3GPP TSG CN Plenary
Meeting #10, Bangkok, Thailand
6th – 8th December 2000

Tdoc NP-000646

Source: TSG_CN WG 4

Title: CRs to R97 Work Item USSD

Agenda item: 7.23

Document for: APPROVAL

Introduction:

This document contains 4 CRs on R97 Work Item USSD, that have been agreed by TSG_CN WG4, and is forwarded to TSG_CN Plenary meeting #10 for approval.

SMG#	TDoc	SPEC	CR	RE	PHAS	VERS	SUBJECT	CAT
CN10	N4-000909	09.02	A309	2	R97	6.8.0	Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface	F
CN10	N4-000910	09.02	A308	2	R98	7.5.0	Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface	A
CN10	N4-000911	29.002	167	3	R99	3.5.1	Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface	A
CN10	N4-000912	29.002	166	3	Rel-4	4.0.1	Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface	A

3GPP TSG-CN4
Paris, FRANCE
13th November – 17th November 2000

Tdoc N4-000910

CHANGE REQUEST

09.02	CR	A308r2	Current Version:	7.5.0

For submission to: CN#10 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ]

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: CN4 **Date:** 12th September 2000

Subject: Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface

Work item: CAMEL phase 2

Category:

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[X]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[X]
Release 99	[ ]
Release 00	[ ]

Reason for change: Various corrections of USSD procedures;
addition of USSD procedure description in the gsmSCF

Clauses affected: 22.9.4, 22.9.5 (new), 22.10.2, 22.10.4, 22.10.5 (new)

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	R99: CR 29.002 167r3 R00: CR 29.002 166r3
Other GSM core specifications	[X]	→ List of CRs:	R97: CR 09.02 A309r2
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:

22.9.4 Procedures in the HLR

~~The initiation of the process is shown in subclause 22.1.3~~ The Mobile initiated USSD Procedure in the HLR starts by the HLR receiving a MAP-OPEN service indication from the VLR.

Once a MAP dialogue is established, the HLR may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the VLR. This message contains information input by the user. If the alphabet used for the message is understood then the message shall either be fed to an application contained locally in the HLR or to the gsmSCF. If the alphabet is not understood then the error "UnknownAlphabet" shall be returned.

Message Destined for Local Application

If the message is destined for the local USSD application then the HLR shall transfer the message to the local application.

The HLR may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the application.

When the HLR receives the result of the original operation from the application then it shall pass this to the VLR and initiate release of the CM connection.

Message Destined for gsmSCF

If the message is destined for the gsmSCF then the HLR shall transfer the message transparently to the gsmSCF. The HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications from the gsmSCF. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the gsmSCF.

When the HLR receives a MAP_PROCESS_UNSTRUCTURED_SS_REQUEST confirmation from the gsmSCF then it shall pass this to the VLR and closes the MAP provider service.

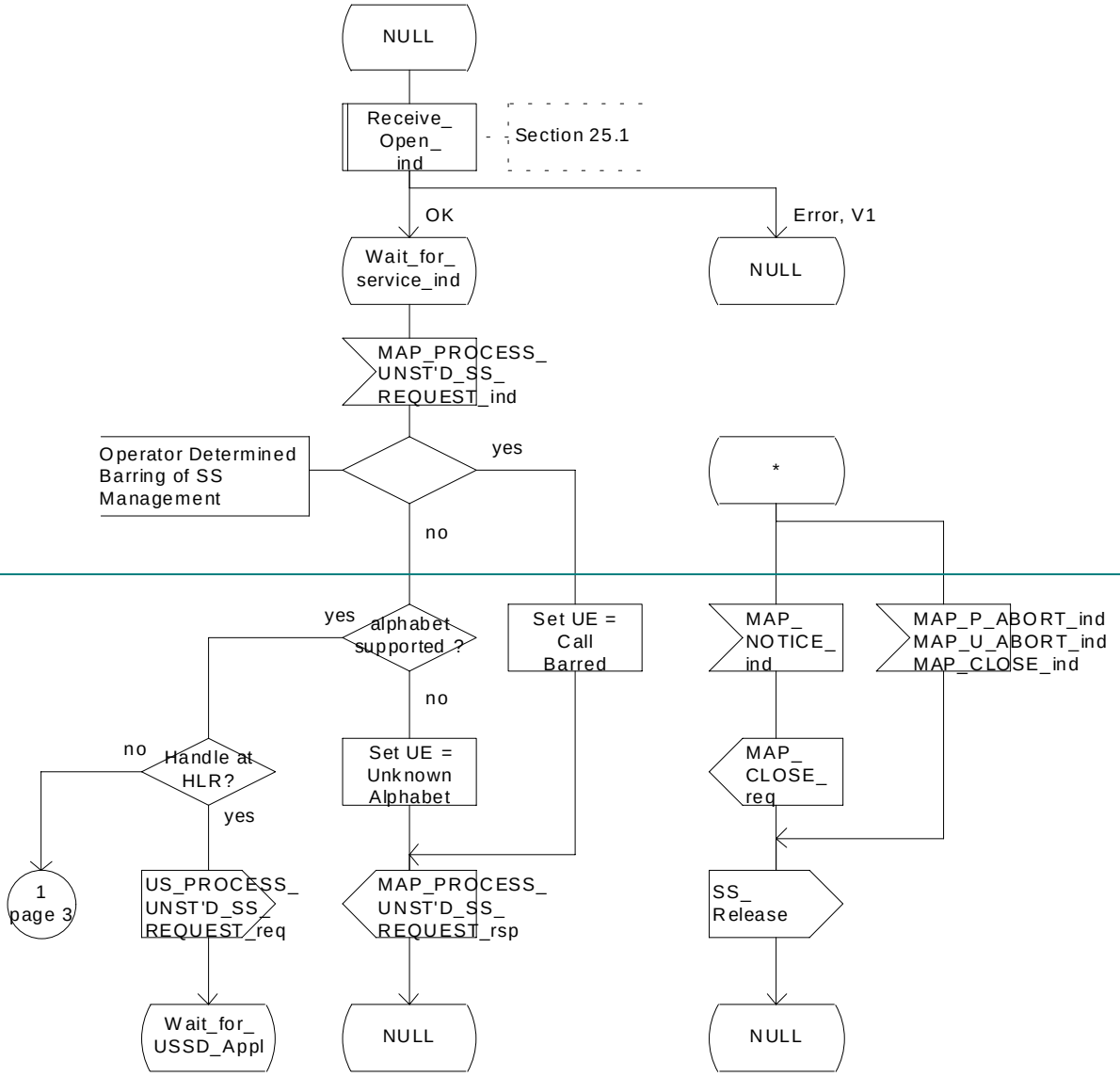
Error Handling

Both the VLR, the USSD Application and the gsmSCF may initiate release of the MAP service at any time. This is handled as shown in the diagrams.

The procedure in the HLR is shown in figure 22.9.4/1.

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR
unless otherwise stated.
Arrow to right are to USSD application
unless otherwise stated



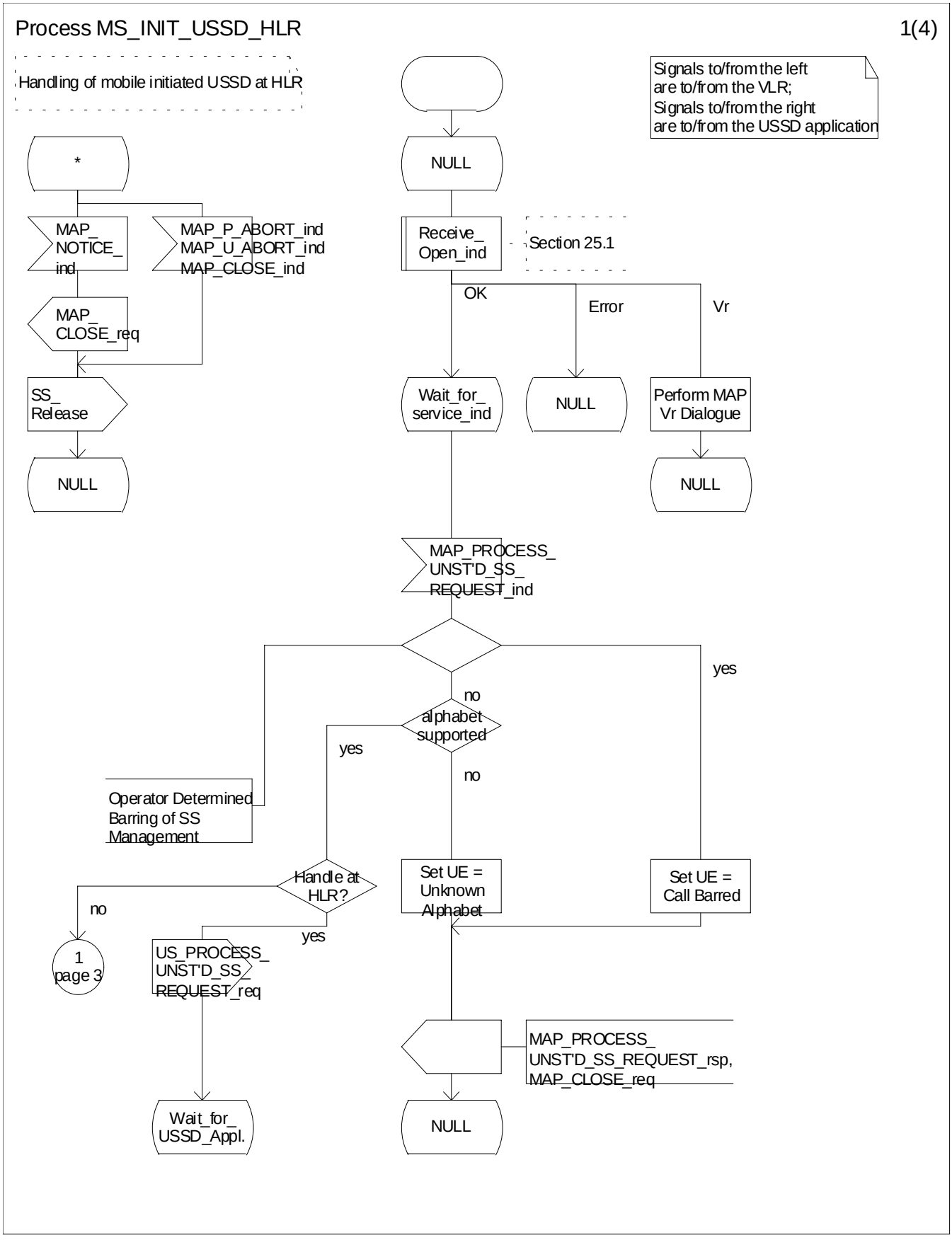


Figure 22.9.4/1 (sheet 1 of 4): Procedure MI_USSD_HLR

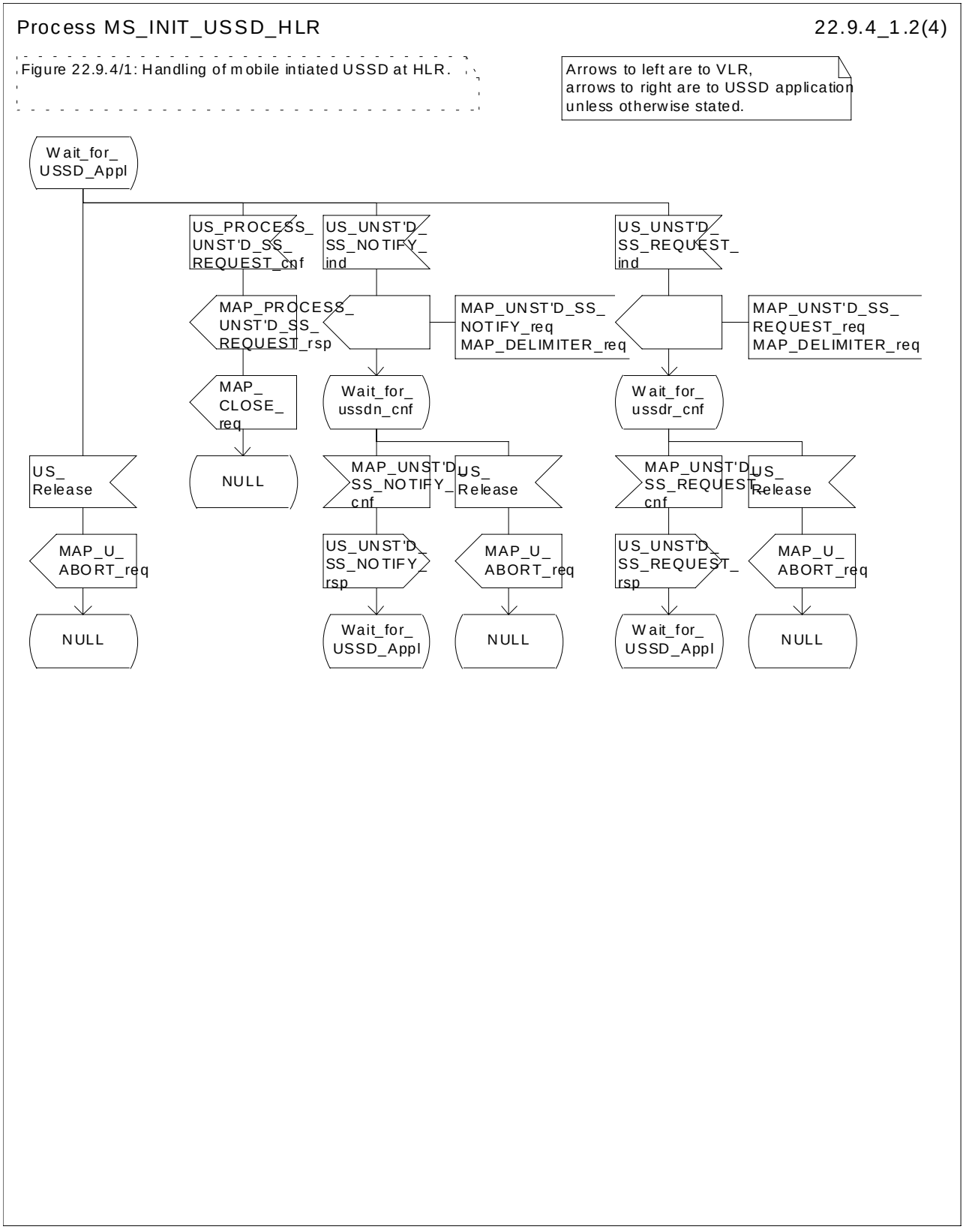


Figure 22.9.4/1 (sheet 2 of 4): Procedure MI_USSD_HLR

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR, arrows to right are to gsmSCF unless otherwise stated.

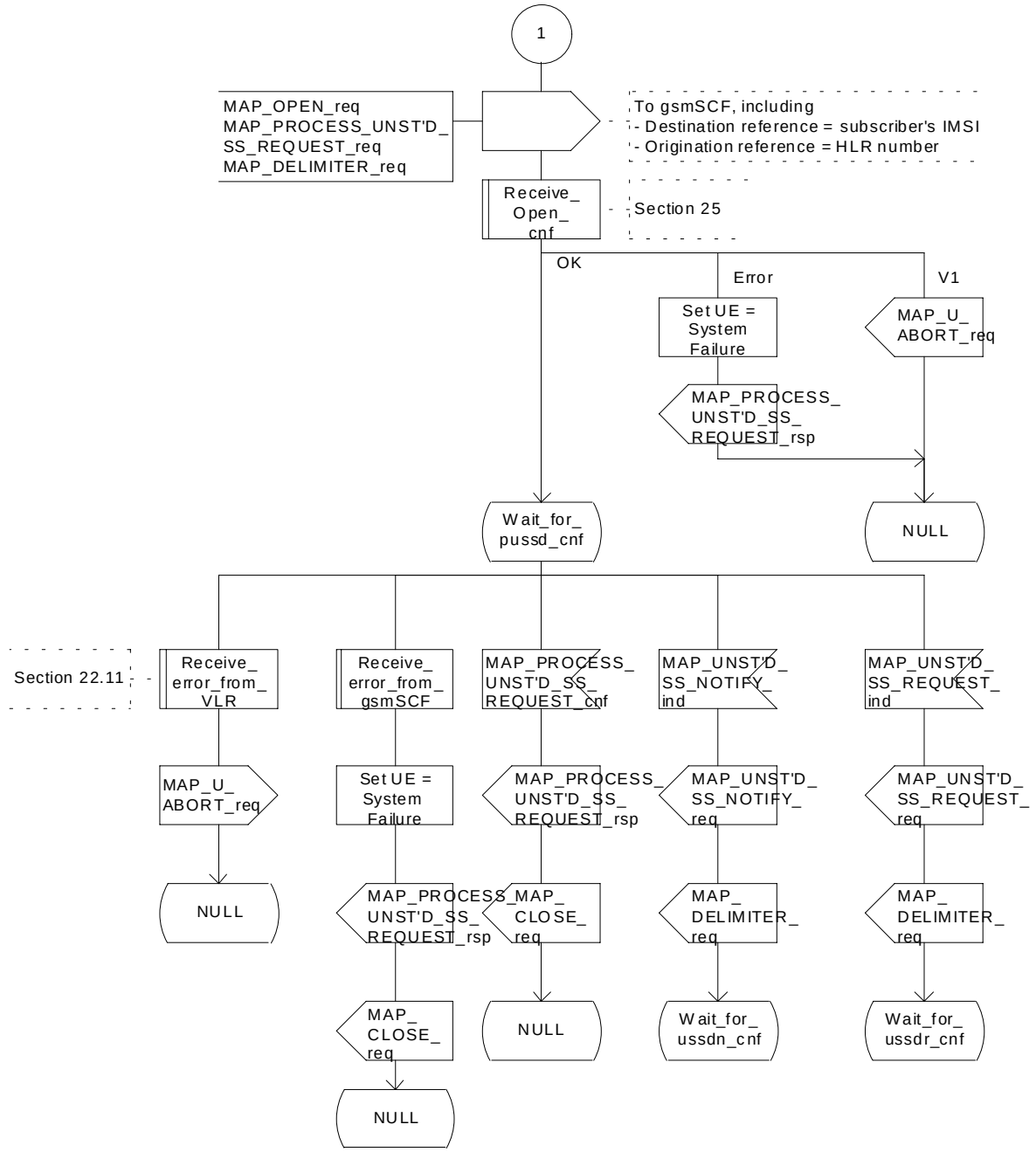


Figure 22.9.4/1 (sheet 3 of 4): Procedure MI_USSD_HLR

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

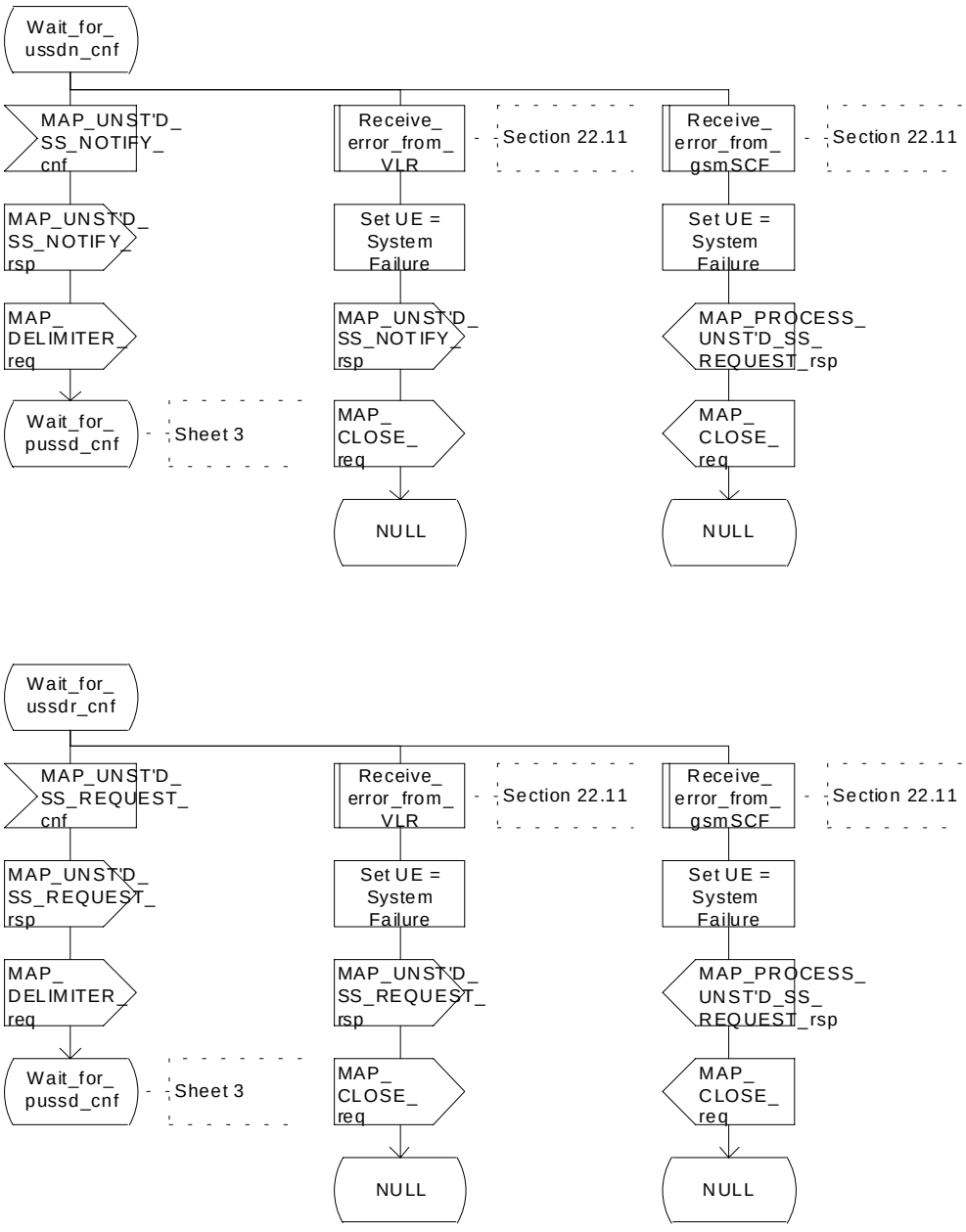


Figure 22.9.4/1 (sheet 4 of 4): Procedure MI_USSD_HLR

22.9.5 Procedures in the gsmSCF

The Mobile initiated USSD Procedure in the gsmSCF starts by the gsmSCF receiving a MAP-OPEN service indication from the HLR.
Once a MAP dialogue is established, the gsmSCF may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the HLR.
The gsmSCF shall transfer the message to the local application.
The gsmSCF may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the HLR. When a confirmation is received from the HLR this shall be returned to the application.
When the gsmSCF receives the result of the original operation from the application then it shall pass this to the HLR and initiate release of the CM connection.

Error Handling

Both the HLR and the USSD Application may initiate release of the MAP service at any time. This is handled as shown in the diagrams.
The procedure in the gsmSCF is shown in figure 22.9.5/1.

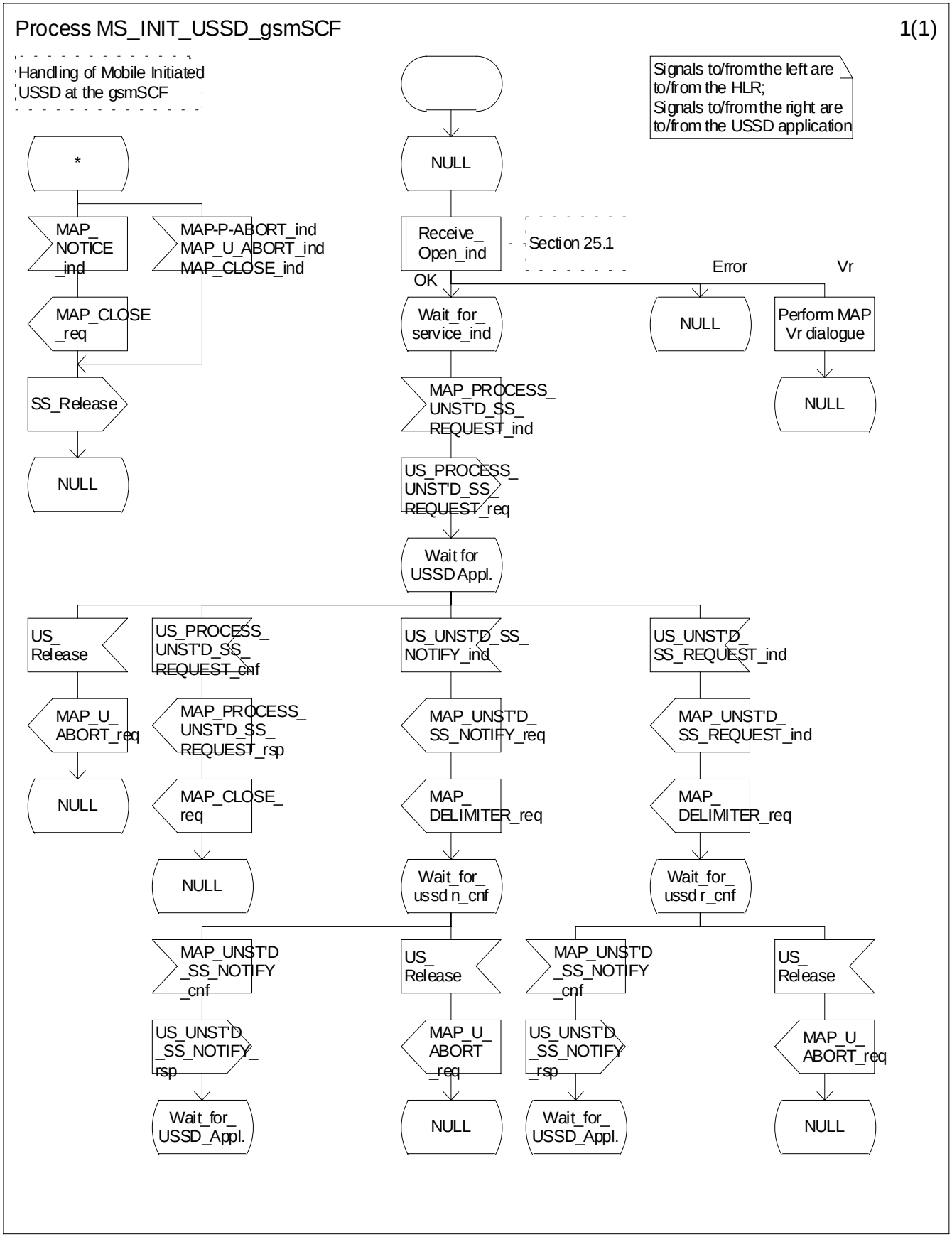


Figure 22.9.5/1 Process MS_INIT_USSD_gsmSCF

22.10.2 Procedure in the MSC

The procedure may be invoked either by the VLR or by a USSD application local to the MSC. They may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
If the request is initiated by a local USSD application then the MSC will open a dialogue with the V~~H~~LR.
In both cases the MSC will initiate a CM connection to the MS (using the page or search macros defined in subclause 25.3). Once the connection is successfully established the message received from the VLR or USSD application will be sent to the MS using the mapping specified in GSM 09.11.
Following transfer of the message the MSC will wait for a confirmation from the MS. This will be sent to the VLR or USSD application as appropriate.
Following this, the MSC may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive an indication to release the connection to the MS.
In the event of an error, the connection to the MS shall be released, and the MAP process with the VLR shall be aborted as shown in the diagram.
The procedure in the MSC is shown in figure 22.10.2/1.
.....

22.10.4 Procedure in the HLR

The procedure may be invoked either by the gsmSCF or by a USSD application local to the HLR. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the HLR will first check whether the MS is reachable .
If the MS is reachable, the HLR will initiate a MAP dialogue with the VLR and send~~. Once the dialogue is successfully established~~ the message received from the gsmSCF or USSD application ~~will be sent~~ to the VLR.
Following transfer of the message the HLR will wait for a confirmation from the VLR. This will be sent to the gsmSCF or USSD application as appropriate.
Following this, the HLR may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive a MAP_CLOSE_ind.
In the event of an error, the MAP process with the VLR shall be released and if necessary the MAP process with the gsmSCF shall be aborted, as shown in the diagram.
Message Originated by gsmSCF
If the message is originated by the gsmSCF then the HLR shall transfer the message transparently to the VLR.
The HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST_ind or MAP_UNSTRUCTURED_SS_NOTIFY_ind indications from the gsmSCF. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the gsmSCF.
When the HLR receives a MAP_CLOSE_ind from the gsmSCF then it shall pass this to the VLR and close the MAP dialogue.
The procedure in the HLR is shown in figure 22.10.4/1 and 22.10.4/2.

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to gsmSCF
unless otherwise stated.

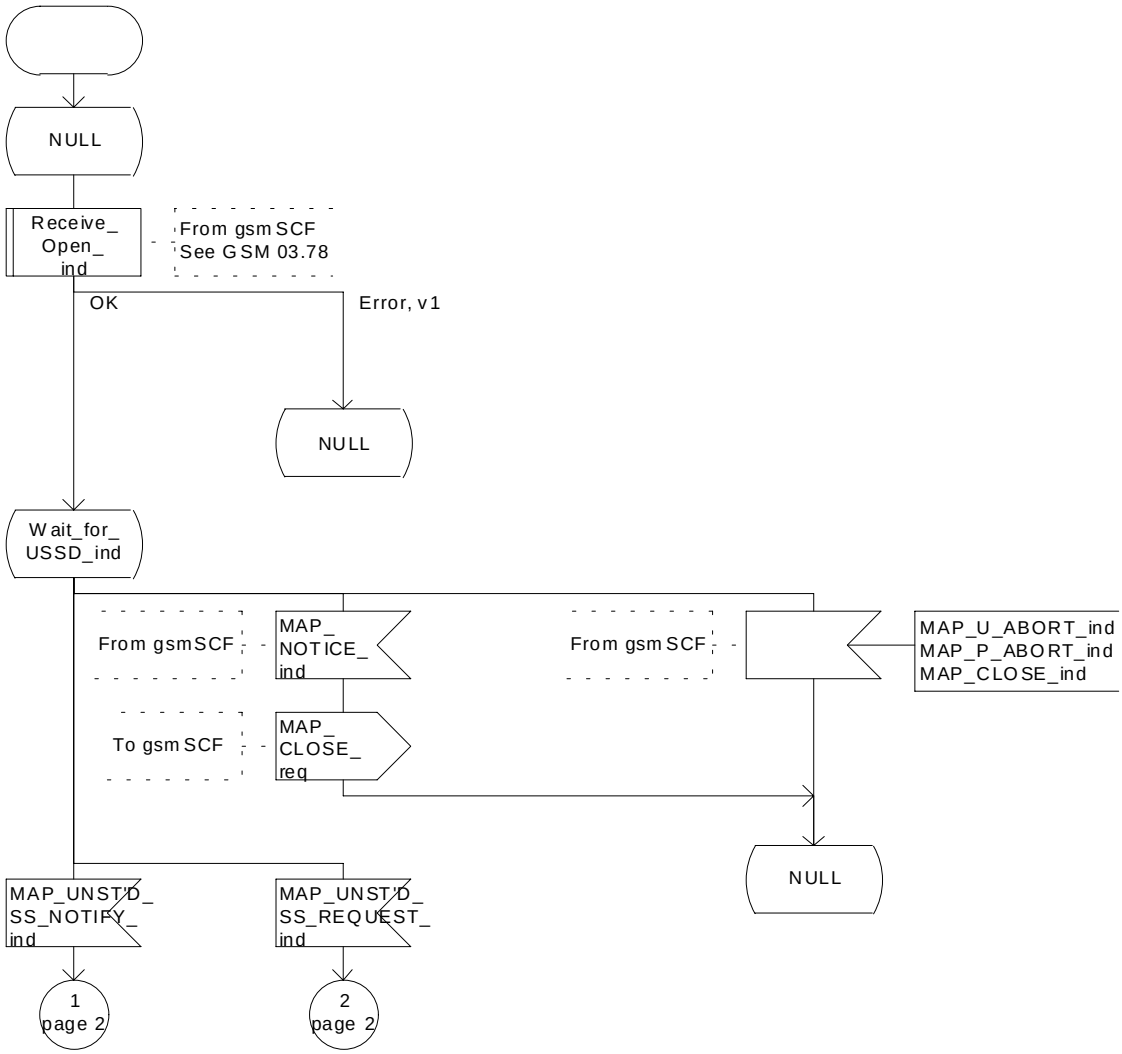
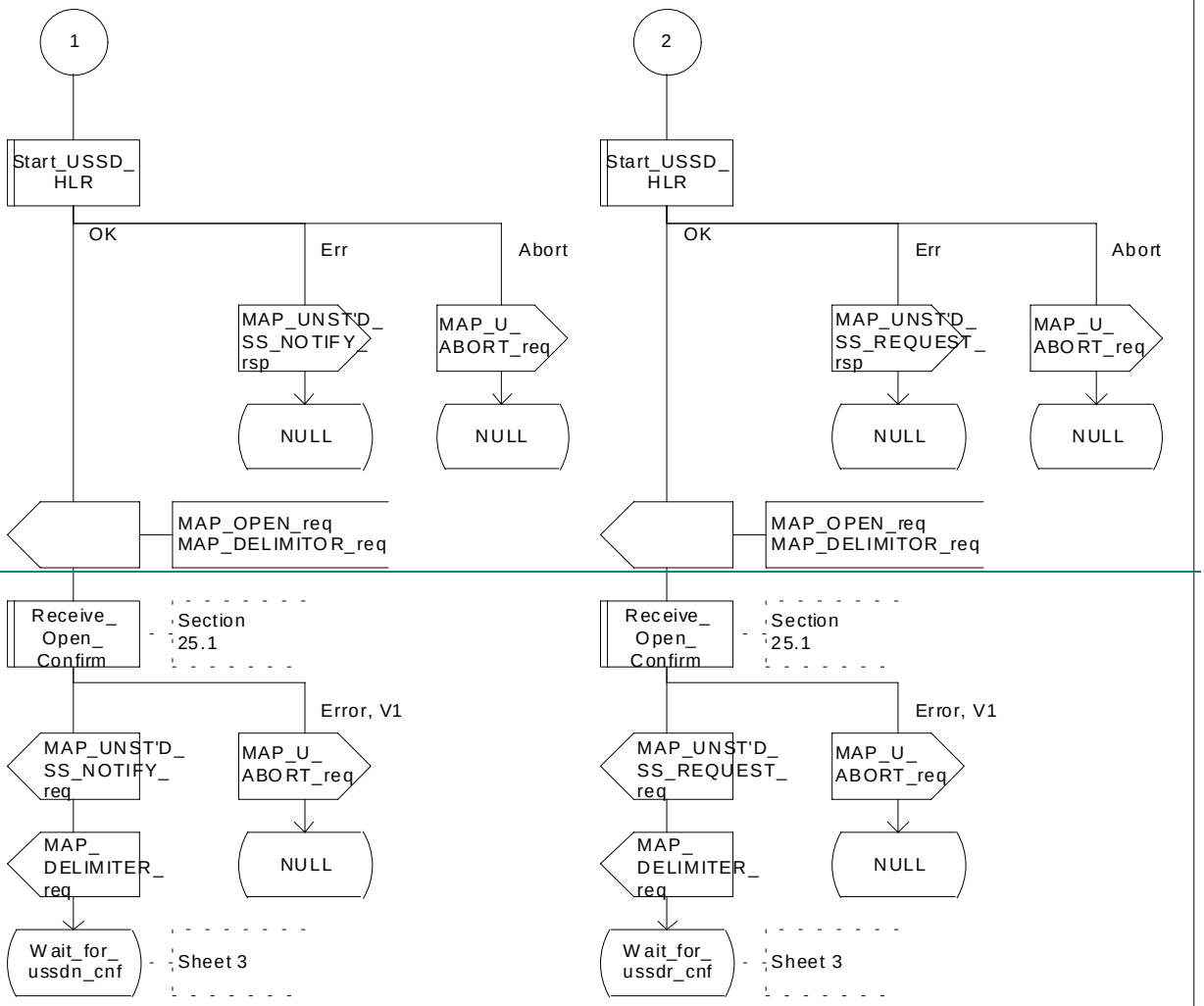


Figure 22.10.4/1 (sheet 1 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to gsm SCF
unless otherwise stated.



