**3GPP TSG_CN**
**Plenary Meeting #9, Oahu, Hawaii**
**20th – 22nd September 2000.**

**Tdoc NP-000499**

**Source:** TSG_N WG 4

**Title:** Corrective CRs to R96, R97, R98, R99 Work Item Technical Enhancements and Improvements (TEI)

**Agenda item:**

**Document for:** APPROVAL

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**Introduction:**

This document contains 17 Corrective CRs on R96, R97, R98, R99 Work Item TEI, that have been agreed by TSG_N WG4, and is forwarded to TSG_N Plenary meeting #9 for approval.

| SM | TDoc | SPEC | CR | REV | PHAS | VERS | SUBJECT | CAT |
|---|---|---|---|---|---|---|---|---|
| CN9 | N4-000495 | 03.08 | A033 | | R98 | 7.3.0 | Deletion of "Barring of roaming" stored in the SGSN | A |
| CN9 | N4-000496 | 03.08 | A034 | | R97 | 6.4.0 | Deletion of "Barring of roaming" stored in the SGSN | F |
| CN9 | N4-000487 | 09.02 | A304 | | R96 | 5.15.0 | Deletion of Annex C | F |
| CN9 | N4-000488 | 09.02 | A305 | | R97 | 6.8.0 | Deletion of Annex C | A |
| CN9 | N4-000489 | 09.02 | A306 | | R98 | 7.5.0 | Deletion of Annex C | A |
| CN9 | N4-000735 | 03.16 | A041 | | R98 | 7.3.0 | Correction to Delete Subscriber Data | A |
| CN9 | N4-000734 | 03.16 | A042 | | R97 | 6.4.0 | Correction to Delete Subscriber Data | F |
| CN9 | N4-000625 | 23.003 | 023 | 1 | R99 | 3.5.0 | Alignment of 23.003 with text from 25.401 | F |
| CN9 | N4-000497 | 23.008 | 030 | | R99 | 3.3.0 | Deletion of "Barring of roaming" stored in the SGSN | A |
| CN9 | N4-000678 | 23.008 | 031 | | R99 | 3.4.0 | Corrections of the description of BC allocation for VLR | A |
| CN9 | N4-000490 | 29.002 | 157 | | R99 | 3.5.1 | Deletion of Annex C | A |
| CN9 | N4-000765 | 29.010 | 007 | 1 | R99 | 3.2.0 | Corrections and updates to align with current R99 specs | F |
| CN9 | N4-000596 | 23.016 | 016 | | R99 | 3.5.0 | Correction to Delete Subscriber Data | F |
| CN9 | N4-000441 | 23.018 | 053 | | R99 | 3.5.0 | Correction of connector numbering in process ICH_MSC | F |
| CN9 | N4-000564 | 23.018 | 059 | | R99 | 3.5.0 | Corrections to procedure obtain routeing address | F |
| CN9 | N4-000569 | 23.018 | 060 | | R99 | 3.5.0 | Corrections to process ICH_VLR | F |
| CN9 | N4-000568 | 23.079 | 015 | | R99 | 3.2.0 | Sheet 1 of Procedure OR_HLR_CF | F |

**3GPP-CN4 Meeting #3**
**Helsinki, Finland, 17-21 July 2000**

***Document N4-000495***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 03.08 | CR | A033 | Current Version: | 7.3.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: CN#09 | | | | | |
|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | for approval | X | strategic | | *(for SMG use only)* |
| | for information | | non-strategic | X | |

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

**Source:** N4 **Date:** 14.07.00

**Subject:** Deletion of "Barring of roaming" stored in SGSN

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:** Table 2 in section 4 currently indicates that Barring of roaming is conditionally stored in both HLR and SGSN. The data, however, is permanent data stored in HLR according to section 2.8.2.3. And TS 03.15 also describes that the data is stored in only HLR. This CR, therefore, proposes to correct the table.

**Clauses affected:** 4

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:**

help.doc

<--------- double-click here for help and instructions on how to create a CR.

### 2.8.2.3 Barring of roaming

Barring of roaming indicates which one of the following categories of operator determined barring of roaming applies to the subscriber:

- no barring of roaming;
- barring of roaming outside the home PLMN;
- barring of roaming outside the home PLMN country.

It is permanent data, and is stored conditionally in the HLR both for non-GPRS and GPRS subscription.

****** Modified section ******

# 4 Accessing subscriber data

**Table 2: Overview of data used for GPRS Network Access Mode**

| PARAMETER | Subclause | HLR | VLR | SGSN | GGSN | TYPE |
|---|---|---|---|---|---|---|
| IMSI | 2.1.1.1 | M | M | M | M | P Note |
| Network Access Mode | 2.1.1.2 | M | - | C (a) | - | P Note |
| International MS ISDN number | 2.1.2 | M | M | M | - | T |
| multinumbering MSISDNs | 2.1.3 | C | - | - | - | T Note |
| Basic MSISDN indicator | 2.1.3.1 | C | - | - | - | T . |
| MSISDN-Alert indicator | 2.1.3.2 | C | - | - | - | T |
| P-TMSI | 2.1.5 | - | - | C | - | T Note |
| TLLI | 2.1.6 | - | - | C | - | T |
| Random TLLI | 2.1.7 | - | - | C | - | T Note |
| IMEI | 2.1.9 | - | - | C | - | T |
| RAND/SRES and Kc | 2.3.1 | M | - | M | - | T |
| Ciphering Key Sequence Number | 2.3.2 | - | - | M | - | T |
| Selected Ciphering Algorithm | 2.3.3 | - | - | M | - | T |
| Current Kc | 2.3.4 | - | - | M | - | T |
| P-TMSI Signature | 2.3.5 | - | - | C | - | T |
| Routing Area Identity | 2.4.3 | - | - | M | - | T |
| Cell Global Identification | 2.4.4 | - | - | C | - | T |
| VLR Number | 2.4.5 | M | - | C (Gs) | - | T |
| SGSN Number | 2.4.8.1 | M | C (Gs) | - | - | T Note |
| GGSN Number | 2.4.8.2 | M | - | - | - | P Note |
| RSZI Lists | 2.4.10.1 | C | - | - | - | P |
| Zone Code List | 2.4.10.2 | - | - | C | - | P |
| LA not allowed flag | 2.4.12 | - | - | M | - | T |
| SGSN area restricted flag | 2.4.13 | M | - | - | - | T |
| Roaming Restriction in the SGSN .. | 2.4.15.2 | M | - | M | - | T |
| Cell ID | 2.4.16 | - | - | C | - | T |
| LSA Identity | 2.4.17.1 | C | C | C | - | P |
| LSA Priority | 2.4.17.2 | C | C | C | - | P |
| LSA Preferential Access Indicator | 2.4.17.2A | C | C | C | - | P |
| LSA Active Mode Support Indicator | 2.4.17.2B | C | C | C | - | P |
| LSA Only Access Indicator | 2.4.17.3 | C | C | C | - | P |
| LSA Active Mode Indicator | 2.4.17.4 | C | C | C | - | P |
| VPLMN Identifier | 2.4.17.5 | C | - | - | - | P |
| Provision of teleservice | 2.5.2 | C | - | C | - | P |
| Transfer of SM option | 2.5.4 | M | - | - | - | P |
| MNRG | 2.7.2 | M | - | M | M | T |
| MM State | 2.7.3 | - | - | M | - | T |
| Subscriber Data Confirmed by HLR Indicator | 2.7.4.2 | - | - | M | - | T |
| Location Info Confirmed by HLR Indicator | 2.7.4.3 | - | - | M | - | T |
| MS purged for GPRS flag | 2.7.6 | M | - | - | - | T |
| MNRR | 2.7.7 | C | - | - | - | T |
| Subscriber Status | 2.8.1 | C | - | C | - | P |
| Barring of outgoing calls | 2.8.2.1 | C | - | C | - | P |
| Barring of roaming | 2.8.2.3 | C | - | -C | - | P |
| ODB PLMN-specific data | 2.8.3 | C | - | C | - | P |
| Trace Activated in SGSN | 2.11.7 | C | - | C | - | P |
| PDP Type | 2.13.1 | C | - | C | M | P |
| PDP Address | 2.13.2 | C | - | C | M | P |
| NSAPI | 2.13.3 | - | - | C | C | T |
| PDP State | 2.13.4 | - | - | C | - | T |
| New SGSN Address | 2.13.5 | - | - | C | - | T |
| Access Point Name | 2.13.6 | C | - | C | C | P/T Note |
| GGSN Address in Use | 2.13.7 | - | - | C | - | T |
| VPLMN Address Allowed | 2.13.8 | C | - | C | - | P |
| Dynamic Address | 2.13.9 | - | - | - | C | T |
| SGSN Address | 2.13.10 | - | - | - | M | T |
| GGSN-list | 2.13.11 | M | - | - | - | T |
| (continued) | | | | | | |

**Table 2 (concluded): Overview of data used for GPRS Network Access Mode**

| PARAMETER | Subclause | HLR | VLR | SGSN | GGSN TYPE | |
|---|---|---|---|---|---|---|
| Quality of Service Subscribed | 2.13.12 | C | - | C | - | P |
| Quality of Service Requested | 2.13.13 | - | - | C | - | T |
| Quality of Service Negotiated | 2.13.14 | - | - | C | M | T |
| SND | 2.13.15 | - | - | C | C | T |
| SNU | 2.13.16 | - | - | C | C | T |
| DRX Parameters | 2.13.17 | - | - | M | - | T |
| Compression | 2.13.18 | - | - | C | - | T |
| NGAF | 2.13.19 | - | - | C (Gs) | - | T |
| Classmark | 2.13.20 | - | - | M | - | T |
| TID | 2.13.21 | - | - | C | C | T |
| Radio Priority | 2.13.22 | - | - | C | - | T |
| Radio Priority SMS | 2.13.23 | - | - | C | - | T |
| PDP Context Identifier | 2.13.24 | C | | C | | T |

NOTE 1: The HLR column indicates only GPRS related use, i.e. if the HLR uses a parameter in non-GPRS Network Access Mode but not in GPRS Network Access Mode, it is not mentioned in this table 2.
(Gs): The VLR column is applicable if Gs interface is installed. It only indicates GPRS related data to be stored and is only relevant to GPRS subscribers registered in VLR.

a): This parameter is relevant in the SGSN only when the Gs interface is installed.

NOTE 2: For special condition of storage see in the clauses 2.x.y referred-to.
See clause 3 for explanation of M,C,T and P in table 2

**3GPP-CN4 Meeting #3**
**Helsinki, Finland, 17-21 July 2000**

***Document N4-000496***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 03.08 | CR | A034 | Current Version: | 6.4.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: | CN#09 | for approval | X | strategic | | (for SMG use only) |
|---|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | | for information | | non-strategic | X | |

*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:** N4 **Date:** 14.07.00

**Subject:** Deletion of "Barring of roaming" stored in SGSN

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

| | | | | | |
|---|---|---|---|---|---|
| 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:** Table 2 in section 4 currently indicates that Barring of roaming is conditionally stored in both HLR and SGSN. The data, however, is permanent data stored in HLR according to section 2.8.2.3. And TS 03.15 also describes that the data is stored in only HLR. This CR, therefore, proposes to correct the table.

**Clauses affected:** 4

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:**

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<--------- double-click here for help and instructions on how to create a CR.

### 2.8.2.3 Barring of roaming

Barring of roaming indicates which one of the following categories of operator determined barring of roaming applies to the subscriber:

- no barring of roaming;
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****** Modified section ******

# 4 Accessing subscriber data

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|---|---|---|---|---|---|---|---|
| IMSI | 2.1.1.1 | M | M | M | M | P | Note |
| Network Access Mode | 2.1.1.2 | M | - | C (a) | - | P | Note |
| International MS ISDN number | 2.1.2 | M | M | M | - | T | |
| multinumbering MSISDNs | 2.1.3 | C | - | - | - | T | Note |
| Basic MSISDN indicator | 2.1.3.1 | C | - | - | - | T | . |
| MSISDN-Alert indicator | 2.1.3.2 | C | - | - | - | T | |
| P-TMSI | 2.1.5 | - | - | C | - | T | Note |
| TLLI | 2.1.6 | - | - | C | - | T | |
| Random TLLI | 2.1.7 | - | - | C | - | T | Note |
| IMEI | 2.1.9 | - | - | C | - | T | |
| RAND/SRES and Kc | 2.3.1 | M | - | M | - | T | |
| Ciphering Key Sequence Number | 2.3.2 | - | - | M | - | T | |
| Selected Ciphering Algorithm | 2.3.3 | - | - | M | - | T | |
| Current Kc | 2.3.4 | - | - | M | - | T | |
| P-TMSI Signature | 2.3.5 | - | - | C | - | T | |
| Routing Area Identity | 2.4.3 | - | - | M | - | T | |
| Cell Global Identification | 2.4.4 | - | - | C | - | T | |
| SGSN Number | 2.4.8.1 | M | C (Gs) | - | - | T | Note |
| GGSN Number | 2.4.8.2 | © | - | - | - | P | Note |
| VLR Number | 2.4.5 | M | - | C (Gs) | - | T | |
| RSZI Lists | 2.4.10.1 | C | - | - | - | P | |
| Zone Code List | 2.4.10.2 | - | - | C | - | P | |
| LA not allowed flag | 2.4.12 | - | - | M | - | T | |
| SGSN area restricted flag | 2.4.13 | M | - | - | - | T | |
| Roaming Restriction in the SGSN .. | 2.4.15.2 | M | - | M | - | T | |
| Cell ID | 2.4.16 | - | - | C | - | T | |
| Provision of teleservice | 2.5.2 | C | - | C | - | P | |
| Transfer of SM option | 2.5.4 | M | - | - | - | P | |
| Subscriber Status | 2.8.1 | C | - | C | - | P | |
| Barring of outgoing calls | 2.8.2.1 | C | - | C | - | P | |
| Barring of roaming | 2.8.2.3 | C | - | -C | - | P | |
| ODB PLMN-specific data | 2.8.3 | C | - | C | - | P | |
| MM State | 2.7.3 | - | - | M | - | T | |
| Subscriber Data Confirmed by HLR Indicator | 2.7.4.2 | - | - | M | - | T | |
| Location Info Confirmed by HLR Indicator | 2.7.4.3 | - | - | M | - | T | |
| MS purged for GPRS flag | 2.7.6 | M | - | - | - | T | |
| MNRG | 2.7.2 | M | - | M | M | T | |
| MNRR | 2.7.7 | C | - | - | - | T | |
| Trace Activated in SGSN | 2.11.7 | C | - | C | - | P | |
| PDP Type | 2.13.1 | C | - | C | M | P | |
| PDP Address | 2.13.2 | C | - | C | M | P | |
| NSAPI | 2.13.3 | - | - | C | C | T | |
| PDP State | 2.13.4 | - | - | C | - | T | |
| New SGSN Address | 2.13.5 | - | - | C | - | T | |
| Access Point Name | 2.13.6 | C | - | C | C | P/T | Note |
| GGSN Address in Use | 2.13.7 | - | - | C | - | T | |
| VPLMN Address Allowed | 2.13.8 | C | - | C | - | P | |
| Dynamic Address | 2.13.9 | - | - | - | C | T | |
| SGSN Address | 2.13.10 | - | - | - | M | T | |
| GGSN-list | 2.13.11 | M | - | - | - | T | |
| Quality of Service Subscribed | 2.13.12 | C | - | C | - | P | |
| Quality of Service Requested | 2.13.13 | - | - | C | - | T | |
| Quality of Service Negotiated | 2.13.14 | - | - | C | M | T | |
| SND | 2.13.15 | - | - | C | C | T | |
| SNU | 2.13.16 | - | - | C | C | T | |
| DRX Parameters | 2.13.17 | - | - | M | - | T | |
| Compression | 2.13.18 | - | - | C | - | T | |
| NGAF | 2.13.19 | - | - | C (Gs) | - | T | |
| Classmark | 2.13.20 | - | - | M | - | T | |
| TID | 2.13.21 | - | - | C | C | T | |
| Radio Priority | 2.13.22 | - | - | C | - | T | |
| Radio Priority SMS | 2.13.23 | - | - | C | - | T | |
| PDP Context Identifier | 2.13.24 | C | | C | | T | |

NOTE: The HLR column indicates only GPRS related use, i.e. if the HLR uses a parameter in non-GPRS Network Access Mode but not in GPRS Network Access Mode, it is not mentioned in this table 2.
(Gs): The VLR column is applicable if Gs interface is installed. It only indicates GPRS related data to be stored and is only relevant to GPRS subscribers registered in VLR.

a): This parameter is relevant in the SGSN only when the Gs interface is installed.

