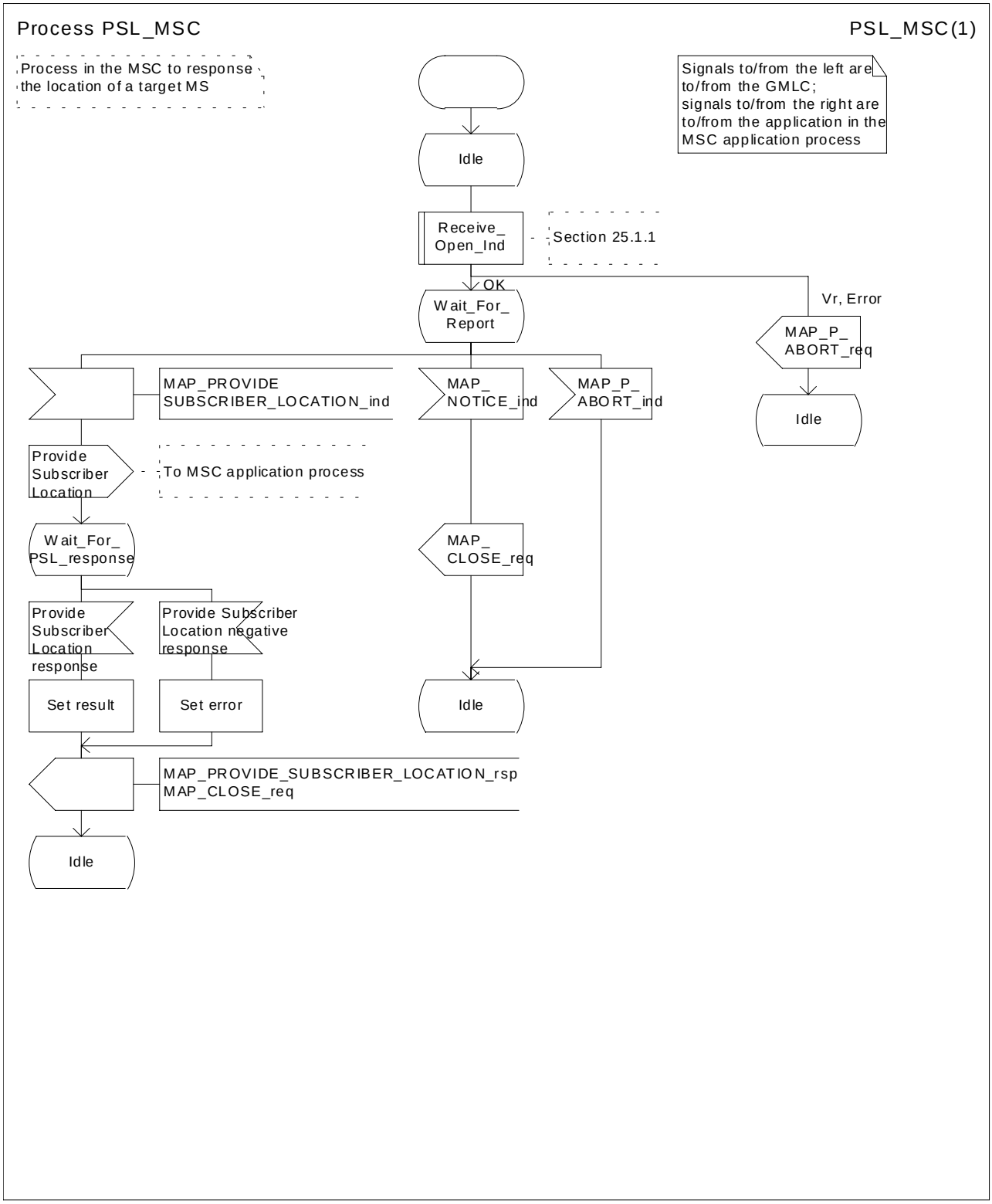
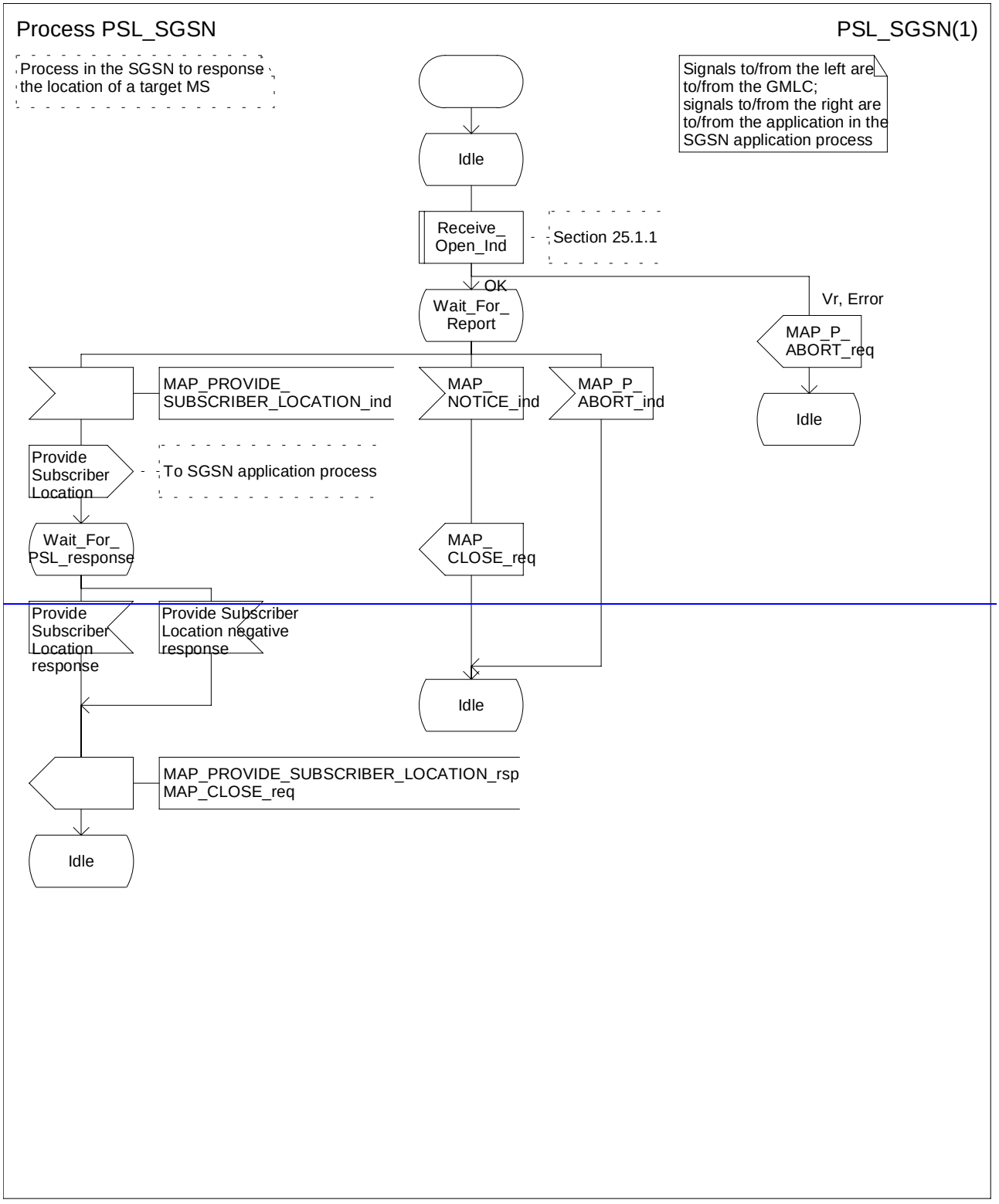