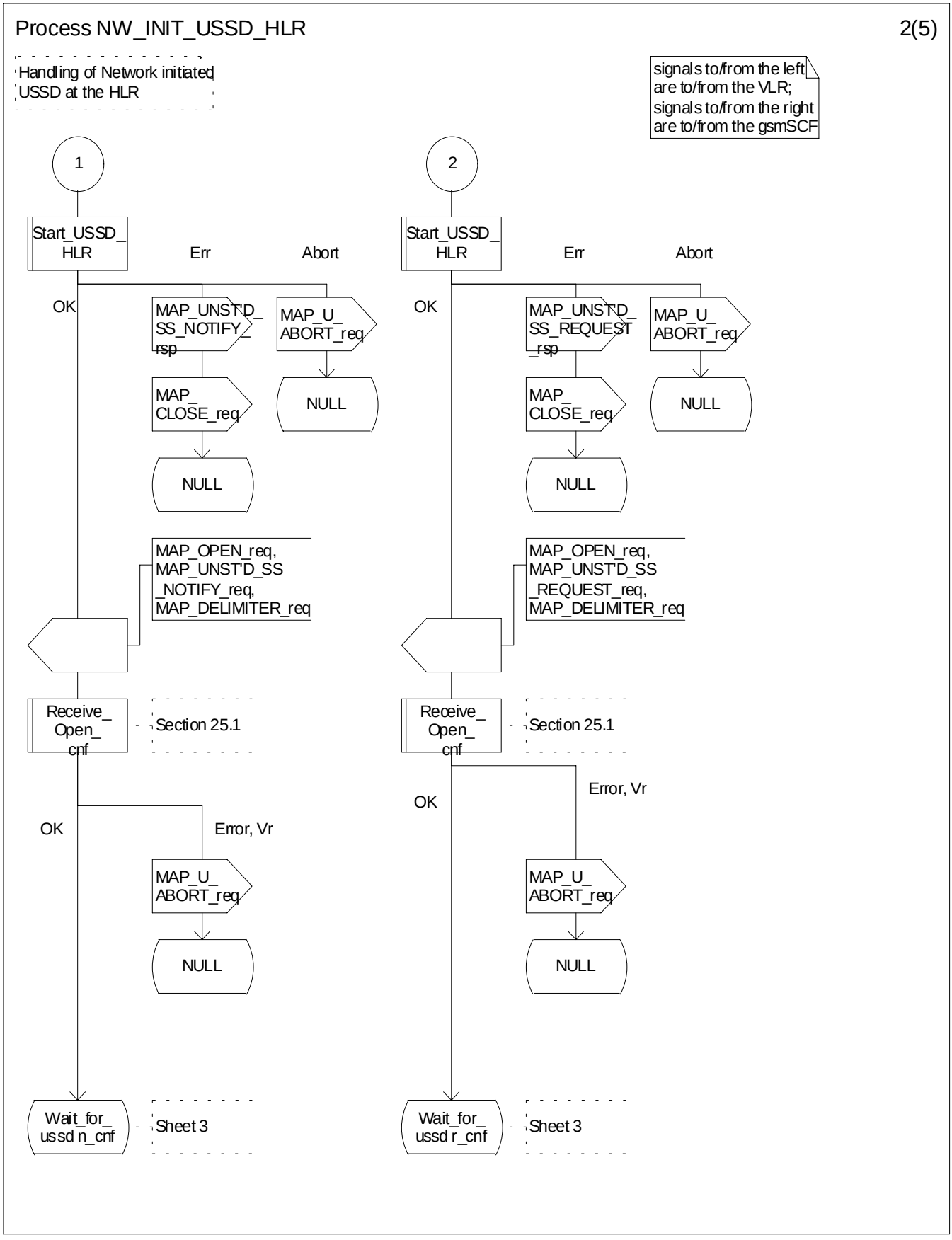


Figure 22.10.4/1 (sheet 2 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to gsmSCF
unless otherwise stated.

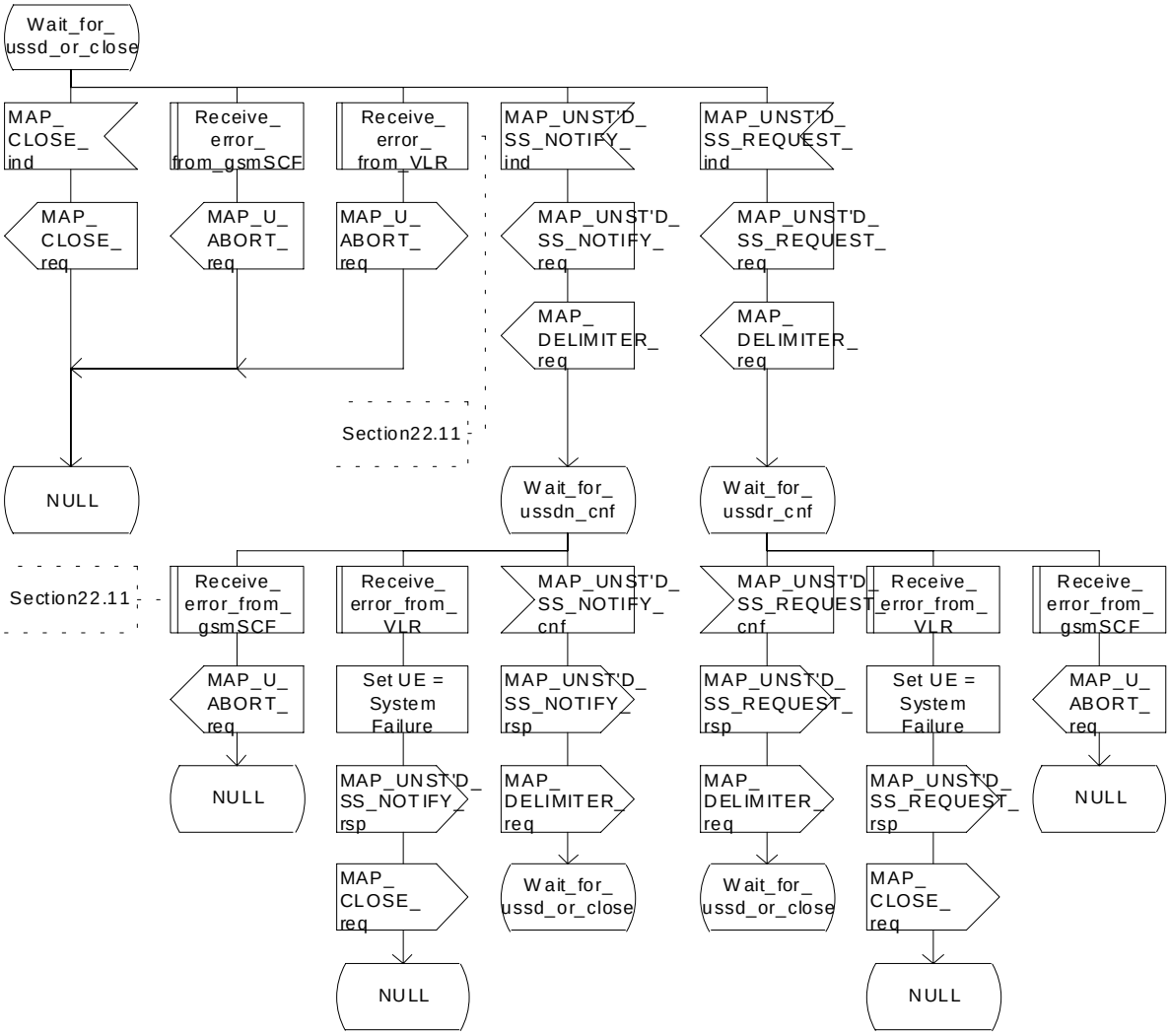
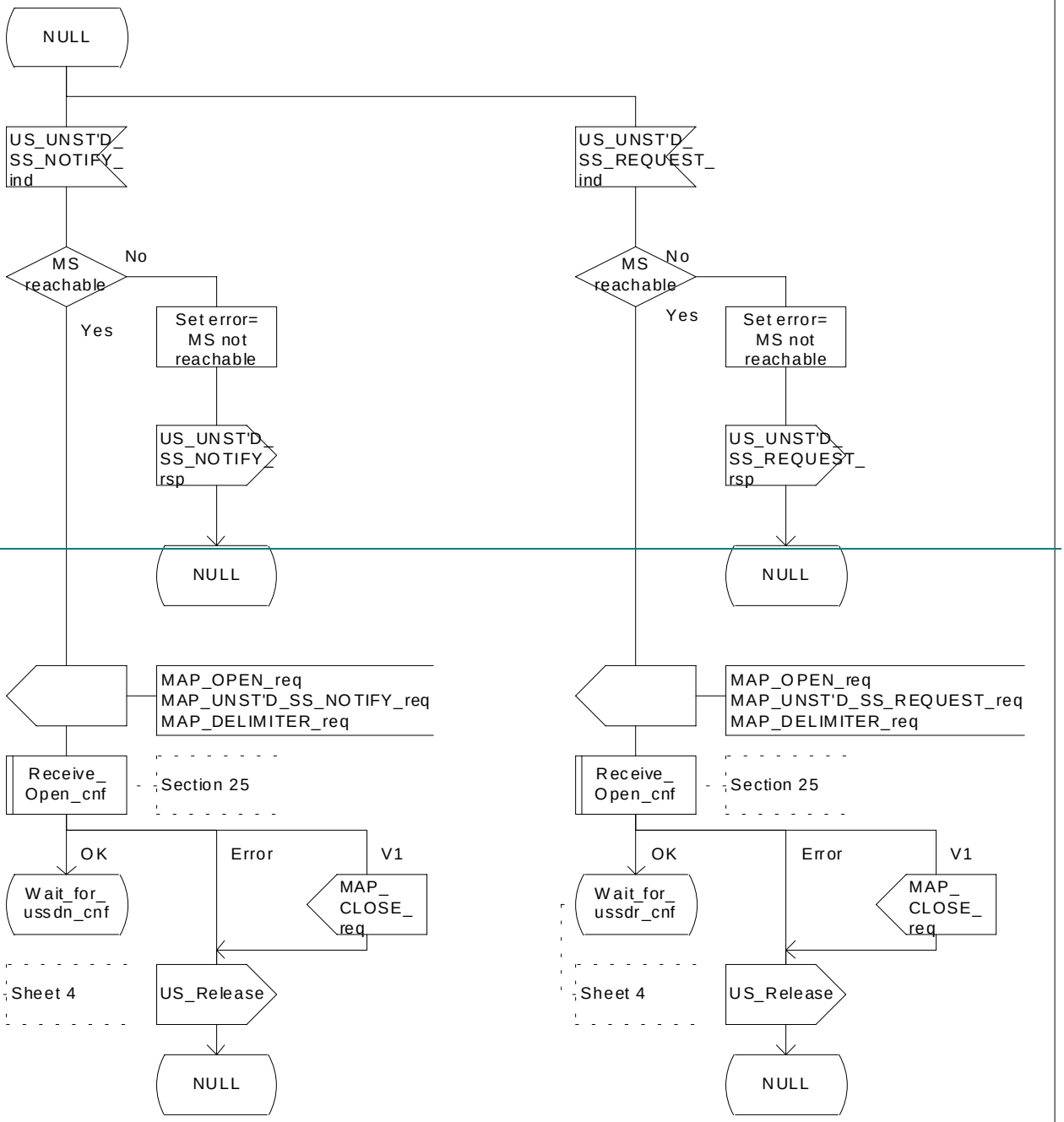


Figure 22.10.4/1 (sheet 3 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



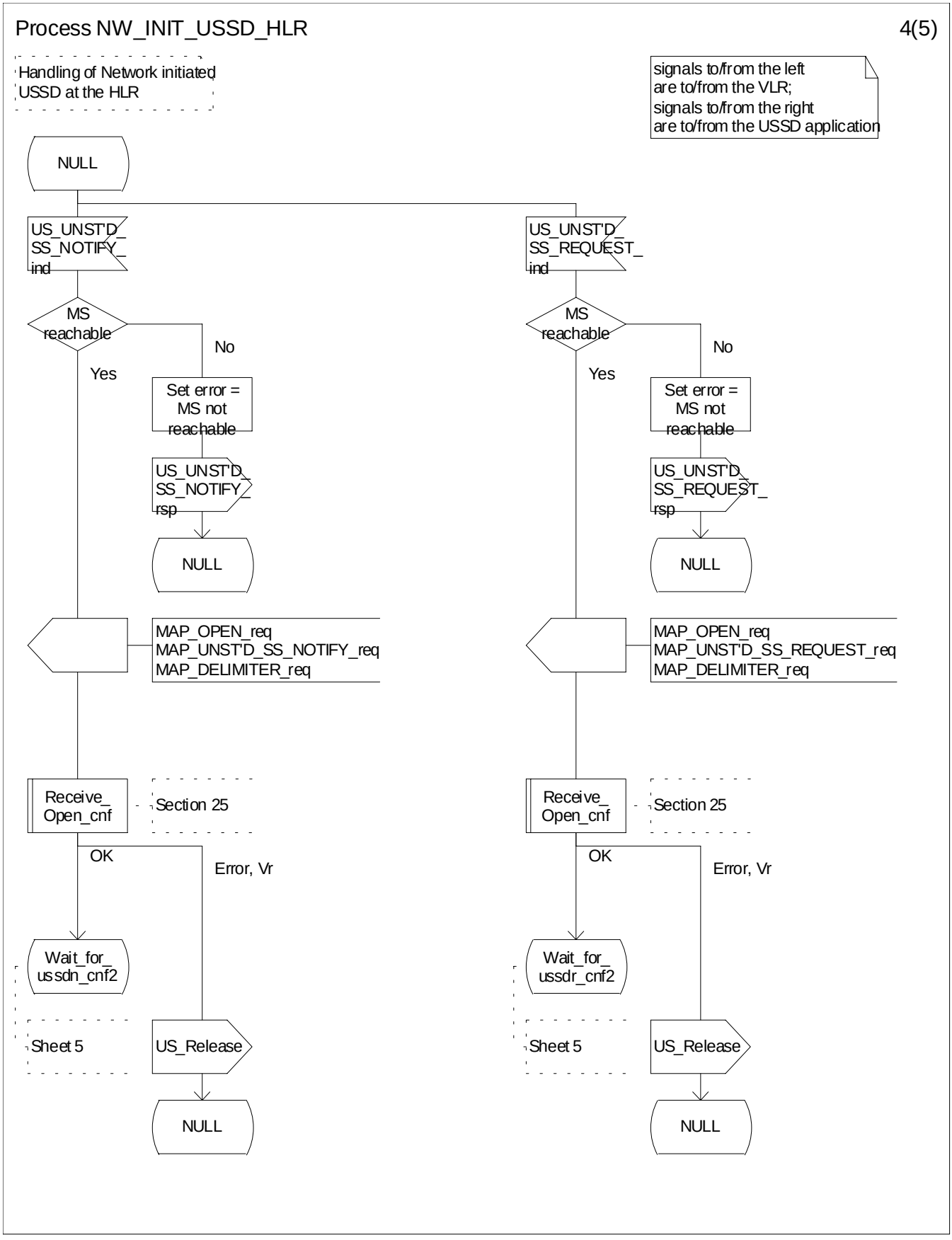
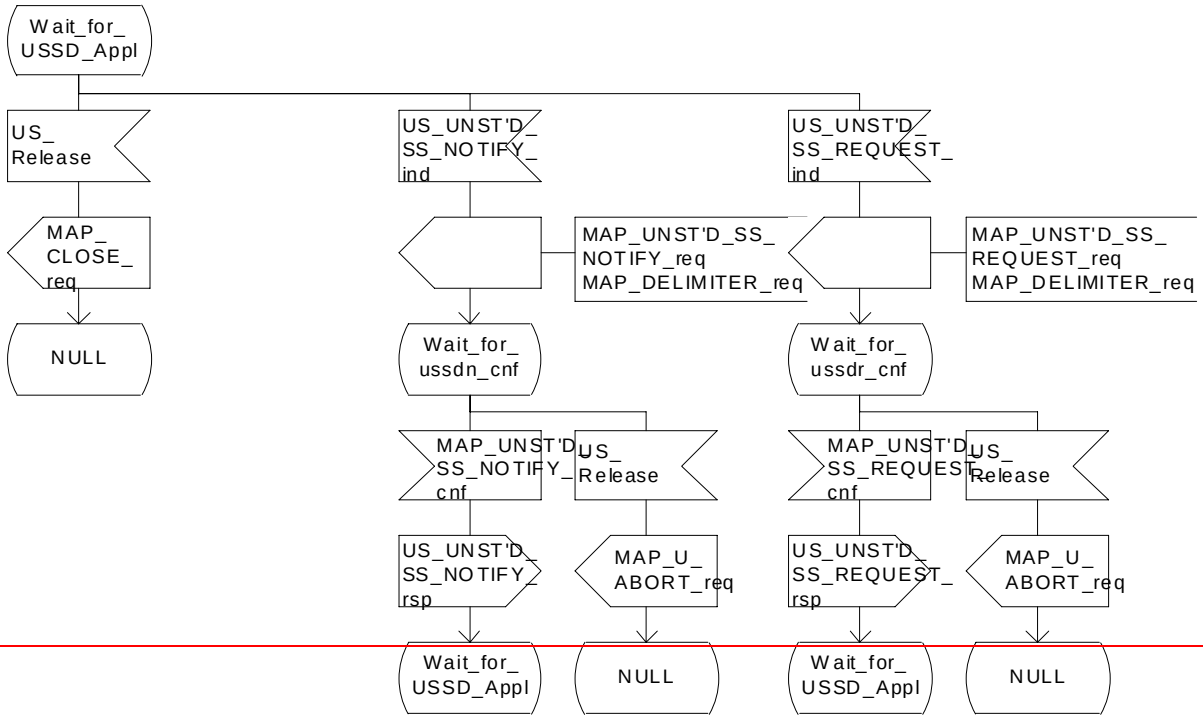


Figure 22.10.4/1 (sheet 4 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



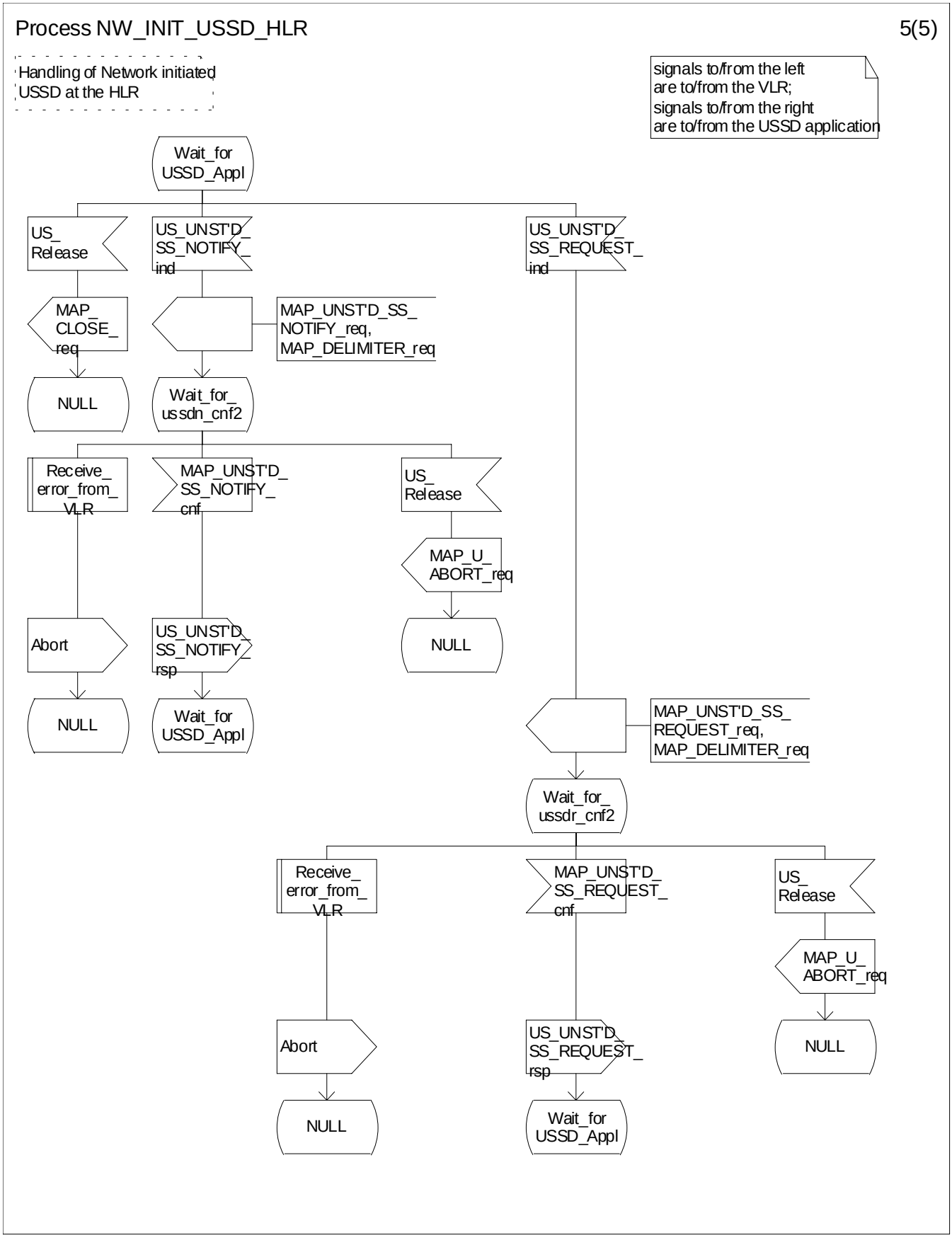


Figure 22.10.4/1 (sheet 5 of 5): Procedure NI_USSD_HLR

Macrodefinition Start_USSD_HLR 22.10.4_2.1(1)

Figure 22.10.4/2: Macro to check MS is reachable at the HLR for a network initiated USSD operation

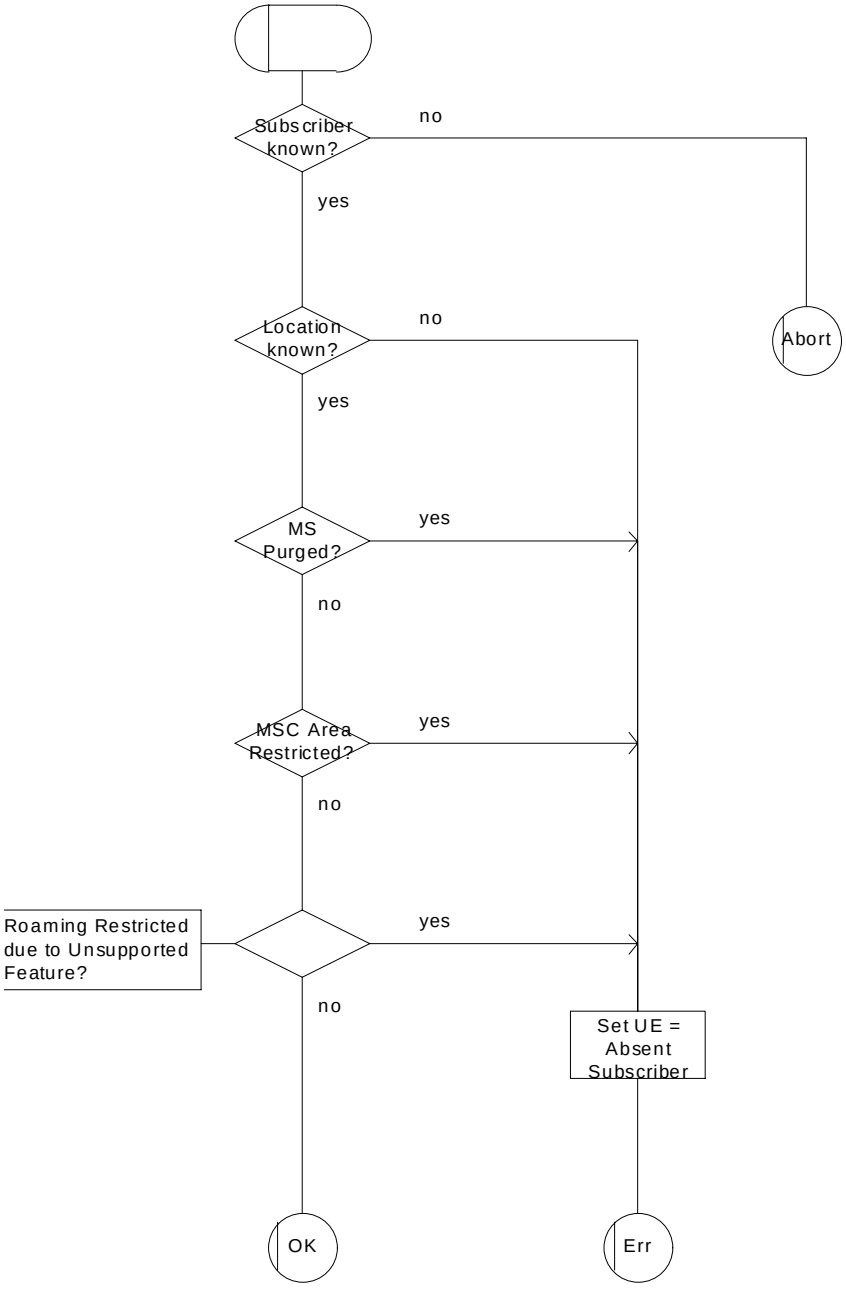


Figure 22.10.4/2: Macro Start_USSD_HLR

22.10.5 Procedure in the gsmSCF

The procedure is invoked by an USSD application local to the gsmSCF. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the gsmSCF will initiate a MAP dialogue with the HLR and send the message received from the USSD application to the HLR.
Following transfer of the message the gsmSCF will wait for a confirmation from the HLR. This will be relayed to the USSD application..
Following this, the gsmSCF may receive further UNSTRUCTURED_SS_REQUEST or UNSTRUCTURED_SS_NOTIFY requests, or may receive a Release from the USSD application.
In the event of an error, the MAP dialogue with the HLR shall be released as shown in the diagram.
The procedure in the gsmSCF is shown in figure 22.10.5/1.

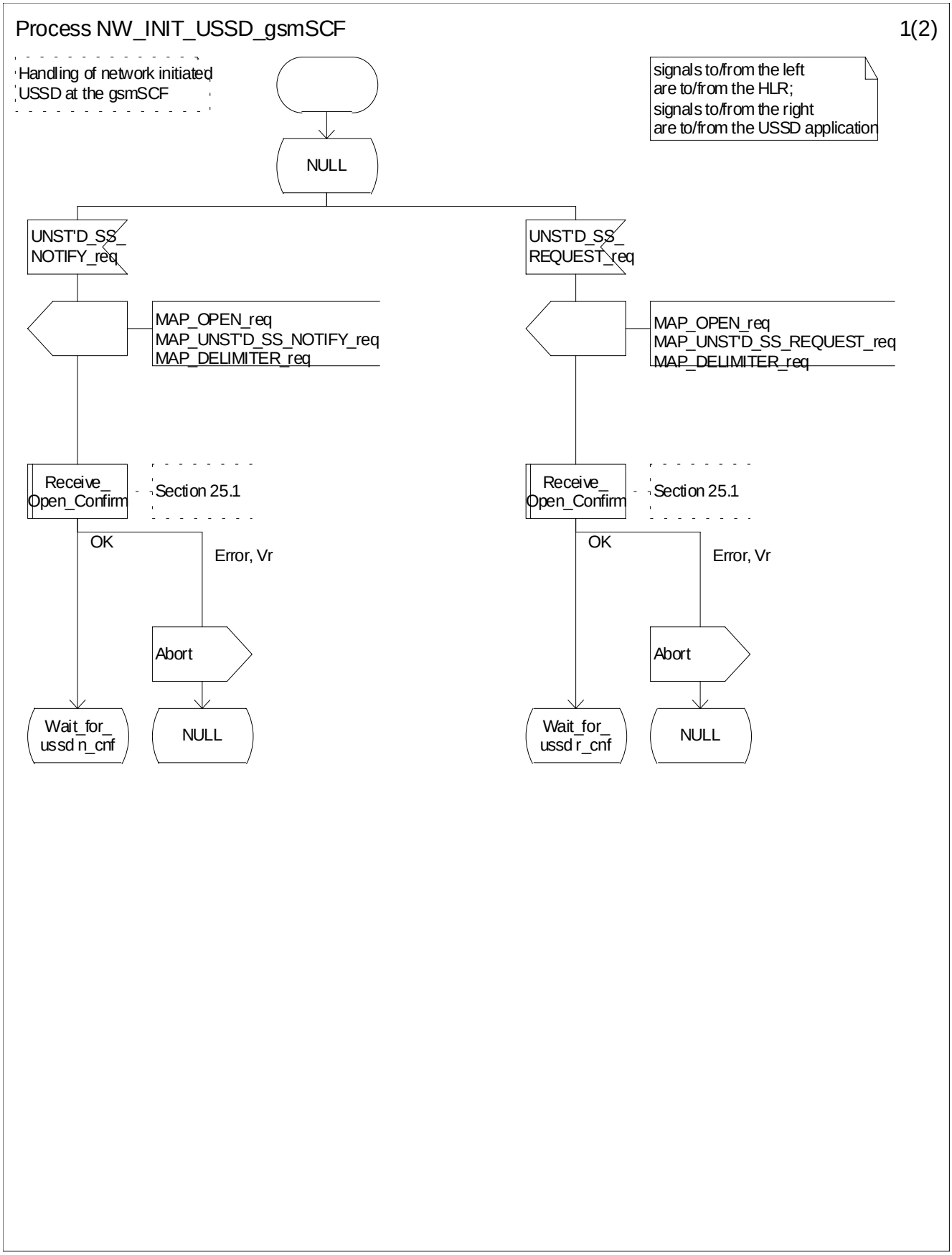


Figure 22.10.5/1 (sheet 1 of 2): Procedure NI_USSD_gsmSCF

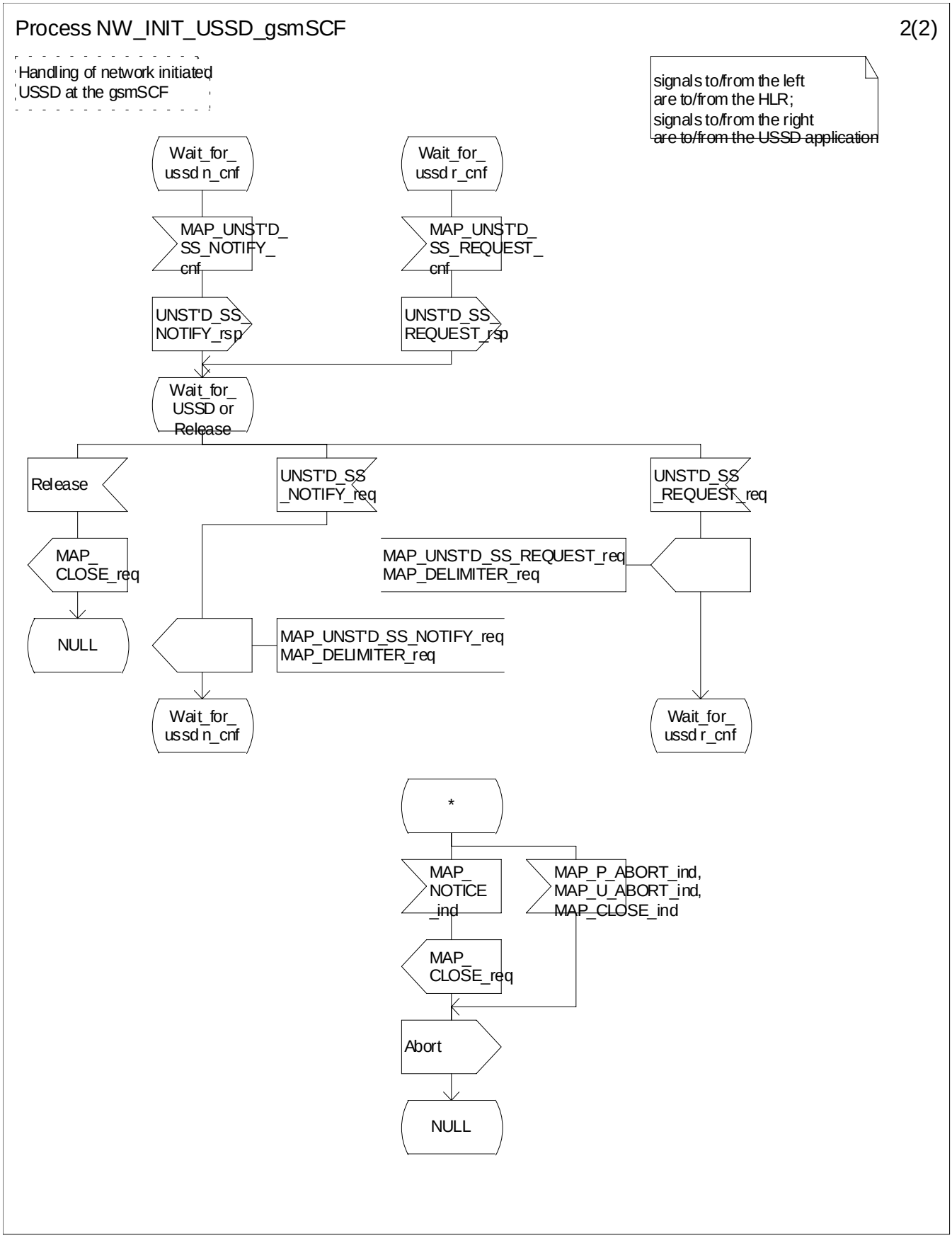


Figure 22.10.5/1 (sheet 2 of 2): Procedure NI_USSD_gsmSCF

3GPP TSG-CN4
Paris, FRANCE
13th November – 17th November 2000

Tdoc N4-000909

CHANGE REQUEST

09.02 **CR** **A309r2** Current Version: 6.8.0

For submission to: CN#10 for approval [X] strategic [ ]
for information [ ] non-strategic [ ]

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: CN4 **Date:** 12th September 2000

Subject: Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface

Work item: CAMEL phase 2

Category:

F	Correction	[X]	**Release:**	Phase 2	[ ]
A	Corresponds to a correction in an earlier release	[ ]		Release 96	[ ]
B	Addition of feature	[ ]		Release 97	[X]
C	Functional modification of feature	[ ]		Release 98	[ ]
D	Editorial modification	[ ]		Release 99	[ ]
				Release 00	[ ]

Reason for change: critical correction
various corrections of USSD procedures;
addition of USSD procedure description in the gsmSCF

Clauses affected: 22.9.4, 22.9.5 (new), 22.10.2, 22.10.4, 22.10.5 (new)

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	R99: CR 29.002 167r3 R00: CR 29.002 166r3
Other GSM core specifications	[X]	→ List of CRs:	R98: CR 09.02 A308r2
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:

22.9.4 Procedures in the HLR

~~The initiation of the process is shown in subclause 22.1.3~~ The Mobile initiated USSD Procedure in the HLR starts by the HLR receiving a MAP-OPEN service indication from the VLR.

Once a MAP dialogue is established, the HLR may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the VLR. This message contains information input by the user. If the alphabet used for the message is understood then the message shall either be fed to an application contained locally in the HLR or to the gsmSCF. If the alphabet is not understood then the error "UnknownAlphabet" shall be returned.

Message Destined for Local Application

If the message is destined for the local USSD application then the HLR shall transfer the message to the local application.

The HLR may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the application.

When the HLR receives the result of the original operation from the application then it shall pass this to the VLR and initiate release of the CM connection.