NOTE: For special condition of storage see in the clauses 2.x.y referred-to.
See clause 3 for explanation of M,C,T and P in table 2.

**3GPP TSG CN4 Meeting #4**
**Seattle, 28th August - 1st September 2000**

***Document N4-000735***

# CHANGE REQUEST

| 03.16 | CR | A041 | Current Version: | 7.3.0 |
|---|---|---|---|---|

For submission to: CN#09

| | | | |
|---|---|---|---|
| for approval | X | strategic | |
| for information | | non-strategic | X |

*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:** N4 **Date:** 30st August 2000

**Subject:** Correction to Delete Subscriber Data

**Work item:** TEI

**Category:**

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

**Reason for change:** Category C3

To align with 09.02. The DSD dialogue is closed by the VLR or SGSN

**Clauses affected:** 4.2.2

**Other specs affected:**

| | | | |
|---|---|---|---|
| Other 3G core specifications | | → List of CRs: | R97, R99 (CR016) |
| Other GSM core specifications | | → List of CRs: | |
| MS test specifications | | → List of CRs: | |
| BSS test specifications | | → List of CRs: | |
| O&M specifications | | → List of CRs: | |

**Other comments:**

### 4.2.2 Deletion of data in the VLR or the SGSN

Deletion needs a separate dialogue.
HLR and VLR or SGSN actions are the same as above except for the following case:

- if, in response to deletion, one or more unsupported features are indicated by the VLR or the SGSN, the HLR may:

  - delete subscriber data including replacement feature(s) locally;

  - delete subscriber data including replacement feature(s) locally and in the VLR or the SGSN (NOTE);

  - take no further action.

  Which of the three options apply for which feature is out of scope of this specification.

NOTE: This deletion in the VLR or the SGSN needs a separate dialogue.

The VLR or SGSN~~HLR~~ shall terminate the dialogue when sending~~after~~ the response ~~was received from~~ to the H~~V~~LR ~~or the SGSN~~.

**3GPP TSG CN4 Meeting #4**
**Seattle, 28th August - 1st September 2000**

***Document N4-000734***

# CHANGE REQUEST

| 03.16 | CR | A042 | Current Version: | 6.4.0 |
|---|---|---|---|---|

For submission to: CN#09

| | | | |
|---|---|---|---|
| for approval | X | strategic | |
| for information | | non-strategic | X |

*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:** N4 **Date:** 30st August 2000

**Subject:** Correction to Delete Subscriber Data

**Work item:** TEI

**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:** Category C3

To align with 09.02. The DSD dialogue is closed by the VLR or SGSN

**Clauses affected:** 4.2.2

**Other specs affected:**

| | | | |
|---|---|---|---|
| Other 3G core specifications | | → List of CRs: | R98, R99(CR016) |
| Other GSM core specifications | | → List of CRs: | |
| MS test specifications | | → List of CRs: | |
| BSS test specifications | | → List of CRs: | |
| O&M specifications | | → List of CRs: | |

**Other comments:**

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NOTE: This deletion in the VLR or the SGSN needs a separate dialogue.

The VLR or SGSN~~HLR~~ shall terminate the dialogue when sending~~after~~ the response ~~was received from~~ to the H~~V~~LR ~~or the SGSN~~.

**3GPP TSG CN WG4 Meeting #3**
**Helsinki, Finland, 17-21 July 2000**

***Document* N4-000487**
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

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| **GSM 09.02** | **CR** | **A304** | Current Version: | 5.15.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: CN#09 | for approval | X | strategic | | (for SMG use only) |
|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | for information | | non-strategic | X | |

*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:** N4 **Date:** 13 July 2000

**Subject:** Deletion of informative Annexe C

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:** Informative Annexe C lists the formal protocol incompatibilities between versions 1 & 2 of MAP. It has not been updated since GSM 09.02 version 4.x.y, and it has led to serious confusion about the differences between MAP version 1 and later versions. It is therefore better to remove it from the MAP specification for Release 96 and onwards. Category: C3

**Clauses affected:** Annexe C is deleted

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:** To save file space, the text of Annexe C has not been shown struck out.

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<--------- double-click here for help and instructions on how to create a CR.

**3GPP TSG CN WG4 Meeting #3**
**Helsinki, Finland, 17-21 July 2000**

***Document* N4-000488**
*e.g. for 3GPP use the format TP-99xxx*
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# CHANGE REQUEST

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| **GSM 09.02** | **CR** | **A305** | Current Version: | 6.8.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: CN#09 | for approval | X | strategic | | (for SMG use only) |
|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | for information | | non-strategic | X | |

*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:** N4 **Date:** 13 July 2000

**Subject:** Deletion of informative Annexe C

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

| | | | | | |
|---|---|---|---|---|---|
| F | Correction | | **Release:** | Phase 2 | |
| A | Corresponds to a correction in an earlier release | X | | 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:** Informative Annexe C lists the formal protocol incompatibilities between versions 1 & 2 of MAP. It has not been updated since GSM 09.02 version 4.x.y, and it has led to serious confusion about the differences between MAP version 1 and later versions. It is therefore better to remove it from the MAP specification for Release 96 and onwards. Category C3

**Clauses affected:** Annexe C is deleted

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:** To save file space, the text of Annexe C has not been shown struck out.

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**3GPP TSG CN WG4 Meeting #3**
**Helsinki, Finland, 17-21 July 2000**

***Document* N4-000489**
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

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| GSM 09.02 | CR | A306 | Current Version: | 7.5.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: CN#09 *list expected approval meeting # here ↑* | for approval [X] | strategic [ ] | *(for SMG use only)* |
|---|---|---|---|
| | for information [ ] | non-strategic [X] | |

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

**Source:** N4 **Date:** 13 July 2000

**Subject:** Deletion of informative Annexe C

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:** Informative Annexe C lists the formal protocol incompatibilities between versions 1 & 2 of MAP. It has not been updated since GSM 09.02 version 4.x.y, and it has led to serious confusion about the differences between MAP version 1 and later versions. It is therefore better to remove it from the MAP specification for Release 96 and onwards. Category C3

**Clauses affected:** Annexe C is deleted

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:** To save file space, the text of Annexe C has not been shown struck out.

help.doc

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**3GPP TSG CN WG4 Meeting #4**
**Seattle, USA, 28 August - 1 September 2000**

***Document* N4-000625**
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# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 23.003 | CR | 023r1 | Current Version: | 3.5.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: | CN#9 | for approval | X | strategic | | (for SMG use only) |
|---|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | | 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:** *(at least one should be marked with an X)* | (U)SIM | | ME | | UTRAN / Radio | X | Core Network | X |
|---|---|---|---|---|---|---|---|---|

**Source:** N4 **Date:** 2000-08-21

**Subject:** Alignment of 23.003 with text from 25.401

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:** It was requested by RAN 3 that this text be added to 23.003 in order to align 23.003 with the most up-to-date version of 25.401

**Clauses affected:** 12.4

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:**

help.doc

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## 12.4 Service Area Identifier

The Service Area Identifier (SAI) is used to uniquely identify an area consisting of one or more cells belonging to the same Location Area. Such an area is called a Service Area and can be used for indicating the location of a UE to the CN.

The Service Area Code (SAC) together with the PLMN-Id and the LAC will constitute the Service Area Identifier.

- **SAI = PLMN-Id + LAC + SAC**

The SAC is defined by the operator, and set in the RNC via O&M.

For syntax description and the usage of this identifier in RANAP signalling, see 3G TS 25.413.

For Release 99 the broadcast (BC) domain requires that Service Area consist of one cell. This does not limit the usage of Service Area for other domains. Refer to TS 25.410 for a definition of the BC domain.

**3GPP-CN4 Meeting #3**
**Helsinki, Finland, 17-21 July 2000**

***Document N4-000497***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 23.008 | CR | 030 | Current Version: | 3.4.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: CN#09 | | | | |
|---|---|---|---|---|
| *list expected approval meeting # here ↑* | for approval | X | strategic | *(for SMG use only)* |
| | for information | | non-strategic | X |

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

**Source:** N4 **Date:** 14.07.00

**Subject:** Deletion of "Barring of roaming" stored in SGSN

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:** Table 2 in section 4 currently indicates that Barring of roaming is conditionally stored in both HLR and SGSN. The data, however, is permanent data stored in HLR according to section 2.8.2.3. And TS 23.015 also describes that the data is stored in only HLR. This CR, therefore, proposes to correct the table.

**Clauses affected:** 4

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:**

help.doc

<--------- double-click here for help and instructions on how to create a CR.

### 2.8.2.3 Barring of roaming

Barring of roaming indicates which one of the following categories of operator determined barring of roaming applies to the subscriber:

- No barring of roaming;
- Barring of roaming outside the home PLMN;
- Barring of roaming outside the home PLMN country.

It is permanent data, and is stored conditionally in the HLR both for non-GPRS and GPRS subscription.

****** Modified section ******

# 4 Accessing subscriber data

**Table 2: Overview of data used for GPRS Network Access Mode**

| PARAMETER | Subclause | HLR | VLR | SGSN | GGSN | TYPE |
|---|---|---|---|---|---|---|
| IMSI | 2.1.1.1 | M | M | M | M | P |
| Network Access Mode | 2.1.1.2 | M | - | C note1 | - | P |
| International MS ISDN number | 2.1.2 | M | M | M | - | T |
| multinumbering MSISDNs | 2.1.3 | C | - | - | - | T |
| Basic MSISDN indicator | 2.1.3.1 | C | - | - | - | T . |
| MSISDN-Alert indicator | 2.1.3.2 | C | - | - | - | T |
| P-TMSI | 2.1.5 | - | - | C | - | T |
| TLLI | 2.1.6 | - | - | C | - | T |
| Random TLLI | 2.1.7 | - | - | C | - | T |
| IMEI | 2.1.9 | - | - | C | - | T |
| RAND/SRES and Kc | 2.3.1 | | - | C | - | T |
| RAND, XRES, CK, IK, AUTN | 2.3.2 | M | - | C | - | T |
| Ciphering Key Sequence Number | 2.3.3 | - | - | M | - | T |
| Selected Ciphering Algorithm | 2.3.5 | - | - | M | - | T |
| Current Kc | 2.3.6 | - | - | M | - | T |
| P-TMSI Signature | 2.3.7 | - | - | C | - | T |
| Routing Area Identity | 2.4.3 | - | - | M | - | T |
| VLR Number | 2.4.5 | M | - | C note2 | - | T |
| SGSN Number | 2.4.8.1 | M | C note2 | - | - | T |
| GGSN Number | 2.4.8.2 | M | - | - | - | P |
| RSZI Lists | 2.4.11.1 | C | - | - | - | P |
| Zone Code List | 2.4.11.2 | - | - | C | - | P |
| LA not allowed flag | 2.4.13 | - | - | M | - | T |
| SGSN area restricted flag | 2.4.14 | M | - | - | - | T |
| Roaming Restriction in the SGSN .. | 2.4.15.2 | M | - | M | - | T |
| Cell Global ID or Service Area ID | 2.4.16 | - | - | C | - | T |
| LSA Identity | 2.4.17.1 | C | C | C | - | P |
| LSA Priority | 2.4.17.2 | C | C | C | - | P |
| LSA Preferential Access Indicator | 2.4.17.2A | C | C | C | | P |
| LSA Active Mode Support Indicator | 2.$.17.2B | C | C | C | | P |
| LSA Only Access Indicator | 2.4.17.3 | C | C | C | - | P |
| LSA Active Mode Indicator | 2.4.17.4 | C | C | C | - | P |
| VPLMN Identifier | 2.4.17.5 | C | - | - | - | P |
| Provision of teleservice | 2.5.2 | C | - | C | - | P |
| Transfer of SM option | 2.5.4 | M | - | - | - | P |
| MNRG | 2.7.2 | M | - | M | M | T |
| MM State | 2.7.3 | - | - | M | - | T |
| Subscriber Data Confirmed by HLR Indicator | 2.7.4.2 | - | - | M | - | T |
| Location Info Confirmed by HLR Indicator | 2.7.4.3 | - | - | M | - | T |
| MS purged for GPRS flag | 2.7.6 | M | - | - | - | T |
| MNRR | 2.7.7 | C | - | - | - | T |
| Subscriber Status | 2.8.1 | C | - | C | - | P |
| Barring of outgoing calls | 2.8.2.1 | C | - | C | - | P |
| Barring of roaming | 2.8.2.3 | C | - | ~~-C~~ | - | P |
| ODB PLMN-specific data | 2.8.3 | C | - | C | - | P |
| Notification to CSE flag for ODB | 2.8.4 | C | - | - | - | T |
| gsmSCF address list for ODB | 2.8.5 | C | - | - | - | P |
| Trace Activated in SGSN | 2.11.7 | C | - | C | - | P |
| PDP Type | 2.13.1 | C | - | C | M | P |
| PDP Address | 2.13.2 | C | - | C | M | P |
| NSAPI | 2.13.3 | - | - | C | C | T |
| PDP State | 2.13.4 | - | - | C | - | T |
| New SGSN Address | 2.13.5 | - | - | C | - | T |
| Access Point Name | 2.13.6 | C | - | C | C | P/T |
| GGSN Address in Use | 2.13.7 | - | - | C | - | T |
| VPLMN Address Allowed | 2.13.8 | C | - | C | - | P |
| Dynamic Address | 2.13.9 | - | - | - | C | T |
| SGSN Address | 2.13.10 | - | - | - | M | T |
| GGSN-list | 2.13.11 | M | - | - | - | T |