Figure 24B.2/3: Process PSL_MSC

24B.2.4 Process in the SGSN


Process PSL_SGSN
PSL_SGSN(1)
Process in the SGSN to response the location of a target MS
Signals to/from the left are to/from the GMLC; signals to/from the right are to/from the application in the SGSN application process
Idle
Receive_ Open_Ind
Section 25.1.1
OK
Vr, Error
Wait_For_ Report
MAP_P_ ABORT_req
Idle
MAP_PROVIDE_ SUBSCRIBER_LOCATION_ind
MAP_ NOTICE_ind
MAP_P_ ABORT_ind
Provide Subscriber Location
To SGSN application process
Wait_For_ PSL_response
MAP_ CLOSE_req
Provide Subscriber Location response
Provide Subscriber Location negative response
Idle
MAP_PROVIDE_SUBSCRIBER_LOCATION_rsp
MAP_CLOSE_req
Idle

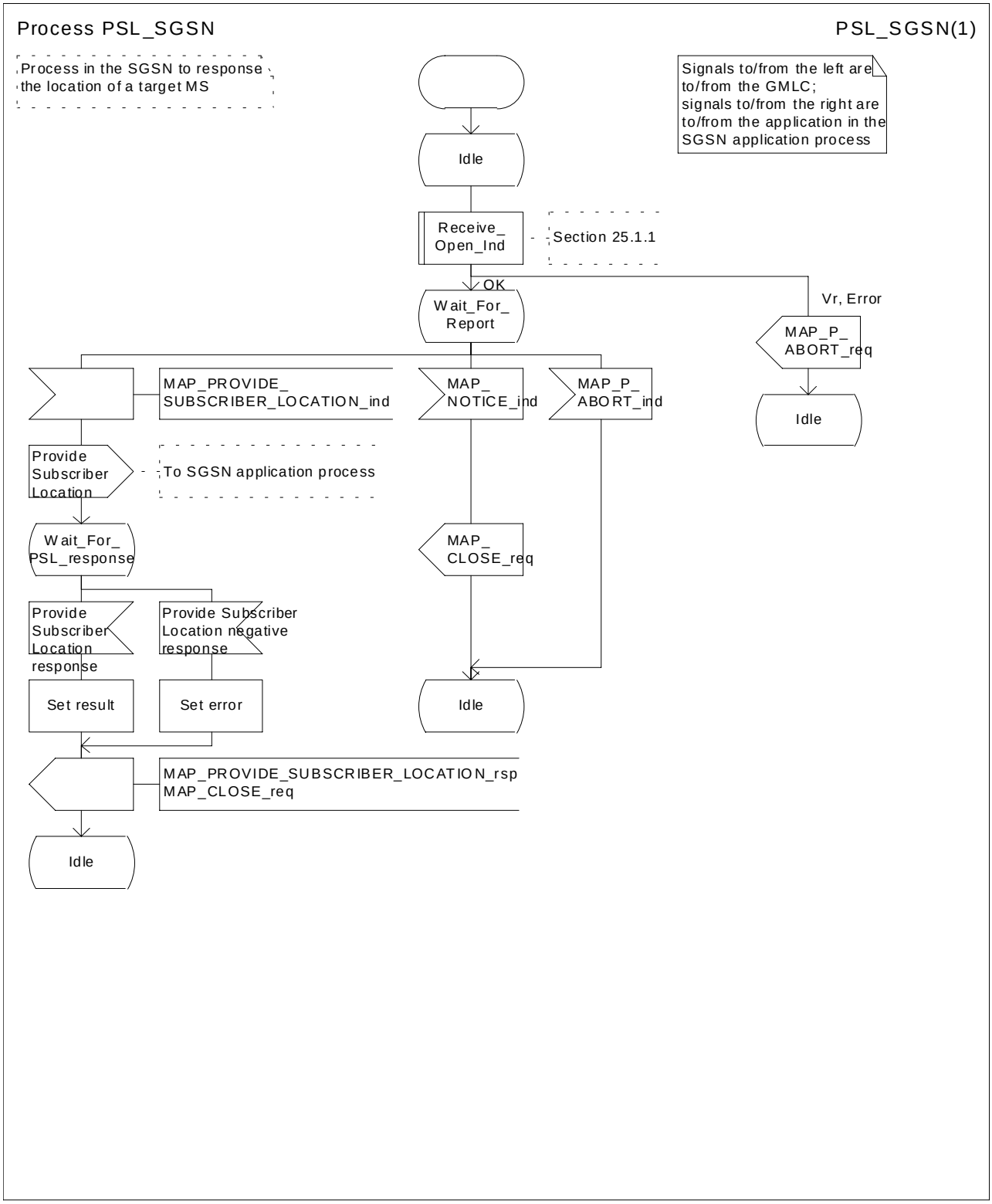


Figure 24B.2/4: Process PSL_SGSN

24B.3 Subscriber Location Report procedure

24B.3.1 General

The message flows for successful report of the location information of a target MS related to location services are shown in figure 24B.3/1.

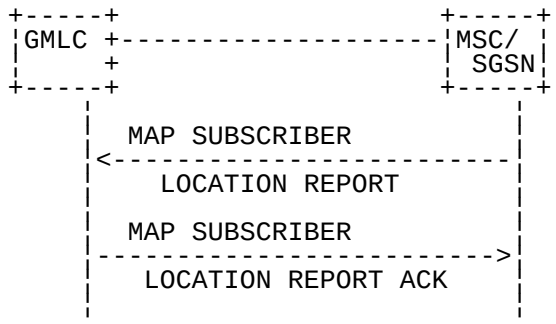
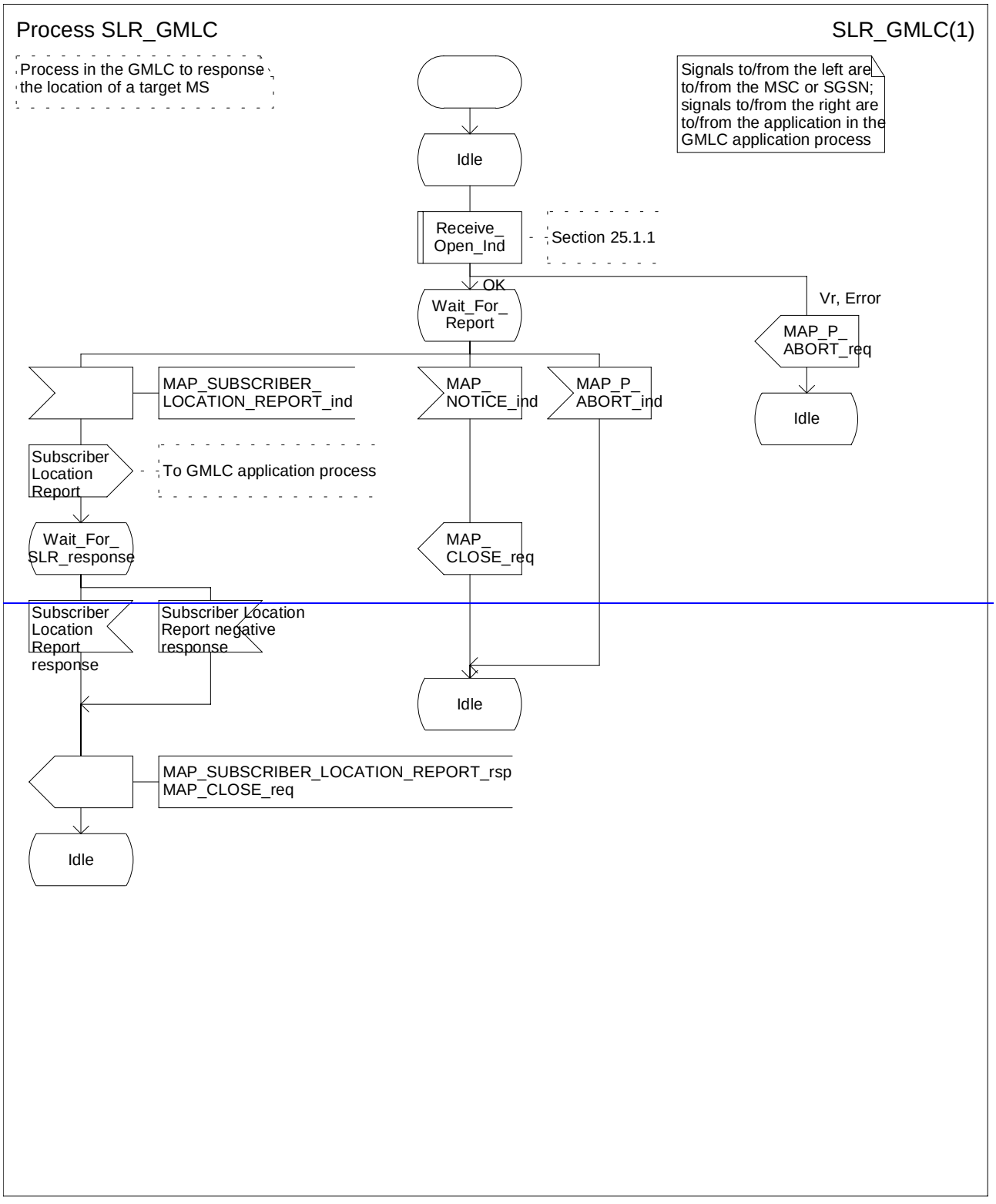