Message Destined for gsmSCF

If the message is destined for the gsmSCF then the HLR shall transfer the message transparently to the gsmSCF. The HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications from the gsmSCF. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the gsmSCF.

When the HLR receives a MAP_PROCESS_UNSTRUCTURED_SS_REQUEST confirmation from the gsmSCF then it shall pass this to the VLR and closes the MAP provider service.

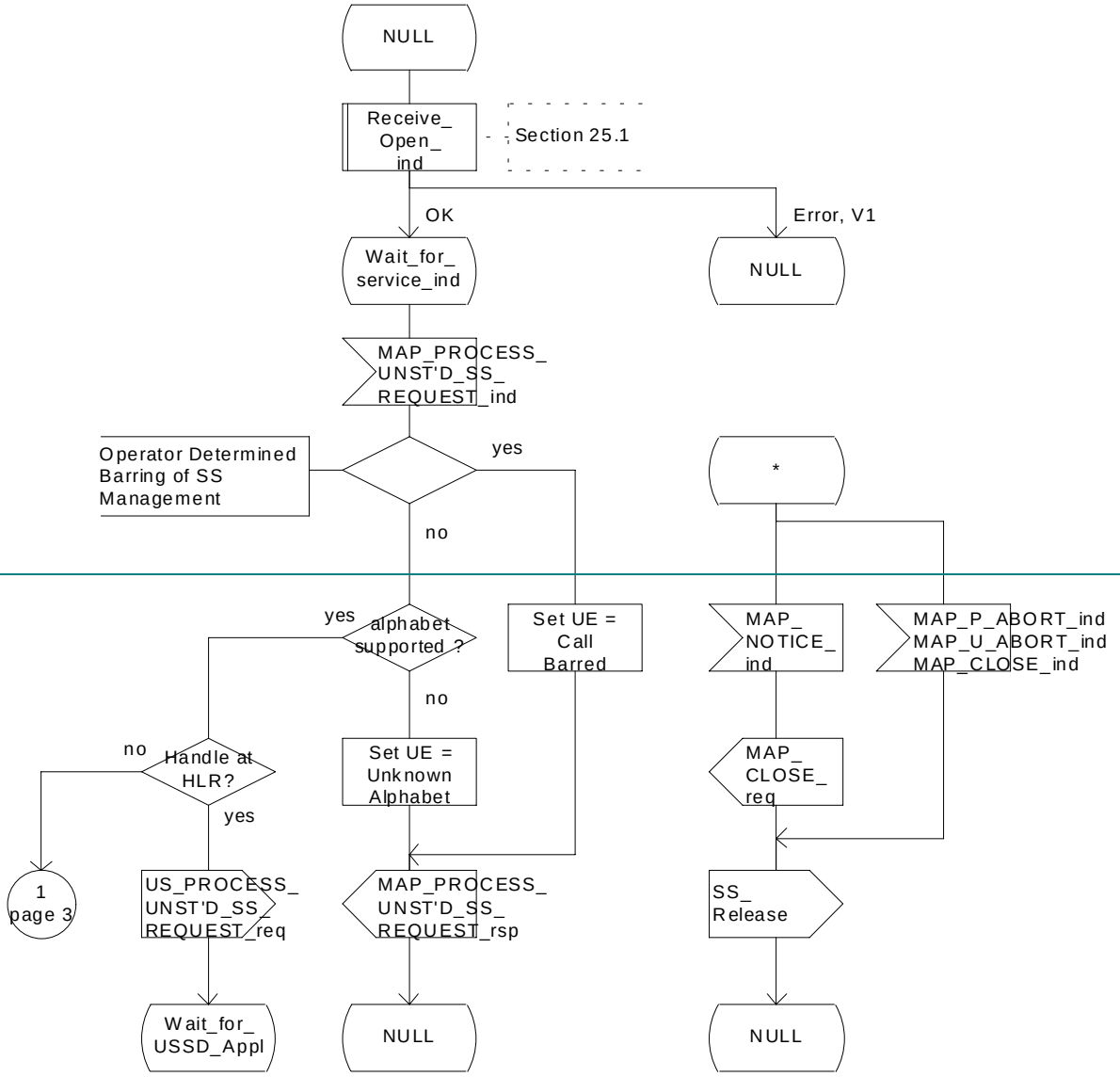
Error Handling

Both the VLR, the USSD Application and the gsmSCF may initiate release of the MAP service at any time. This is handled as shown in the diagrams.

The procedure in the HLR is shown in figure 22.9.4/1.

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR
unless otherwise stated.
Arrow to right are to USSD application
unless otherwise stated



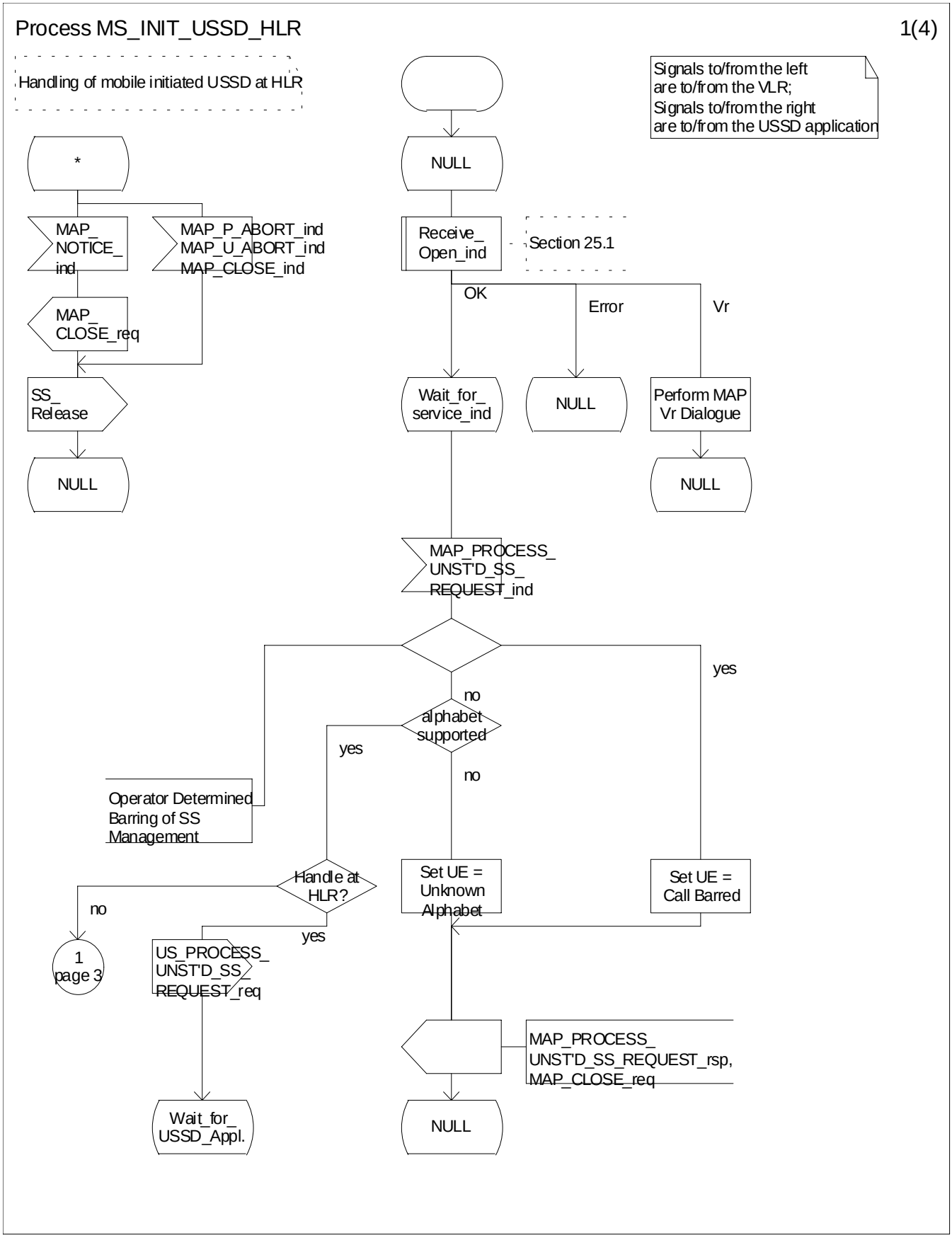


Figure 22.9.4/1 (sheet 1 of 4): Procedure MI_USSD_HLR

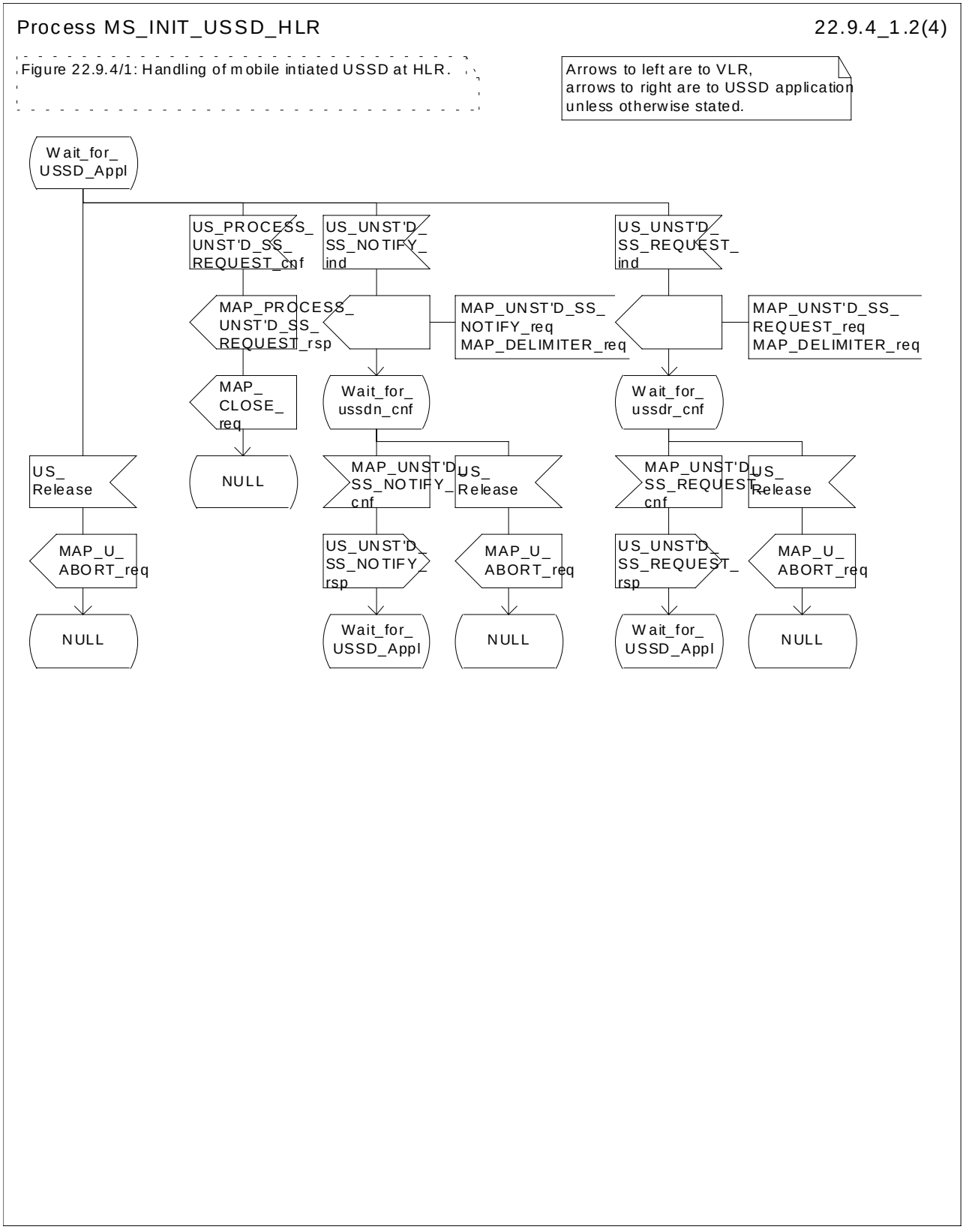


Figure 22.9.4/1 (sheet 2 of 4): Procedure MI_USSD_HLR

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR, arrows to right are to gsmSCF unless otherwise stated.

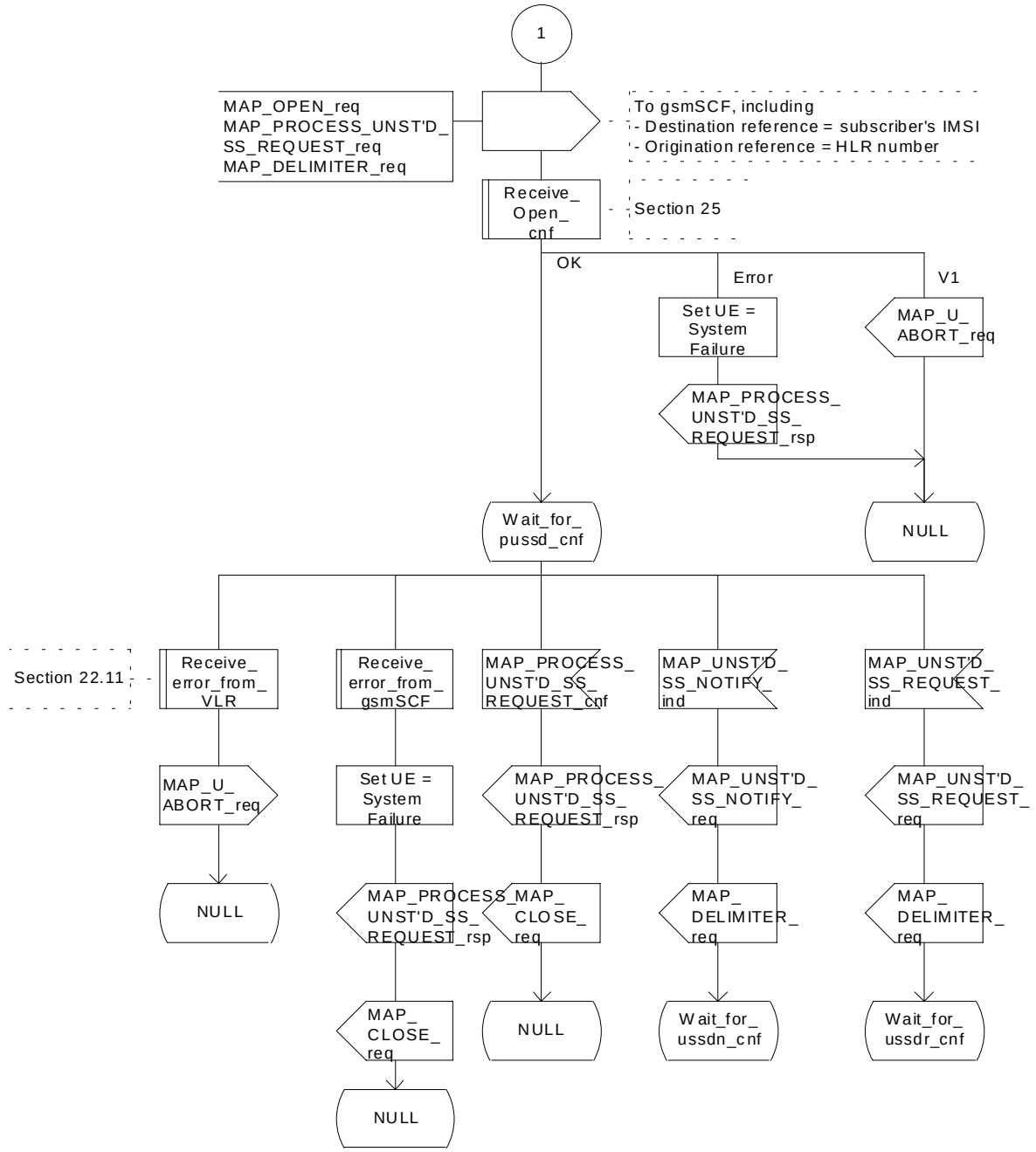


Figure 22.9.4/1 (sheet 3 of 4): Procedure MI_USSD_HLR

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

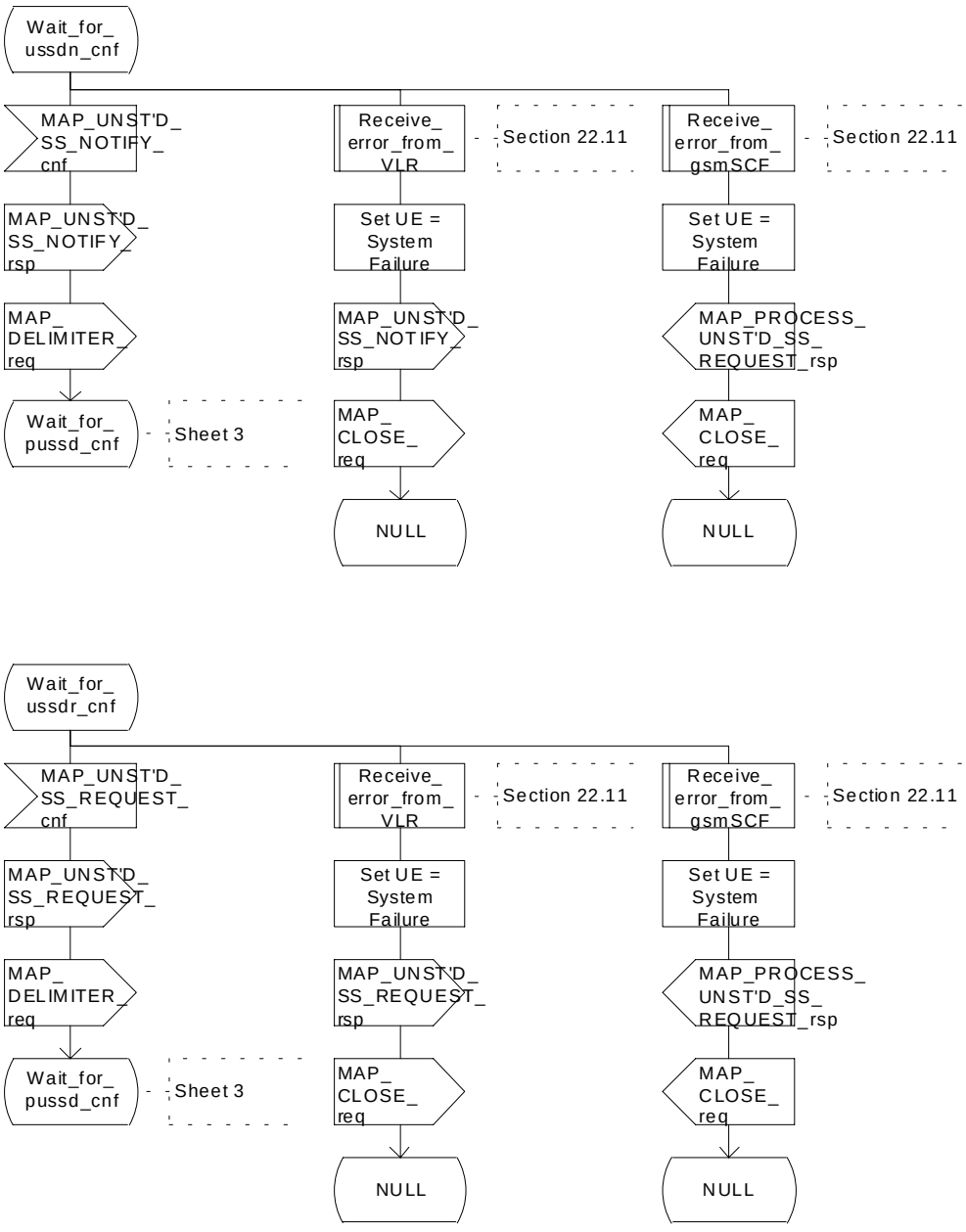


Figure 22.9.4/1 (sheet 4 of 4): Procedure MI_USSD_HLR

22.9.5 Procedures in the gsmSCF

The Mobile initiated USSD Procedure in the gsmSCF starts by the gsmSCF receiving a MAP-OPEN service indication from the HLR.
Once a MAP dialogue is established, the gsmSCF may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the HLR.
The gsmSCF shall transfer the message to the local application.
The gsmSCF may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the HLR. When a confirmation is received from the HLR this shall be returned to the application.
When the gsmSCF receives the result of the original operation from the application then it shall pass this to the HLR and initiate release of the CM connection.

Error Handling

Both the HLR and the USSD Application may initiate release of the MAP service at any time. This is handled as shown in the diagrams.
The procedure in the gsmSCF is shown in figure 22.9.5/1.

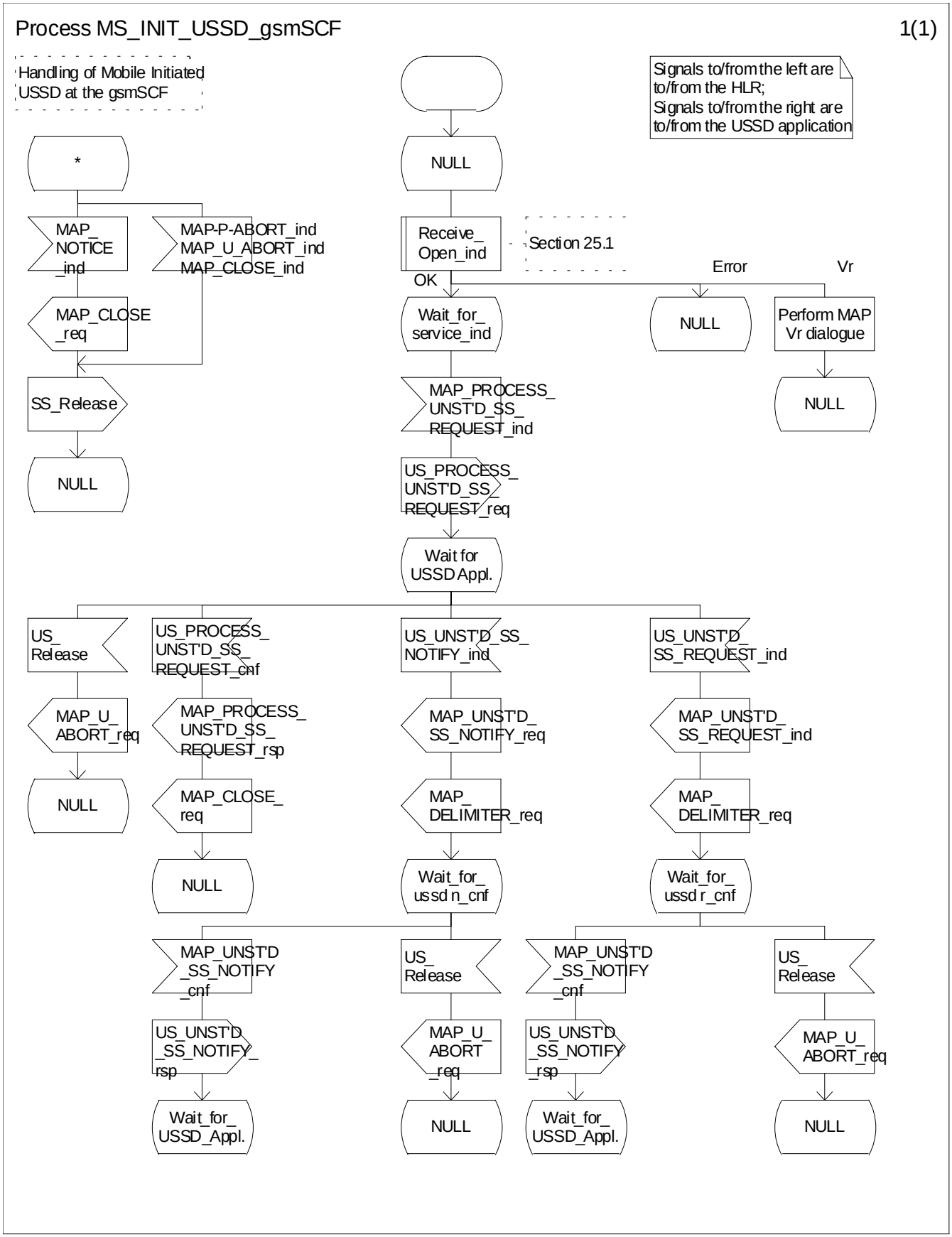


Figure 22.9.5/1 Process MS_INIT_USSD_gsmSCF

22.10.2 Procedure in the MSC

The procedure may be invoked either by the VLR or by a USSD application local to the MSC. They may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
If the request is initiated by a local USSD application then the MSC will open a dialogue with the VHLR.
In both cases the MSC will initiate a CM connection to the MS (using the page or search macros defined in subclause 25.3). Once the connection is successfully established the message received from the VLR or USSD application will be sent to the MS using the mapping specified in GSM 09.11.
Following transfer of the message the MSC will wait for a confirmation from the MS. This will be sent to the VLR or USSD application as appropriate.
Following this, the MSC may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive an indication to release the connection to the MS.
In the event of an error, the connection to the MS shall be released, and the MAP process with the VLR shall be aborted as shown in the diagram.
The procedure in the MSC is shown in figure 22.10.2/1.
.....

22.10.4 Procedure in the HLR

The procedure may be invoked either by the gsmSCF or by a USSD application local to the HLR. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the HLR will first check whether the MS is reachable .
If the MS is reachable, the HLR will initiate a MAP dialogue with the VLR and send. Once the dialogue is successfully established the message received from the gsmSCF or USSD application will be sent to the VLR.
Following transfer of the message the HLR will wait for a confirmation from the VLR. This will be sent to the gsmSCF or USSD application as appropriate.
Following this, the HLR may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive a MAP_CLOSE_ind.
In the event of an error, the MAP process with the VLR shall be released and if necessary the MAP process with the gsmSCF shall be aborted, as shown in the diagram.
Message Originated by gsmSCF
If the message is originated by the gsmSCF then the HLR shall transfer the message transparently to the VLR.
The HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST_ind or MAP_UNSTRUCTURED_SS_NOTIFY_ind indications from the gsmSCF. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the gsmSCF.
When the HLR receives a MAP_CLOSE_ind from the gsmSCF then it shall pass this to the VLR and close the MAP dialogue.
The procedure in the HLR is shown in figure 22.10.4/1 and 22.10.4/2.

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to gsmSCF
unless otherwise stated.

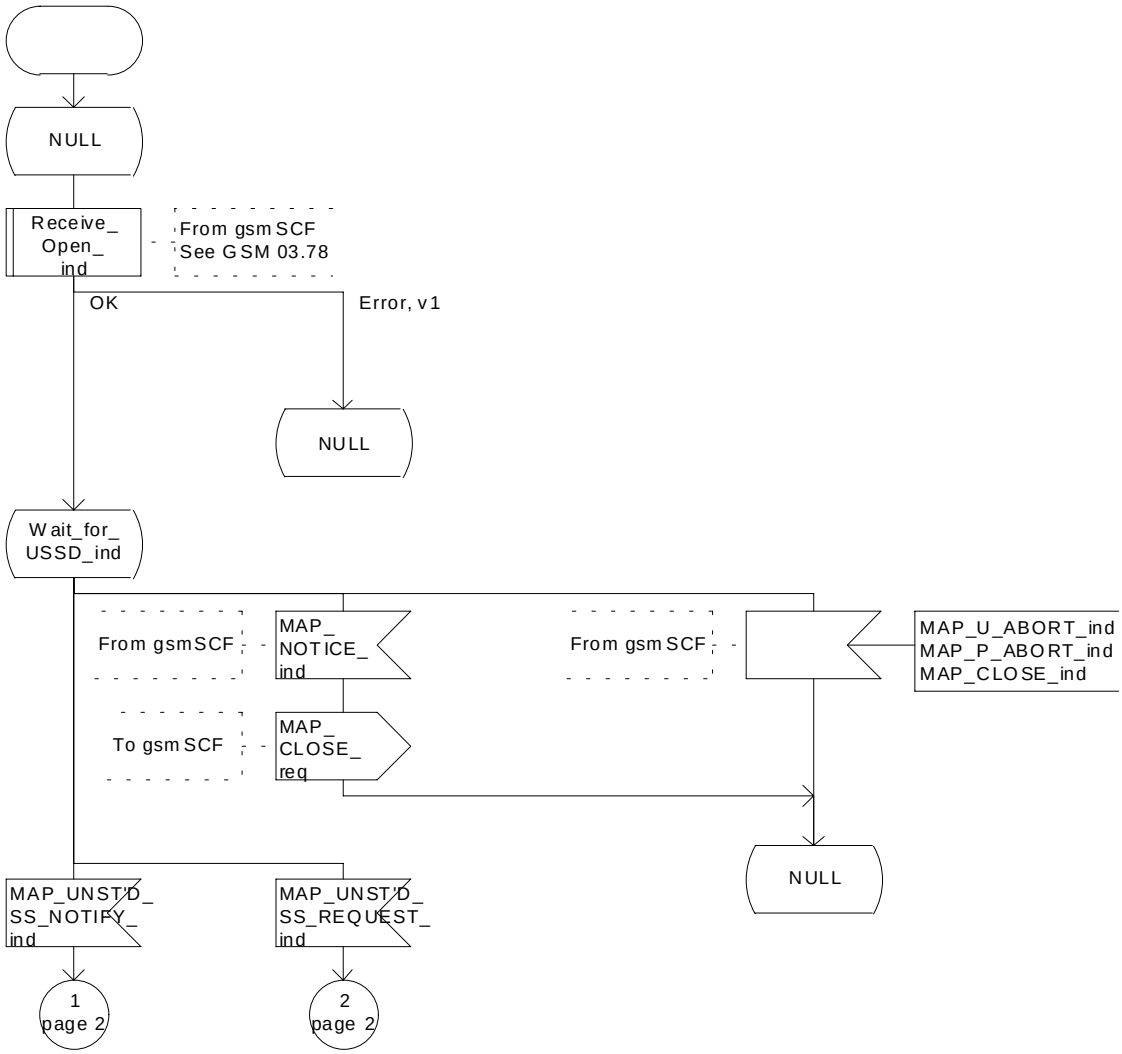
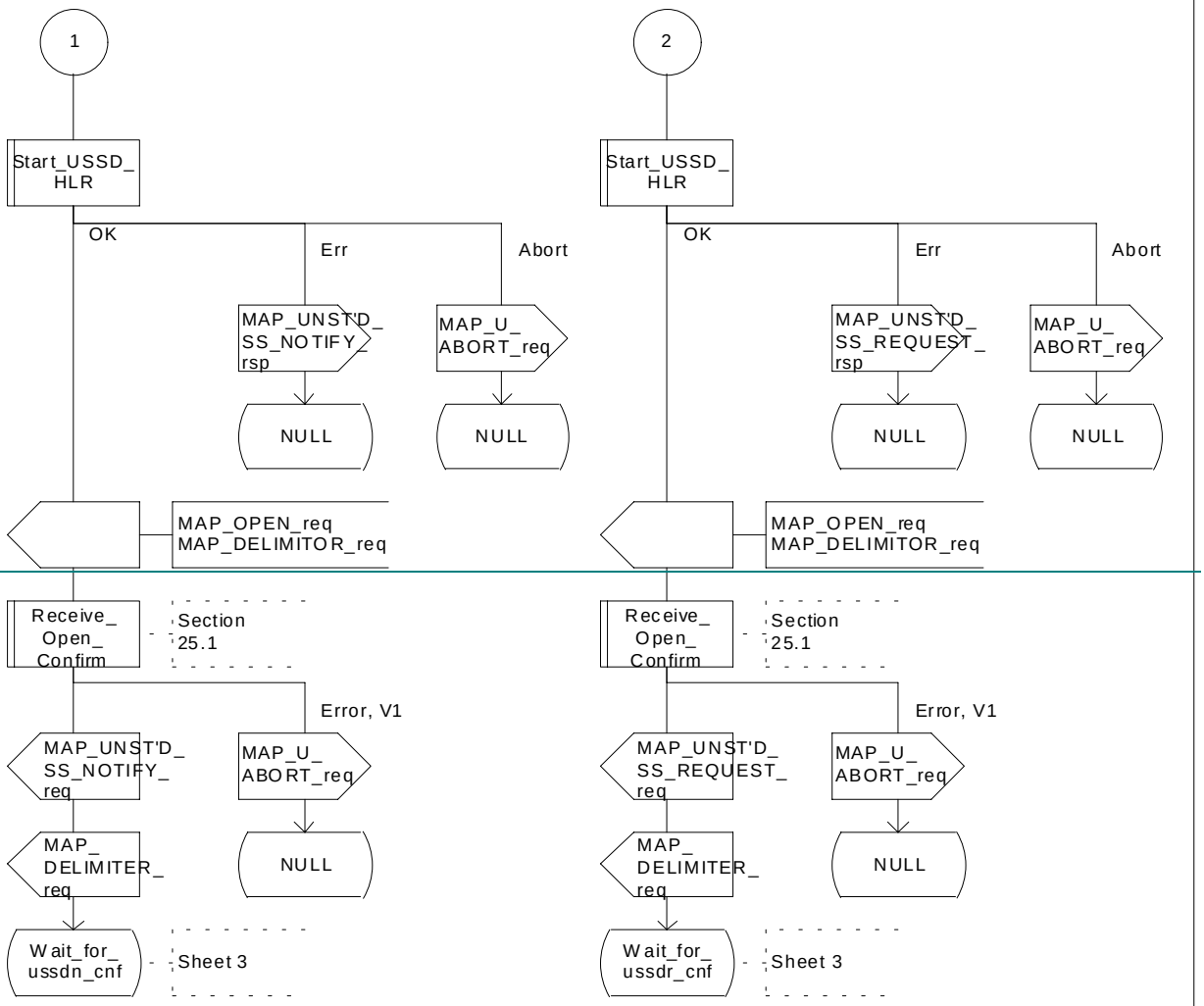


Figure 22.10.4/1 (sheet 1 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to gsm SCF
unless otherwise stated.



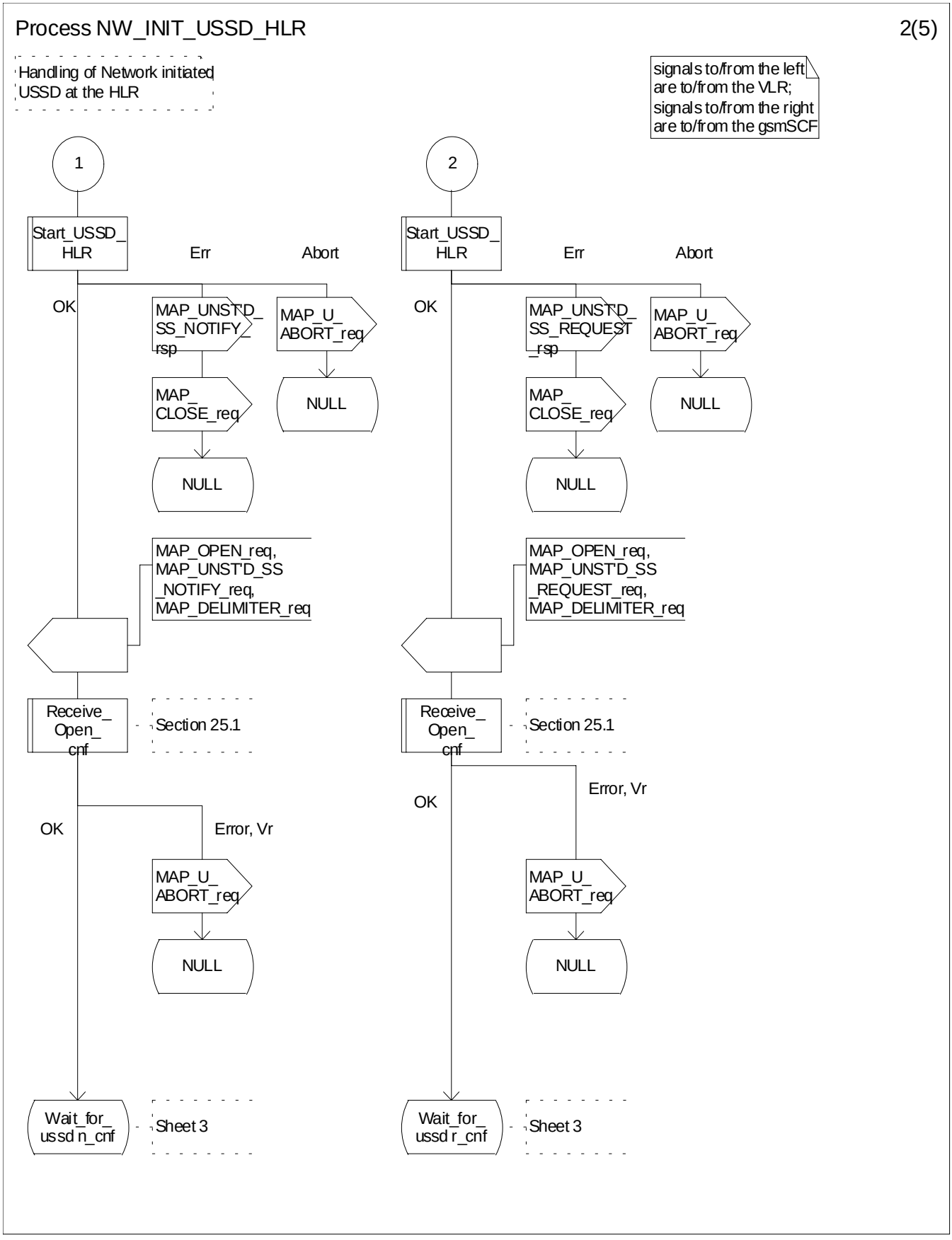


Figure 22.10.4/1 (sheet 2 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to gsmSCF
unless otherwise stated.