(continued)

**Table 2 (concluded): Overview of data used for GPRS Network Access Mode**

| PARAMETER | Subclause | HLR | VLR | SGSN | GGSN | TYPE |
|---|---|---|---|---|---|---|
| Quality of Service Subscribed | 2.13.12 | C | - | C | - | P |
| Quality of Service Requested | 2.13.13 | - | - | C | - | T |
| Quality of Service Negotiated | 2.13.14 | - | - | C | M | T |
| SND | 2.13.15 | - | - | C | C | T |
| SNU | 2.13.16 | - | - | C | C | T |
| DRX Parameters | 2.13.17 | - | - | M | - | T |
| Compression | 2.13.18 | - | - | C | - | T |
| NGAF | 2.13.19 | - | - | C note2 | - | T |
| Classmark | 2.13.20 | - | - | M | - | T |
| TID | 2.13.21 | - | - | C | C | T |
| Radio Priority | 2.13.22 | - | - | C | - | T |
| Radio Priority SMS | 2.13.23 | - | - | C | - | T |
| PDP Context Identifier | 2.13.24 | C | - | C | - | T |
| PDP Context Charging Characteristics | 2.13.25 | C | - | C | C | P |
| Short Message Service CAMEL Subscription Information (SMS-CSI) | 2.14.4.1/1.8 | C | - | C | - | P |
| GPRS CAMEL Subscription Information (GPRS-CSI) | 2.14.4.2/1.9 | C | - | C | - | C |
| SMS-CSI SGSN Negotiated CAMEL Capability Handling | 2.14.2.1 | C | - | - | - | P |
| GPRS-CSI Negotiated CAMEL Capability Handling | 2.14.2.1 | C | - | - | - | P |
| SGSN Supported CAMEL Phases | 2.14.2.3 | C | - | - | - | P |
| GsmSCF address for CSI | 2.14.2.4 | C | - | - | - | P |
| Age Indicator | 2.16.1 | C | - | C | - | T |
| Subscribed Charging Characteristics | 2.19.1 | C | - | C | C | P |

The HLR column indicates only GPRS related use, i.e. if the HLR uses a parameter in non-GPRS Network Access Mode but not in GPRS Network Access Mode, it is not mentioned in this table 2.

note1: This parameter is relevant in the SGSN only when the Gs interface is installed.

note2: The VLR column is applicable if Gs interface is installed. It only indicates GPRS related data to be stored and is only relevant to GPRS subscribers registered in VLR.

For special condition of storage see in clause 2.
See clause 3 for explanation of M, C, T and P in table 2.

**3GPP TSG CN WG4 Meeting #4**
**Seattle, 28 August – 1 September 2000**

***Document N4-000678***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

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| **23.008** | **CR** | **031** | Current Version: | 3.4.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: CN#09 *list expected approval meeting # here ↑* | for approval | X | strategic | | *(for SMG use only)* |
|---|---|---|---|---|---|
| | for information | | non-strategic | X | |

*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:** *(at least one should be marked with an X)* | (U)SIM | | ME | | UTRAN / Radio | | Core Network | X |
|---|---|---|---|---|---|---|---|---|

**Source:** N4 **Date:** 25 August 2000

**Subject:** Corrections of the description of BC allocation for VLR (Release 99)

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:**
In the TS 23.008 specification, there is the description of the BC allocation for VLR.
This BC allocation is used to set up the access connection to the called MS.
The VLR only stores provisionally this information as conditional from the receipt of the PRN message to the receipt of the SIFIC message in order to establish the bearer.
This CR presents the deletion of the description of BC allocation for VLR.
Mirror CR of 03.08-A035.

**Clauses affected:** 2.5.3, 4

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:**

help.doc

<--------- double-click here for help and instructions on how to create a CR.

### 2.5.3 Bearer capability allocation

Bearer capability allocation is a parameter stored against each ISDN number in the case when the Home PLMN allocates one directory number per teleservice and bearer service. In this case it is used to permit the establishment of the correct bearer capability on the connection to the MS. (See GSM 09.07). The bearer capability allocation is not required when the Home PLMN only allocates one directory number per subscriber for all bearer services and teleservices. It is permanent data stored conditionally in ~~both~~the HLR ~~and VLR~~.

# 4 Accessing subscriber data

It shall be possible to retrieve or store subscriber data concerning a specific MS from the HLR by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);
- Mobile Station ISDN Number (MSISDN).

It shall be possible to retrieve or store subscriber data concerning a specific MS from the VLR by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);
- Temporary Mobile Subscriber Identity (TMSI).

It shall be possible to retrieve or store subscriber data concerning a specific MS from the SGSN by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);
- Packet Temporary Mobile Subscriber identity (P-TMSI).

It shall be possible to retrieve or store subscriber data concerning a specific MS from the GGSN by use of the following reference:

- International Mobile Subscriber Identity (IMSI).

See clause 3 for explanation of M, C, T and P in table 1 and table 2.

**Table 1: Overview of data stored for non-GPRS Network Access Mode**

| PARAMETER | SUBCLAUSE | HLR | VLR | TYPE |
|---|---|---|---|---|
| IMSI | 2.1.1.1 | M | M | P |
| Network Access Mode | 2.1.1.2 | M | - | P |
| International MS ISDN number | 2.1.2 | M | M | P |
| multinumbering MSISDNs | 2.1.3 | C | - | P |
| Basic MSISDN indicator | 2.1.3.1 | C | - | P |
| MSISDN-Alert indicator | 2.1.3.2 | C | - | P |
| TMSI | 2.1.4 | - | C | T |
| LMSI | 2.1.8 | C | C | T |
| Mobile Station Category | 2.2.1 | M | M | P |
| LMU Identifier | 2.2.2 | C | C | P |
| RAND, SRES and Kc | 2.3.1 | | C | T |
| RAND, XRES, CK, IK and AUTN | 2.3.2 | M | C | T |
| Ciphering Key Sequence Number | 2.3.3 | - | M | T |
| MSRN | 2.4.1 | - | C | T |
| Location Area Identity | 2.4.2 | - | M | T |
| VLR number | 2.4.5 | M | - | T |
| MSC number | 2.4.6 | M | C | T |
| HLR number | 2.4.7 | - | C | T |
| Subscription restriction | 2.4.10 | C | - | P |
| RSZI lists | 2.4.11.1 | C | - | P |
| Zone Code List | 2.4.11.2 | - | C | P |
| MSC area restricted flag | 2.4.12 | M | - | T |
| LA not allowed flag | 2.4.13 | - | M | T |
| ODB-induced barring data | 2.4.15.1 | C | - | T |
| Roaming restriction due to unsupported feature | 2.4.15.2 | M | M | T |
| Cell Global ID or Service Area ID | 2.4.16 | - | C | T |
| LSA Identity | 2.4.17.1 | C | C | P |
| LSA Priority | 2.4.17.2 | C | C | P |
| LSA Preferential Access Indicator | 2.4.17.2A | C | C | P |
| LSA Active Mode Support Indicator | 2.4.17.2B | C | C | P |
| LSA Only Access Indicator | 2.4.17.3 | C | C | P |
| LSA Active Mode Indicator | 2.4.17.4 | C | C | P |
| VPLMN Identifier | 2.4.17.5 | C | - | P |
| Provision of bearer service | 2.5.1 | M | M | P |
| Provision of teleservice | 2.5.2 | M | M | P |
| BC allocation | 2.5.3 | C | ~~C~~ | P |
| IMSI detached flag | 2.7.1 | - | C | T |
| Confirmed by Radio Contact indicator | 2.7.4.1 | - | M | T |
| Subscriber Data Confirmed by HLR indicator | 2.7.4.2 | - | M | T |
| Location Information Confirmed in HLR indicator | 2.7.4.3 | - | M | T |
| Check SS indicator | 2.7.4.4 | M | - | T |
| MS purged for non-GPRS flag | 2.7.5 | M | - | T |
| MNRR | 2.7.7 | C | - | T |
| Subscriber status | 2.8.1 | C | C | P |
| Barring of outgoing calls | 2.8.2.1 | C | C | P |
| Barring of incoming calls | 2.8.2.2 | C | - | P |
| Barring of roaming | 2.8.2.3 | C | - | P |
| Barring of premium rate calls | 2.8.2.4 | C | C | P |
| Barring of supplementary service management | 2.8.2.5 | C | C | P |
| Barring of registration of call forwarding | 2.8.2.6 | C | - | P |
| Barring of invocation of call transfer | 2.8.2.7 | C | C | P |
| Operator determined barring PLMN-specific data | 2.8.3 | C | C | P |
| Notification to CSE flag for ODB | 2.8.4 | C | - | T |
| gsmSCF address list for ODB | 2.8.5 | C | - | P |
| Handover Number | 2.9.1 | - | C | T |
| Messages Waiting Data | 2.10.1 | C | - | T |
| Mobile Station Not Reachable Flag | 2.10.2 | C | M | T |
| Memory Capacity Exceeded Flag | 2.10.3 | C | - | T |

(continued)

**3GPP TSG CN4 Meeting #4**
**Seattle, 28th August - 1st September 2000**

***Document N4-000596***

# CHANGE REQUEST

| 23.016 | CR | 016 | Current Version: | 3.5.0 |
|---|---|---|---|---|

| For submission to: | CN#09 | for approval | X | strategic | |
|---|---|---|---|---|---|
| | | for information | | non-strategic | X |

*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:** N4 **Date:** 31st July 2000

**Subject:** Correction to Delete Subscriber Data

**Work item:** TEI

**Category:**

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

**Reason for change:** To align with 29.002. The DSD dialogue is closed by the VLR or SGSN

**Clauses affected:** 4.2.2

**Other specs affected:**

| | | | |
|---|---|---|---|
| Other 3G core specifications | | → List of CRs: | R00 |
| Other GSM core specifications | | → List of CRs: | |
| MS test specifications | | → List of CRs: | |
| BSS test specifications | | → List of CRs: | |
| O&M specifications | | → List of CRs: | |

**Other comments:**

### 4.2.2 Deletion of data in the VLR or the SGSN

Deletion needs a separate dialogue.
HLR and VLR or SGSN actions are the same as above except for the following case:

- if, in response to deletion, one or more unsupported features are indicated by the VLR or the SGSN, the HLR may:

  - delete subscriber data including replacement feature(s) locally;

  - delete subscriber data including replacement feature(s) locally and in the VLR or the SGSN (NOTE);

  - take no further action.

  Which of the three options apply for which feature is out of scope of this specification.

NOTE: This deletion in the VLR or the SGSN needs a separate dialogue.

The VLR or SGSN~~HLR~~ shall terminate the dialogue when sending~~after~~ the response ~~was received from~~ to the H~~V~~LR ~~or the SGSN~~.

**3GPP/TSG-CN WG4 Meeting 3**
**Helsinki, Finland, 17-21 July 2000**

***Document* N4-000441**
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 23.018 | CR | 053 | Current Version: | 3.5.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: | CN#09 | for approval | X | strategic | | (for SMG use only) |
|---|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | | for information | | non-strategic | X | |

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

**Source:** N4 **Date:** 06/07/2000

**Subject:** Correction of connector numbering in process ICH_MSC

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

| | | |
|---|---|---|
| F | Correction | X |
| A | Corresponds to a correction in an earlier release | |
| 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:** There are duplicate instances of connector 2 on sheets 3 & 5.

**Clauses affected:** Figures 66d;66e;66i

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:**

help.doc

<--------- double-click here for help and instructions on how to create a CR.