Figure 24B.3/1: Message flow for report of the location information

The following MAP services are used to ~~retrieve requested~~report location information:

MAP_SUBSCRIBER_LOCATION_REPORT see subclause 13A.3.

24B.3.2 Process in the GMLC



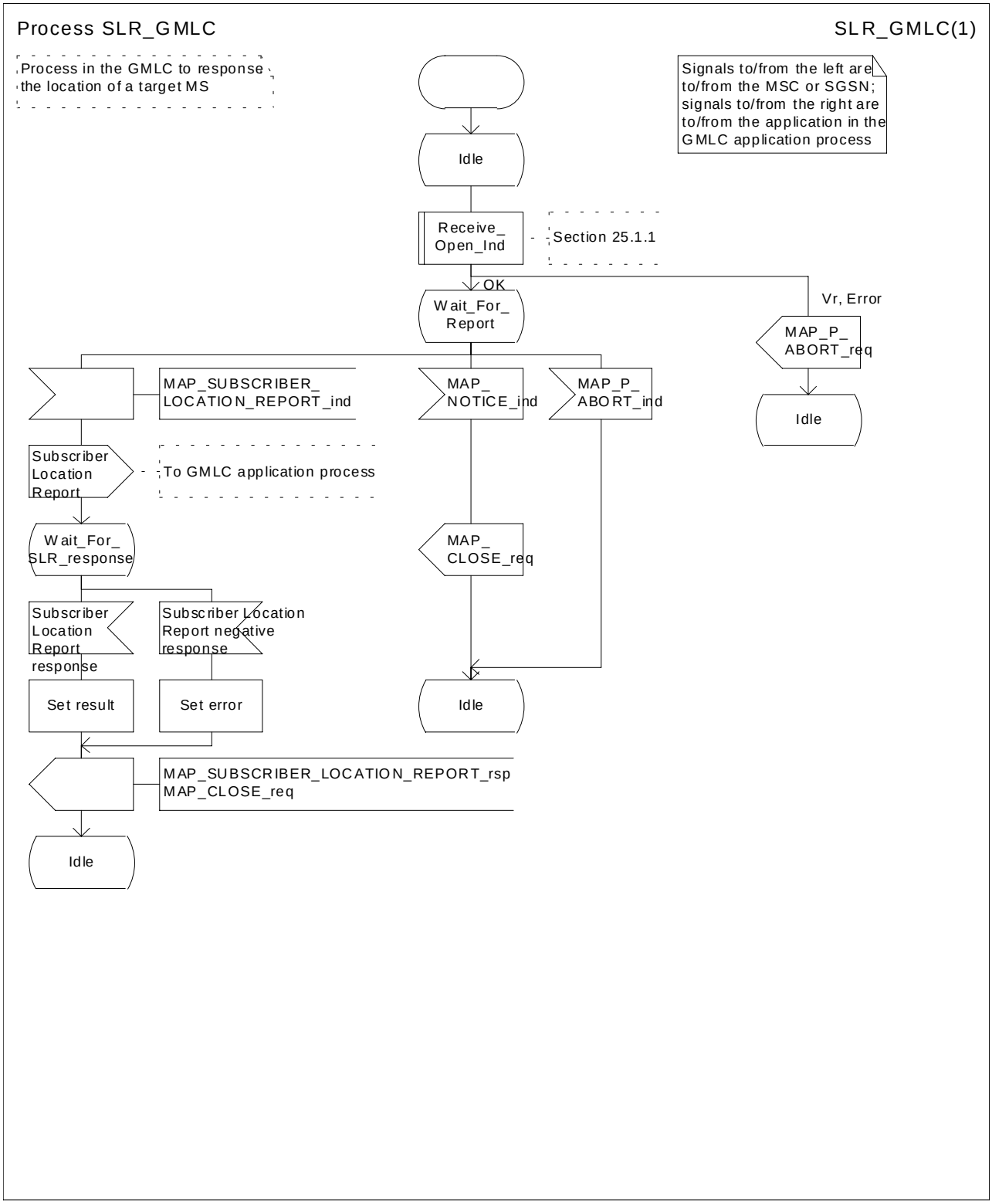
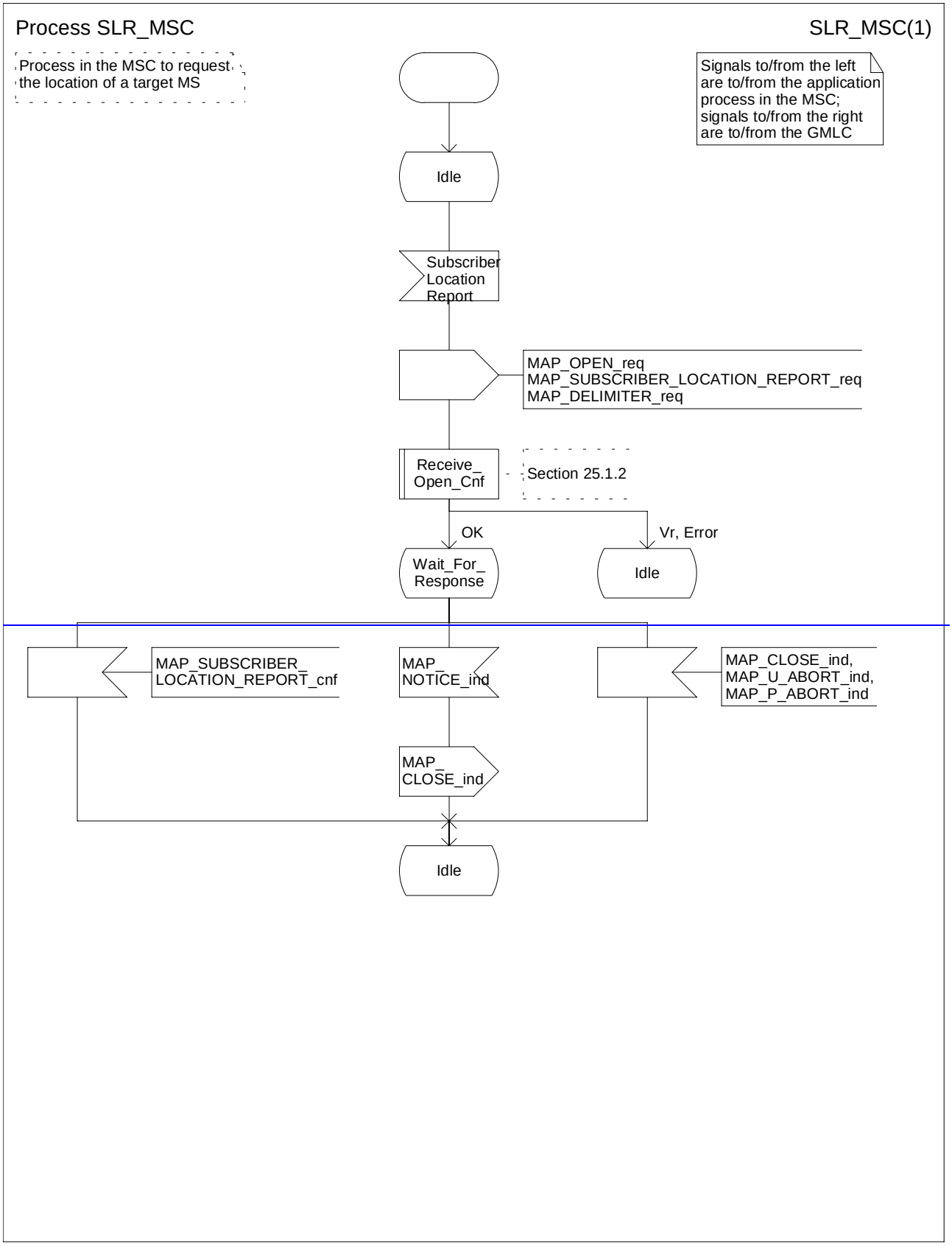