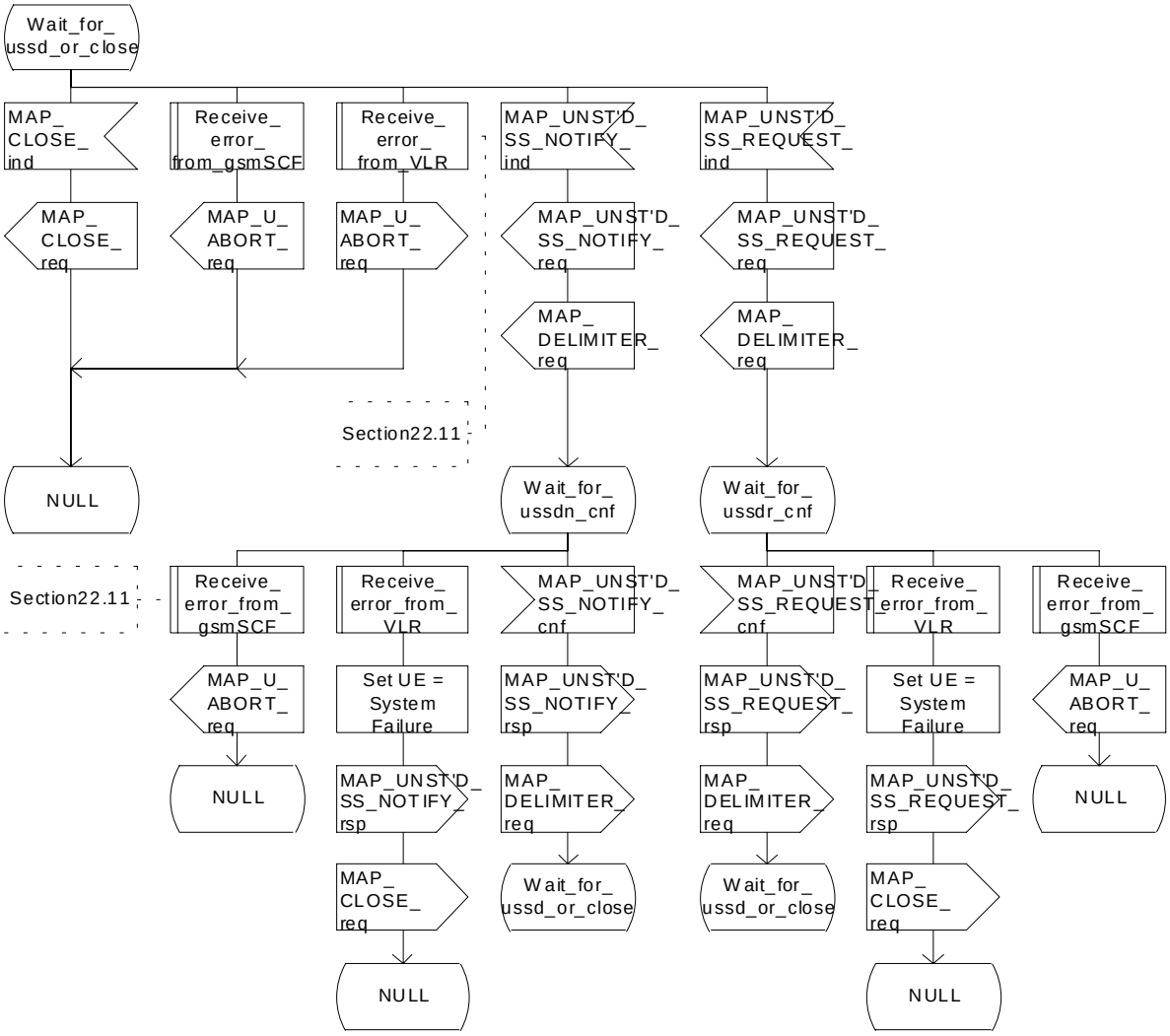
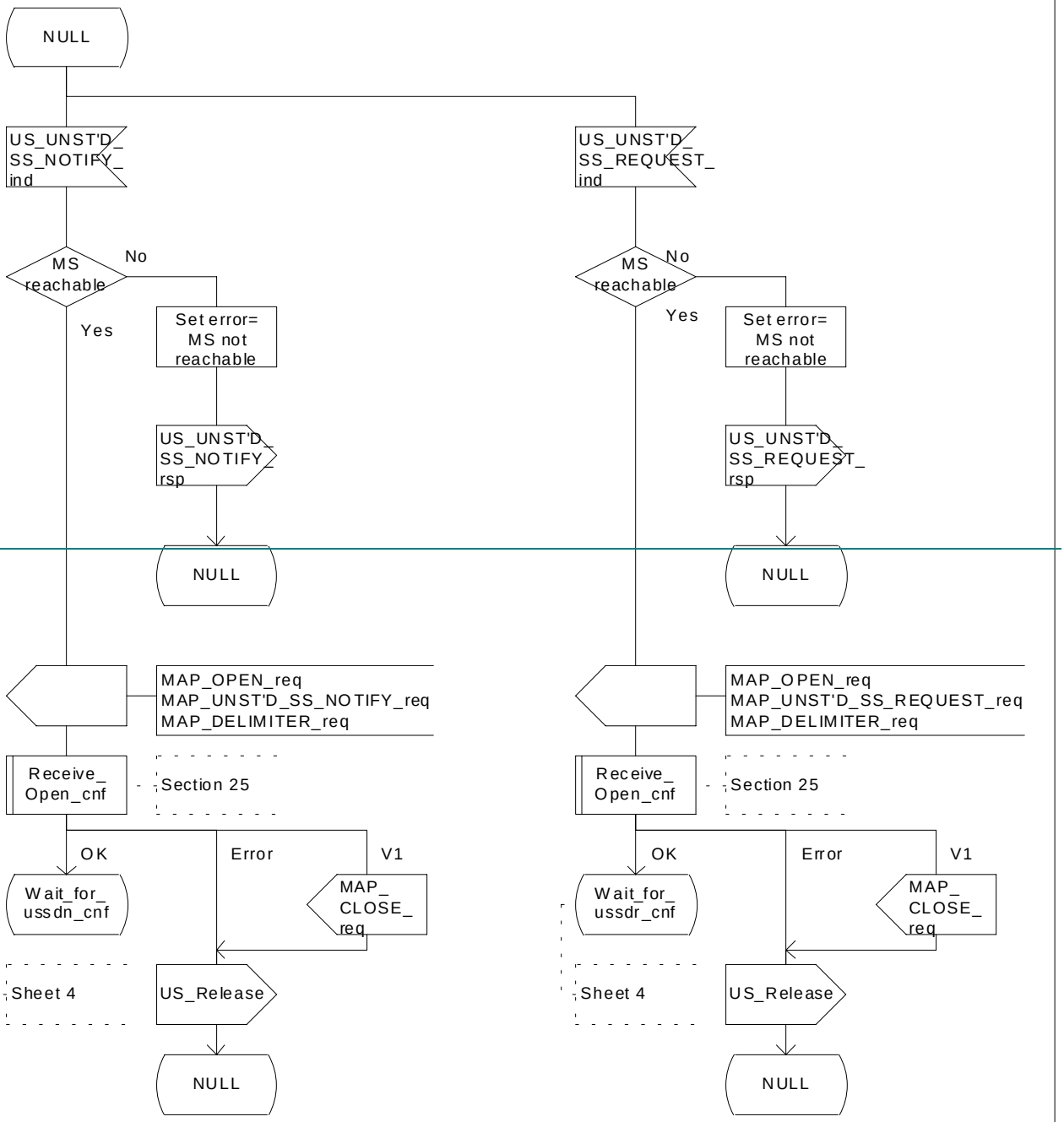


Figure 22.10.4/1 (sheet 3 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



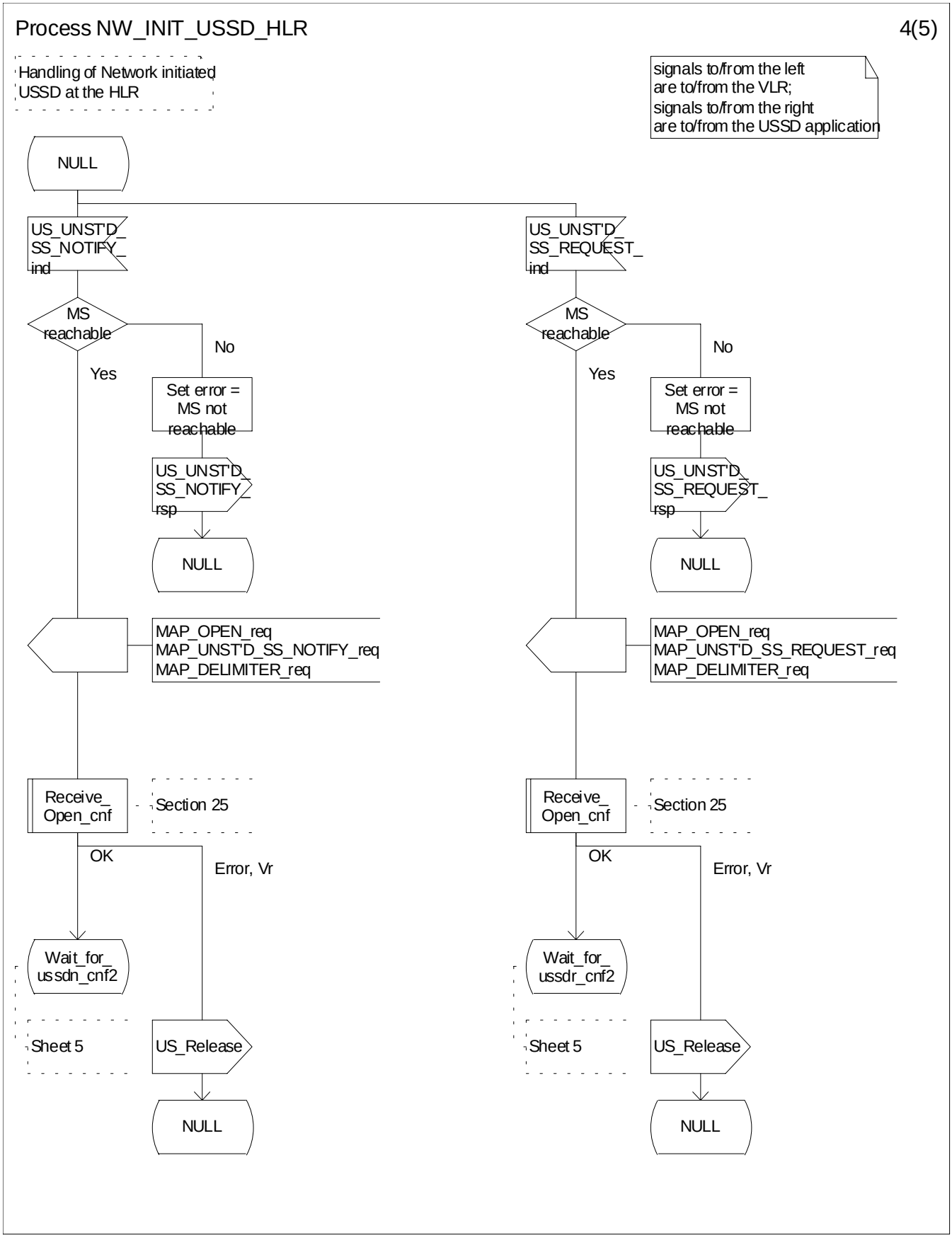
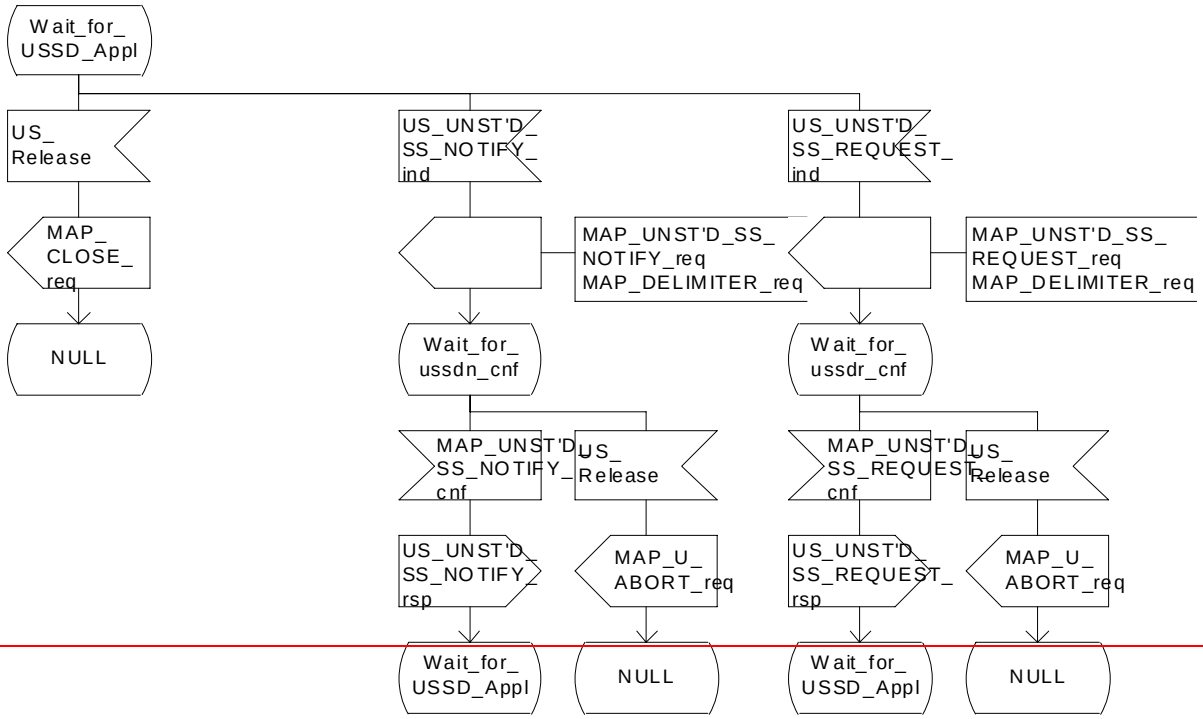


Figure 22.10.4/1 (sheet 4 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



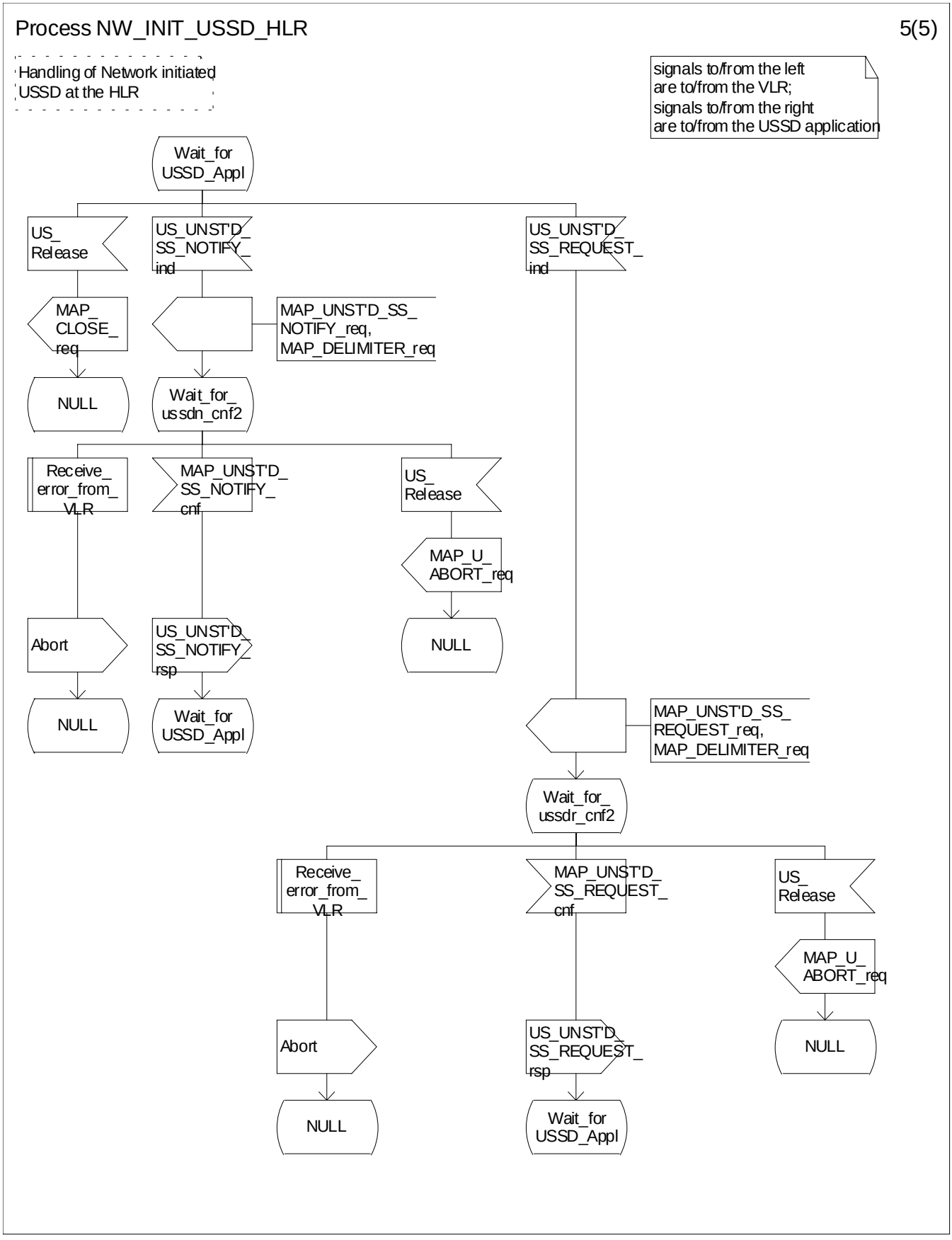


Figure 22.10.4/1 (sheet 5 of 5): Procedure NI_USSD_HLR

Macrodefinition Start_USSD_HLR 22.10.4_2.1(1)

Figure 22.10.4/2: Macro to check MS is reachable at the HLR for a network initiated USSD operation

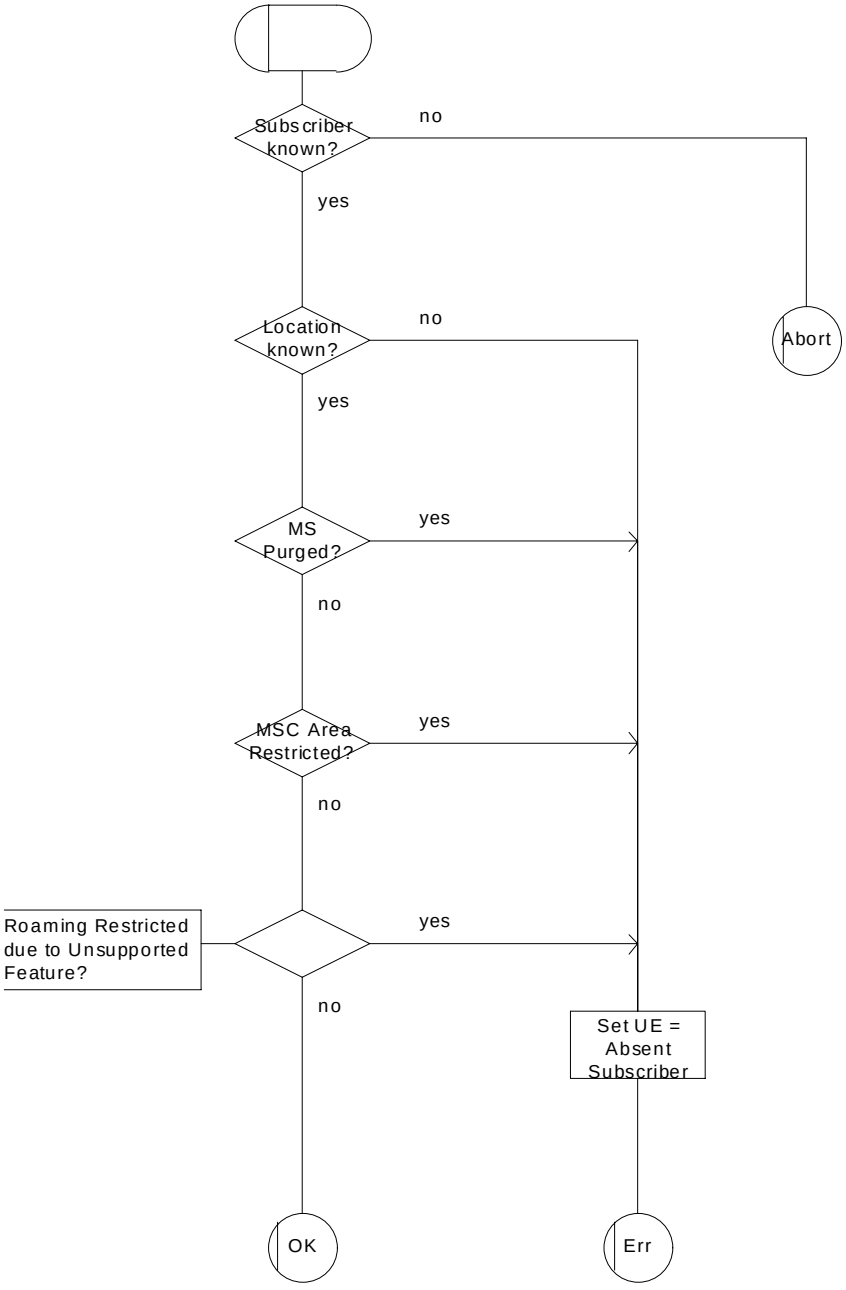


Figure 22.10.4/2: Macro Start_USSD_HLR

22.10.5 Procedure in the gsmSCF

The procedure is invoked by an USSD application local to the gsmSCF. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the gsmSCF will initiate a MAP dialogue with the HLR and send the message received from the USSD application to the HLR.
Following transfer of the message the gsmSCF will wait for a confirmation from the HLR. This will be relayed to the USSD application..
Following this, the gsmSCF may receive further UNSTRUCTURED_SS_REQUEST or UNSTRUCTURED_SS_NOTIFY requests, or may receive a Release from the USSD application.
In the event of an error, the MAP dialogue with the HLR shall be released as shown in the diagram.
The procedure in the gsmSCF is shown in figure 22.10.5/1.

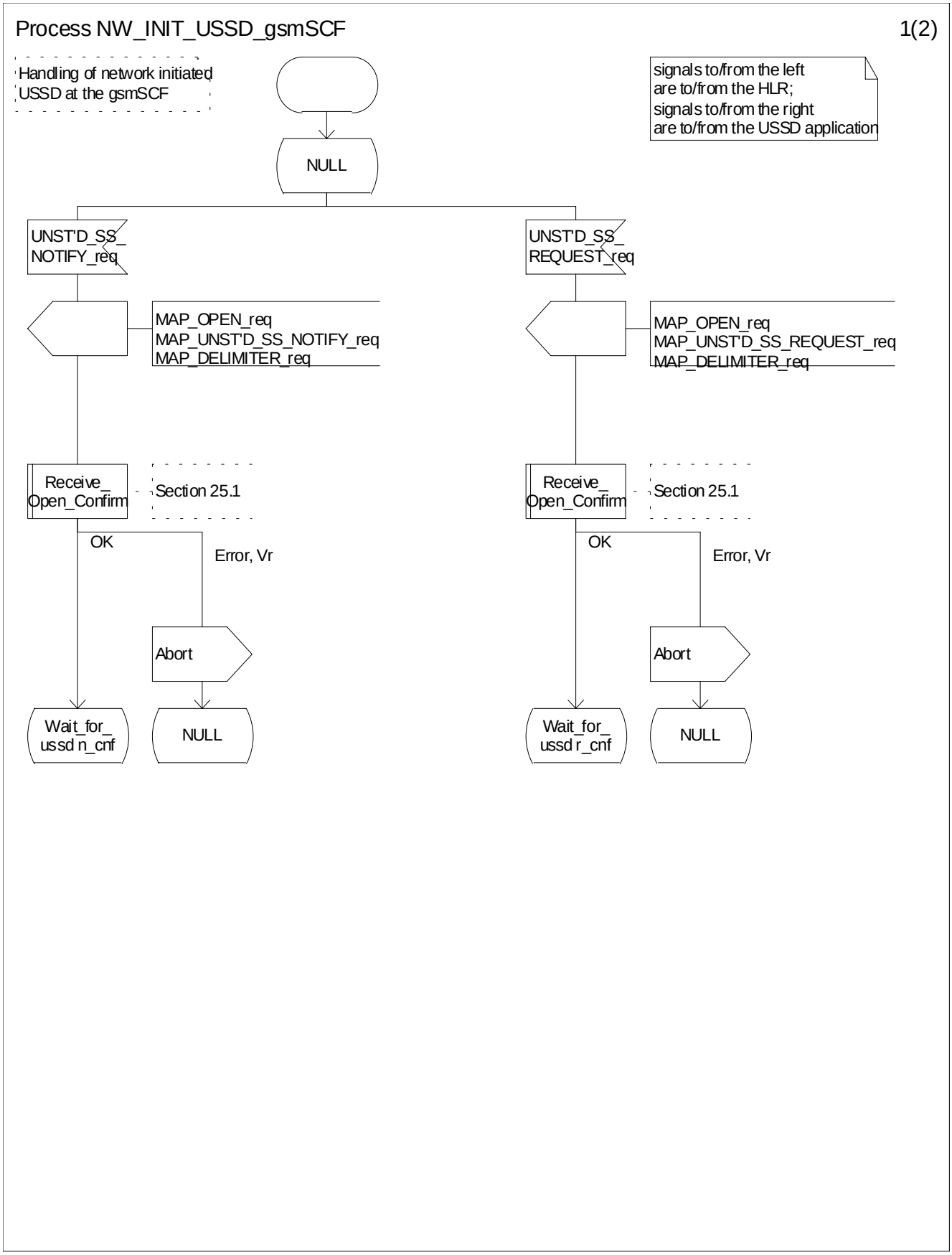


Figure 22.10.5/1 (sheet 1 of 2): Procedure NI_USSD_gsmSCF

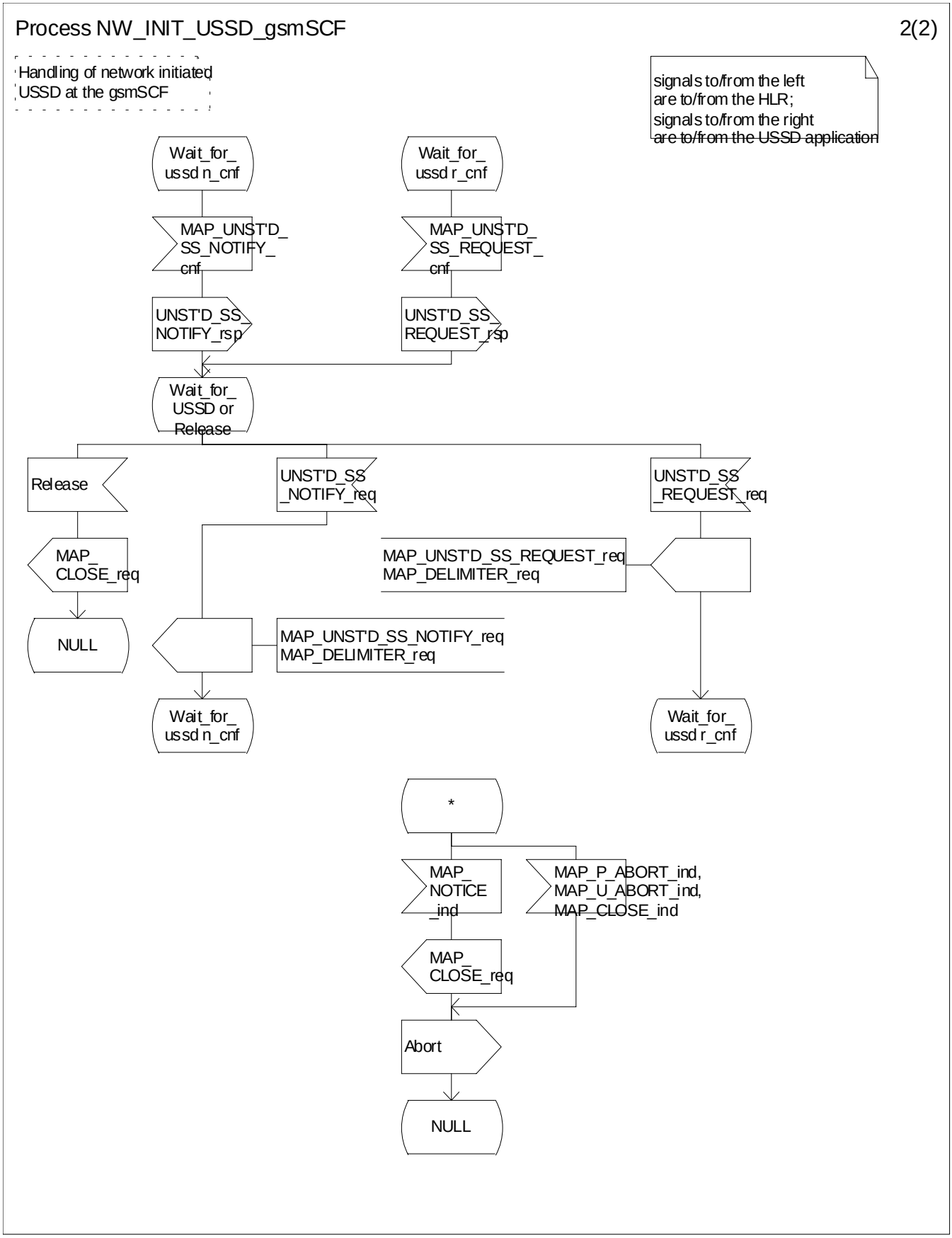


Figure 22.10.5/1 (sheet 2 of 2): Procedure NI_USSD_gsmSCF

3GPP TSG-CN4
Paris, FRANCE
13th November – 17th November 2000

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CHANGE REQUEST

29.002	CR	166r3	Current Version:	4.0.1

For submission to: CN#10 — for approval [X] / for information [ ] — strategic [ ] / non-strategic [ ]

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: CN4 **Date:** 21st September 2000

Subject: Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface

Work item: Follow Me

Category:

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[X]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[ ]
Release 00	[X]

Reason for change: Various corrections of USSD procedures;
addition of USSD procedure description in the gsmSCF/secondary HLR

Clauses affected: 22.9.4, 22.9.5 (new), 22.10.2, 22.10.4, 22.10.5 (new)

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	R99: CR 29.002 167r3
Other GSM core specifications	[X]	→ List of CRs:	R97: CR 09.02 A309r2 R98: CR 09.02 A308r2
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:

22.9.4 Procedures in the HLR

~~The initiation of the process is shown in subclause 22.1.3.~~ The Mobile initiated USSD Procedure in the HLR starts by the HLR receiving a MAP-OPEN service indication from the VLR

Once a MAP dialogue is established, the HLR may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the VLR. This message contains information input by the user. If the alphabet used for the message is understood then the message shall either be fed to an application contained locally in the HLR or to the gsmSCF or to a secondary HLR where the USSD application is located. If the alphabet is not understood then the error "UnknownAlphabet" shall be returned.

Message Destined for Local Application

If the message is destined for the local USSD application then the HLR shall transfer the message to the local application.

The HLR may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the application.

When the HLR receives the result of the original operation from the application then it shall pass this to the VLR and initiate release of the CM connection.

Message Destined for gsmSCF or secondary HLR

If the message is destined for the gsmSCF or secondary HLR then the primary HLR shall transfer the message transparently to the next node.

The primary HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications from the gsmSCF. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the gsmSCF.

When the primary HLR receives a MAP_PROCESS_UNSTRUCTURED_SS_REQUEST confirmation from the gsmSCF then it shall pass this to the VLR and closes the MAP provider service.

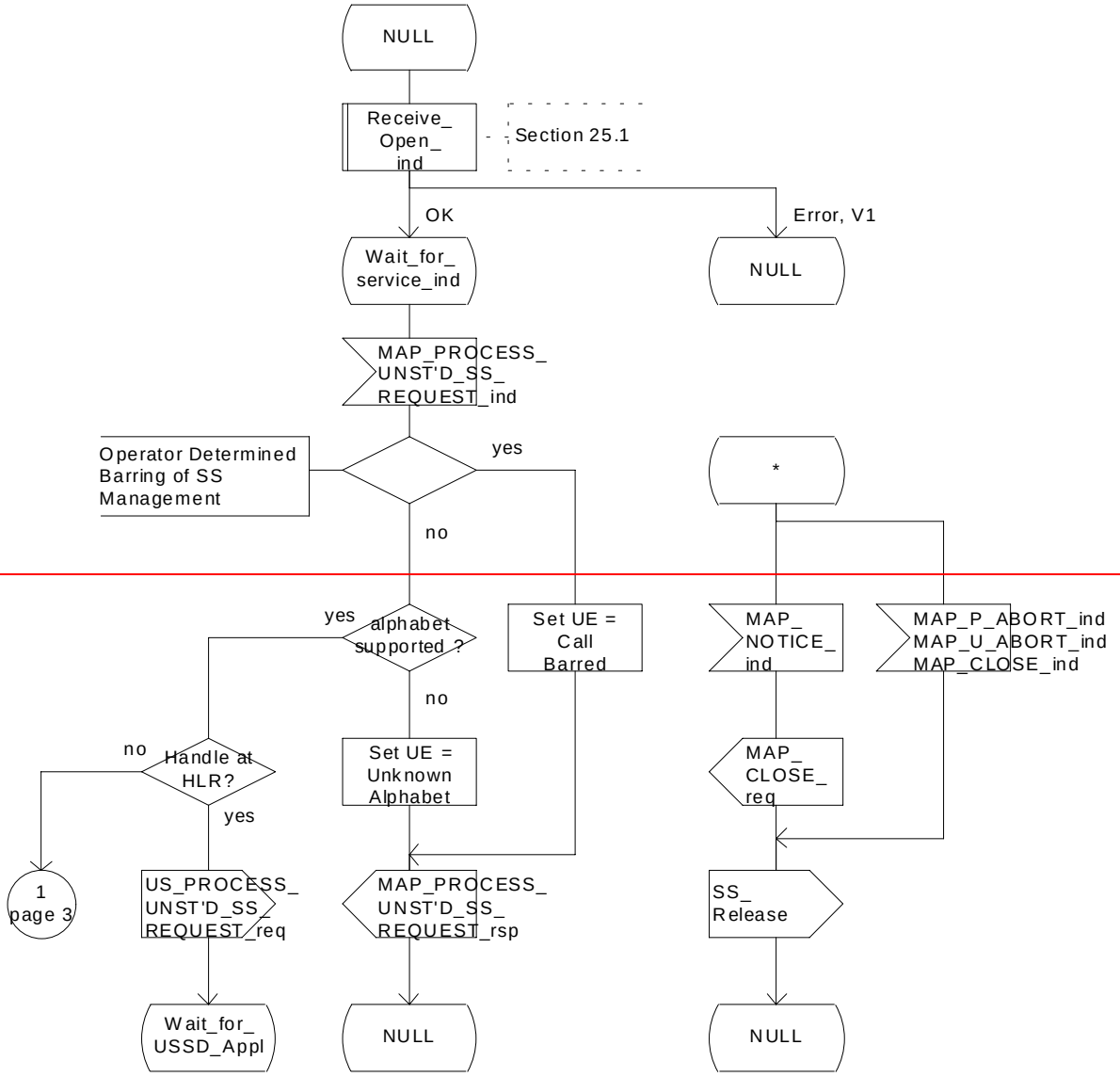
Error Handling

The VLR, the USSD Application and the gsmSCF or secondary HLR may initiate release of the MAP service at any time. This is handled as shown in the diagrams.