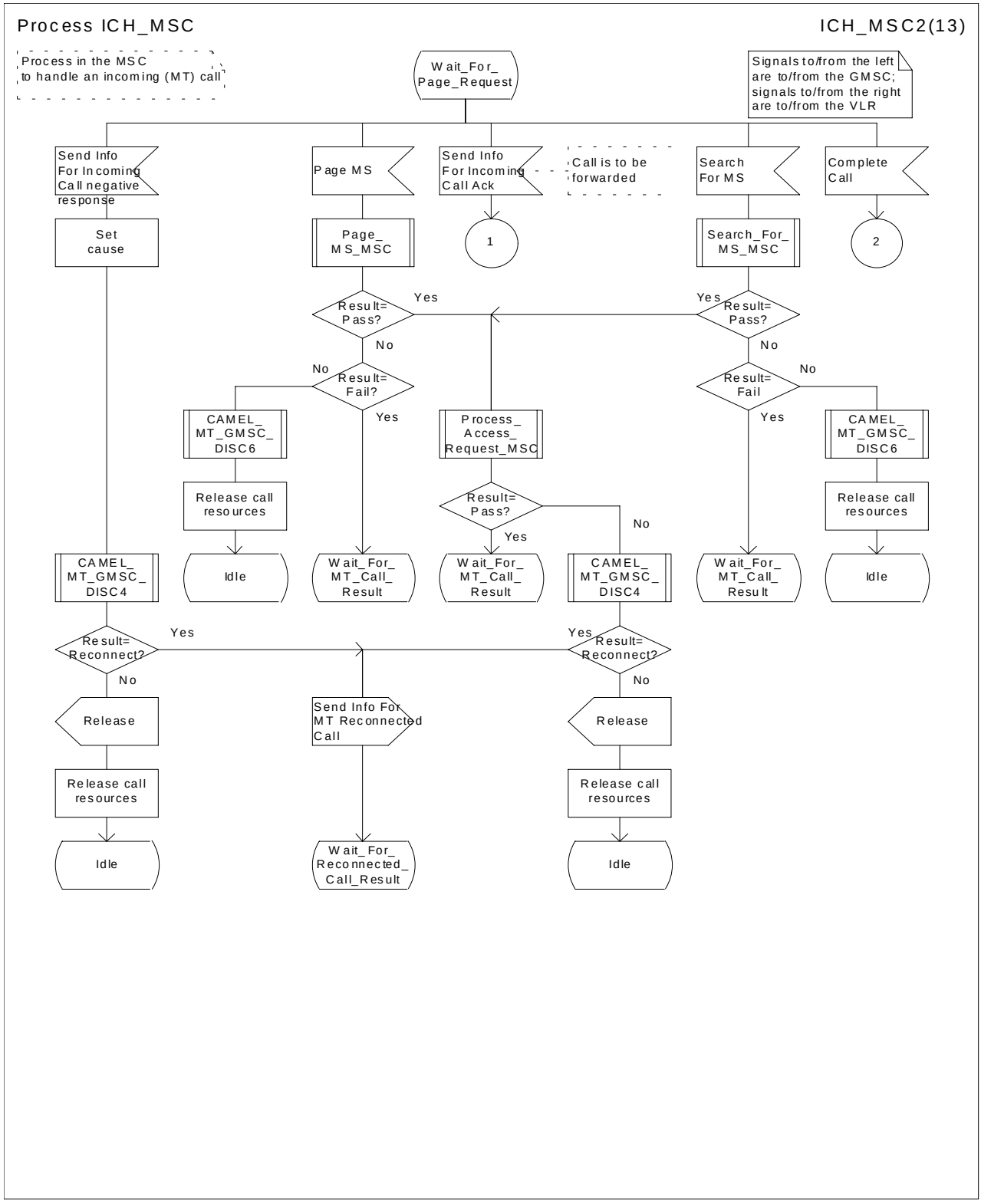



**Figure 66b: Process ICH_MSC (sheet 2)**

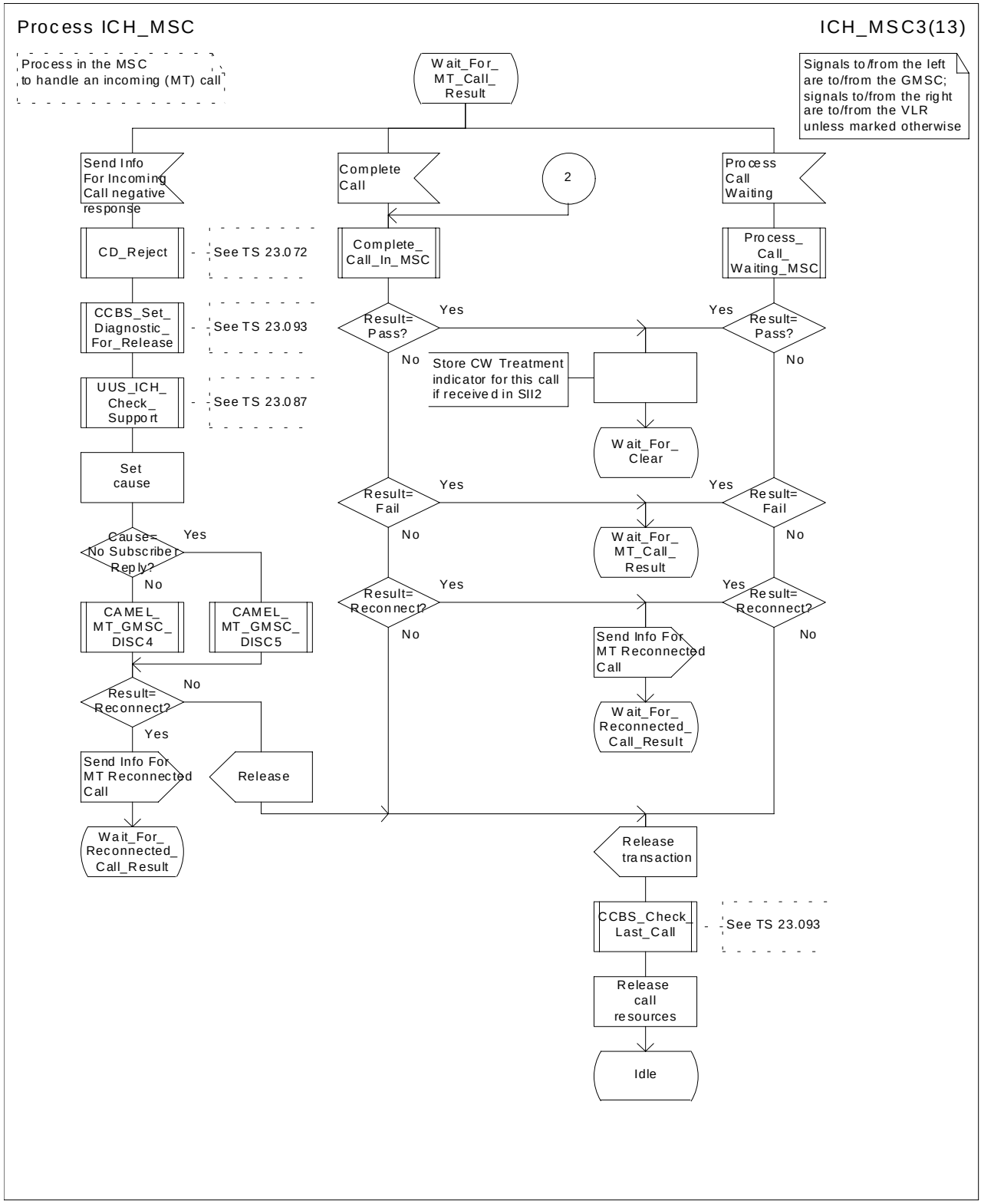


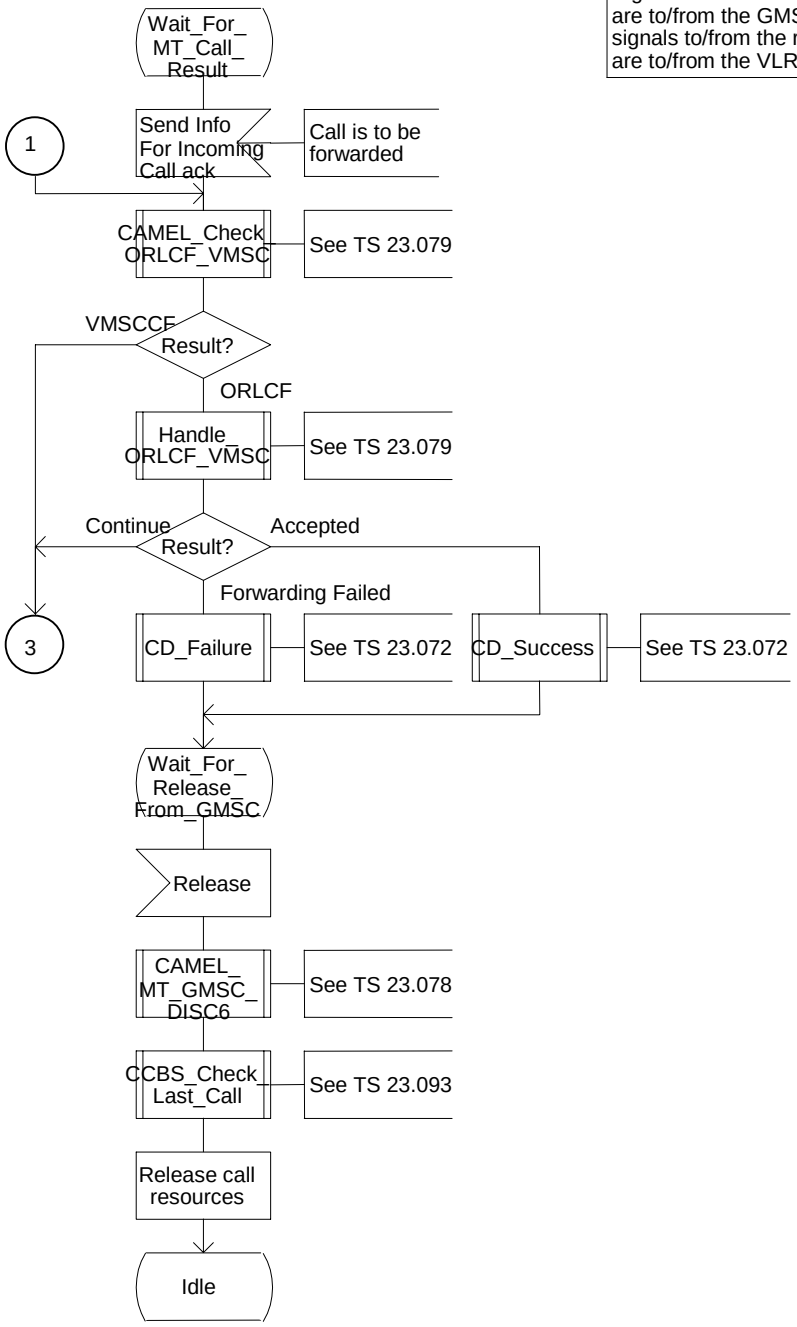

**Figure 66c: Process ICH_MSC (sheet 3)**

Process ICH_MSC

ICH_MSC4(13)

Process in the MSC
to handle an incoming (MT) call

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



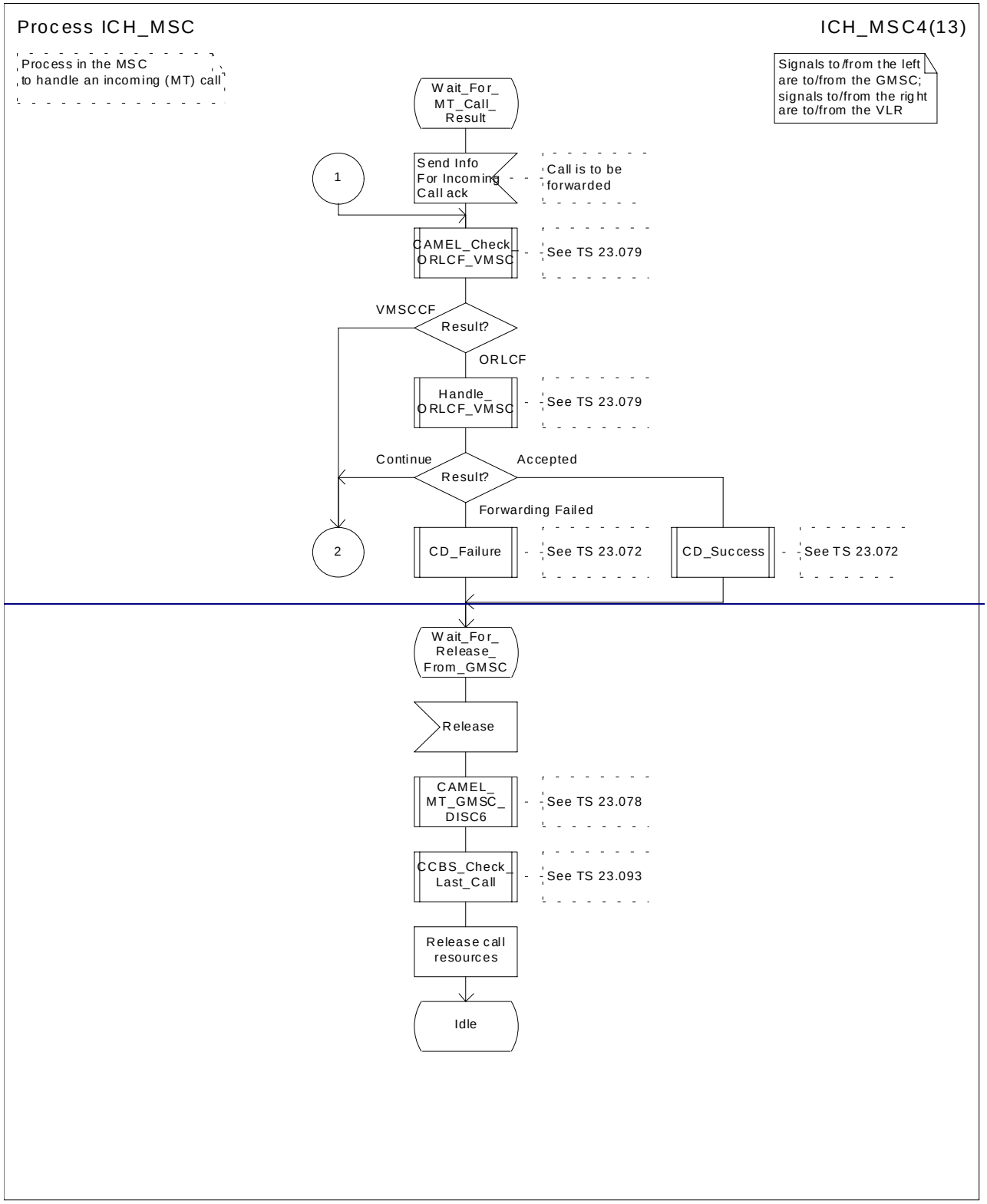
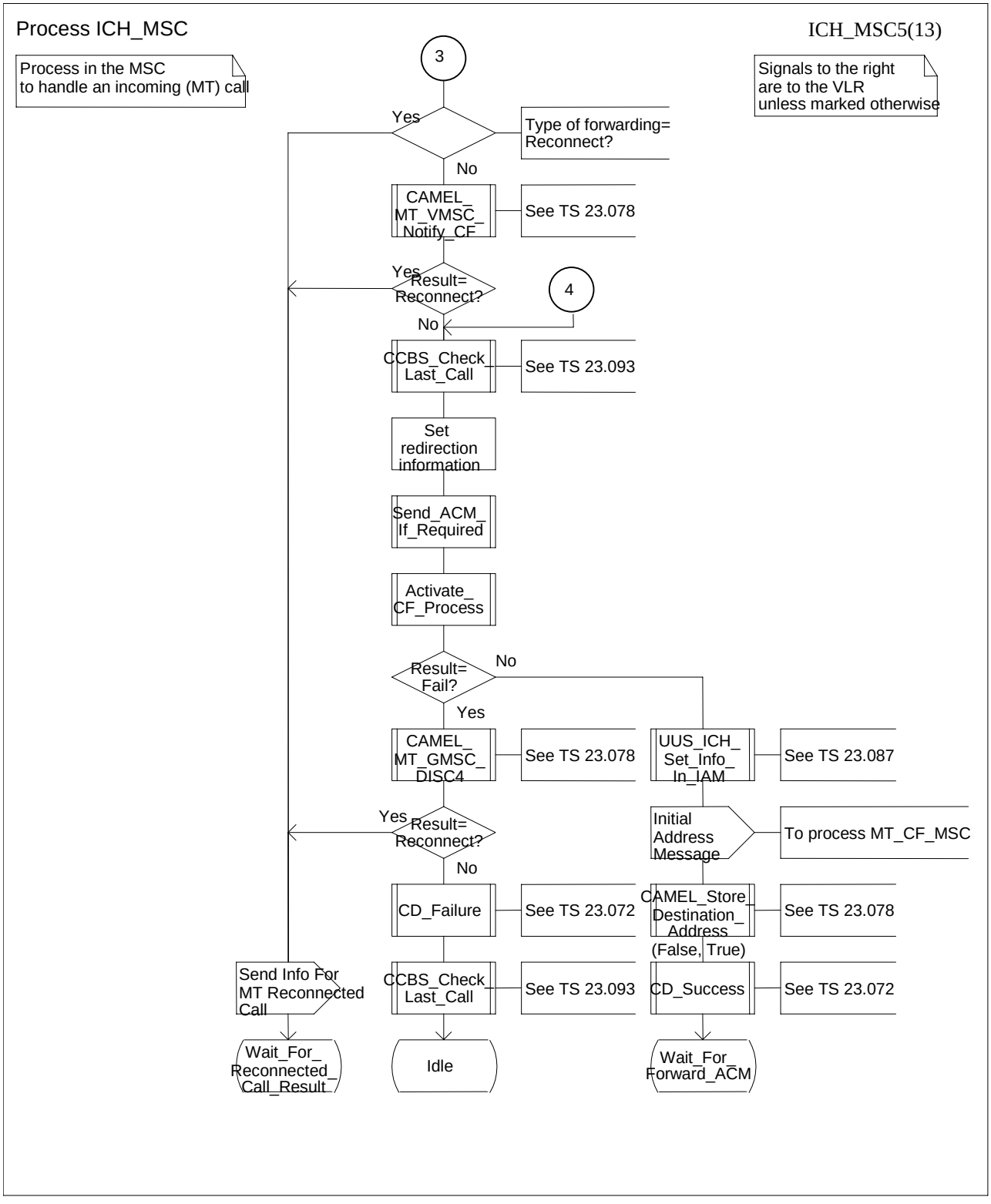