Figure 24B.3/2 Process SLR_GMLC

24B.3.3 Process in the MSC



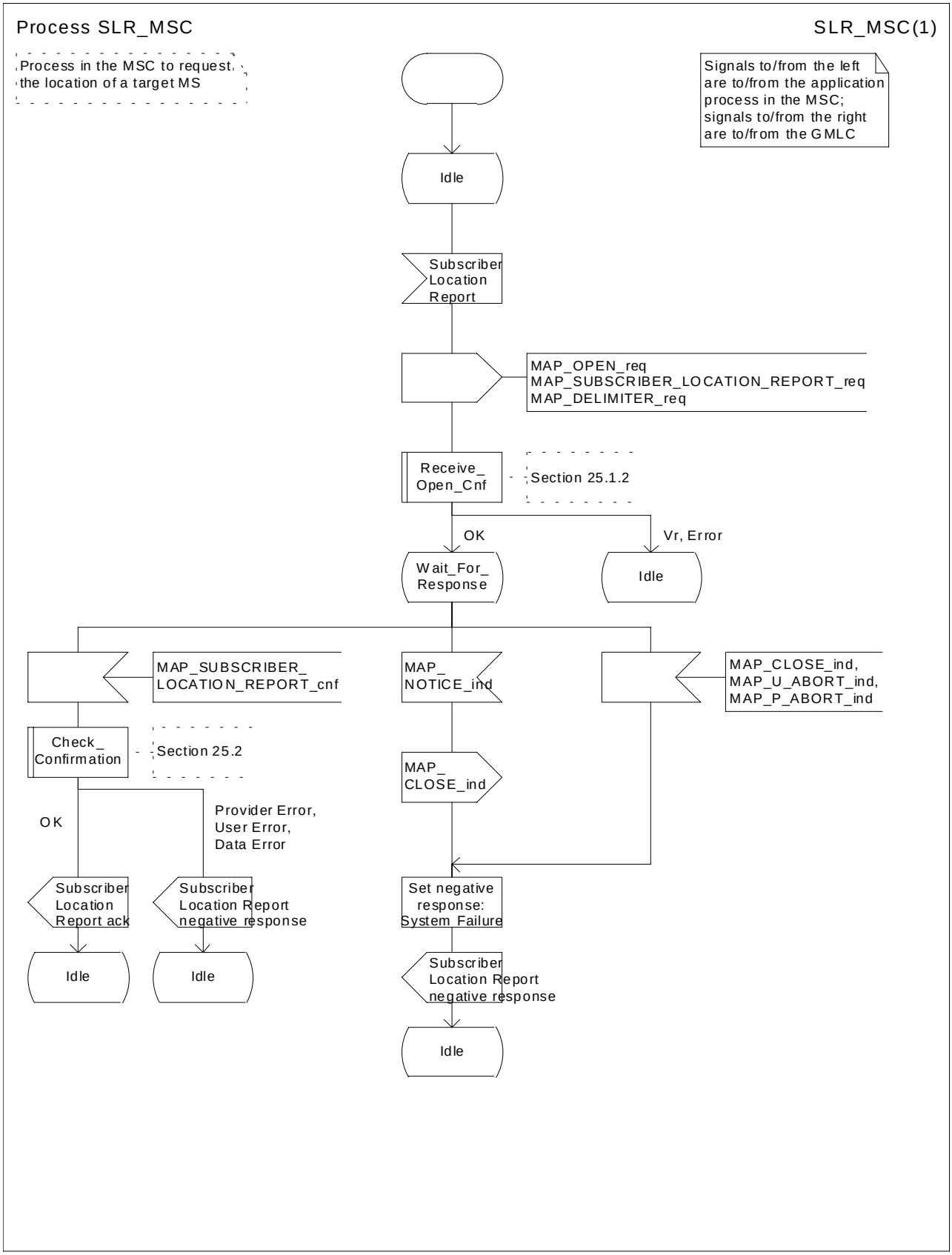
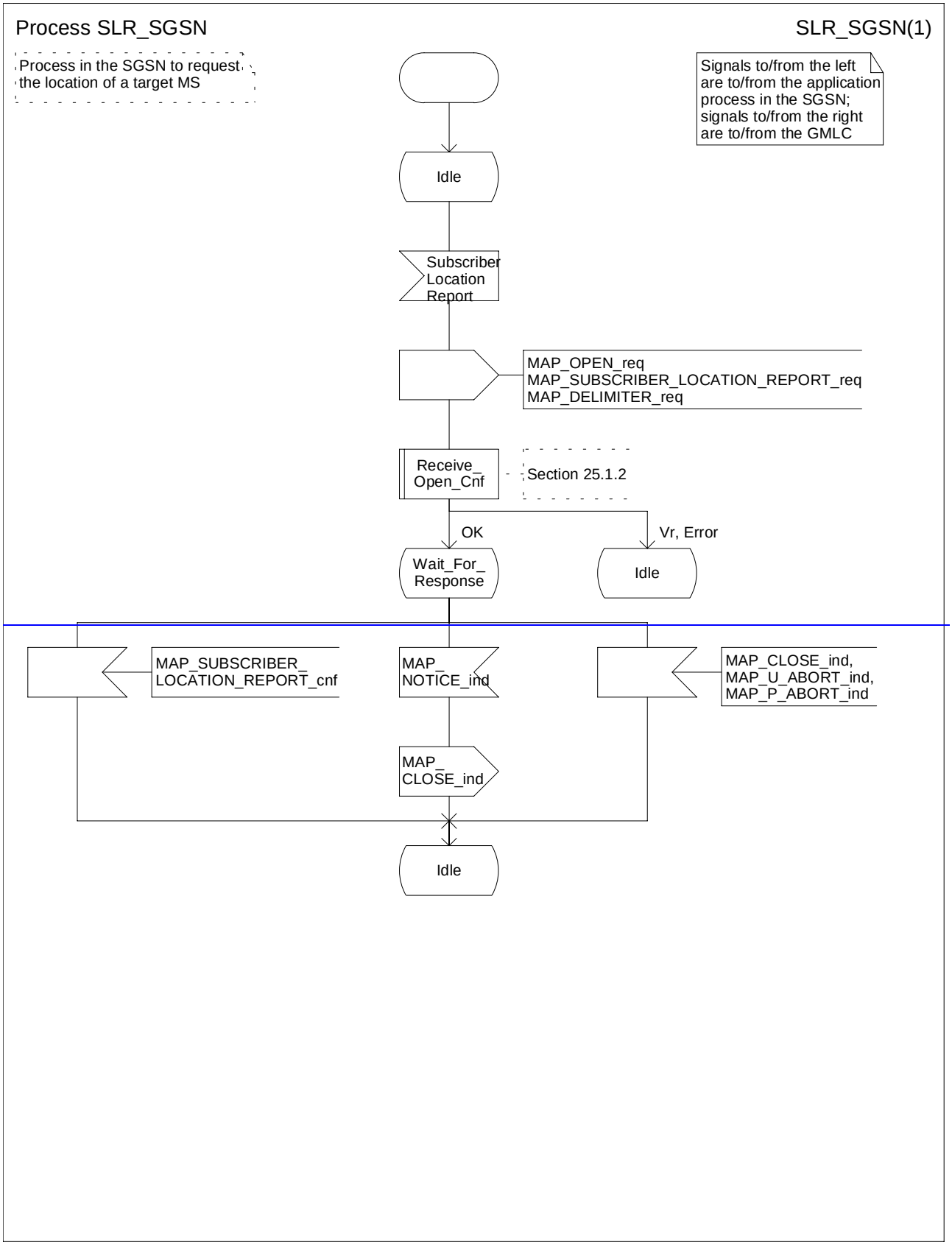