The procedure in the primary ~~and secondary~~ HLR is shown in figure 22.9.4/1.

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR
unless otherwise stated.
Arrow to right are to USSD application
unless otherwise stated



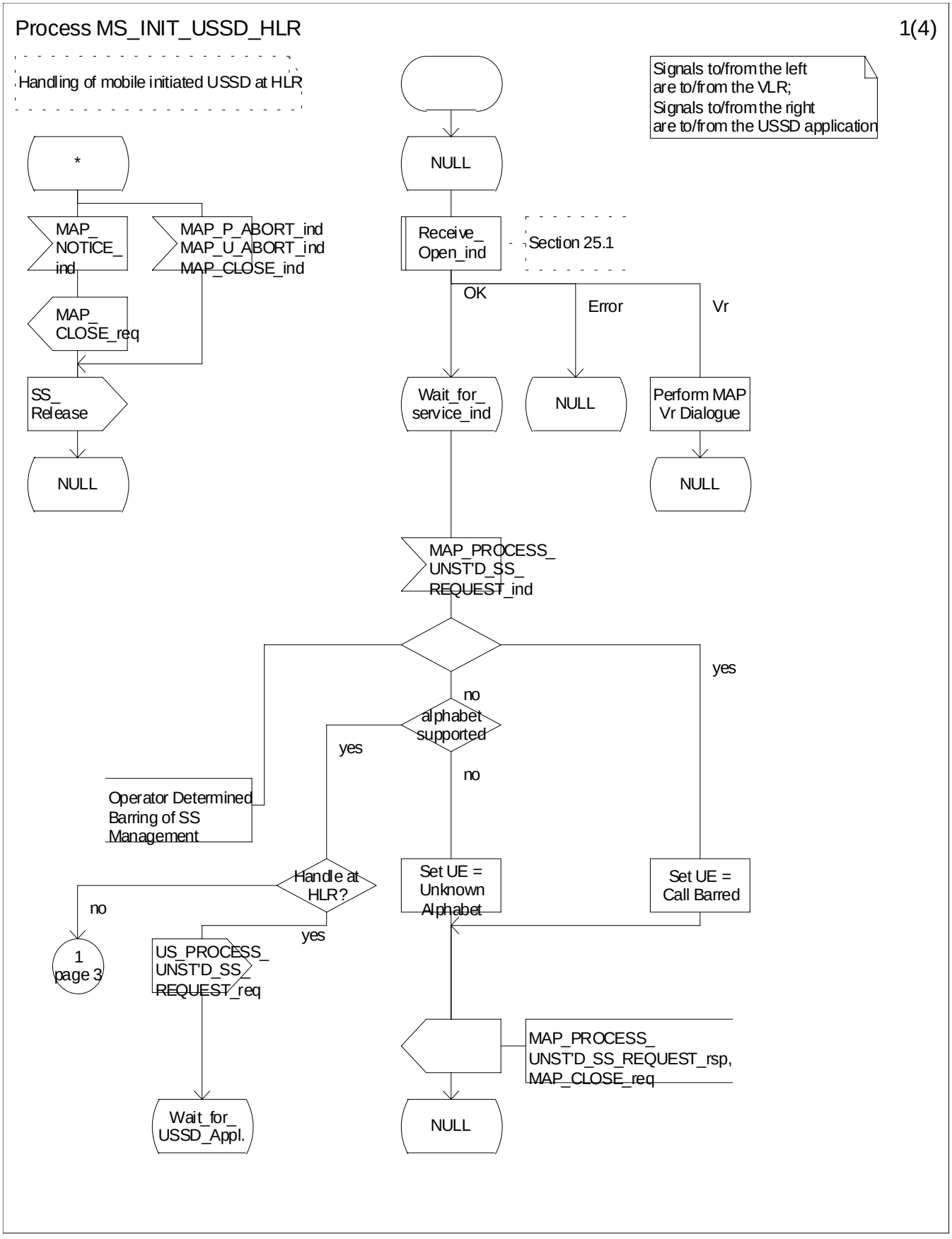


Figure 22.9.4/1 (sheet 1 of 4): Procedure MI_USSD_HLR

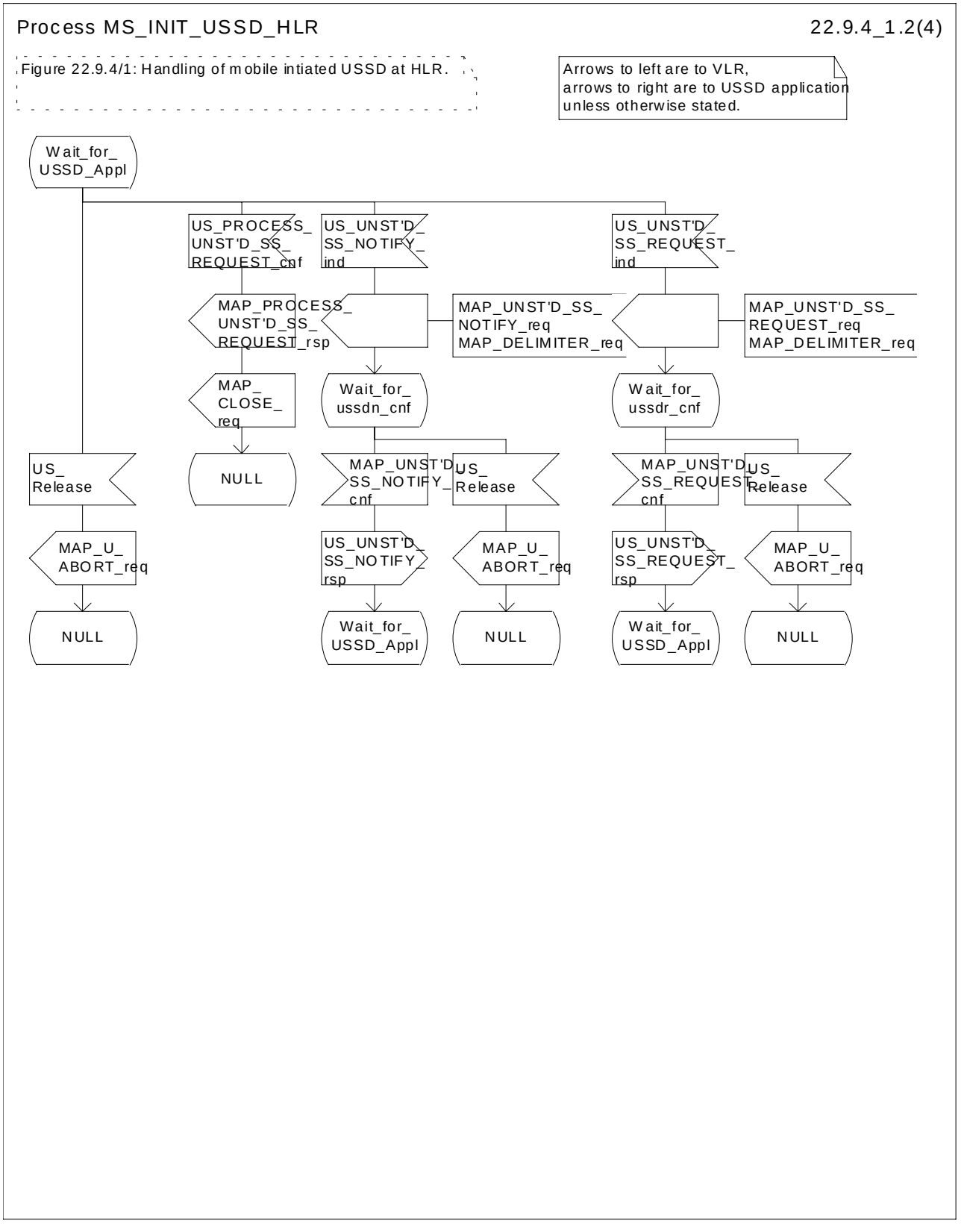
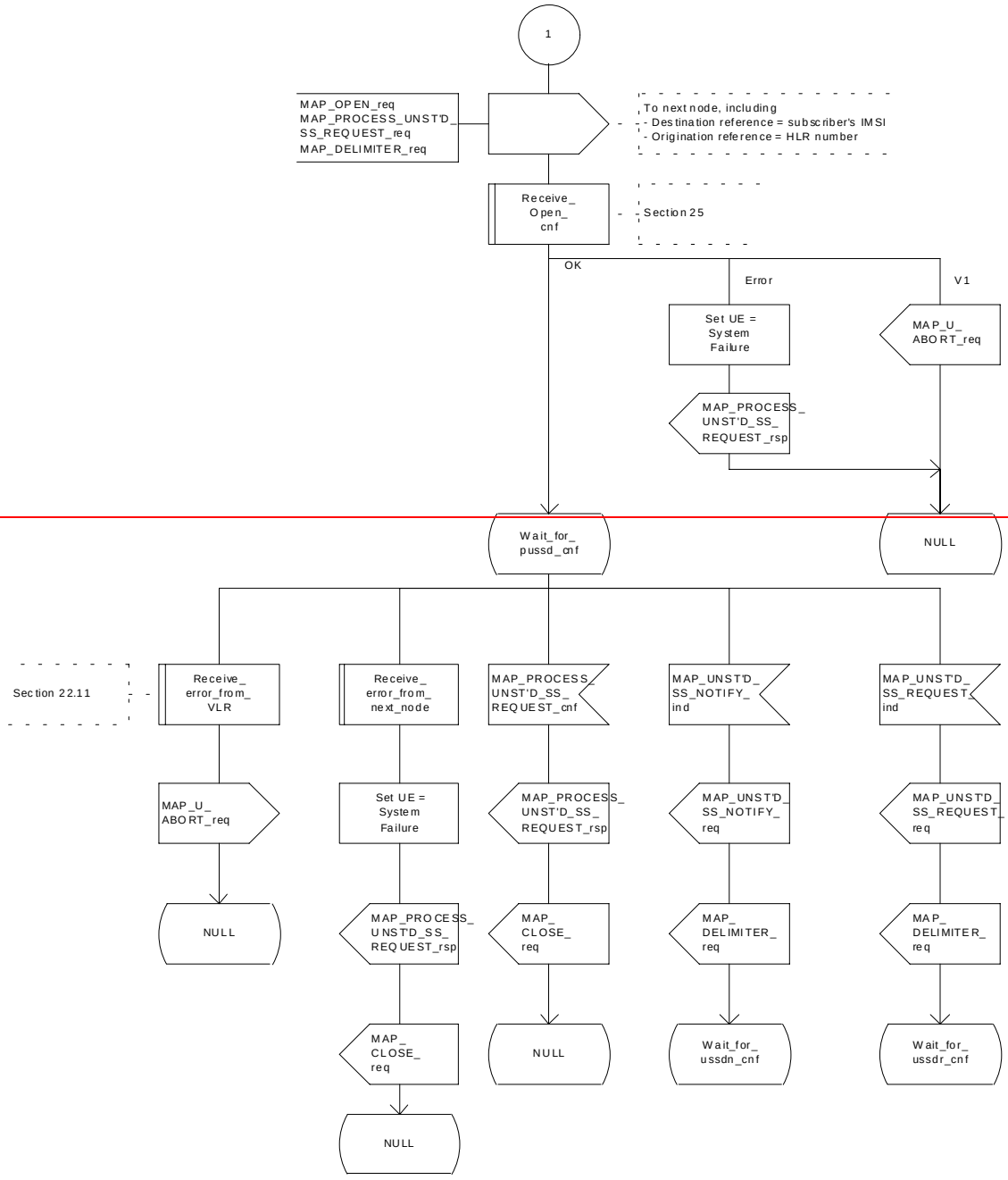


Figure 22.9.4/1 (sheet 2 of 4): Procedure MI_USSD_HLR

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR, arrows to right are to the next node unless otherwise stated.



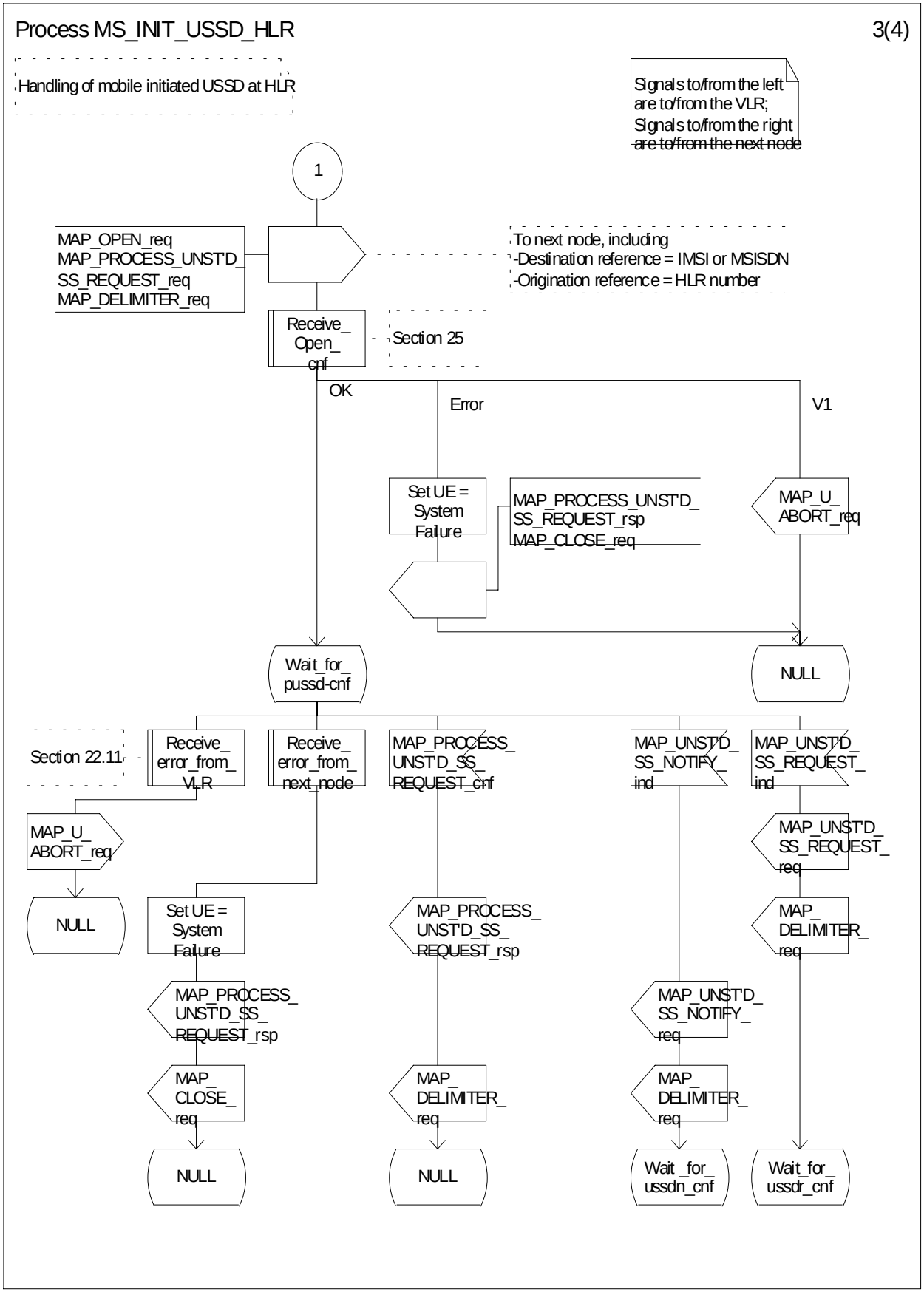


Figure 22.9.4/1 (sheet 3 of 4): Procedure MI_USSD_HLR

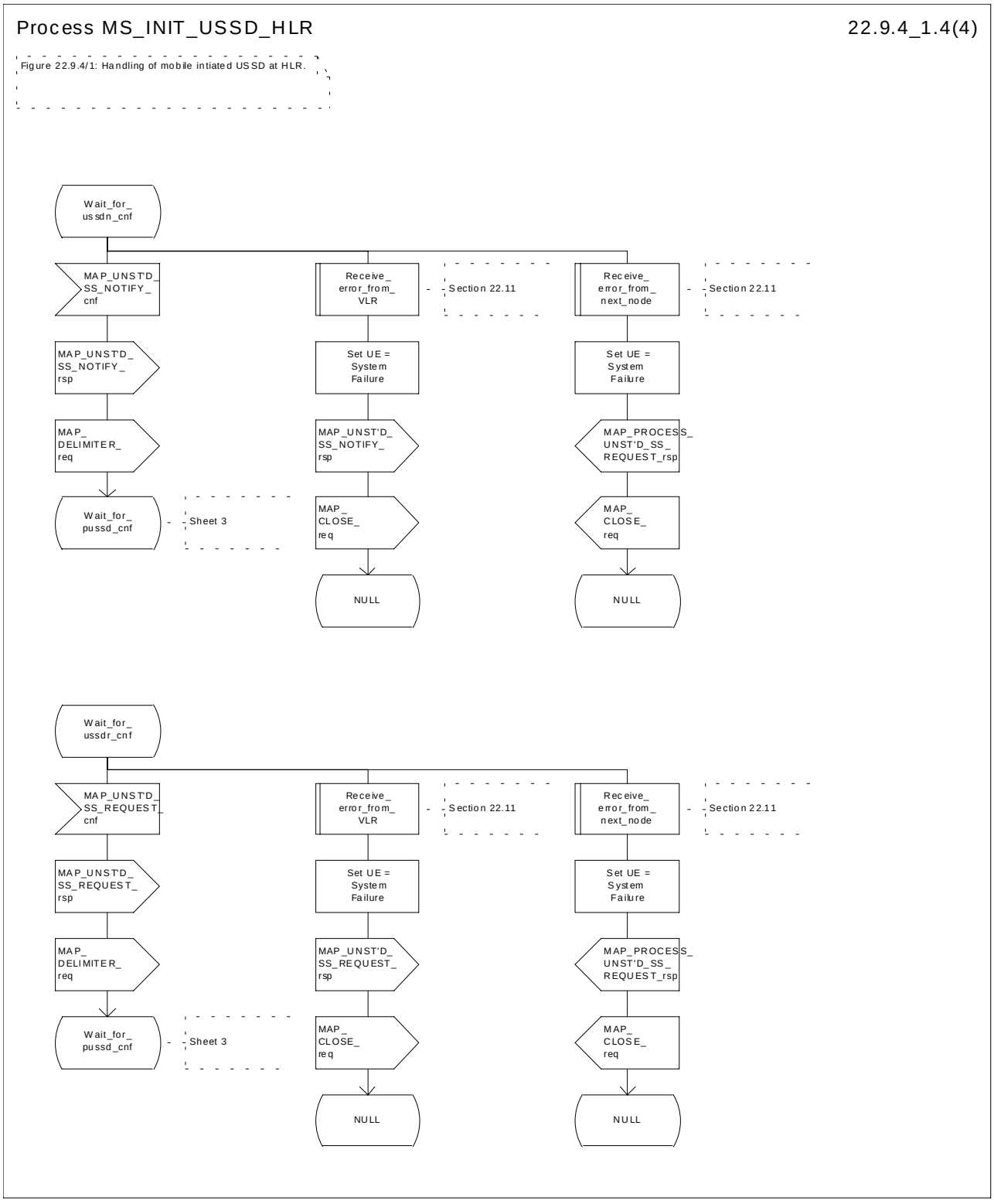


Figure 22.9.4/1 (sheet 4 of 4): Procedure MI_USSD_HLR

22.9.5 Procedures in the gsmSCF/secondary HLR

The Mobile initiated USSD Procedure in the gsmSCF/secondary HLR starts by the gsmSCF/secondary HLR receiving a MAP-OPEN service indication from the HLR.
Once a MAP dialogue is established, the gsmSCF/secondary HLR may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the HLR.
The gsmSCF/secondary HLR shall transfer the message to the local application.

The gsmSCF/secondary HLR may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the HLR. When a confirmation is received from the HLR this shall be returned to the application.

When the gsmSCF/secondary HLR receives the result of the original operation from the application then it shall pass this to the HLR and initiate release of the CM connection.

Error Handling

Both the HLR and the USSD Application may initiate release of the MAP service at any time. This is handled as shown in the diagrams.

The procedure in the gsmSCF and secondary HLR is shown in figure 22.9.5/1.

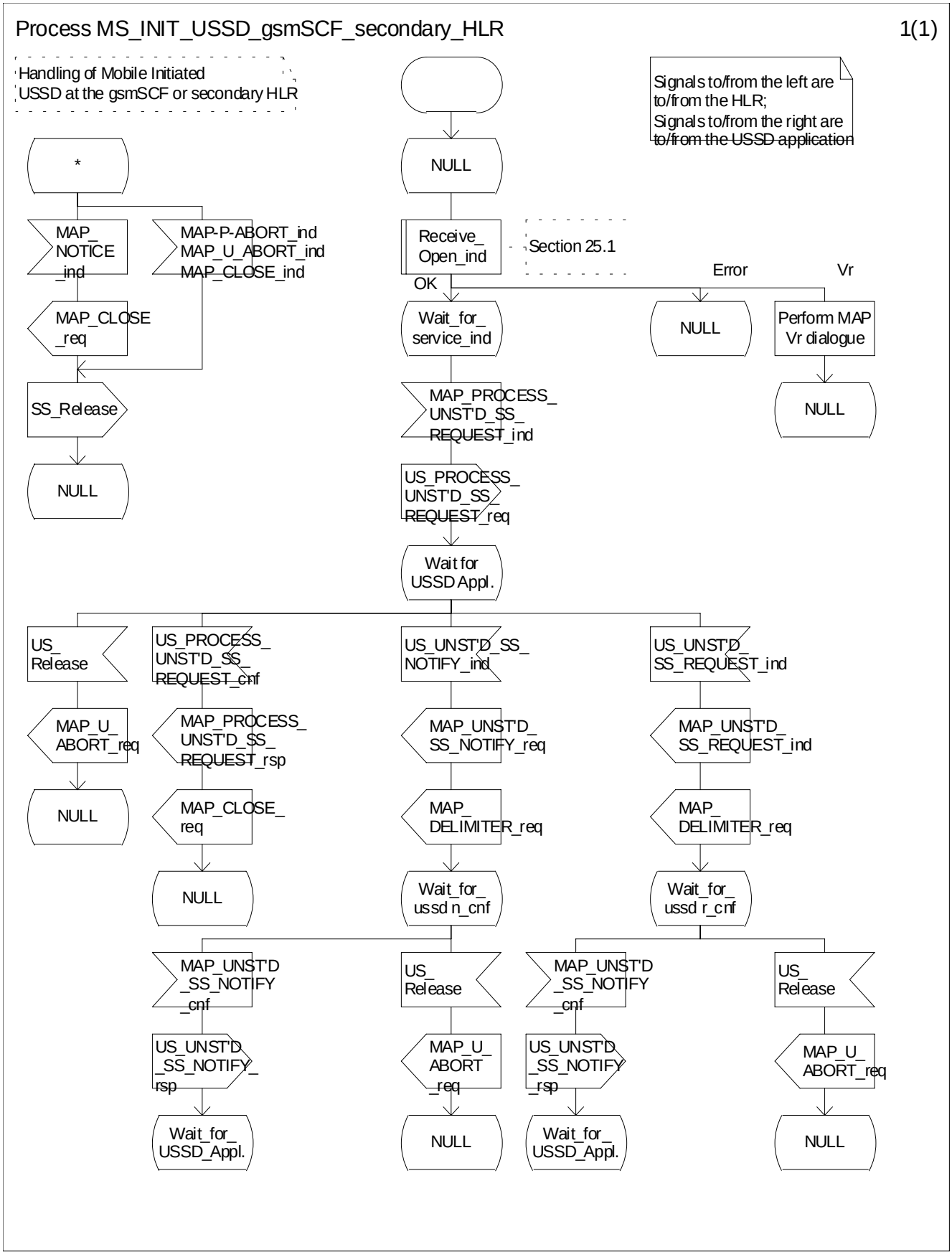


Figure 22.9.5/1 Process MS_INIT_USSD_gsmSCF_secondary_HLR

22.10.2 Procedure in the MSC

The procedure may be invoked either by the VLR or by a USSD application local to the MSC. They may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
If the request is initiated by a local USSD application then the MSC will open a dialogue with the VH~~H~~LR.
In both cases the MSC will initiate a CM connection to the MS (using the page or search macros defined in subclause 25.3). Once the connection is successfully established the message received from the VLR or USSD application will be sent to the MS using the mapping specified in GSM 09.11.
Following transfer of the message the MSC will wait for a confirmation from the MS. This will be sent to the VLR or USSD application as appropriate.
Following this, the MSC may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive an indication to release the connection to the MS.
In the event of an error, the connection to the MS shall be released, and the MAP process with the VLR shall be aborted as shown in the diagram.
.....

22.10.4 Procedure in the HLR

The procedure may be invoked either by a gsmSCF, a secondary HLR or by a USSD application local to the primary HLR. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the primary HLR will first check whether the MS is reachable .
If the MS is reachable, the primary HLR will initiate a MAP dialogue with the VLR and send~~. Once the dialogue is successfully established~~ the message received from the gsmSCF or secondary HLR or USSD application ~~will be sent~~ to the VLR.
Following transfer of the message the primary HLR will wait for a confirmation from the VLR. This will be sent to the gsmSCF or secondary HLR or USSD application as appropriate.
Following this, the primary HLR may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive a MAP_CLOSE_ind.
In the event of an error, the MAP process with the VLR shall be released and if necessary the MAP process with the gsmSCF or secondary HLR shall be aborted, as shown in the diagram.
Message Originated by gsmSCF or secondary HLR

If the message is originated by the gsmSCF or a secondary HLR then the primary HLR shall transfer the message transparently to the VLR.
The primary HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST_ind or MAP_UNSTRUCTURED_SS_NOTIFY_ind indications from the gsmSCF or secondary HLR. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the next node as appropriate.
When the primary HLR receives a MAP_CLOSE_ind from the gsmSCF or secondary HLR then it shall pass this to the VLR and close the MAP dialogue.
The procedure in the primary ~~and secondary~~ HLR is shown in figure 22.10.4/1 and 22.10.4/2.

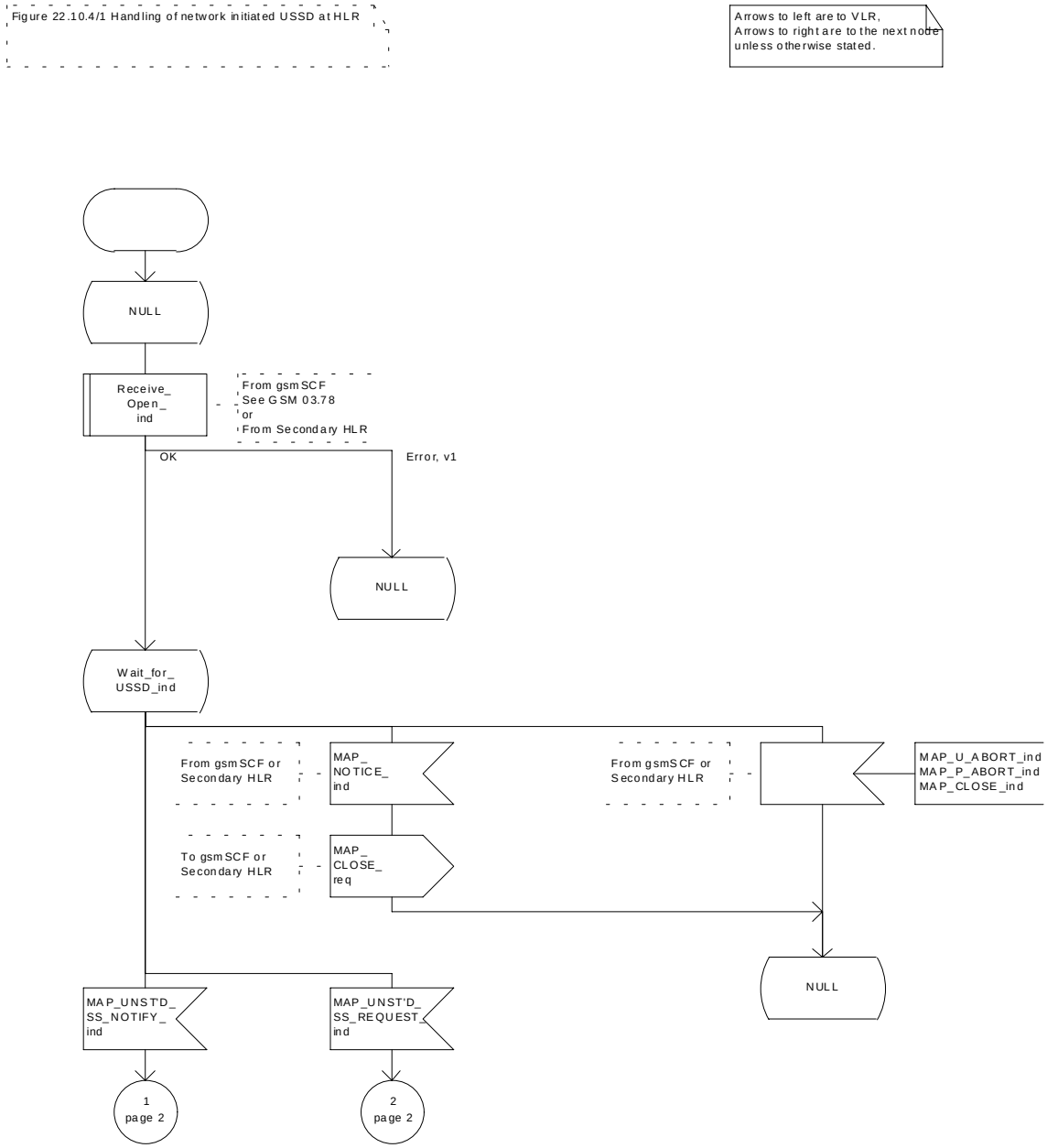
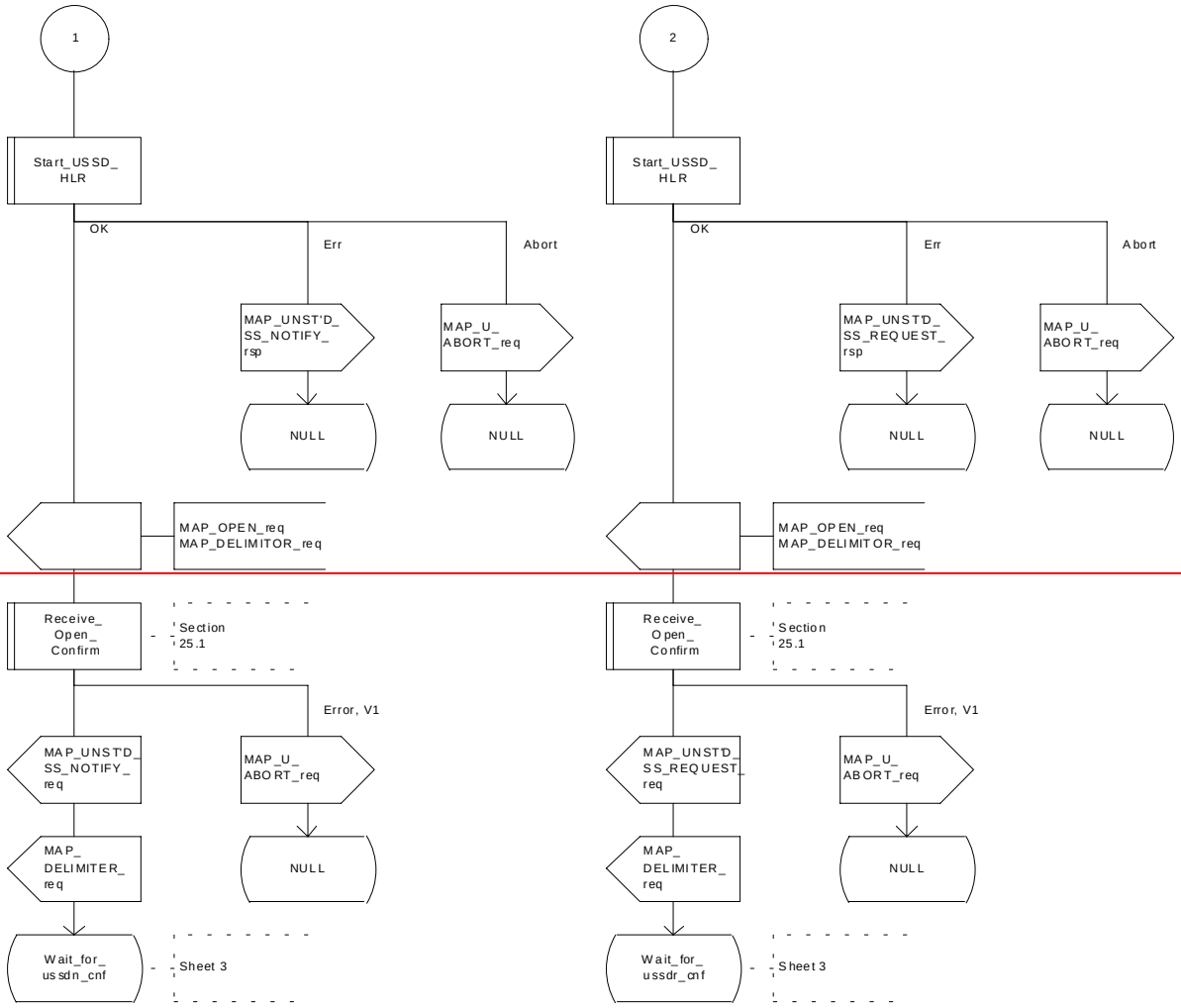


Figure 22.10.4/1 (sheet 1 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to the next node
unless otherwise stated.