**Figure 66d: Process ICH_MSC (sheet 4)**


Process ICH_MSC
ICH_MSC5(13)
Process in the MSC to handle an incoming (MT) call
Signals to the right are to the VLR unless marked otherwise
3
Yes
Type of forwarding= Reconnect?
No
CAMEL_ MT_VMSC_ Notify_CF
See TS 23.078
Yes
Result= Reconnect?
4
No
CCBS_Check Last_Call
See TS 23.093
Set redirection information
Send_ACM_ If_Required
Activate_ CF_Process
Result= Fail?
No
Yes
CAMEL_ MT_GMSC_ DISC4
See TS 23.078
UUS_ICH_ Set_Info_ In_IAM
See TS 23.087
Yes
Result= Reconnect?
Initial Address Message
To process MT_CF_MSC
No
CD_Failure
See TS 23.072
CAMEL_Store_ Destination_ Address
See TS 23.078
(False, True)
Send Info For MT Reconnected Call
CCBS_Check Last_Call
See TS 23.093
CD_Success
See TS 23.072
Wait_For_ Reconnected_ Call_Result
Idle
Wait_For_ Forward_ACM

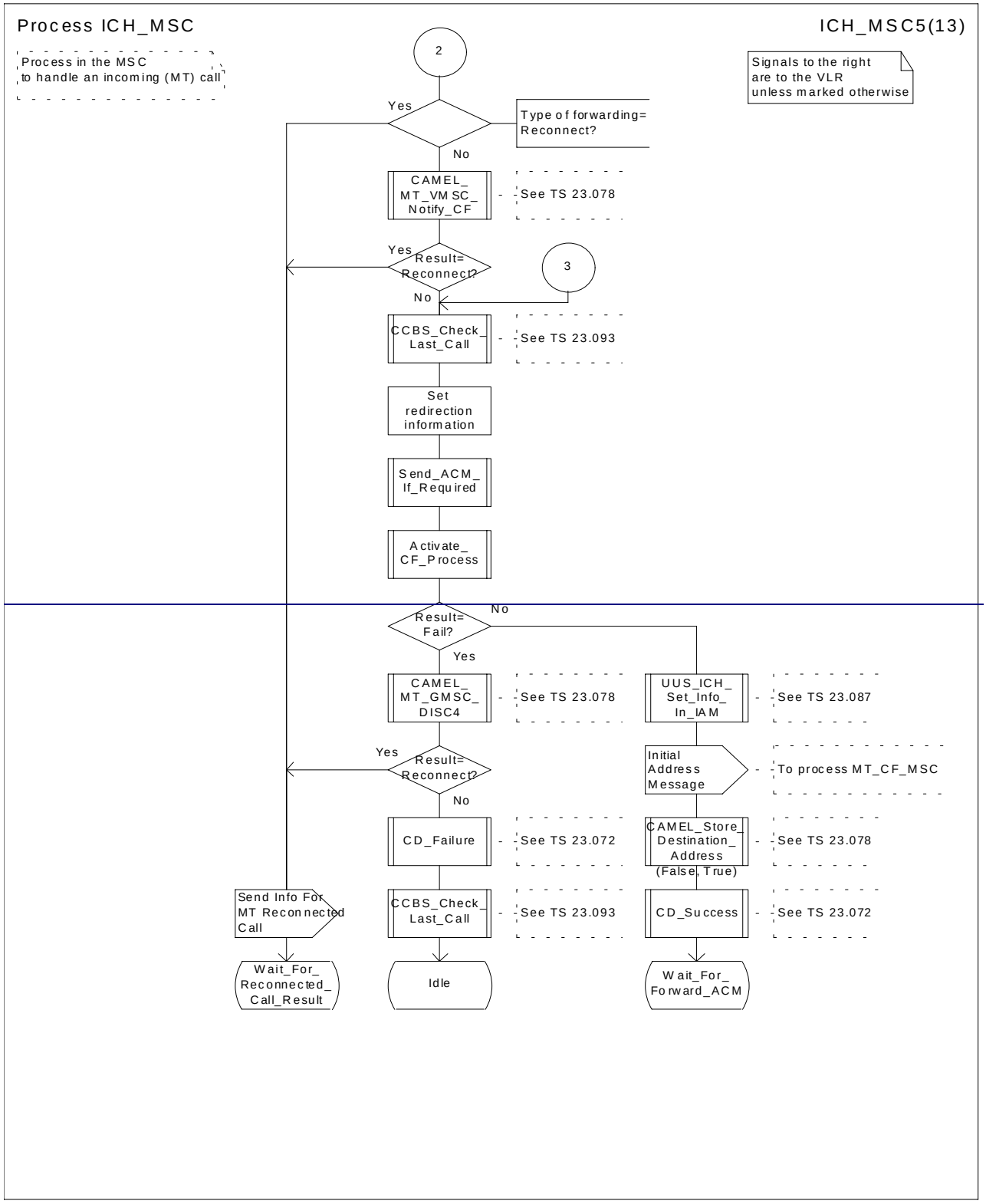
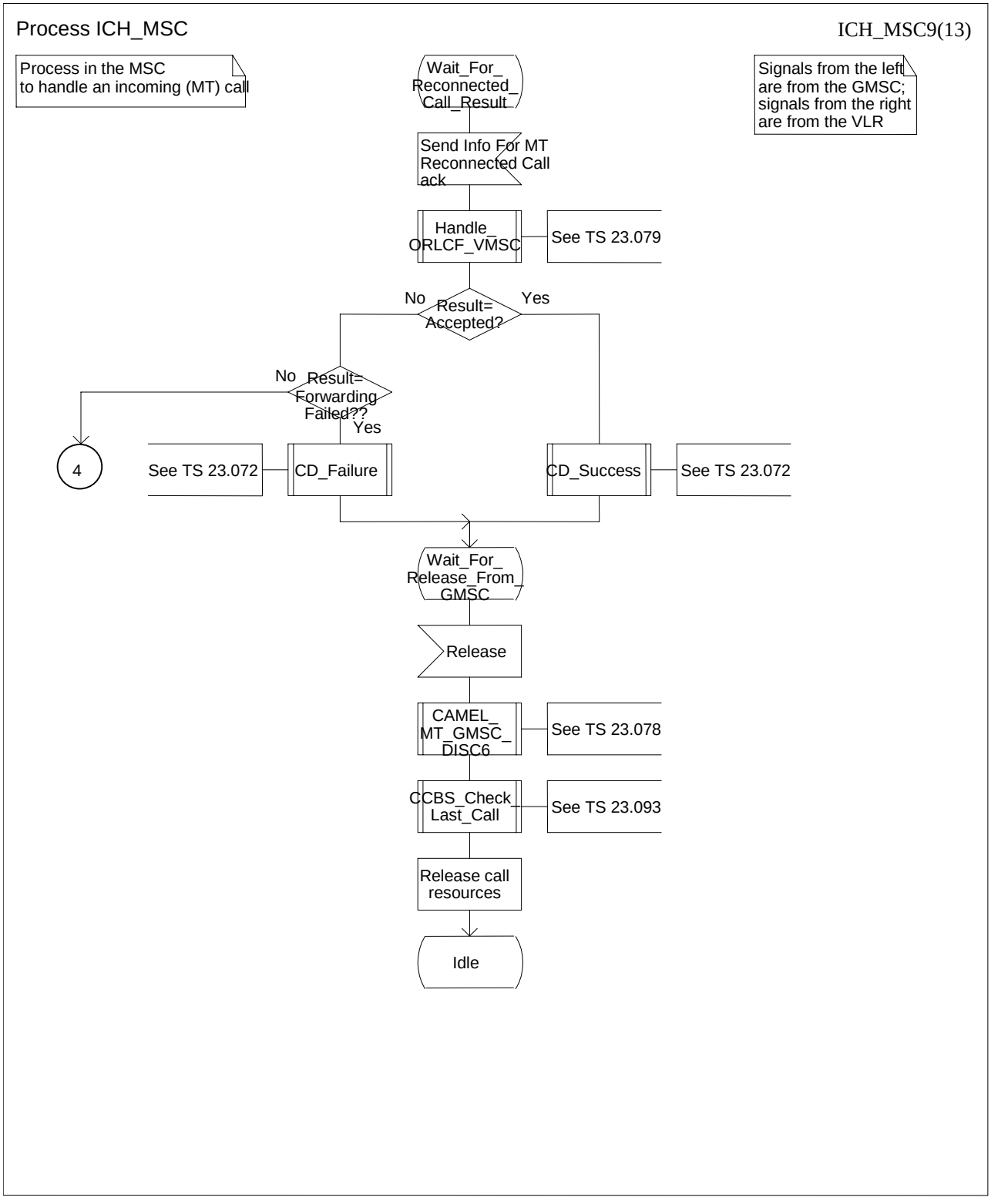



**Figure 66e: Process ICH_MSC (sheet 5)**


Process ICH_MSC
ICH_MSC9(13)
Process in the MSC to handle an incoming (MT) call
Signals from the left are from the GMSC; signals from the right are from the VLR
Wait_For_ Reconnected_ Call_Result
Send Info For MT Reconnected Call ack
Handle_ ORLCF_VMSC
See TS 23.079
No
Result= Accepted?
Yes
No
Result= Forwarding Failed??
Yes
4
See TS 23.072
CD_Failure
CD_Success
See TS 23.072
Wait_For_ Release_From_ GMSC
Release
CAMEL_ MT_GMSC_ DISC6
See TS 23.078
CCBS_Check_ Last_Call
See TS 23.093
Release call resources
Idle

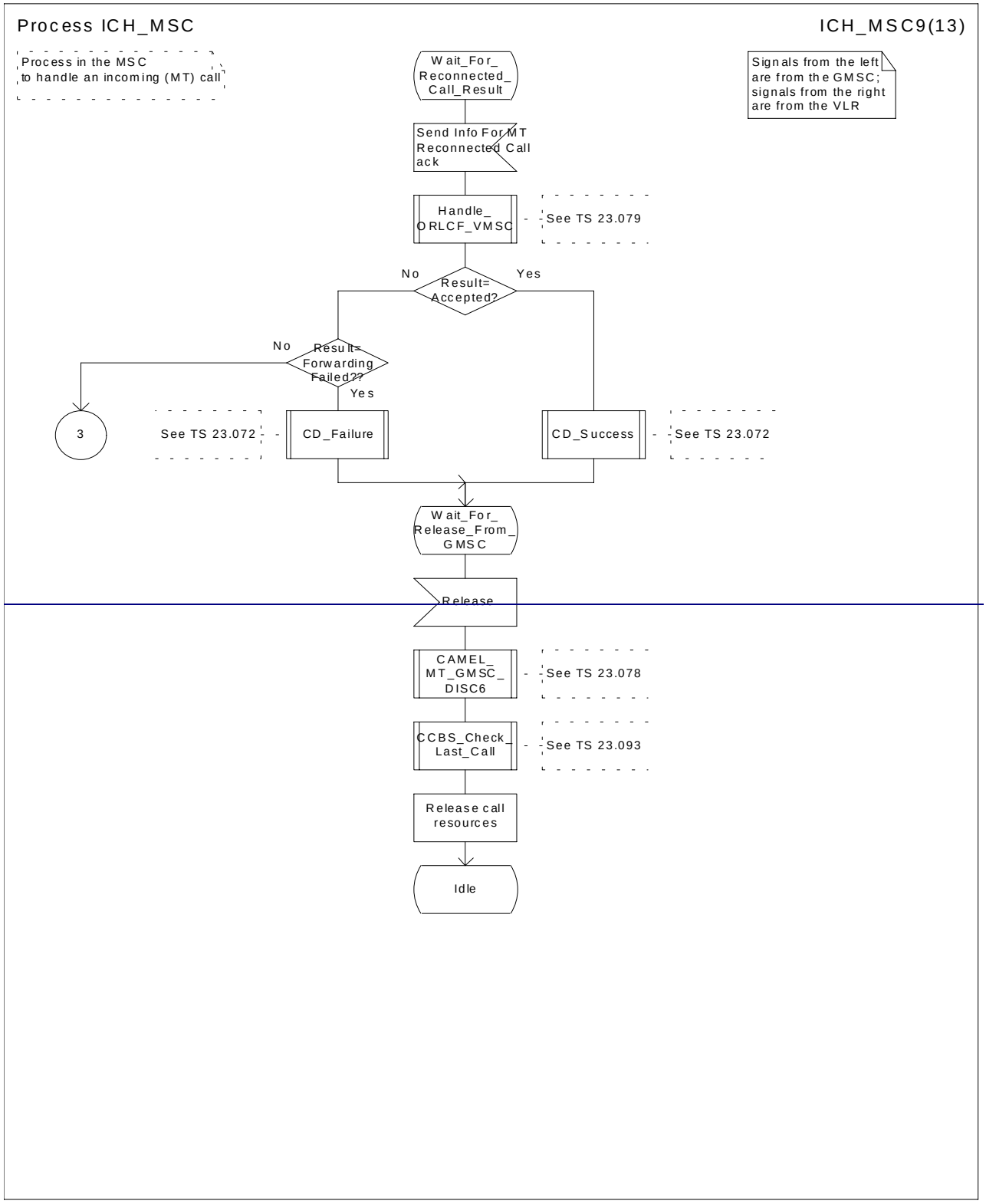



**Figure 66i: Process ICH_MSC (sheet 9)**

**3GPP/TSG-CN WG4 Meeting 4**
**Seattle, USA, 28 August - 1 September 2000**

***Document N4-000569***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 23.018 | CR | 060 | Current Version: | 3.5.0 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: | TSG-CN#09 | for approval | X | strategic | | (for SMG use only) |
|---|---|---|---|---|---|---|
| *list expected approval meeting # here ↑* | | for information | | non-strategic | X | |

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

**Source:** N4 **Date:** 01/08/00

**Subject:** Corrections to process ICH_VLR.

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:** Mislabelled Connector.