Figure 24B.3/3 Process SLR_MSC

24B.3.4 Process in the SGSN


Process SLR_SGSN
SLR_SGSN(1)
Process in the SGSN to request the location of a target MS
Signals to/from the left are to/from the application process in the SGSN; signals to/from the right are to/from the GMLC
Idle
Subscriber Location Report
MAP_OPEN_req
MAP_SUBSCRIBER_LOCATION_REPORT_req
MAP_DELIMITER_req
Receive_ Open_Cnf
Section 25.1.2
OK
Vr, Error
Wait_For_ Response
Idle
MAP_SUBSCRIBER_ LOCATION_REPORT_cnf
MAP_ NOTICE_ind
MAP_CLOSE_ind,
MAP_U_ABORT_ind,
MAP_P_ABORT_ind
MAP_ CLOSE_ind
Idle

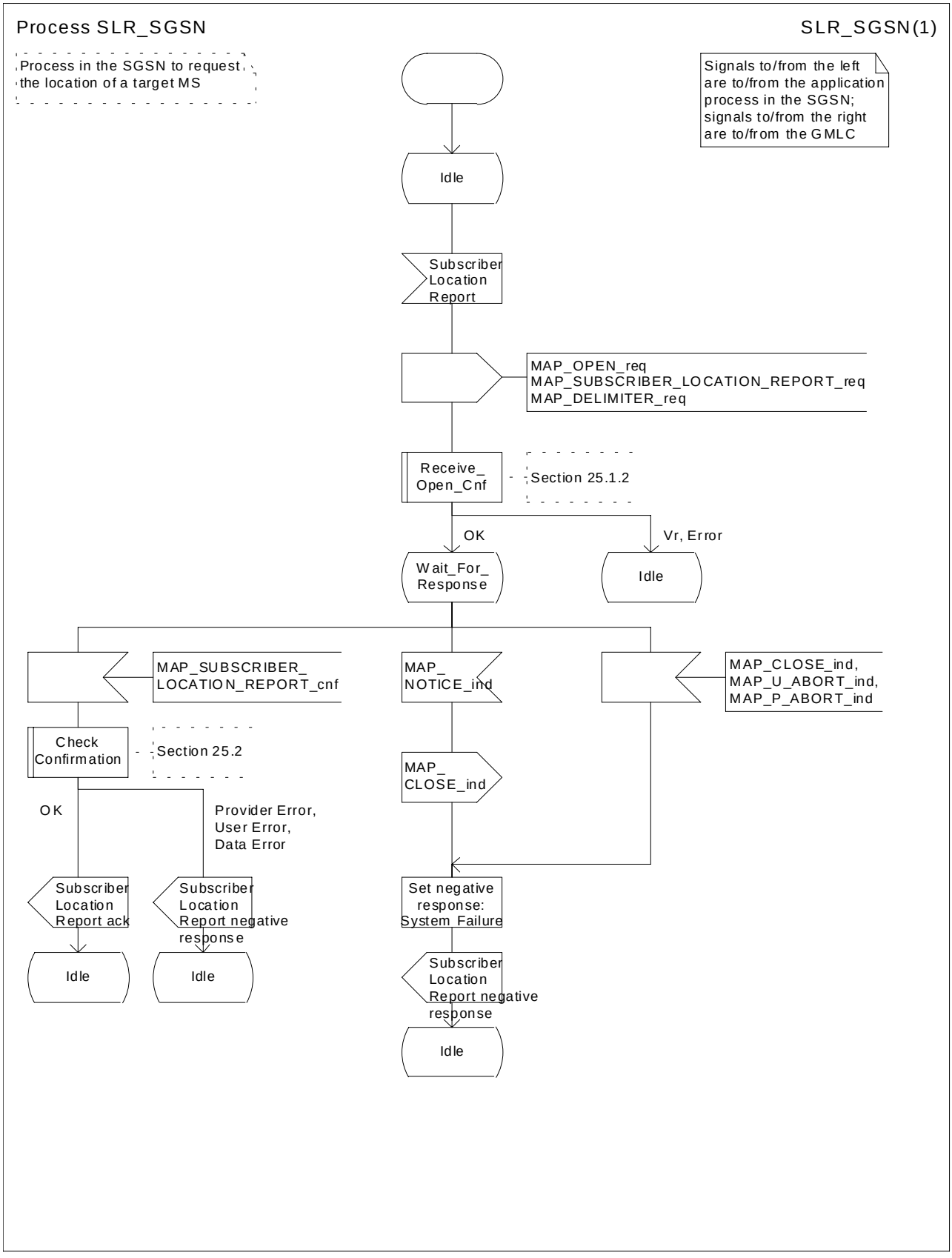


Figure 24B.3/4 Process SLR_SGSN

3GPP TSG CN WG4 Meeting #11 **N4-011262**
Cancun, Mexico, 26th - 30th November 2001

CR-Form-v5

CHANGE REQUEST

⌘ **29.002** **CR** **344** ⌘ **rev** **-** ⌘ Current version: **4.5.0** ⌘

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

Proposed change affects: ⌘ (U)SIM ☐ ME/UE ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Correction of the priority for "SRI for LCS"
Source:	⌘	CN4
Work item code:	⌘	LCS1 ***Date:*** ⌘ 16/11/2001
Category:	⌘	**F** Agreed by consensus ***Release:*** ⌘ Rel-4

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)

Reason for change:	⌘	When the GMLC receives the MSC number and SGSN number (i.e. Network Node Number and Additional Number) by SRI for LCS response from the HLR, the GMLC doesn't know which number should be used to provide the subscriber location. The description for the priority is missing.
Summary of change:	⌘	This CR proposes to add the following text in the definition. --- If the "Network Node Number" and "Additional Number" are received in the GMLC, the "Network Node Number" is used in preference to the "Additional Number". ---
Consequences if not approved:	⌘	The GMLC doesn't know which number should be used to provide the subscriber location.

Clauses affected:	⌘	13A.1.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.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.

13A Location Service Management Services

13A.1 MAP-SEND-ROUTING-INFO-FOR-LCS Service

13A.1.1 Definition