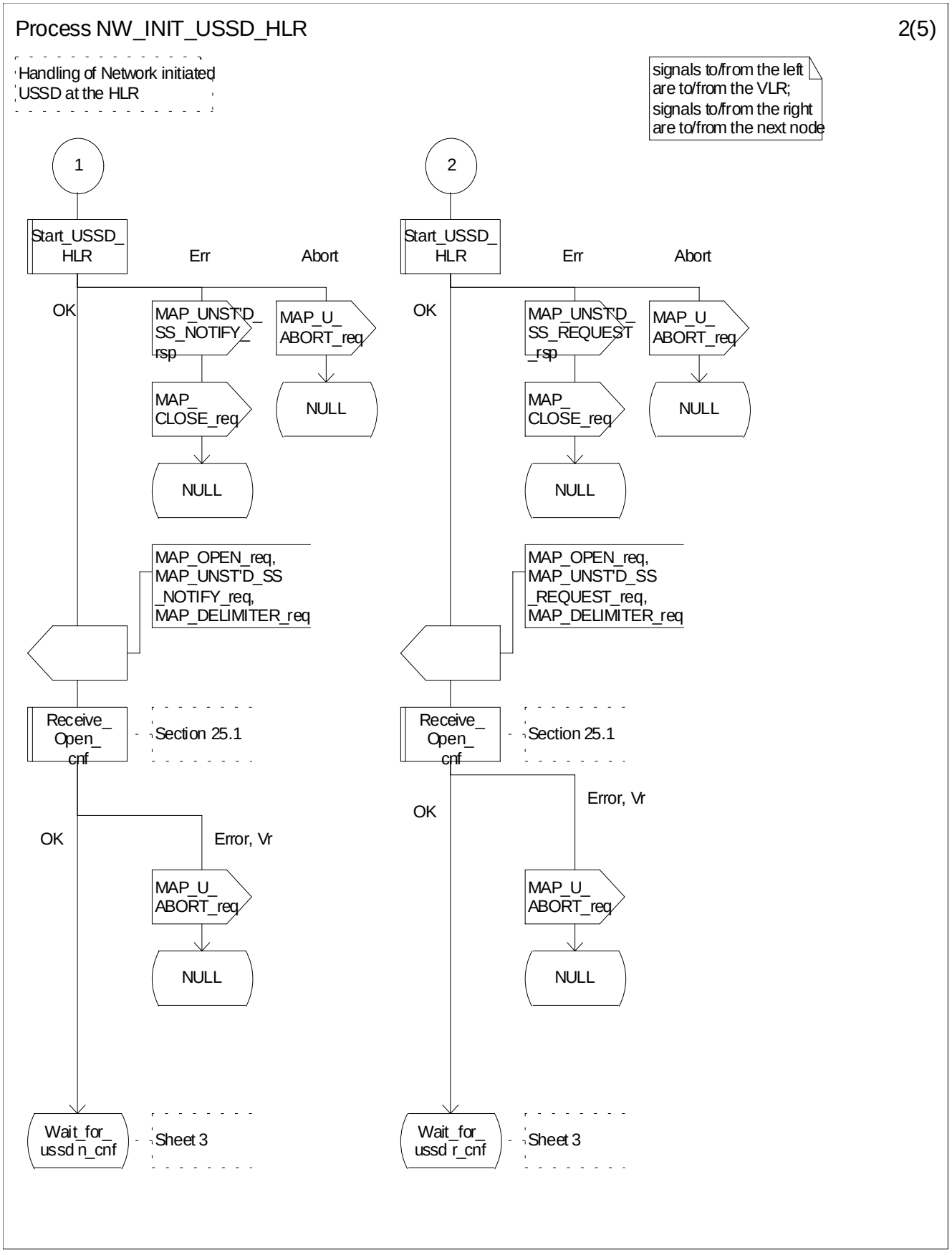


Figure 22.10.4/1 (sheet 2 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to the next node
unless otherwise stated.

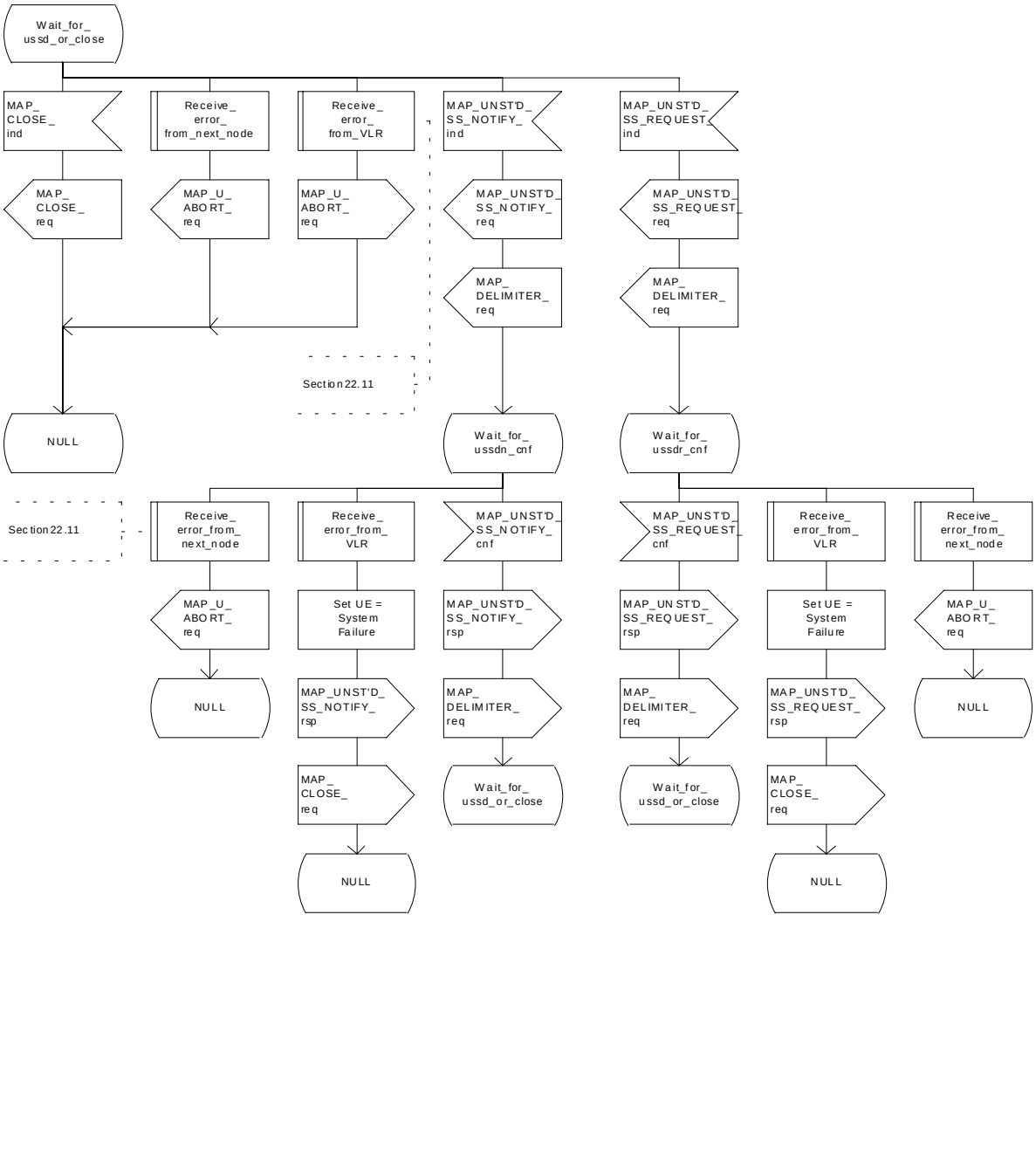
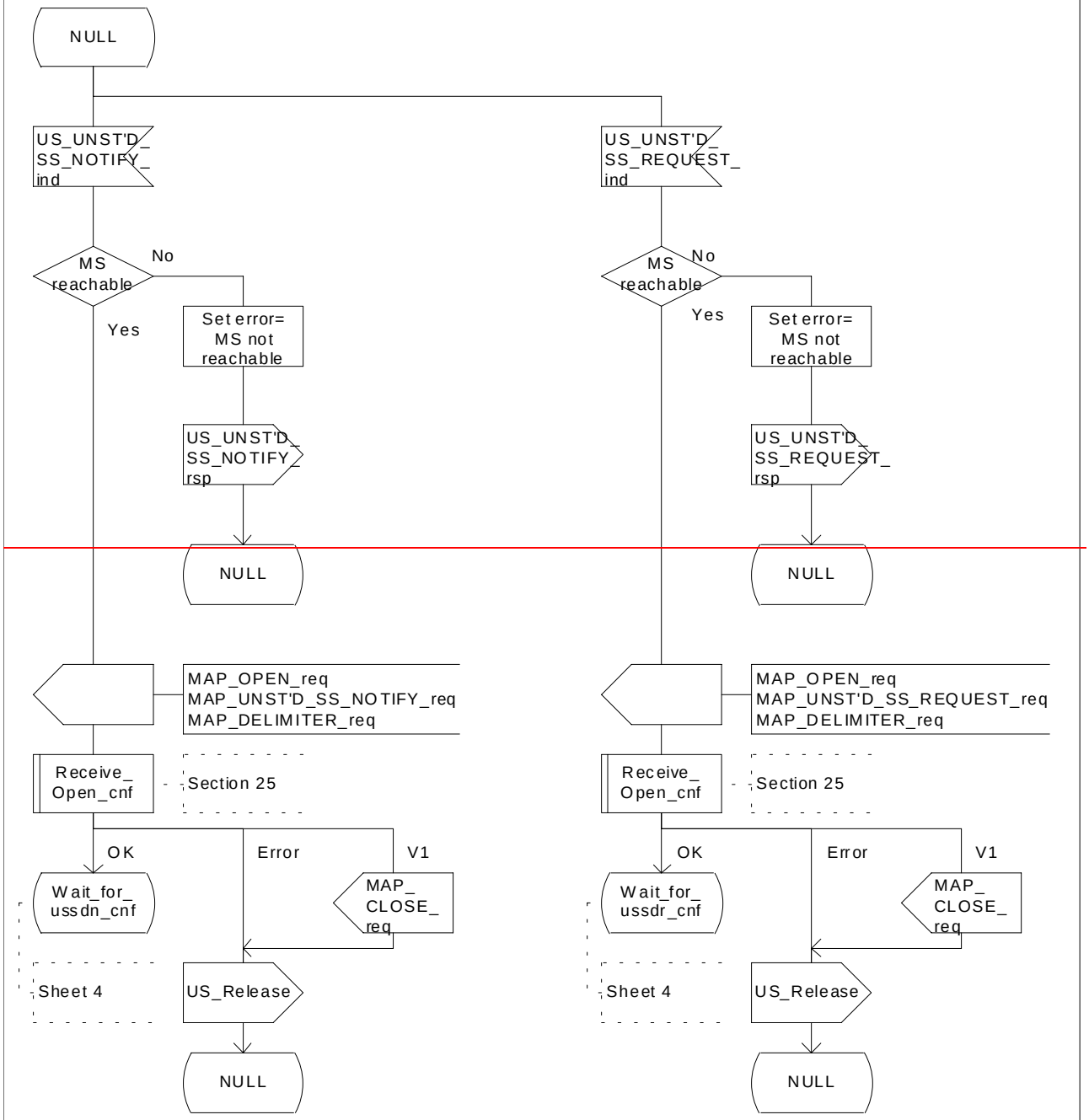


Figure 22.10.4/1 (sheet 3 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



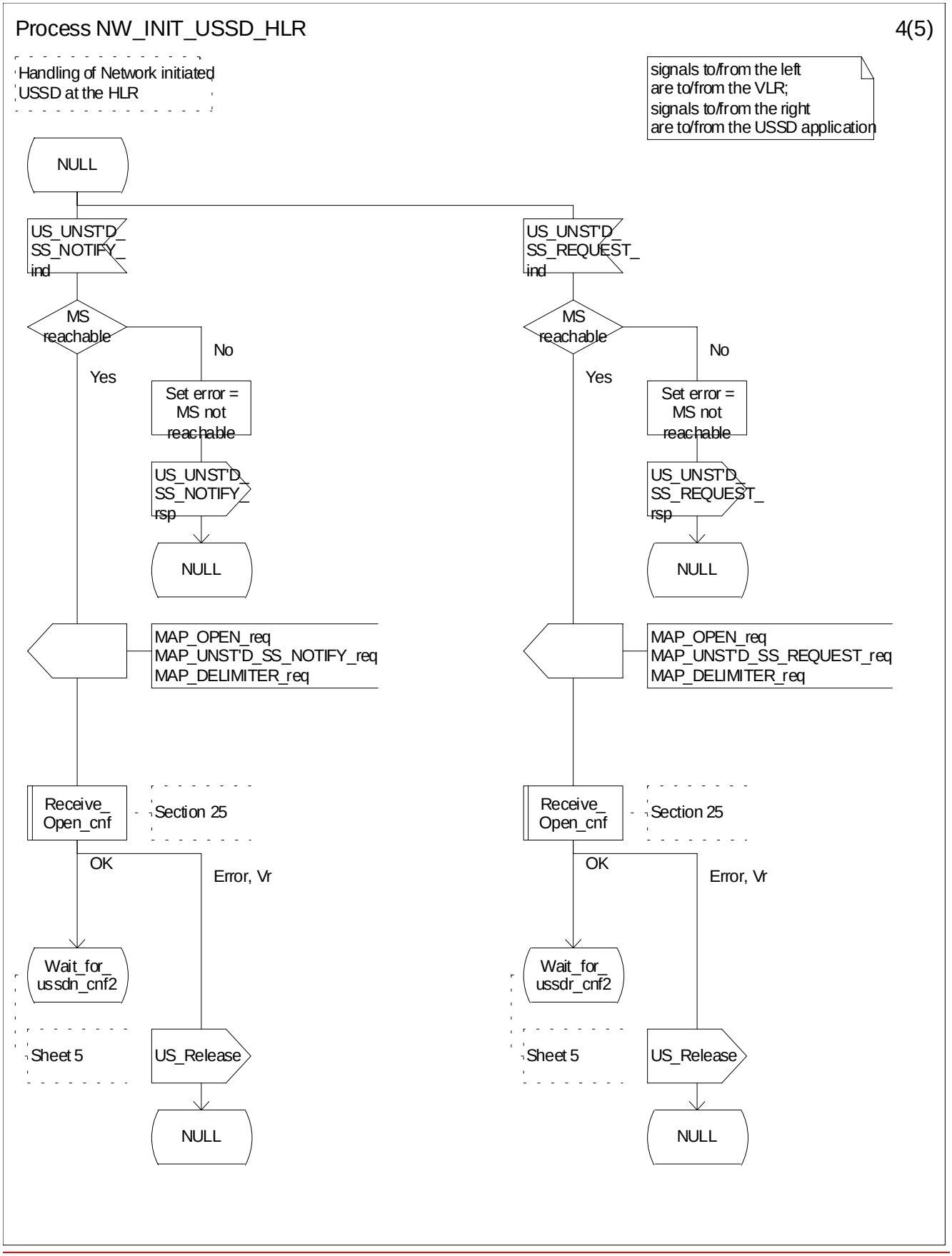
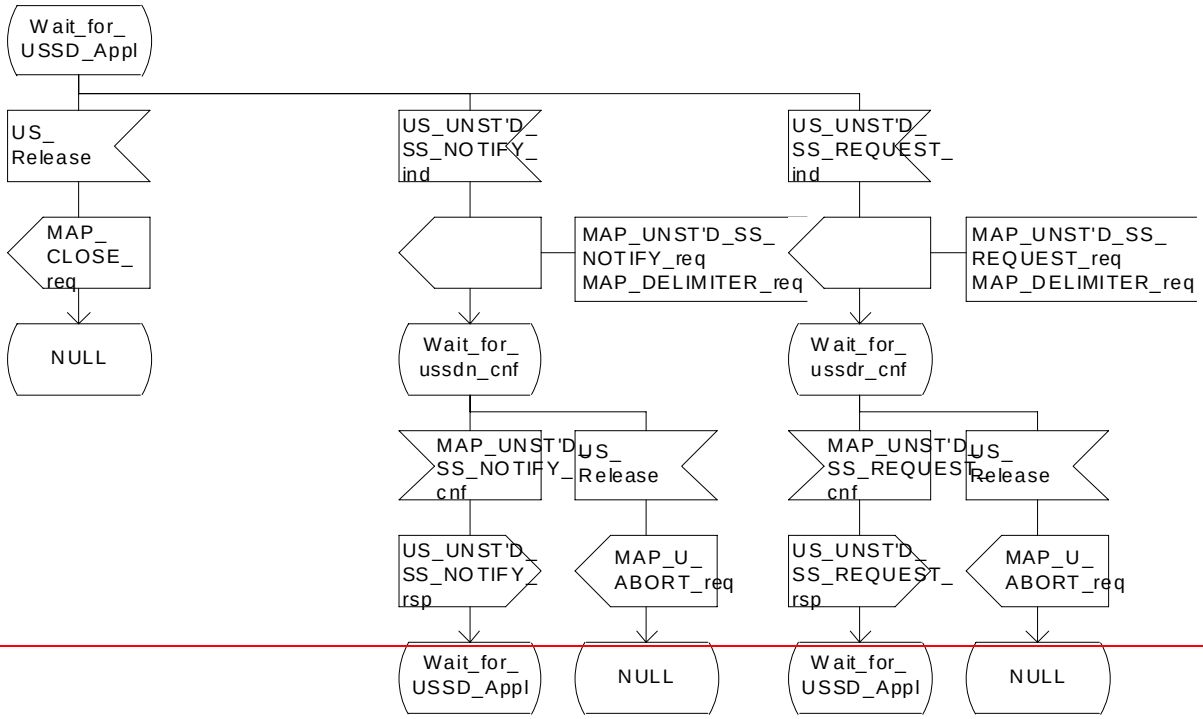


Figure 22.10.4/1 (sheet 4 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



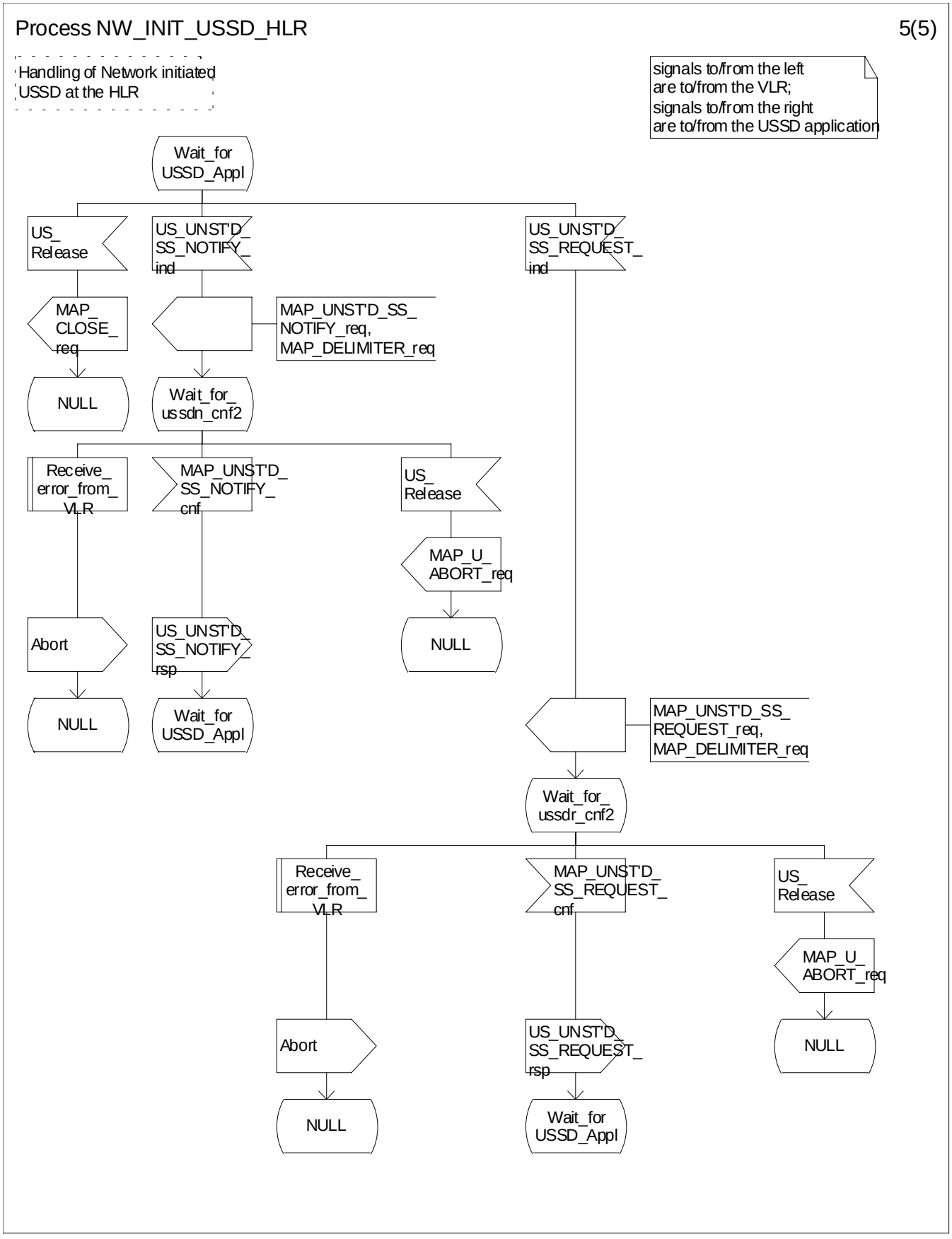


Figure 22.10.4/1 (sheet 5 of 5): Procedure NI_USSD_HLR

Macrodefinition Start_USSD_HLR 22.10.4_2.1(1)

Figure 22.10.4/2: Macro to check MS is reachable at the HLR for a network initiated USSD operation

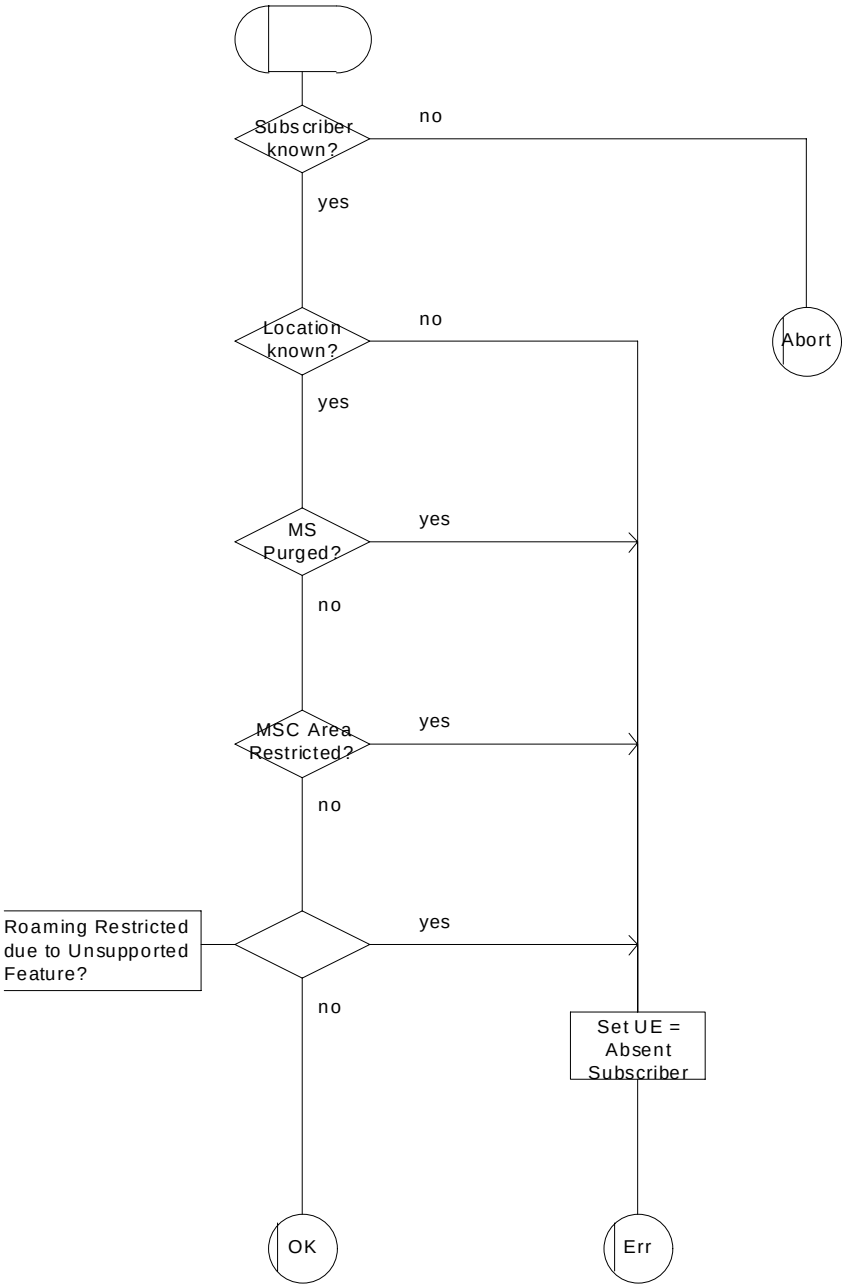


Figure 22.10.4/2: Macro Start_USSD_HLR

22.10.5 Procedure in the gsmSCF and secondary HLR

The procedure is invoked by an USSD application local to the gsmSCF/secondary HLR. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the gsmSCF will initiate a MAP dialogue with the HLR and send the message received from the USSD application to the HLR.

Following transfer of the message the gsmSCF will wait for a confirmation from the HLR. This will be relayed to the USSD application..
Following this, the gsmSCF/secondary HLR may receive further UNSTRUCTURED_SS_REQUEST or UNSTRUCTURED_SS_NOTIFY requests, or may receive a Release from the USSD application.
In the event of an error, the MAP dialogue with the HLR shall be released as shown in the diagram.
The procedure in the gsmSCF and secondary HLR is shown in figure 22.10.5/1.

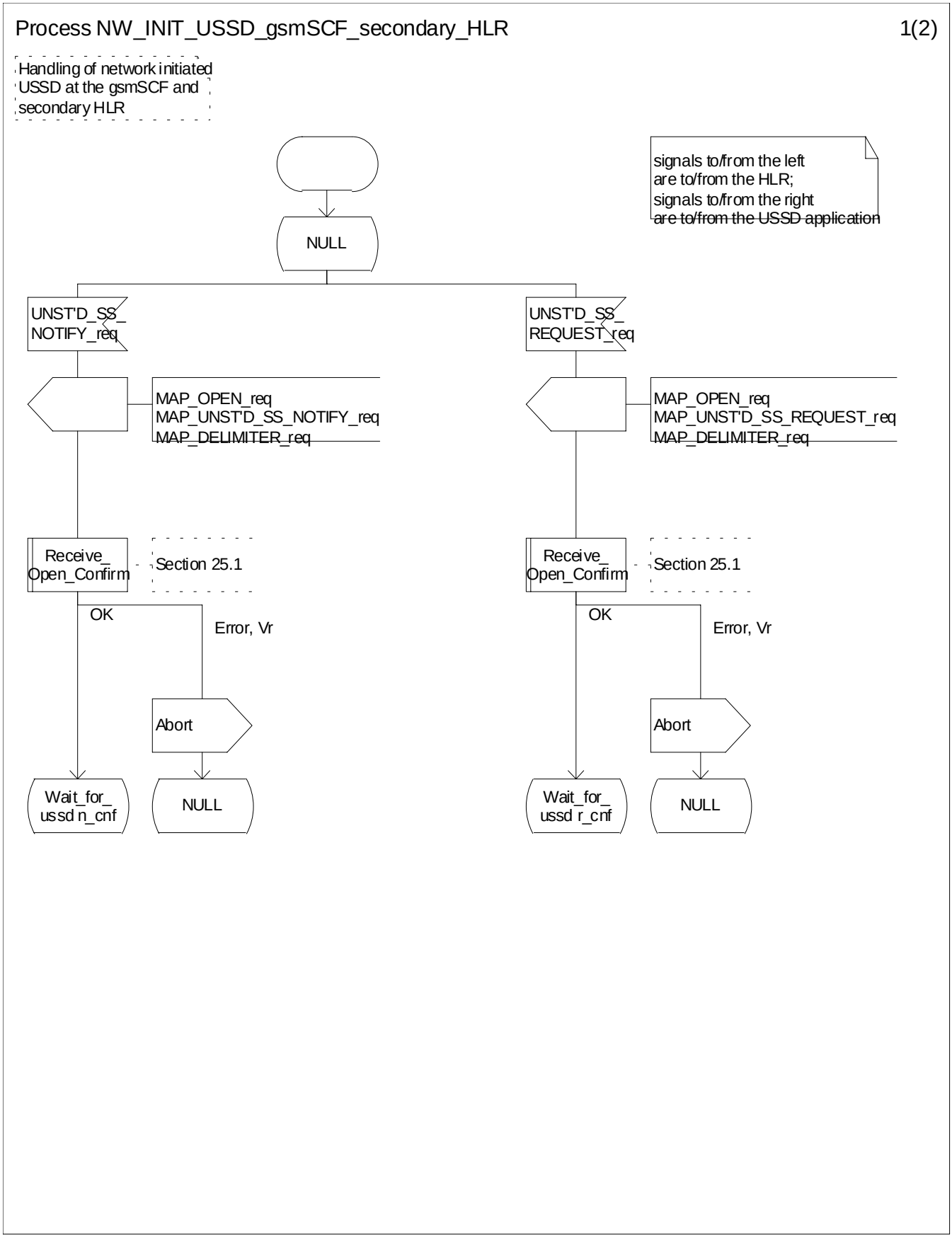


Figure 22.10.5/1 (sheet 1 of 2): Procedure NI_USSD_gsmSCF_secondary_HLR

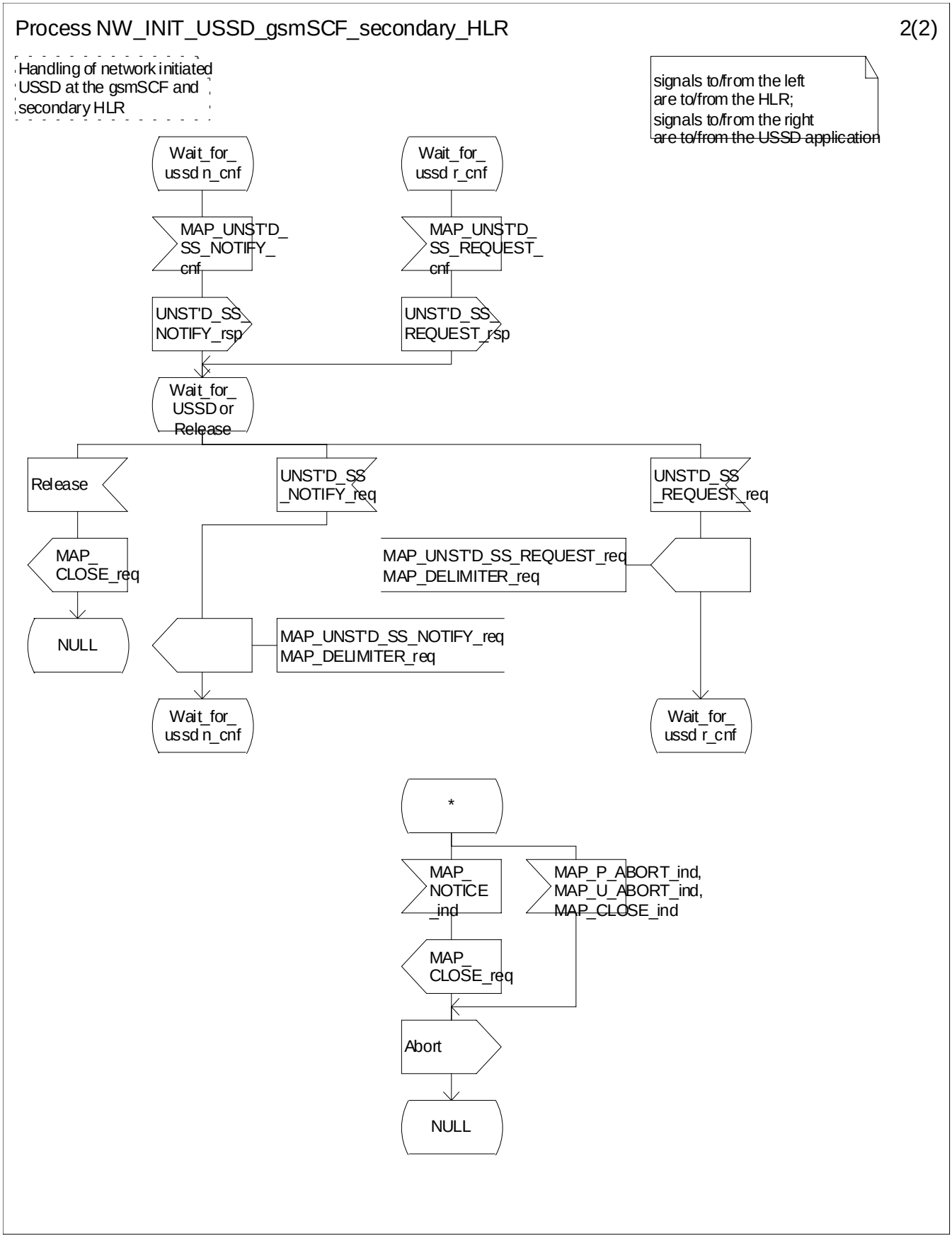


Figure 22.10.5/1 (sheet 2 of 2): Procedure NI_USSD_gsmSCF_secondary_HLR

3GPP TSG-CN4
Paris, FRANCE
13th November – 17th November 2000

Tdoc N4-000911

CHANGE REQUEST

29.002	CR	167r3	Current Version:	3.5.1

For submission to: CN#10 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [ ]

Form: CR cover sheet, version 2 for 3GPP and SMG *The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc*

Proposed change affects: (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]
(at least one should be marked with an X)

Source: CN4 **Date:** 21st September 2000

Subject: Corrections and clarifications for USSD procedures on the HLR - gsmSCF interface

Work item: Follow Me

Category:

F	Correction	[ ]
A	Corresponds to a correction in an earlier release	[X]
B	Addition of feature	[ ]
C	Functional modification of feature	[ ]
D	Editorial modification	[ ]

Release:

Phase 2	[ ]
Release 96	[ ]
Release 97	[ ]
Release 98	[ ]
Release 99	[X]
Release 00	[ ]

Reason for change: Various corrections of USSD procedures;
addition of USSD procedure description in the gsmSCF/secondary HLR

Clauses affected: 22.9.4, 22.9.5 (new), 22.10.2, 22.10.4, 22.10.5 (new)

Other specs affected:

Other 3G core specifications	[X]	→ List of CRs:	R00: CR 29.002 166r3
Other GSM core specifications	[X]	→ List of CRs:	R97: CR 09.02 A309r2 R98: CR 09.02 A308r2
MS test specifications	[ ]	→ List of CRs:	
BSS test specifications	[ ]	→ List of CRs:	
O&M specifications	[ ]	→ List of CRs:	

Other comments:

22.9.4 Procedures in the HLR

~~The initiation of the process is shown in subclause 22.1.3.~~ The Mobile initiated USSD Procedure in the HLR starts by the HLR receiving a MAP-OPEN service indication from the VLR

Once a MAP dialogue is established, the HLR may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the VLR. This message contains information input by the user. If the alphabet used for the message is understood then the message shall either be fed to an application contained locally in the HLR or to the gsmSCF or to a secondary HLR where the USSD application is located. If the alphabet is not understood then the error "UnknownAlphabet" shall be returned.

Message Destined for Local Application

If the message is destined for the local USSD application then the HLR shall transfer the message to the local application.

The HLR may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the application.

When the HLR receives the result of the original operation from the application then it shall pass this to the VLR and initiate release of the CM connection.

Message Destined for gsmSCF or secondary HLR

If the message is destined for the gsmSCF or secondary HLR then the primary HLR shall transfer the message transparently to the next node.

The primary HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications from the gsmSCF. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the gsmSCF.

When the primary HLR receives a MAP_PROCESS_UNSTRUCTURED_SS_REQUEST confirmation from the gsmSCF then it shall pass this to the VLR and closes the MAP provider service.