**Clauses affected:** 7.3.2.1

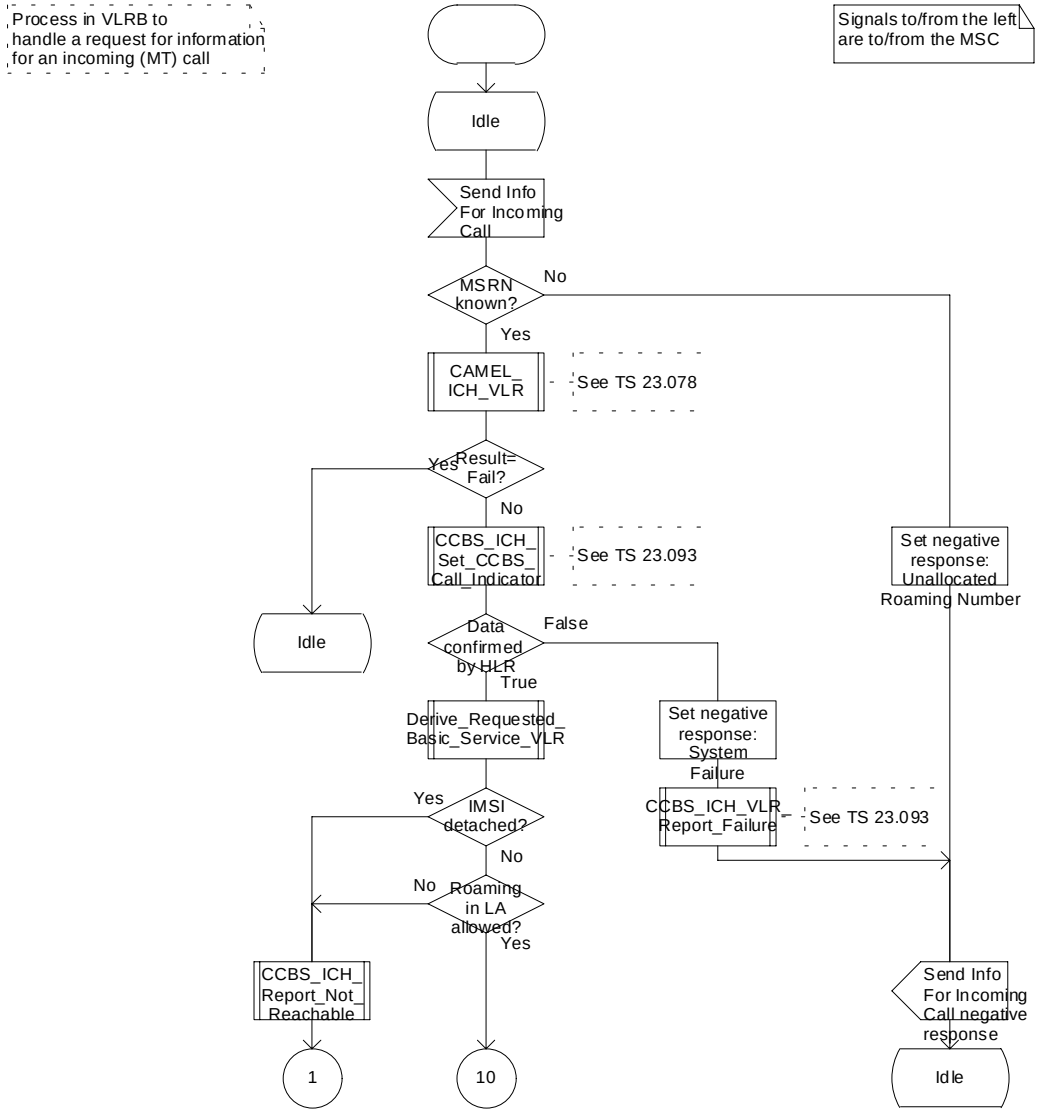
**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | | → List of CRs: |
| Other GSM core specifications | | → List of CRs: |
| MS test specifications | | → List of CRs: |
| BSS test specifications | | → List of CRs: |
| O&M specifications | | → List of CRs: |

**Other comments:**

help.doc

<--------- double-click here for help and instructions on how to create a CR.


Process in VLRB to handle a request for information for an incoming (MT) call
Signals to/from the left are to/from the MSC
Idle
Send Info For Incoming Call
MSRN known?
No
Yes
CAMEL_ ICH_VLR
See TS 23.078
Result= Fail?
Yes
No
CCBS_ICH_ Set_CCBS_ Call_Indicator
See TS 23.093
Set negative response: Unallocated Roaming Number
Idle
Data confirmed by HLR
False
True
Derive_Requested_ Basic_Service_VLR
Set negative response: System Failure
IMSI detached?
Yes
CCBS_ICH_VLR Report_Failure
See TS 23.093
No
Roaming in LA allowed?
No
Yes
CCBS_ICH_ Report_Not_ Reachable
Send Info For Incoming Call negative response
1
10
Idle