This service is used between the GMLC and the HLR to retrieve the routing information needed for routing a location service request to the servicing VMSC or SGSN. The MAP-SEND-ROUTING-INFO-FOR-LCS is a confirmed service using the primitives from table 13A.1/1.

13A.1.2 Service Primitives

Table 13A.1/1: MAP-SEND-ROUTING-INFO-FOR-LCS

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
MLC Number	M	M(=)		
MSISDN	C	C(=)	C	C(=)
IMSI	C	C(=)	C	C(=)
LMSI			C	C(=)
Network Node Number			C	C(=)
GPRS Node Indicator			C	C(=)
Additional Number			C	C(=)
User error			C	C(=)
Provider error				O

13A.1.3 Parameter Use

Invoke id

See definition in clause 7.6.1.

MLC Number

See definition in clause 7.6.2.

MSISDN

See definition in clause 7.6.2. The request shall carry either the IMSI or MSISDN. The response shall carry whichever of these was not included in the request (see 3G TS 23.271 for details).

IMSI

See definition in clause 7.6.2.

LMSI

See definition in clause 7.6.2. It is an operator option to provide this parameter from the VLR; it is mandatory for the HLR to include the LMSI in a successful response, if the VLR has used the LMSI.

Network Node Number

See definition in clause 7.6.2. This parameter is provided in a successful response. If the “Network Node Number” and “Additional Number” are received in the GMLC, the "Network Node Number" is used in preference to the "Additional Number".

GPRS Node Indicator

See definition in clause 7.6.8. The presence of this parameter is mandatory only if the SGSN number is sent in the Network Node Number.

Additional Number

See definition in clause 7.6.2. This parameter is provided in a successful response. If the “Network Node Number” and “Additional Number” are received in the GMLC, the "Network Node Number" is used in preference to the "Additional Number".

User error

The following errors defined in clause 7.6.1 may be used, depending on the nature of the fault:

- Unknown subscriber;
- Absent Subscriber;
- Facility Not Supported;
- System failure;
- Unexpected Data Value;
- Data missing;
- Unauthorised requesting network.

Provider error

For definition of provider errors see clause 7.6.1.