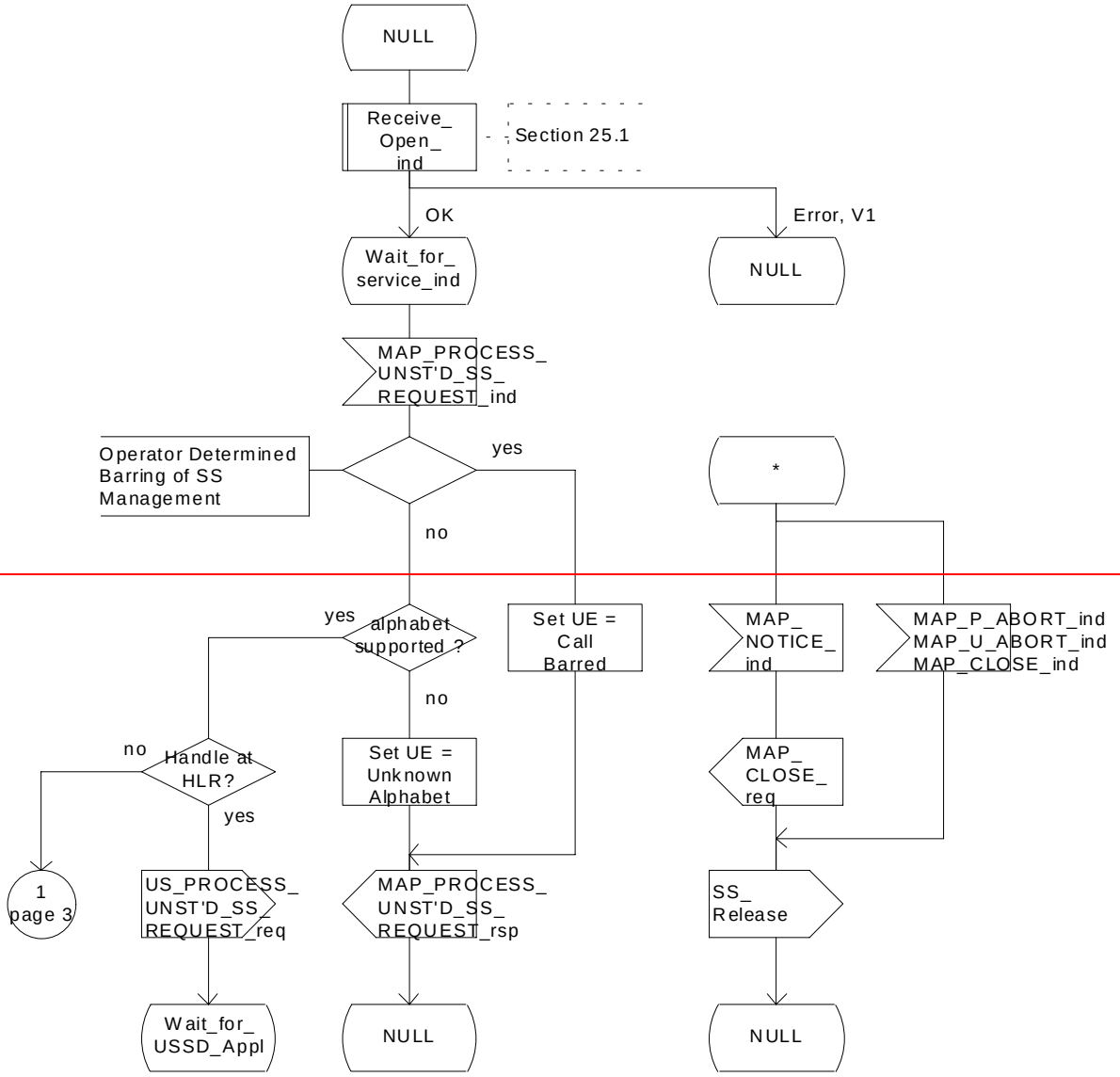
Error Handling

The VLR, the USSD Application and the gsmSCF or secondary HLR may initiate release of the MAP service at any time. This is handled as shown in the diagrams.

The procedure in the primary ~~and secondary~~ HLR is shown in figure 22.9.4/1.

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR
unless otherwise stated.
Arrow to right are to USSD application
unless otherwise stated



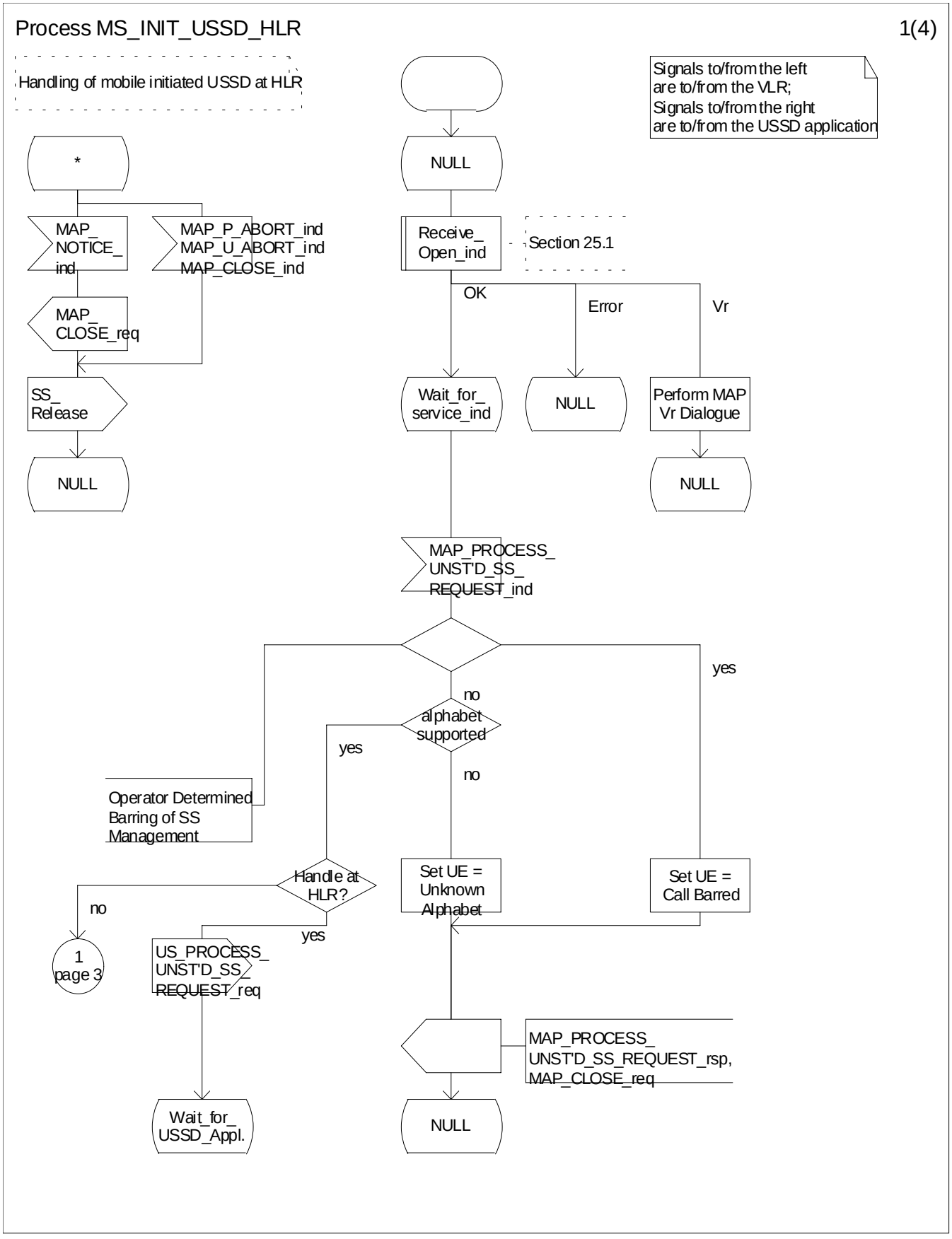


Figure 22.9.4/1 (sheet 1 of 4): Procedure MI_USSD_HLR

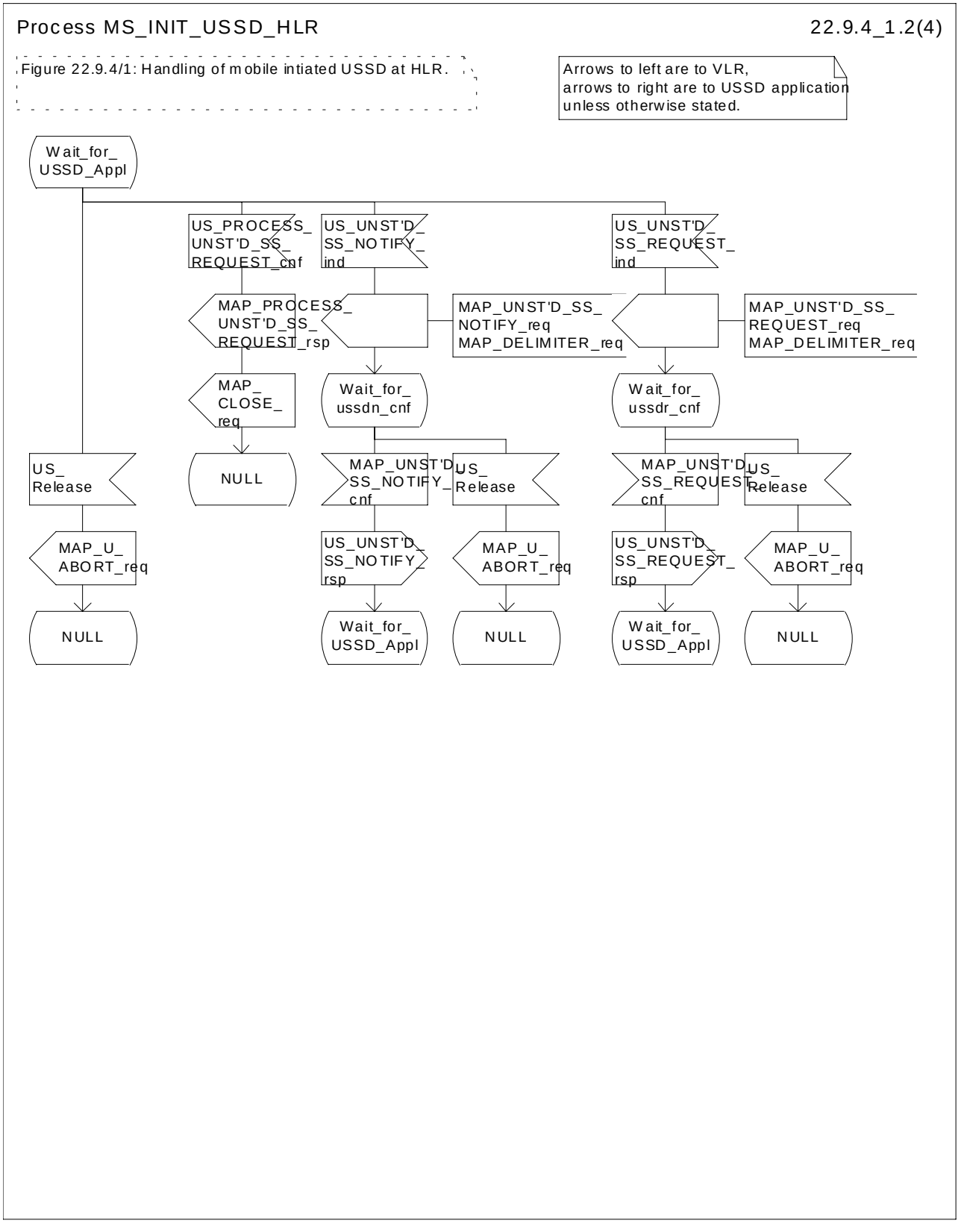
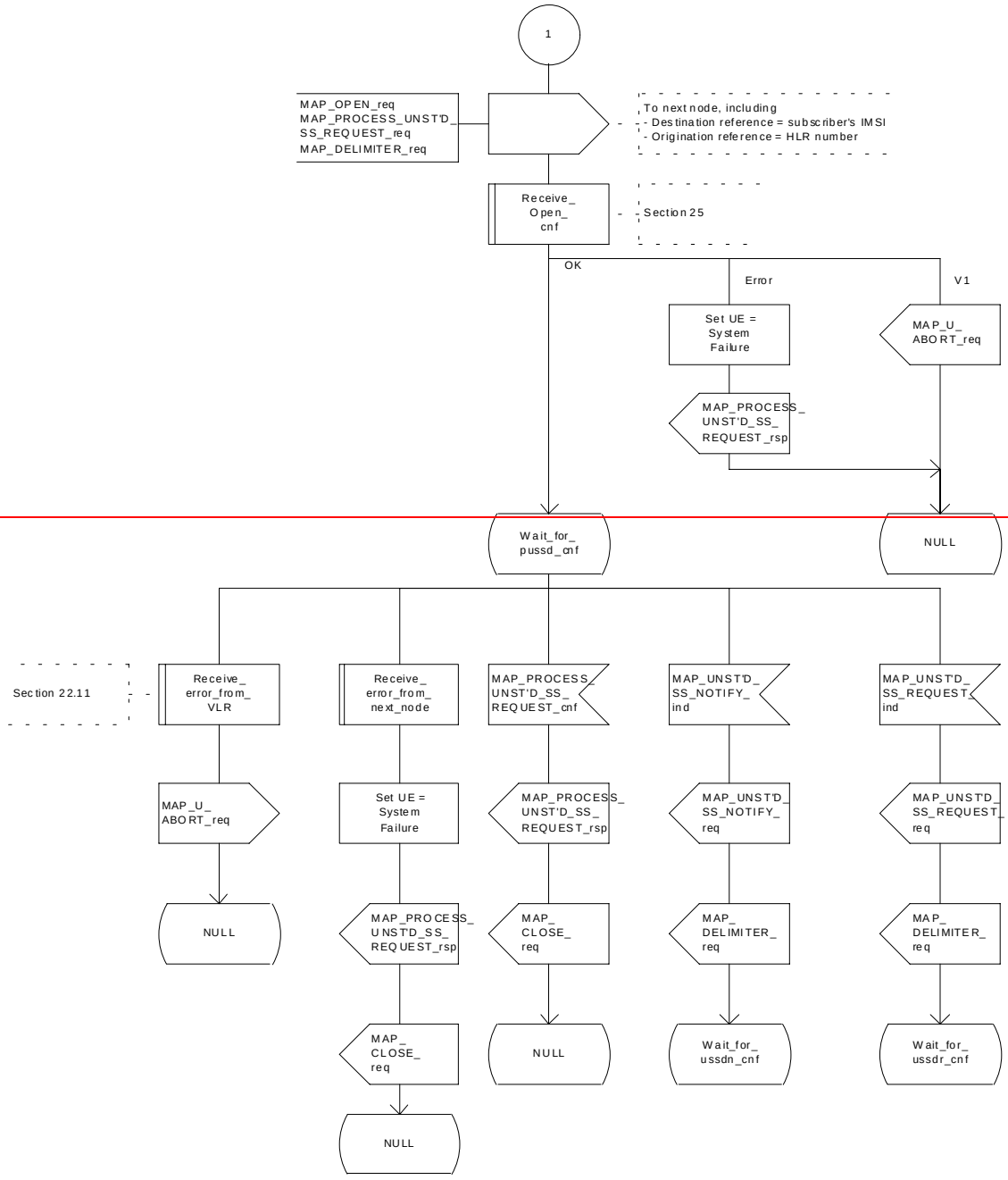


Figure 22.9.4/1 (sheet 2 of 4): Procedure MI_USSD_HLR

Figure 22.9.4/1: Handling of mobile intiated USSD at HLR.

Arrows to left are to VLR, arrows to right are to the next node unless otherwise stated.



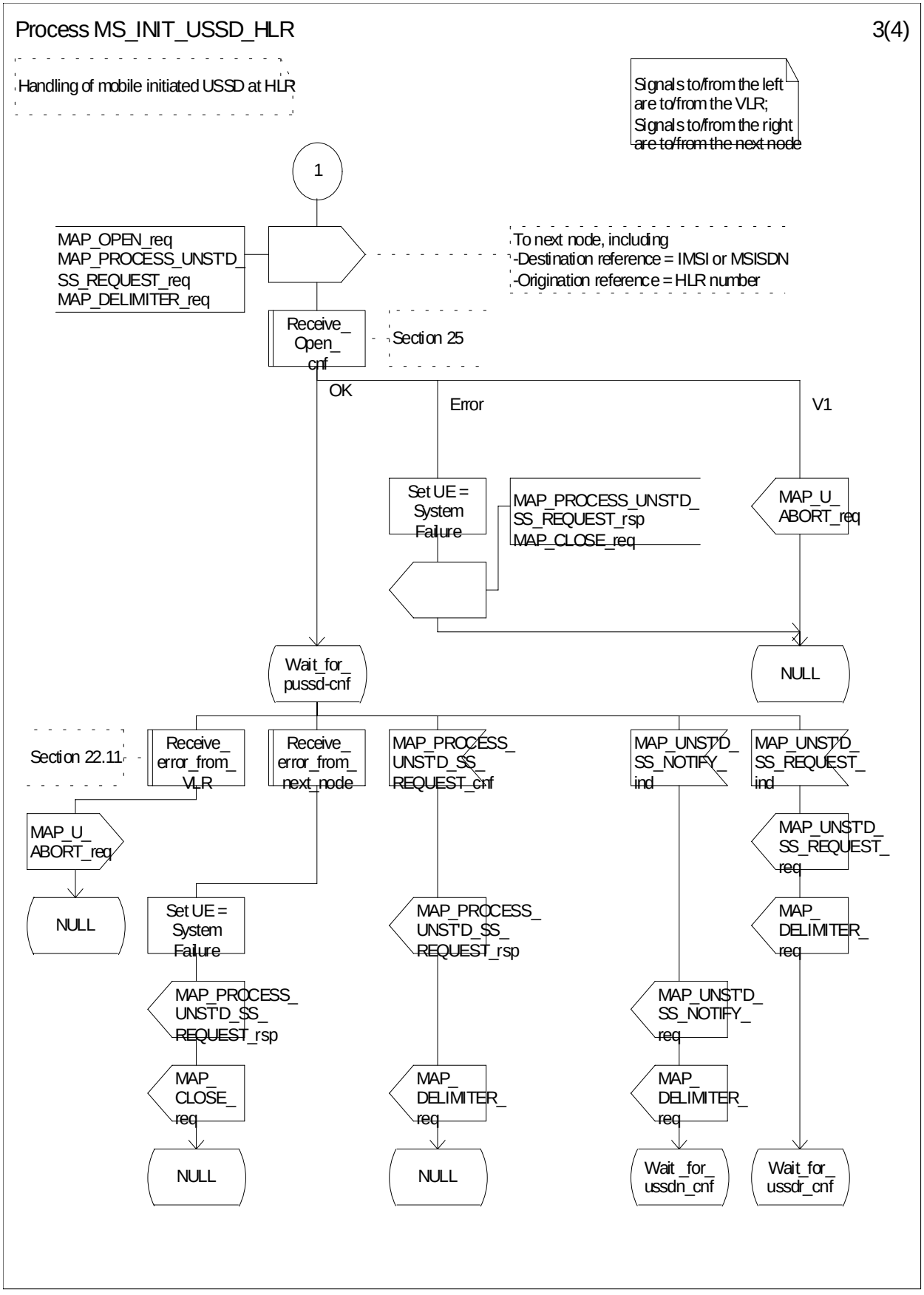


Figure 22.9.4/1 (sheet 3 of 4): Procedure MI_USSD_HLR

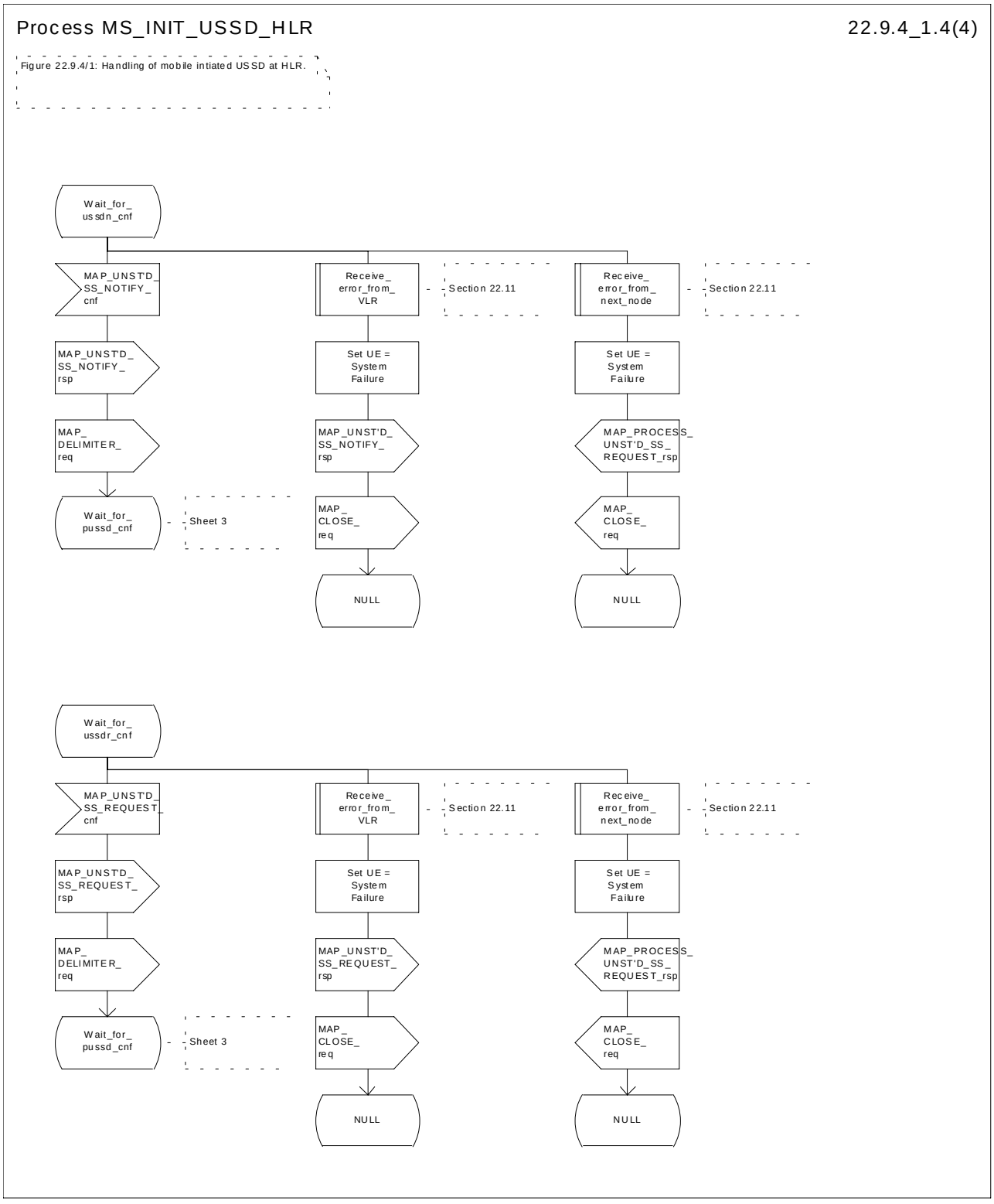


Figure 22.9.4/1 (sheet 4 of 4): Procedure MI_USSD_HLR

22.9.5 Procedures in the gsmSCF/secondary HLR

The Mobile initiated USSD Procedure in the gsmSCF/secondary HLR starts by the gsmSCF/secondary HLR receiving a MAP-OPEN service indication from the HLR.
Once a MAP dialogue is established, the gsmSCF/secondary HLR may handle the MAP_PROCESS_UNSTRUCTURED_SS_REQUEST from the HLR.
The gsmSCF/secondary HLR shall transfer the message to the local application.

The gsmSCF/secondary HLR may subsequently receive one or more requests from the application which correspond to the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY indications. These shall be sent transparently to the HLR. When a confirmation is received from the HLR this shall be returned to the application.

When the gsmSCF/secondary HLR receives the result of the original operation from the application then it shall pass this to the HLR and initiate release of the CM connection.

Error Handling

Both the HLR and the USSD Application may initiate release of the MAP service at any time. This is handled as shown in the diagrams.

The procedure in the gsmSCF and secondary HLR is shown in figure 22.9.5/1.

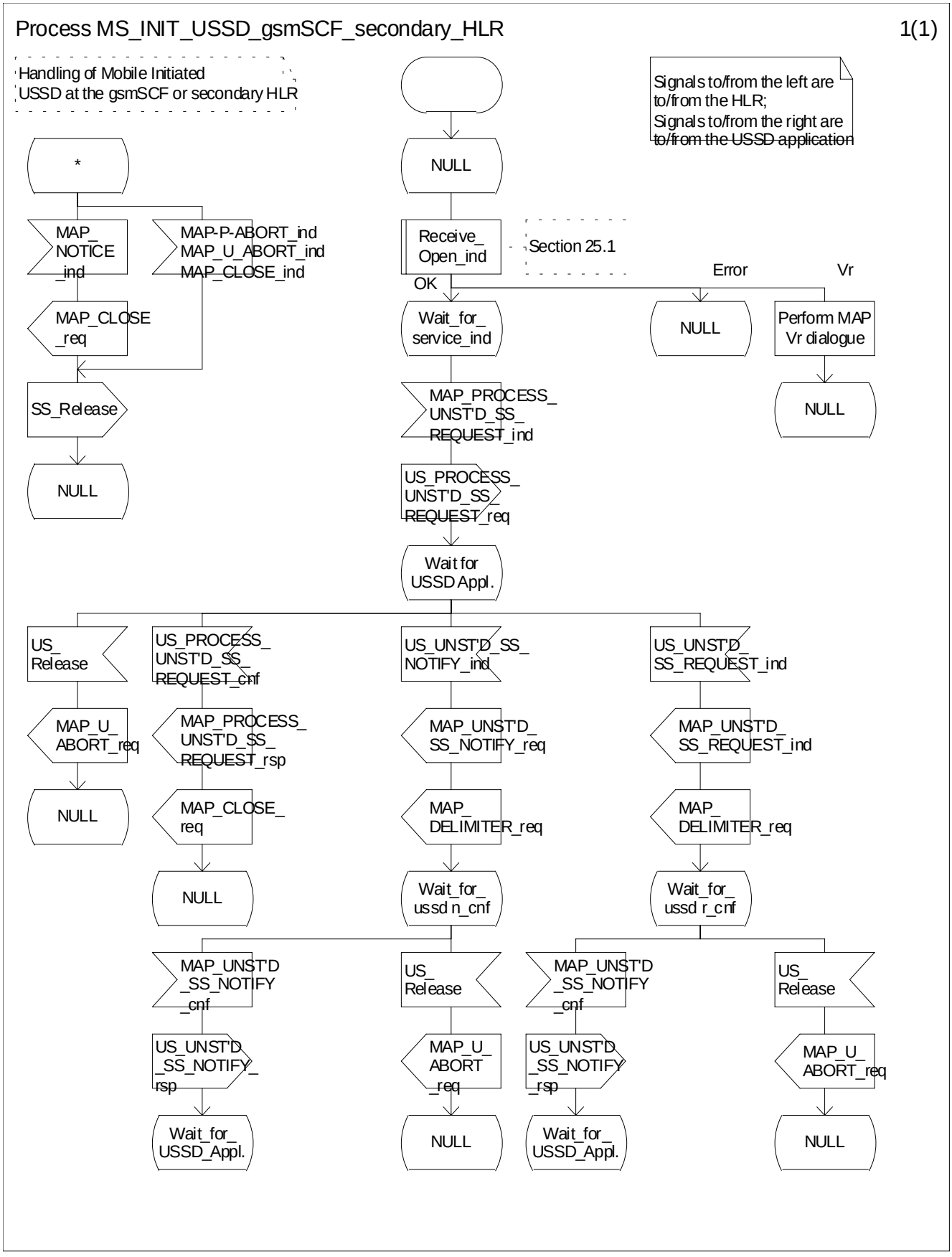


Figure 22.9.5/1 Process MS_INIT_USSD_gsmSCF_secondary_HLR

22.10.2 Procedure in the MSC

The procedure may be invoked either by the VLR or by a USSD application local to the MSC. They may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
If the request is initiated by a local USSD application then the MSC will open a dialogue with the VHLR.
In both cases the MSC will initiate a CM connection to the MS (using the page or search macros defined in subclause 25.3). Once the connection is successfully established the message received from the VLR or USSD application will be sent to the MS using the mapping specified in GSM 09.11.
Following transfer of the message the MSC will wait for a confirmation from the MS. This will be sent to the VLR or USSD application as appropriate.
Following this, the MSC may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive an indication to release the connection to the MS.
In the event of an error, the connection to the MS shall be released, and the MAP process with the VLR shall be aborted as shown in the diagram.
.....

22.10.4 Procedure in the HLR

The procedure may be invoked either by a gsmSCF, a secondary HLR or by a USSD application local to the primary HLR. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the primary HLR will first check whether the MS is reachable .
If the MS is reachable, the primary HLR will initiate a MAP dialogue with the VLR and send. Once the dialogue is successfully established the message received from the gsmSCF or secondary HLR or USSD application will be sent to the VLR.
Following transfer of the message the primary HLR will wait for a confirmation from the VLR. This will be sent to the gsmSCF or secondary HLR or USSD application as appropriate.
Following this, the primary HLR may receive further uses of the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY services, or may receive a MAP_CLOSE_ind.
In the event of an error, the MAP process with the VLR shall be released and if necessary the MAP process with the gsmSCF or secondary HLR shall be aborted, as shown in the diagram.
Message Originated by gsmSCF or secondary HLR

If the message is originated by the gsmSCF or a secondary HLR then the primary HLR shall transfer the message transparently to the VLR.
The primary HLR may subsequently receive one or more MAP_UNSTRUCTURED_SS_REQUEST_ind or MAP_UNSTRUCTURED_SS_NOTIFY_ind indications from the gsmSCF or secondary HLR. These shall be sent transparently to the VLR. When a confirmation is received from the VLR this shall be returned to the next node as appropriate.
When the primary HLR receives a MAP_CLOSE_ind from the gsmSCF or secondary HLR then it shall pass this to the VLR and close the MAP dialogue.
The procedure in the primary and secondary HLR is shown in figure 22.10.4/1 and 22.10.4/2.

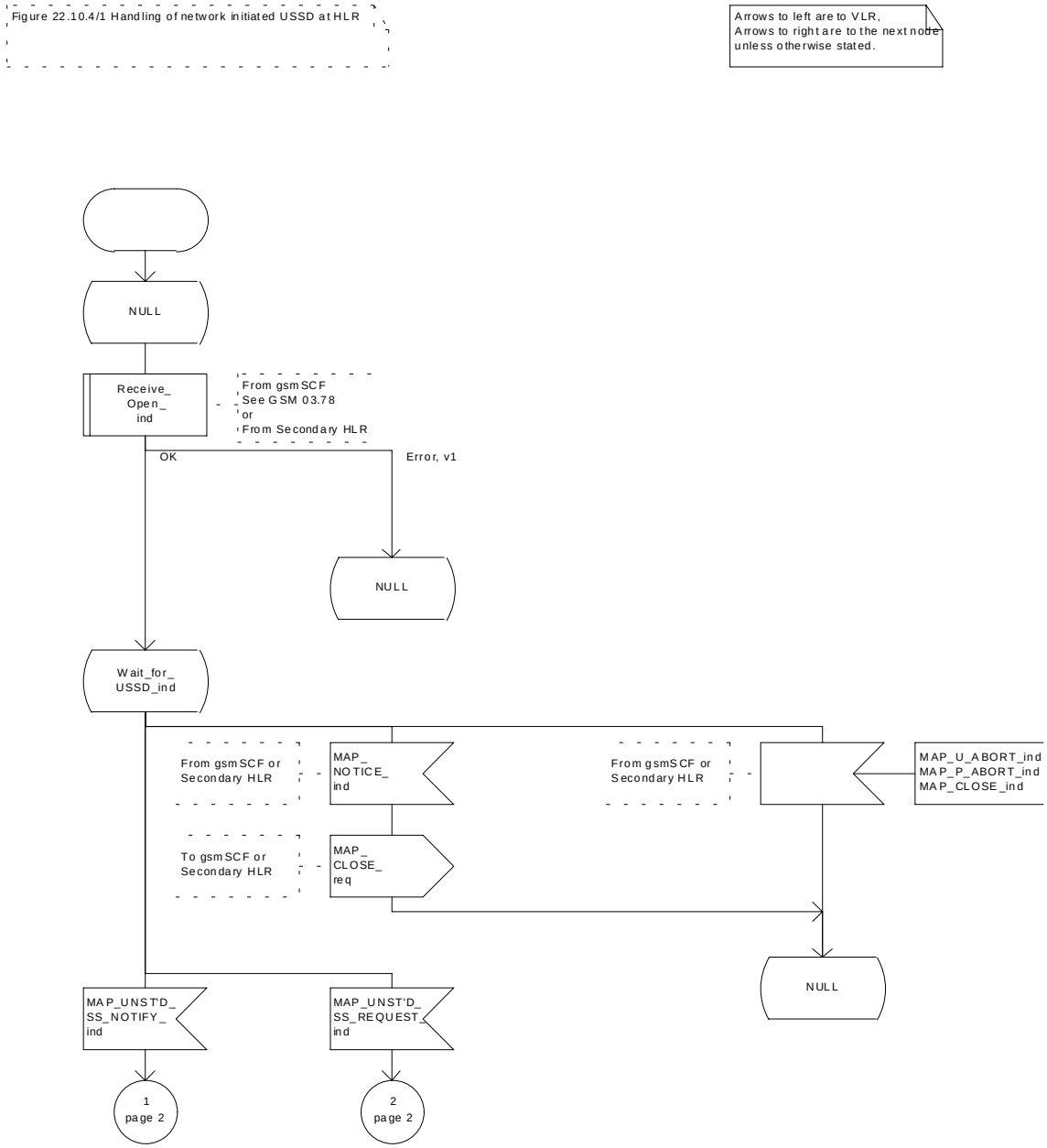
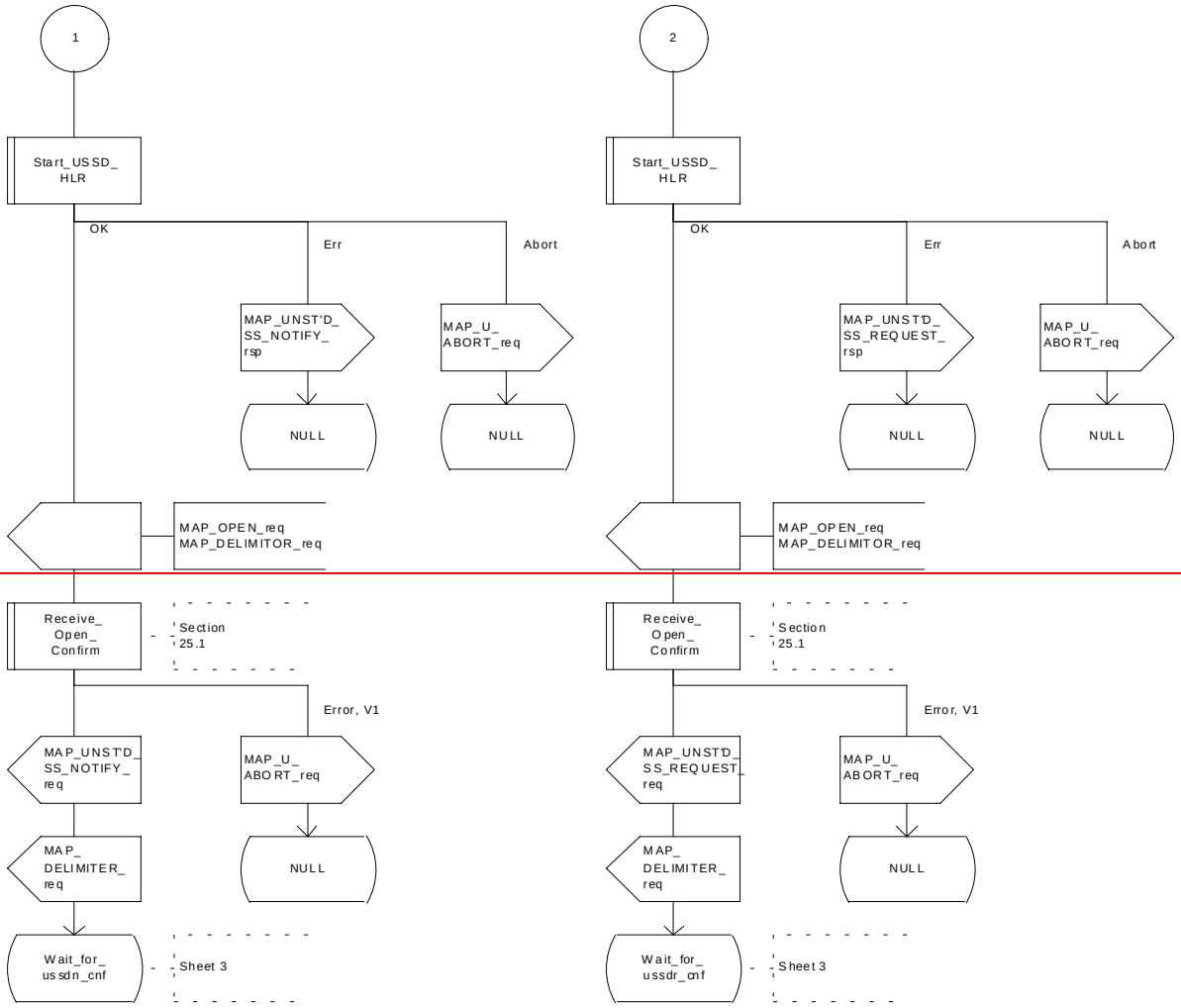


Figure 22.10.4/1 (sheet 1 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to the next node
unless otherwise stated.