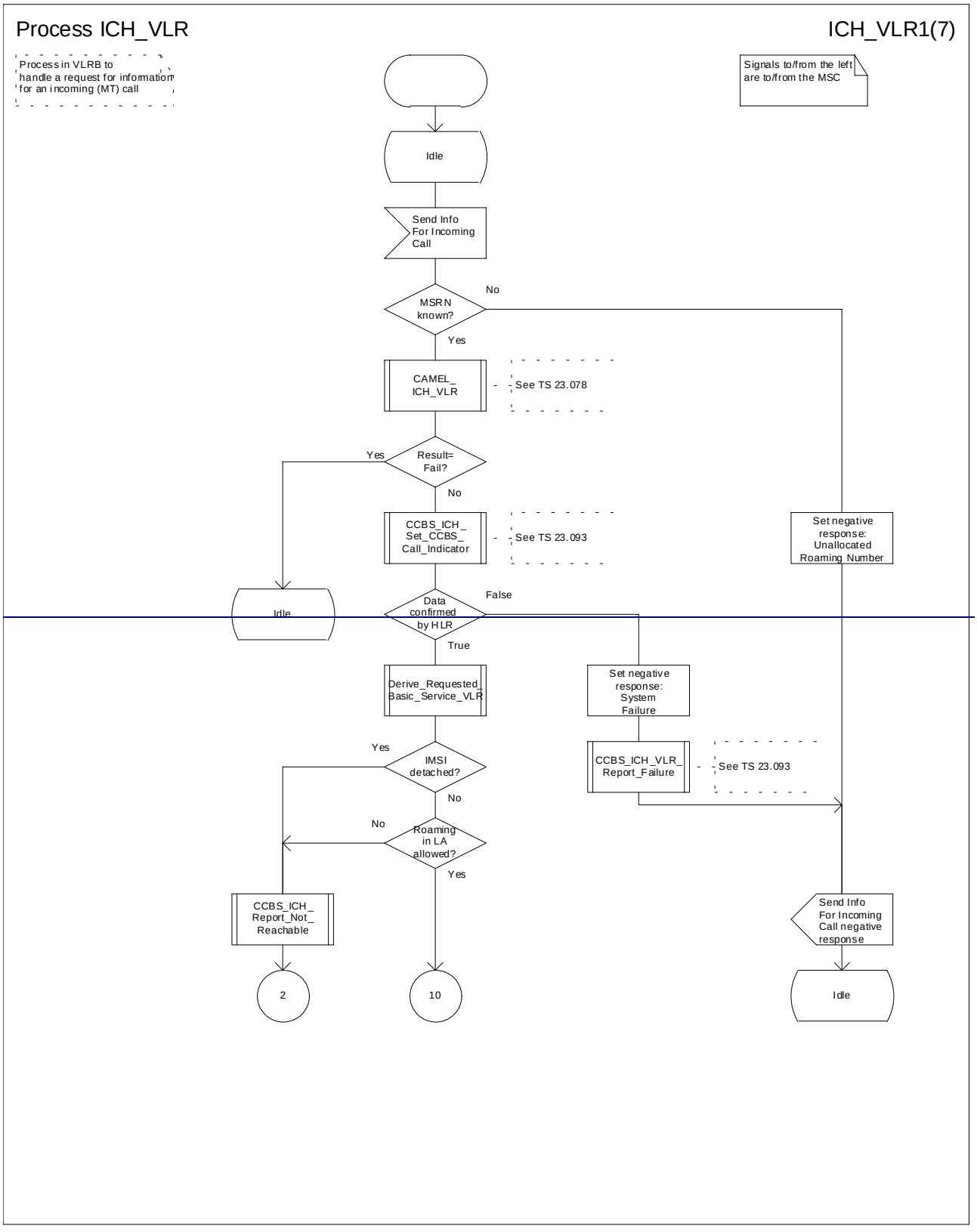



**Figure 1a: Process ICH_VLR (sheet 1)**

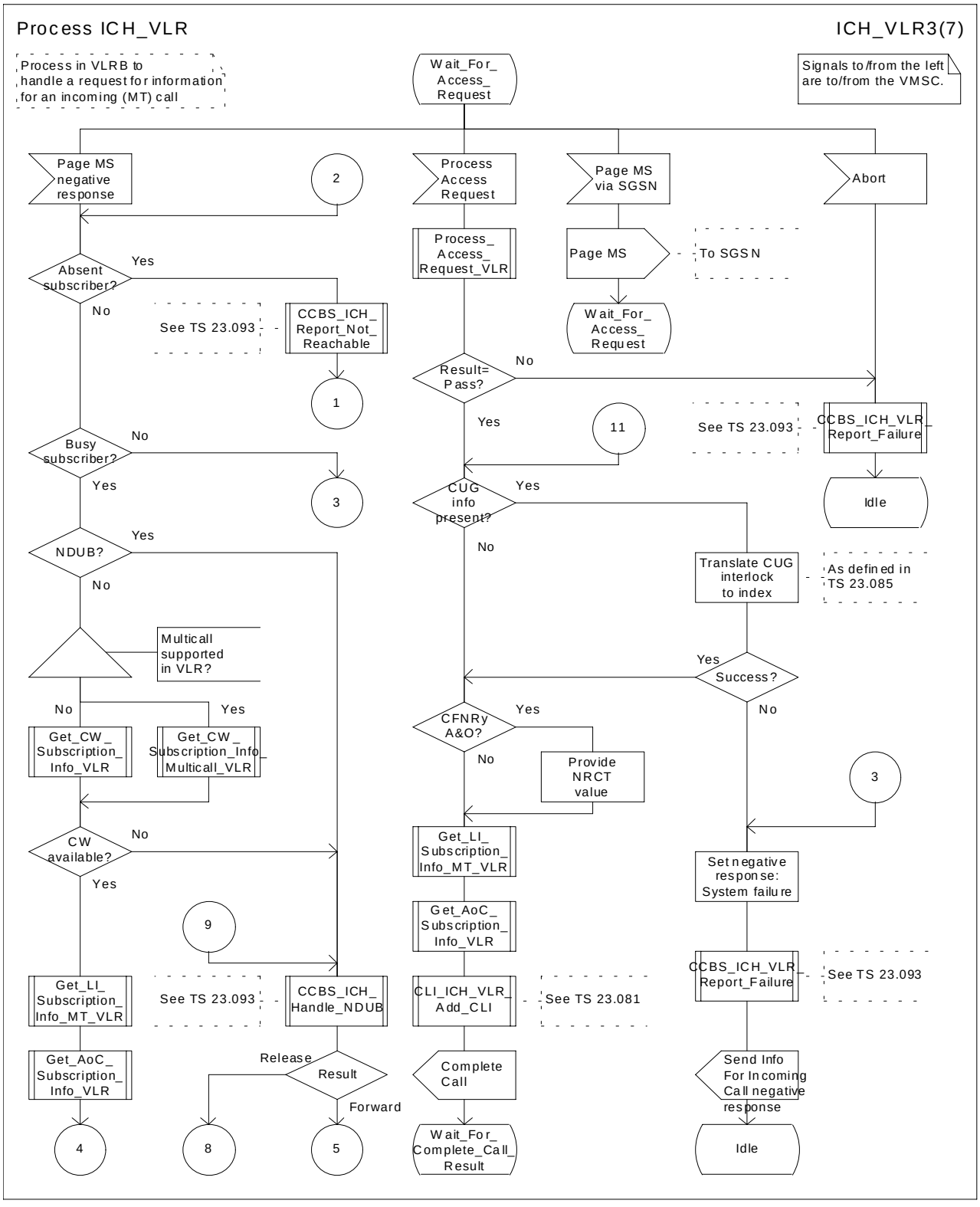



**Figure 1c: Process ICH_VLR (sheet 3)**

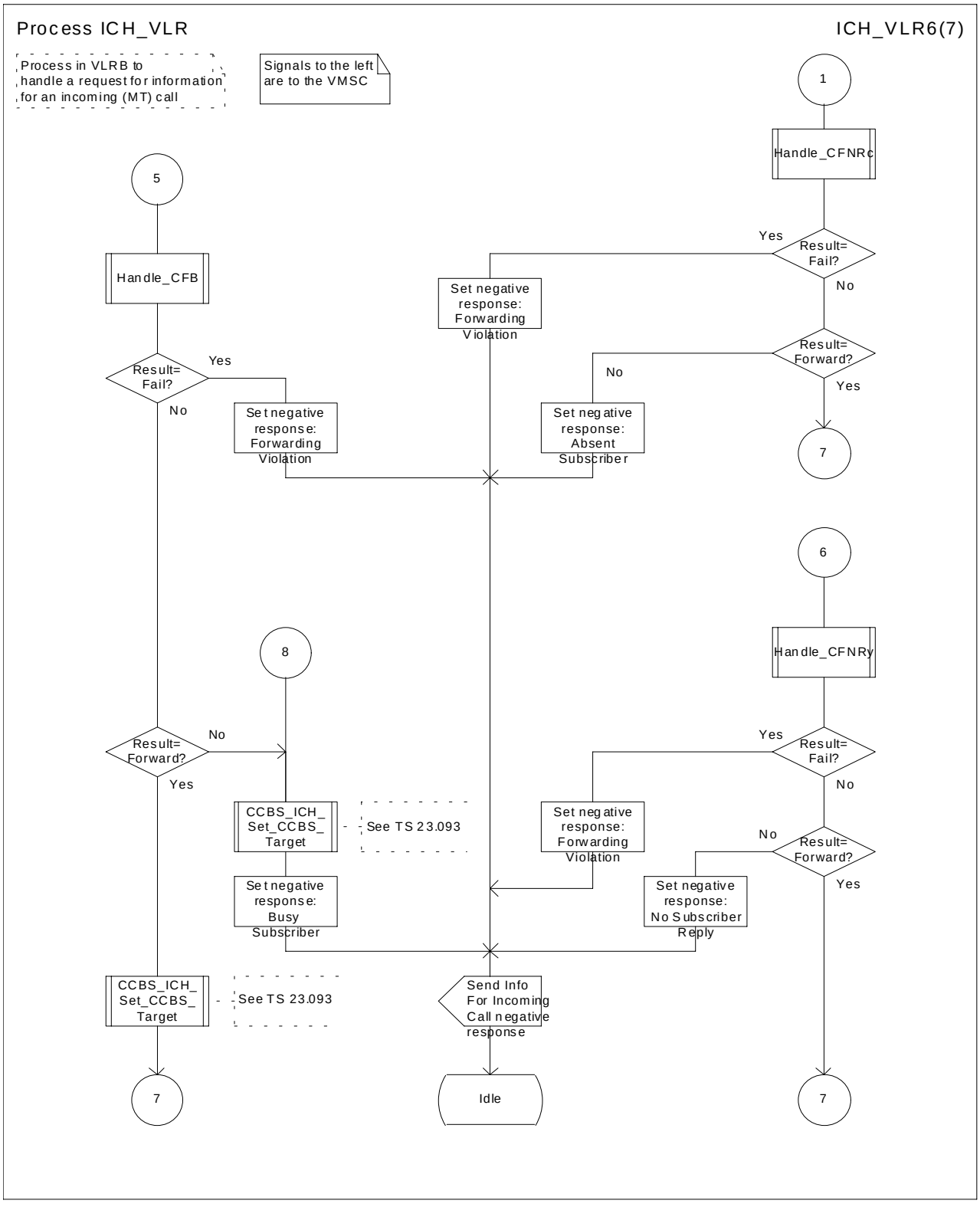



**Figure 1f: Process ICH_VLR (sheet 6)**

**3GPP TSG-N4 #4**
**Seattle, USA, 28 Aug - 01 Sep 2000**

***Tdoc 3GPP*** ***N4-000568***

# CHANGE REQUEST

| **23.079** | **CR** | **015** | Current Version: | 3.5.0 |
|---|---|---|---|---|

For submission to: TSG-CN#09 — for approval [X] / for information [ ] — strategic [ ] / non-strategic [X]

**Proposed change affects:** (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

**Source:** N4 **Date:** 2nd August 2000

**Subject:** Sheet 1 of Procedure OR_HLR_CF

**Work item:** TEI

**Category:**

| | | |
|---|---|---|
| F | Correction | [X] |
| A | Corresponds to a correction in an earlier release | [ ] |
| 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:** In TS 23.079 v3.4.0 the first sheet of Procedure OR_HLR_CF was accidentally deleted. This was not corrected in v3.5.0. This CR re-inserts the first sheet.

**Clauses affected:** 9.5.1

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:**

### 9.5.1 Procedure OR_HLR_CF

Sheet 1: if the HLR does not support optimal routeing of basic mobile-to-mobile calls, the test "Optimal routeing allowed" takes the "No" exit.

Sheet 2: the procedures Handle_CFB, Handle_CFNRc and Handle_CFNRy are specified in 3G TS 23.018 [6].

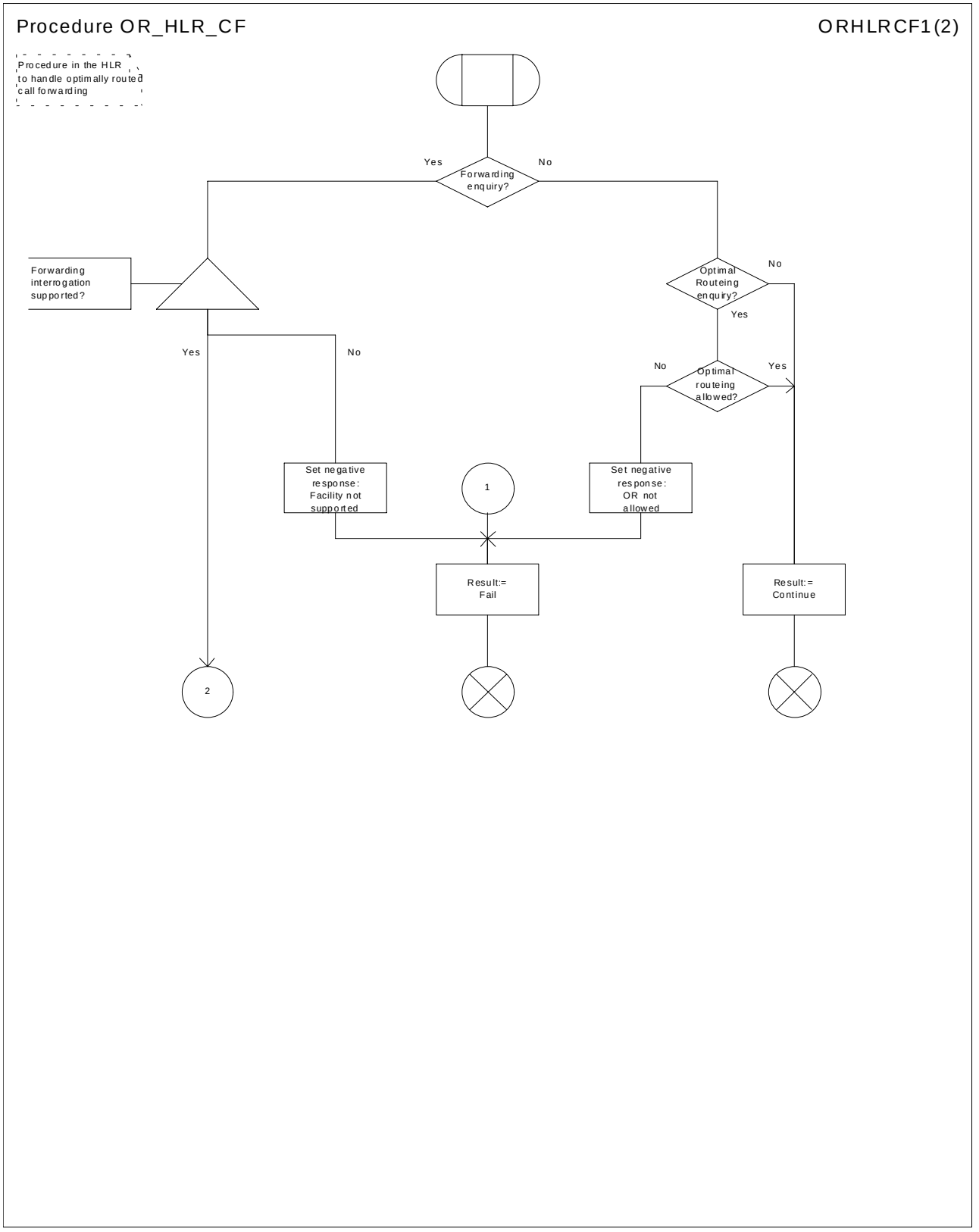



Figure 10a: Procedure OR_HLR_CF (sheet 1)

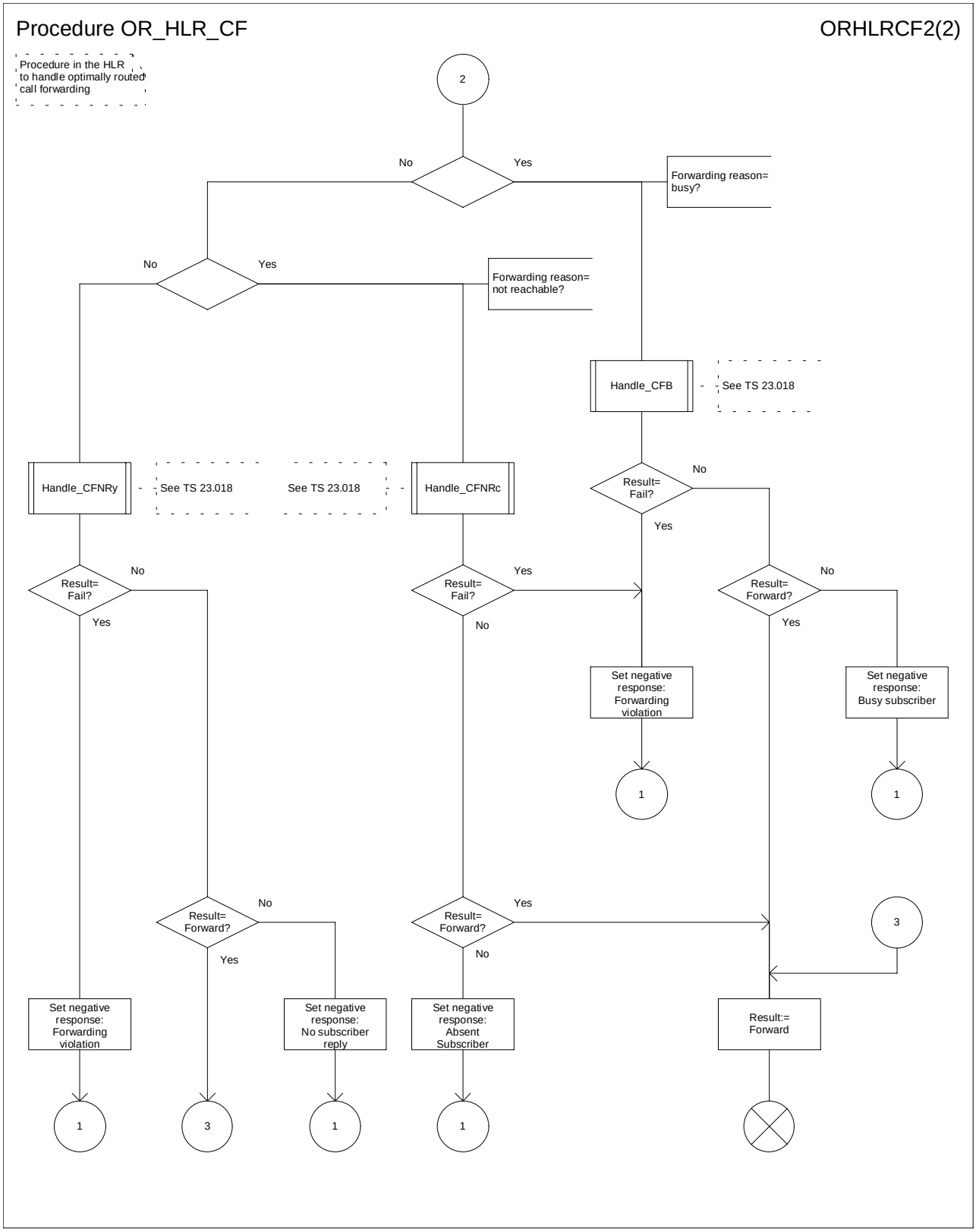



**Figure 10b: Procedure OR_HLR_CF (sheet 2)**

…

**3GPP TSG CN WG4 Meeting #3**
**Helsinki, Finland, 17-21 July 2000**

***Document N4-000490***
*e.g. for 3GPP use the format TP-99xxx*
*or for SMG, use the format P-99-xxx*

# CHANGE REQUEST

*Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

| 29.002 | CR | 157 | Current Version: | 3.5.1 |
|---|---|---|---|---|

*GSM (AA.BB) or 3G (AA.BBB) specification number ↑* *↑ CR number as allocated by MCC support team*

| For submission to: CN#09 *list expected approval meeting # here ↑* | for approval | X | strategic | | *(for SMG use only)* |
|---|---|---|---|---|---|
| | for information | | non-strategic | X | |

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

**Source:** N4 **Date:** 13 July 2000

**Subject:** Deletion of informative Annexe C

**Work item:** TEI

**Category:** *(only one category shall be marked with an X)*

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

**Reason for change:** Informative Annexe C lists the formal protocol incompatibilities between versions 1 & 2 of MAP. It has not been updated since GSM 09.02 version 4.x.y, and it has led to serious confusion about the differences between MAP version 1 and later versions. It is therefore better to remove it from the MAP specification for Release 96 and onwards.

**Clauses affected:** Annexe C is deleted

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:** To save file space, the text of Annexe C has not been shown struck out.

help.doc

<--------- double-click here for help and instructions on how to create a CR.

**3GPP TSG-N4 #4**
**Seattle, USA, 28 Aug - 01 Sep 2000**

***Tdoc 3GPP*** ***N4-000748***

# CHANGE REQUEST

| **29.002** | **CR** | **179r1** | Current Version: | 3.5.1 |
|---|---|---|---|---|

For submission to: TSG CN#09 | for approval [X] | for information [ ] | strategic [ ] | non-strategic [X]

**Proposed change affects:** (U)SIM [ ] ME [ ] UTRAN / Radio [ ] Core Network [X]

**Source:** N4 **Date:** 31st August 2000

**Subject:** Correction to MSC-A handover SDLs

**Work item:** TEI

**Category:**

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

**Release:**

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

**Reason for change:**

- Figure 19.2.2/1 (Sheet 4 of 13) and Figure 19.2.2/1 (Sheet 5 of 13)are duplicated, and Figure 19.2.2/1 (Sheet 5 of 13) from the CR 143 is missing
- Figure 19.2.2/1 (Sheet 8 of 13) and Figure 19.2.2/1 (Sheet 9 of 13)are duplicated, and Figure 19.2.2/1 (Sheet 9 of 13) from the CR 143 is missing

**Clauses affected:** 19.2.2.5

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:**

#### 19.2.2.5 SDL Diagrams

The SDL diagrams on the following pages describe the user processes in MSC-A for the procedures described in this subclause.