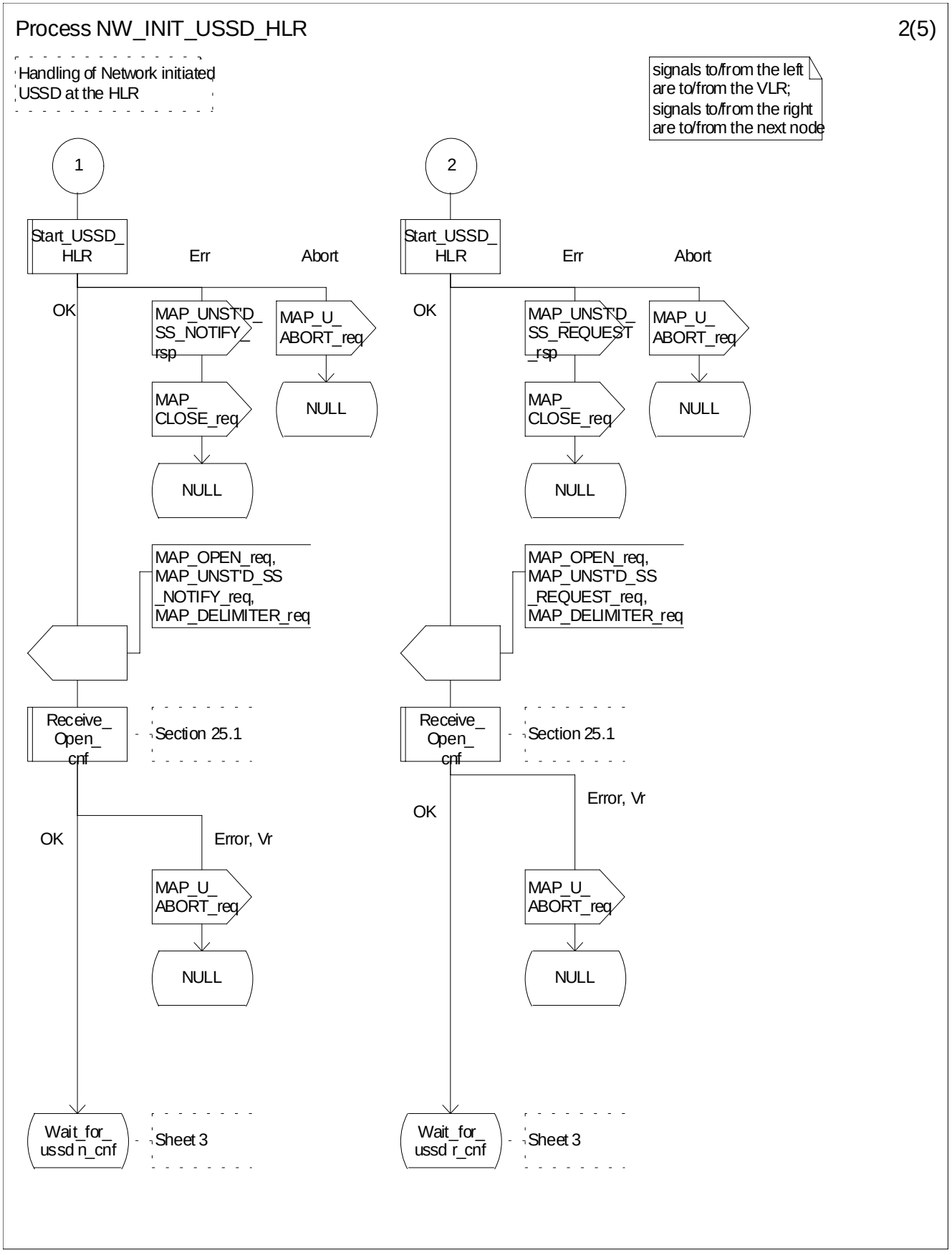


Figure 22.10.4/1 (sheet 2 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
Arrows to right are to the next node
unless otherwise stated.

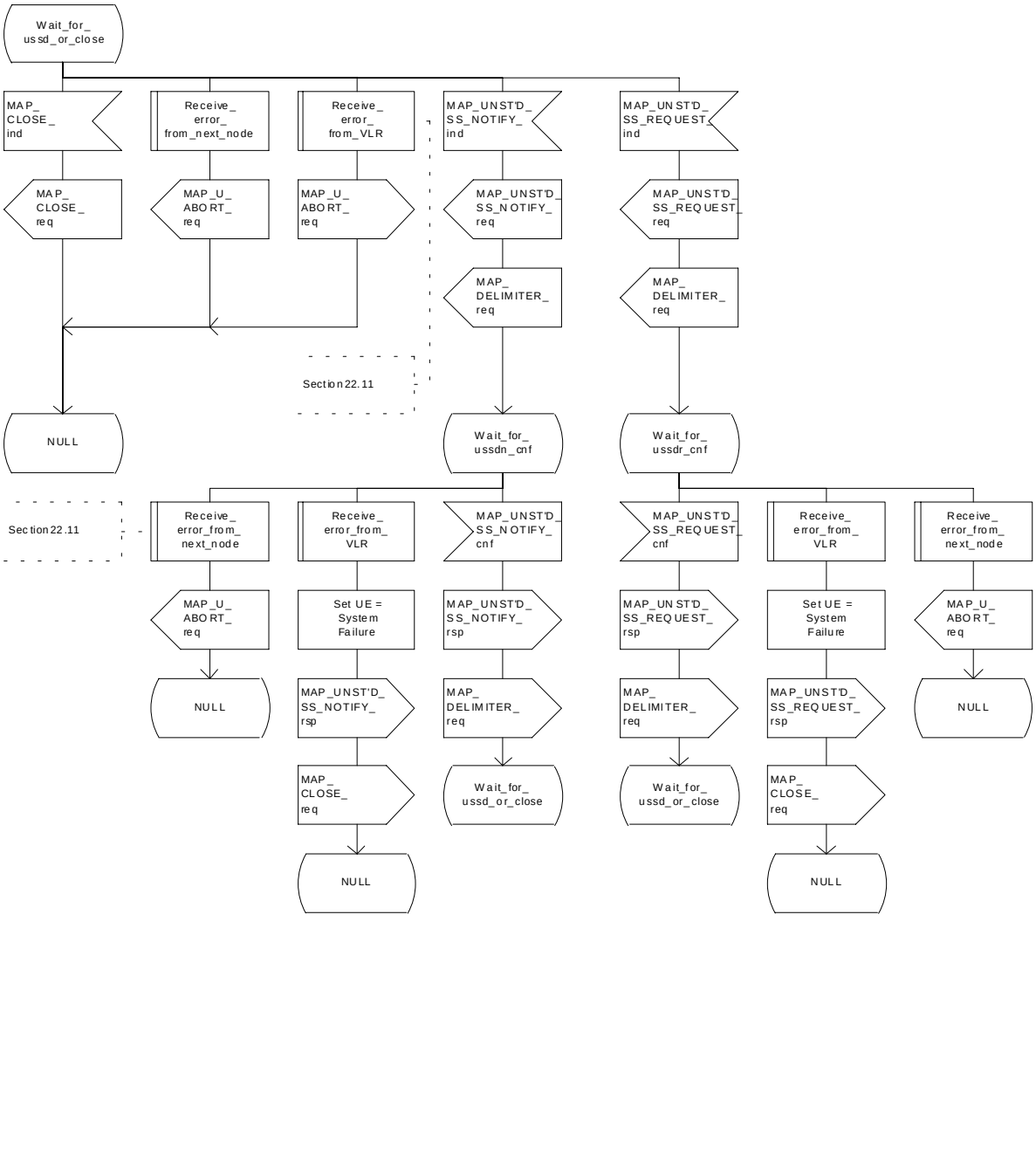
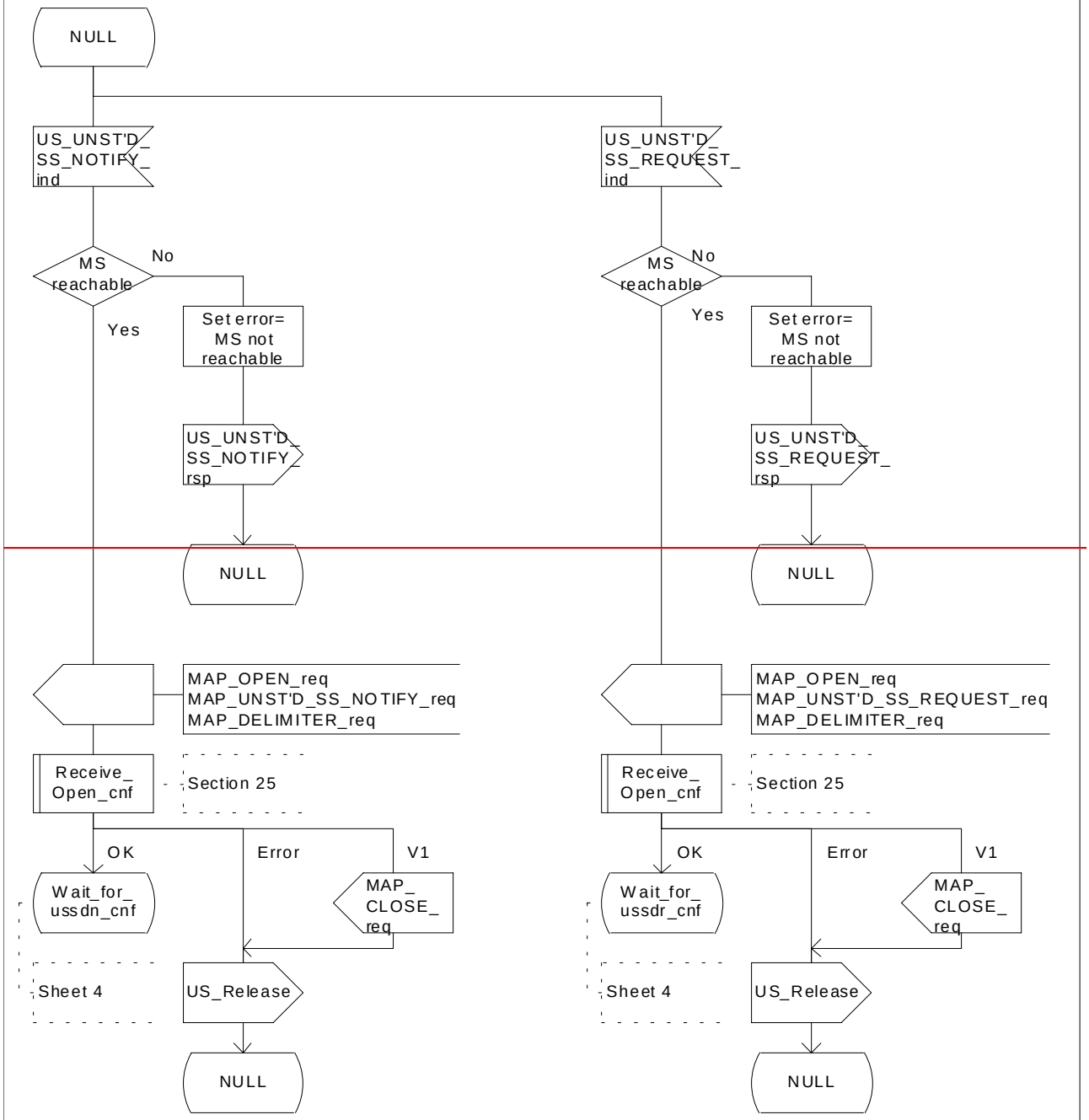


Figure 22.10.4/1 (sheet 3 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



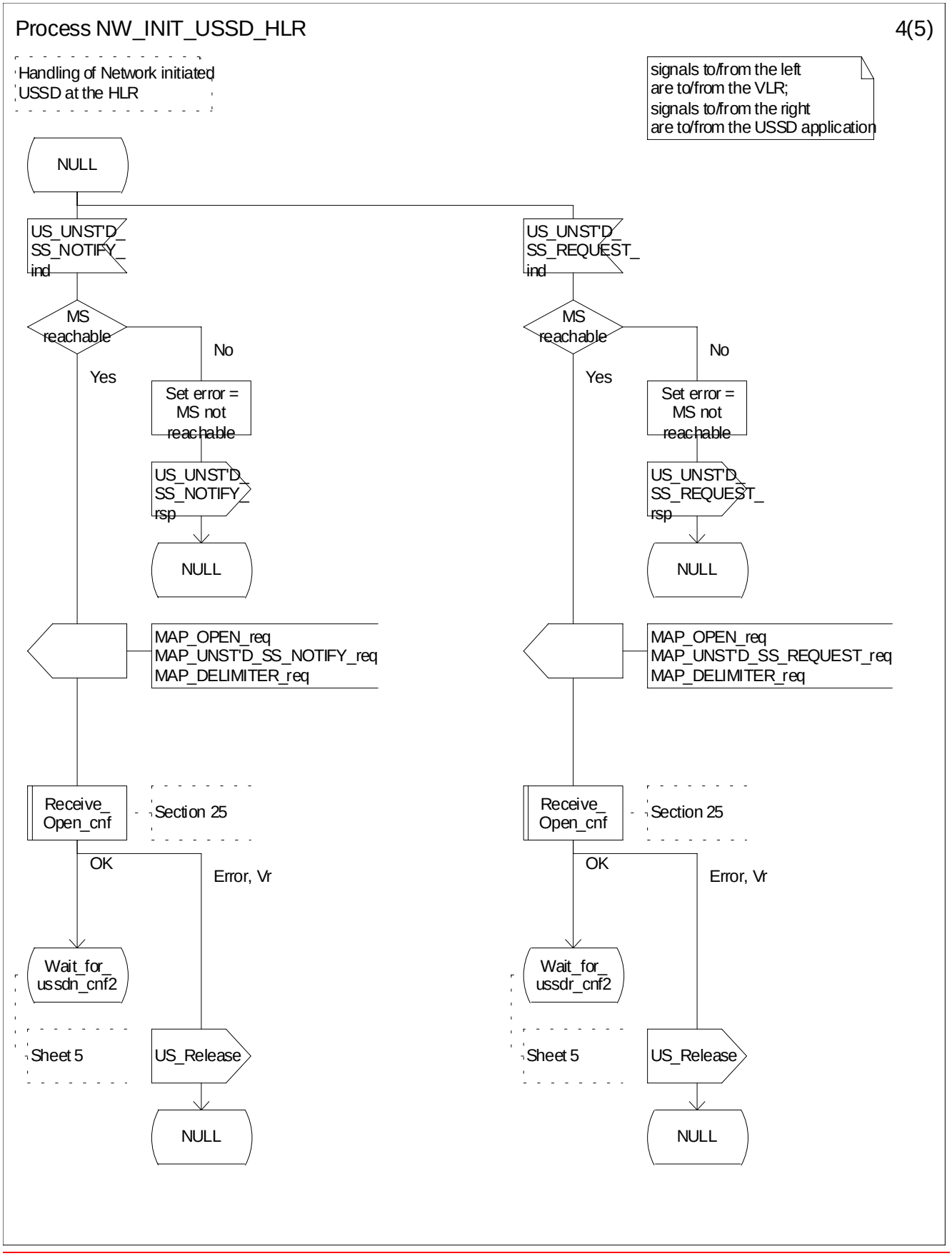
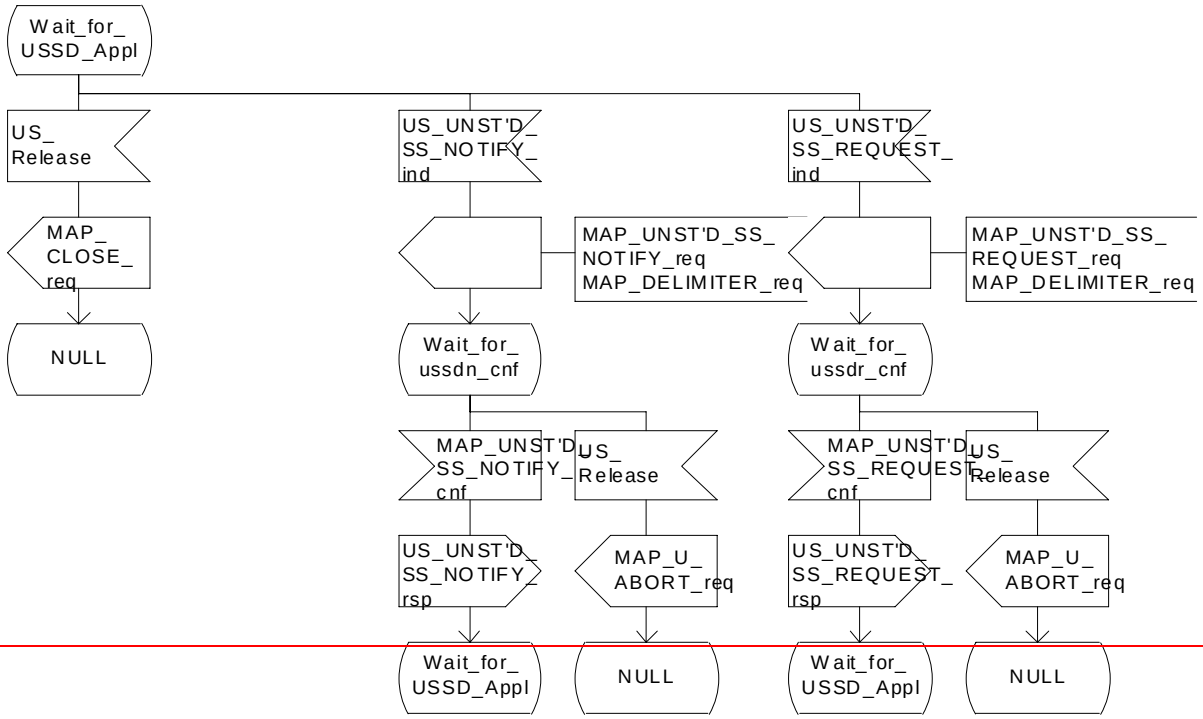


Figure 22.10.4/1 (sheet 4 of 5): Procedure NI_USSD_HLR

Figure 22.10.4/1 Handling of network initiated USSD at HLR

Arrows to left are to VLR,
arrows to right are to USSD application
unless otherwise stated.



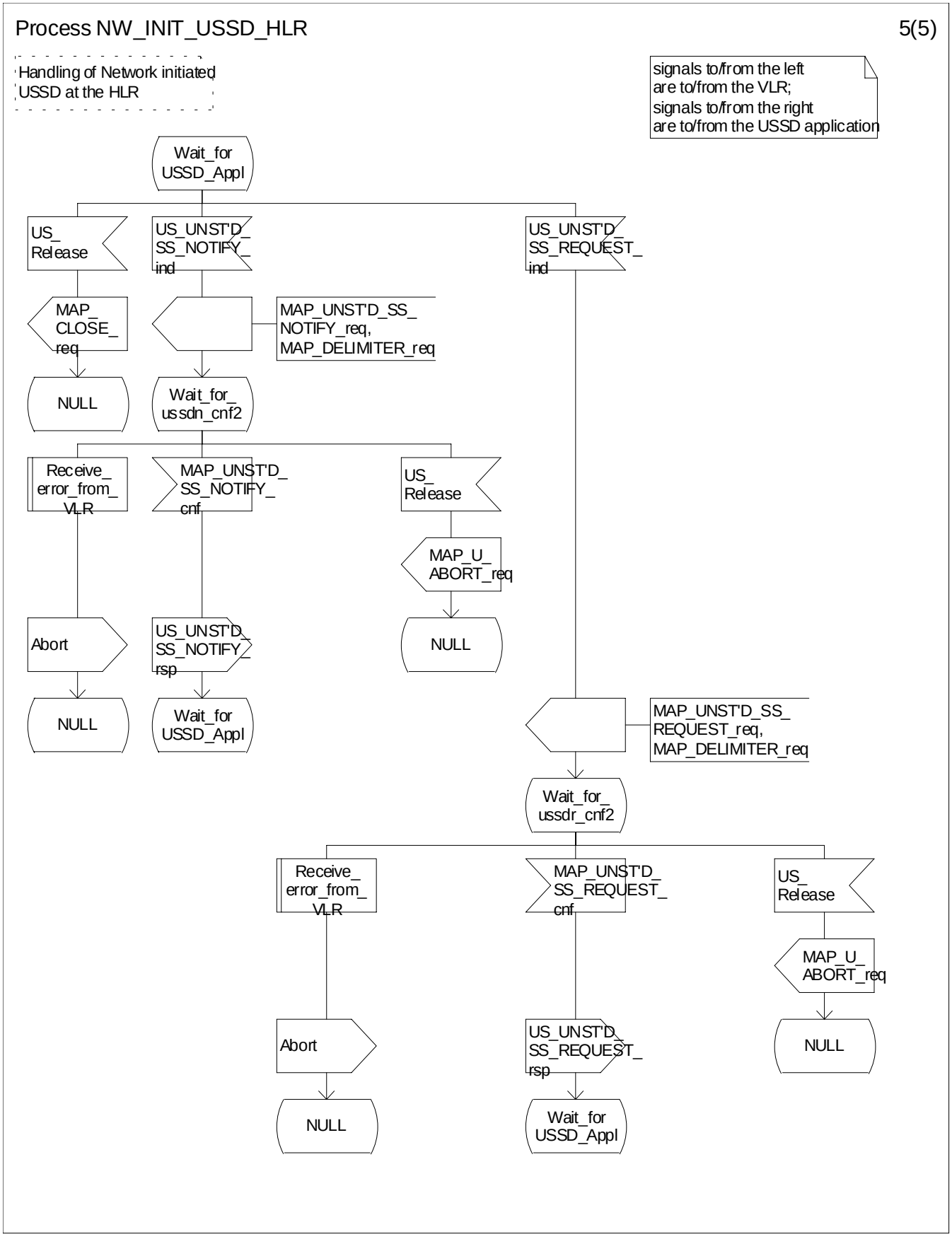


Figure 22.10.4/1 (sheet 5 of 5): Procedure NI_USSD_HLR

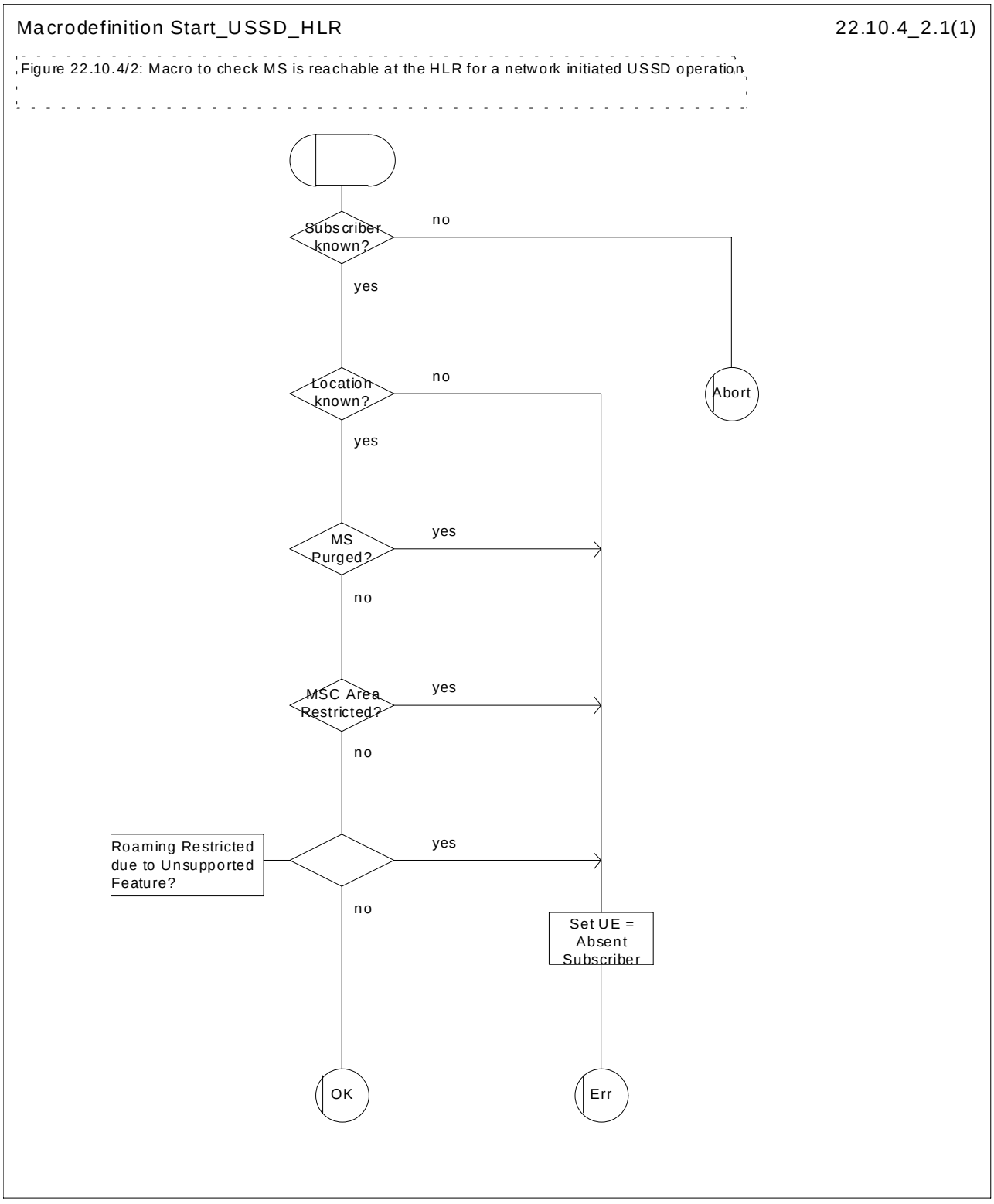


Figure 22.10.4/2: Macro Start_USSD_HLR

22.10.5 Procedure in the gsmSCF and secondary HLR

The procedure is invoked by an USSD application local to the gsmSCF/secondary HLR. It may start by using either the MAP_UNSTRUCTURED_SS_REQUEST or MAP_UNSTRUCTURED_SS_NOTIFY service.
In both cases the gsmSCF will initiate a MAP dialogue with the HLR and send the message received from the USSD application to the HLR.

Following transfer of the message the gsmSCF will wait for a confirmation from the HLR. This will be relayed to the USSD application..
Following this, the gsmSCF/secondary HLR may receive further UNSTRUCTURED_SS_REQUEST or UNSTRUCTURED_SS_NOTIFY requests, or may receive a Release from the USSD application.
In the event of an error, the MAP dialogue with the HLR shall be released as shown in the diagram.
The procedure in the gsmSCF and secondary HLR is shown in figure 22.10.5/1.

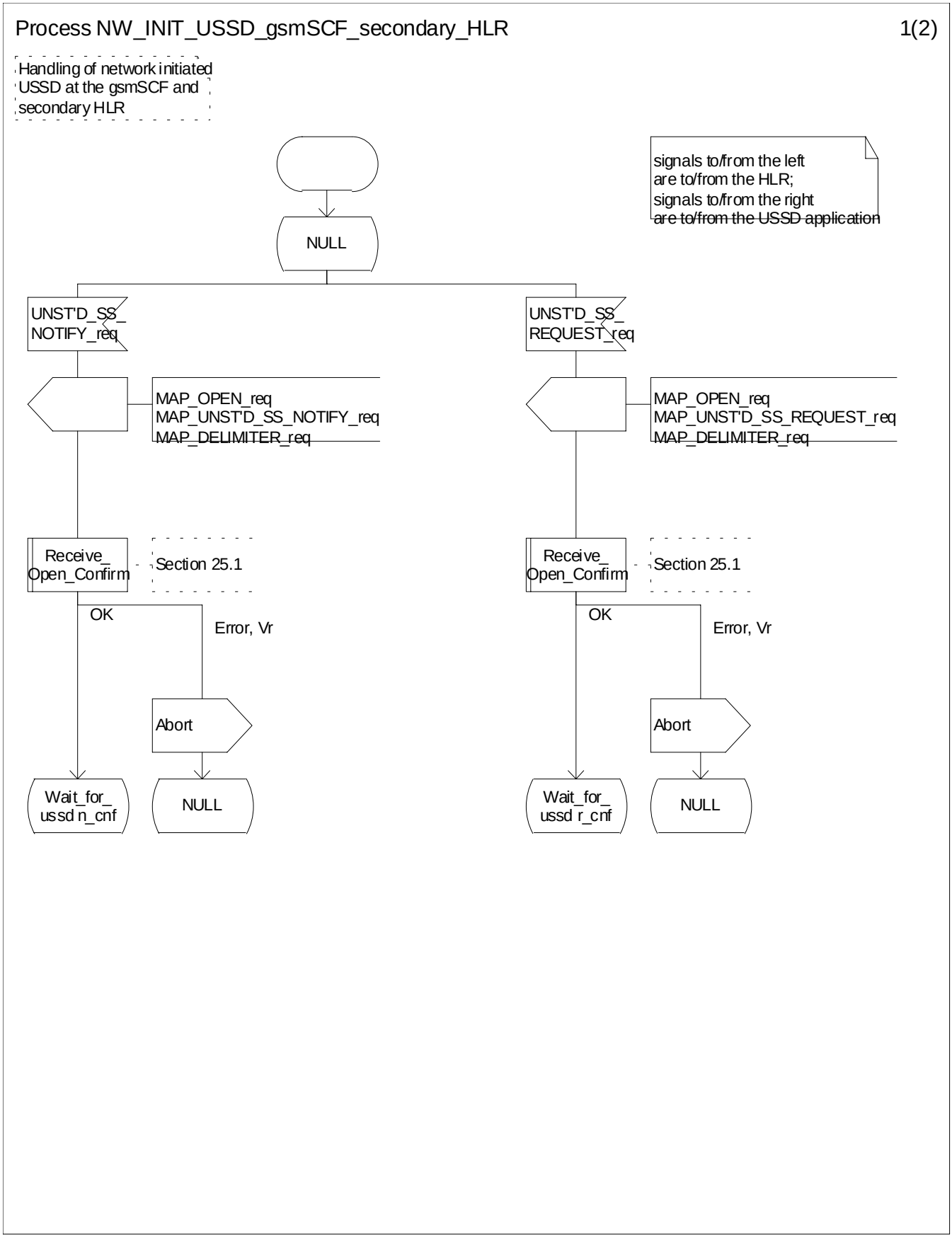


Figure 22.10.5/1 (sheet 1 of 2): Procedure NI_USSD_gsmSCF_secondary_HLR

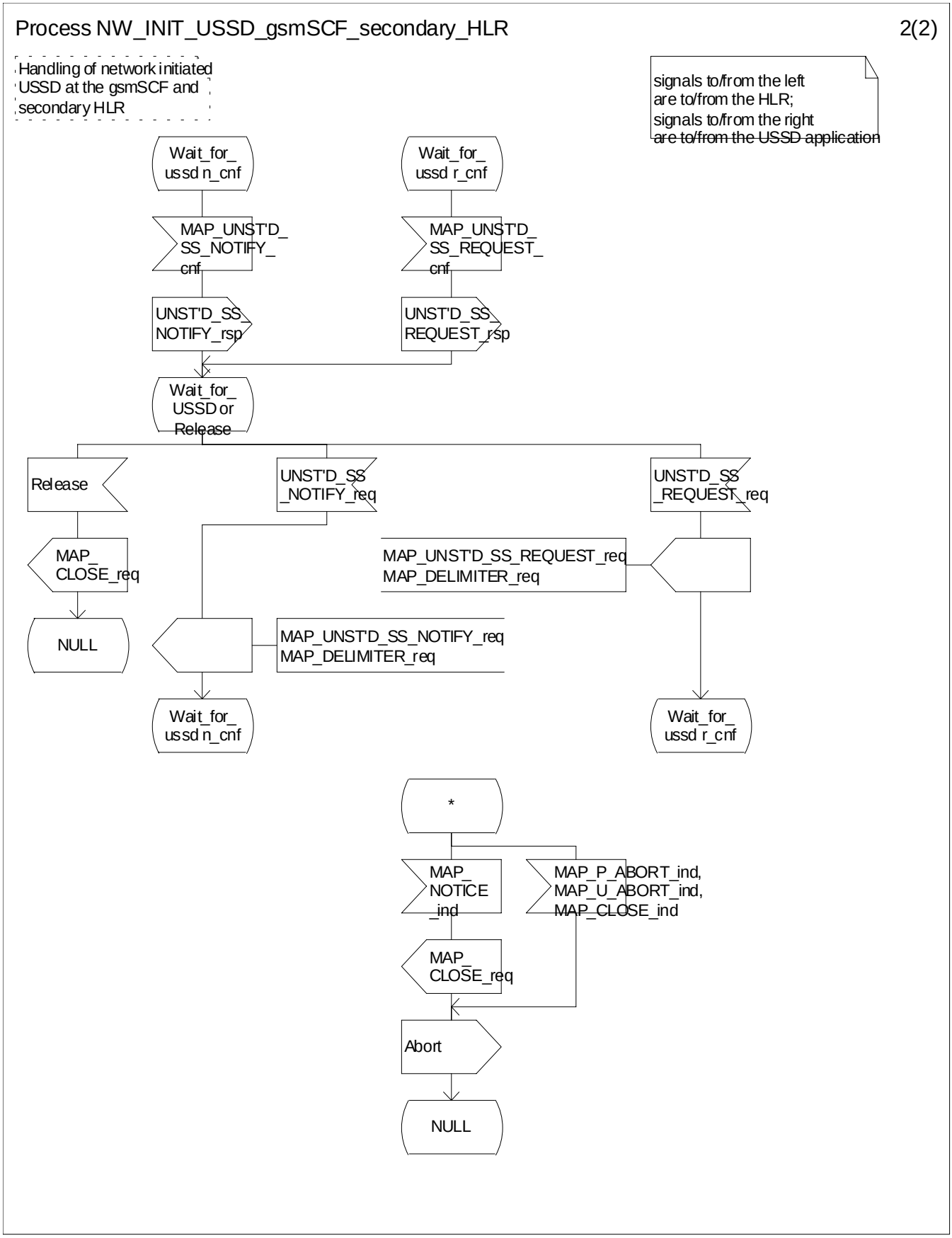


Figure 22.10.5/1 (sheet 2 of 2): Procedure NI_USSD_gsmSCF_secondary_HLR