The services used are defined in subclause 8.4.

NOTE: The message primitives HO_CA_MESSAGE used in the SDL-Diagrams are used to show the internal co-ordination between the MAP application and the Handover Control Application. For a detailed description of the co-ordination between the applications for the handover or relocation procedure, see 3G TS 23.009.

Note that in case of reception of errors from the MSCs (see the Handover error handling macro), the MAP user reports them to the Handover Control Application and does not take any action except in cases explicitly mentioned in the SDL diagrams.

Figure 19.2 2/1: HO in MSC-A

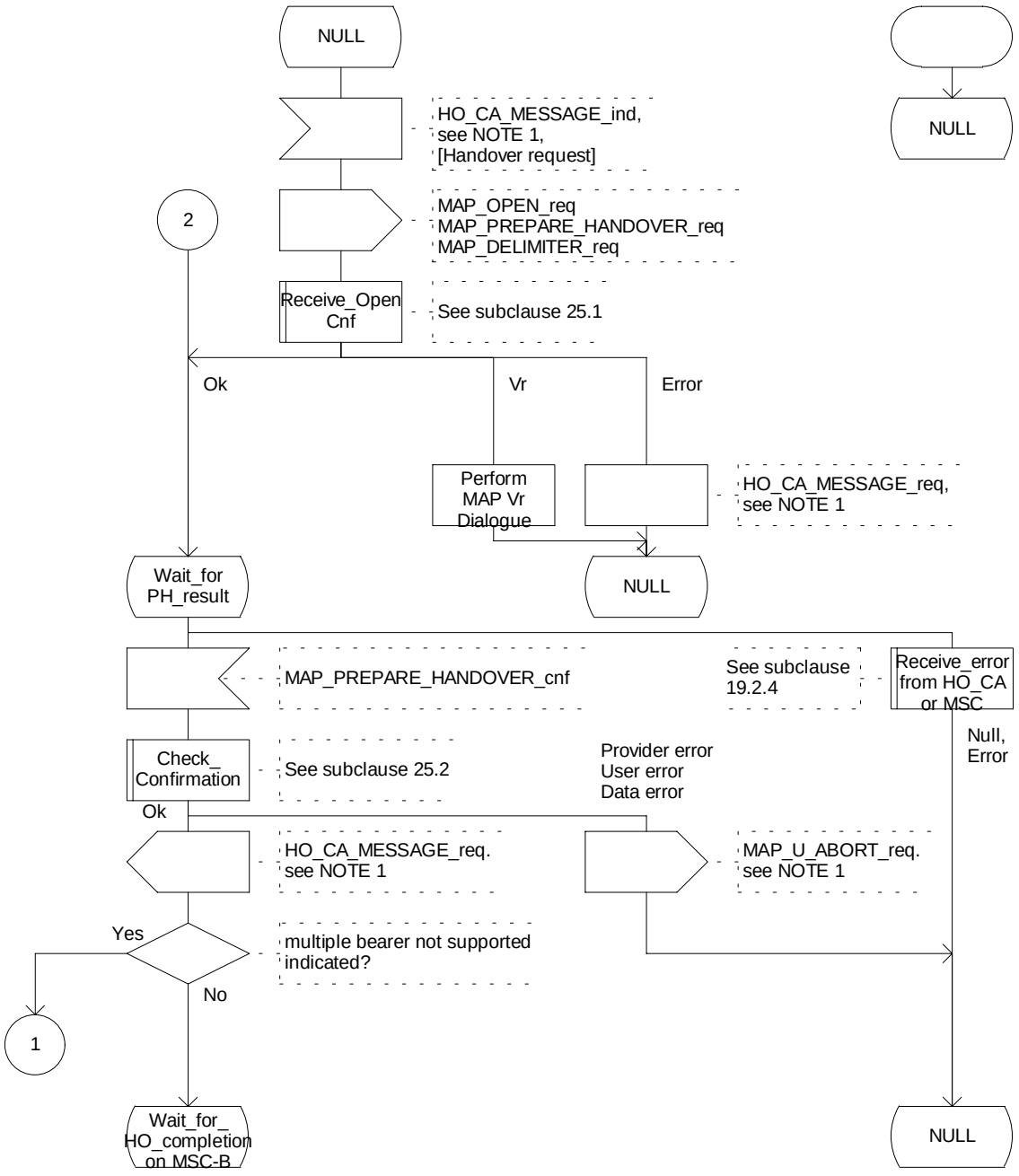



**Figure 19.2.2/1 (sheet 1 of 13): Process MSC_A_HO**

Figure 19.2 2/1: HO in MSC-A

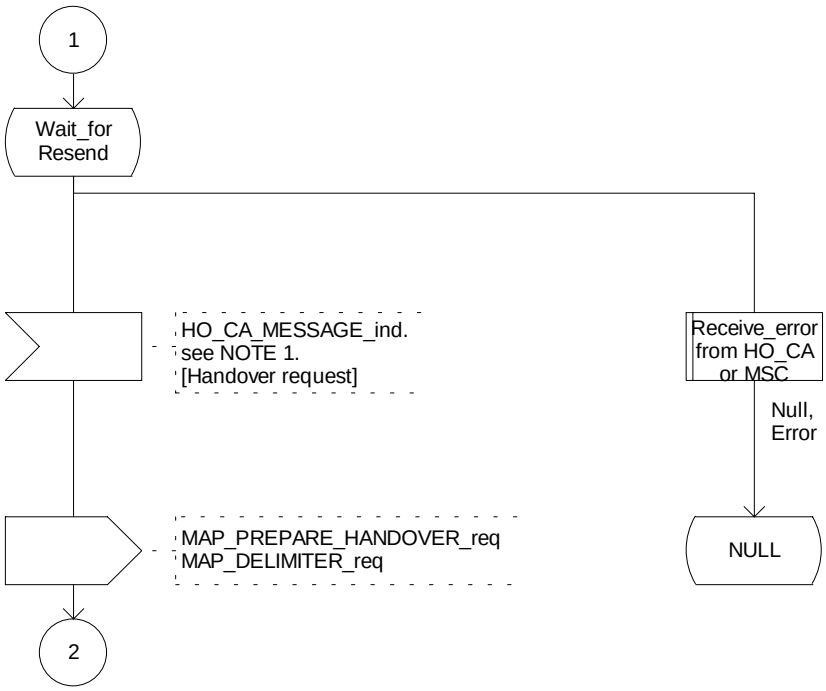



**Figure 19.2.2/1 (sheet 2 of 13): Process MSC_A_HO**

Figure 19.2 2/1: HO in MSC-A

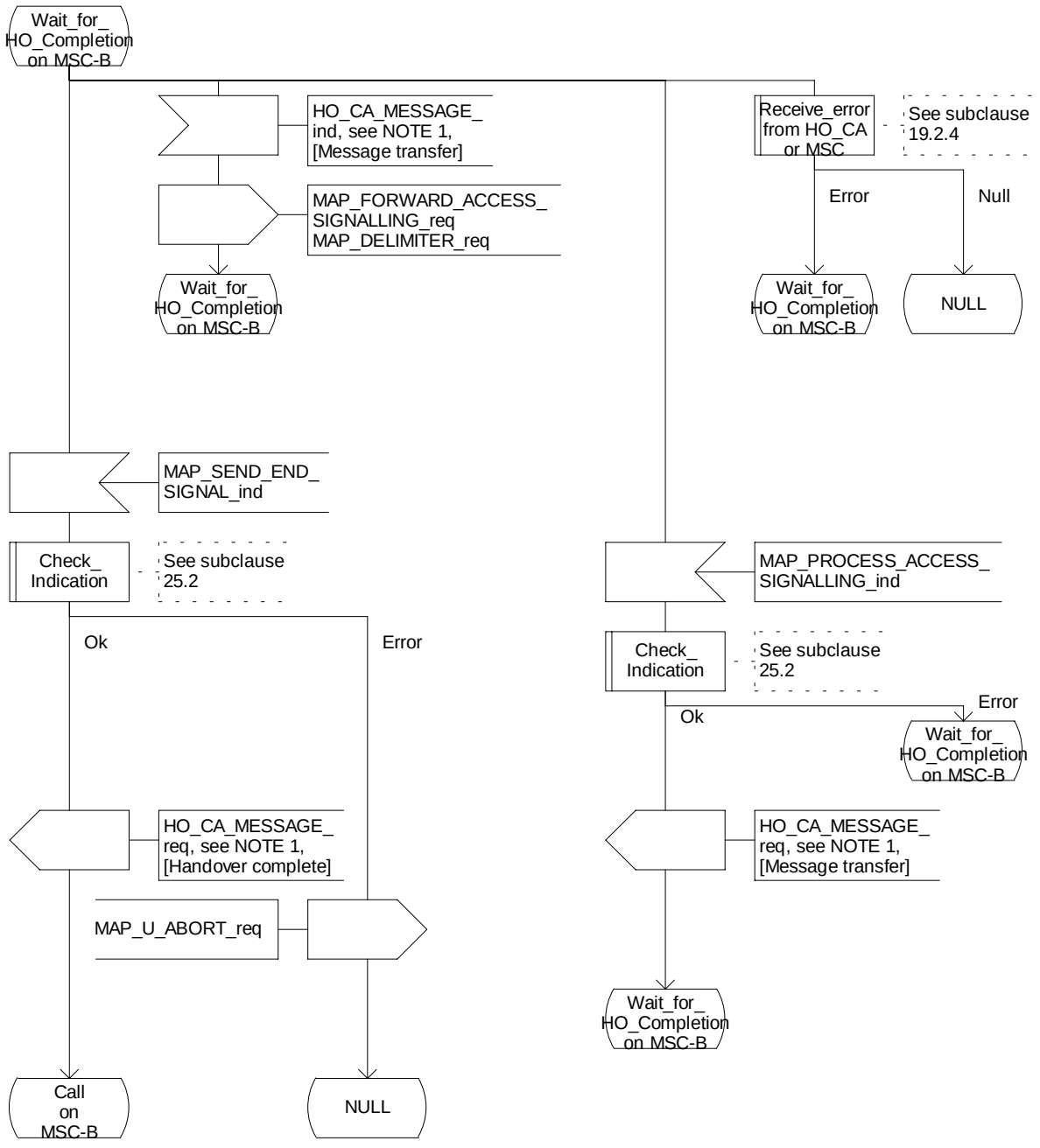



**Figure 19.2.2/1 (sheet 3 of 13): Process MSC_A_HO**

Figure 19.2 2/1: HO in MSC-A

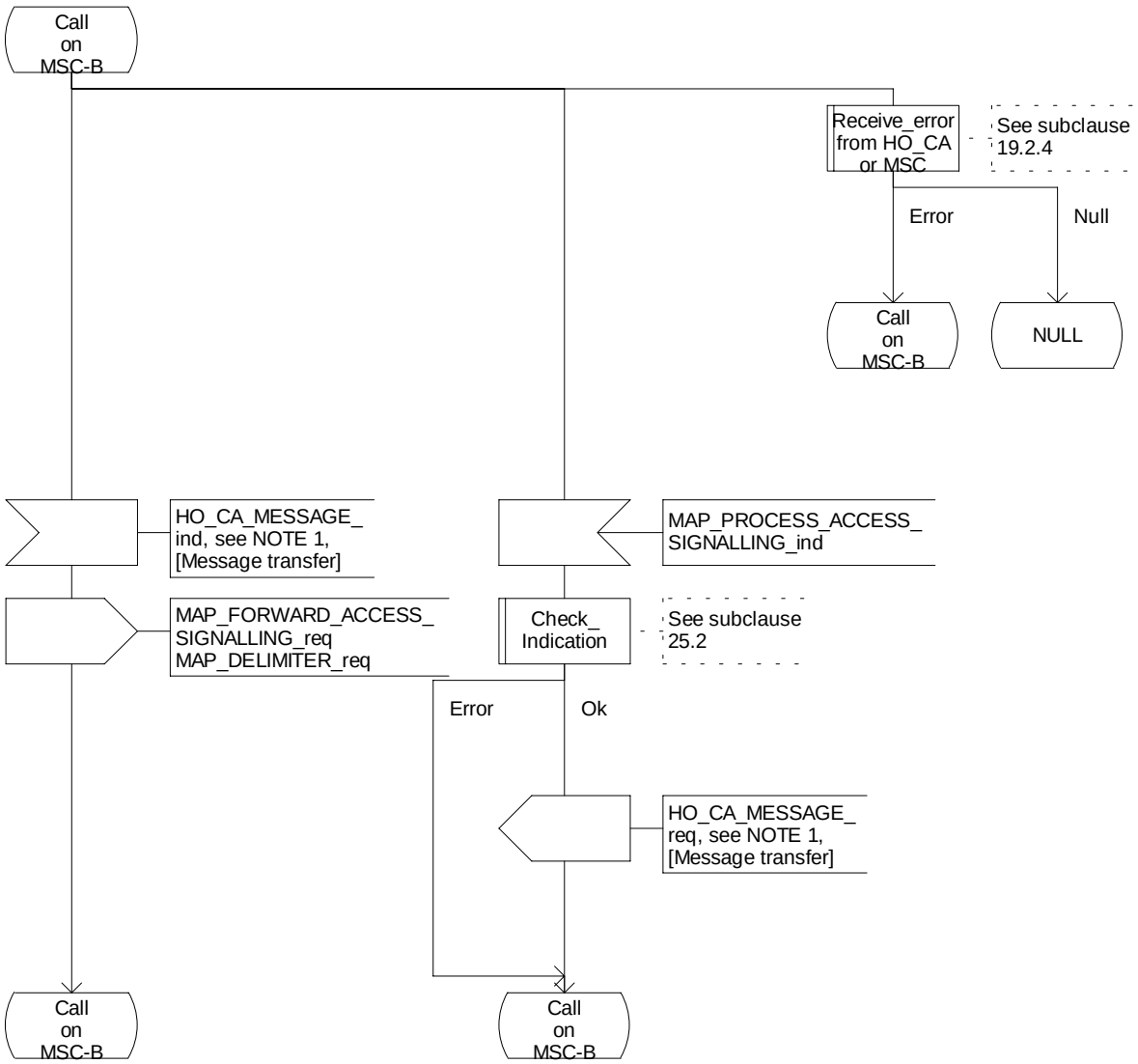
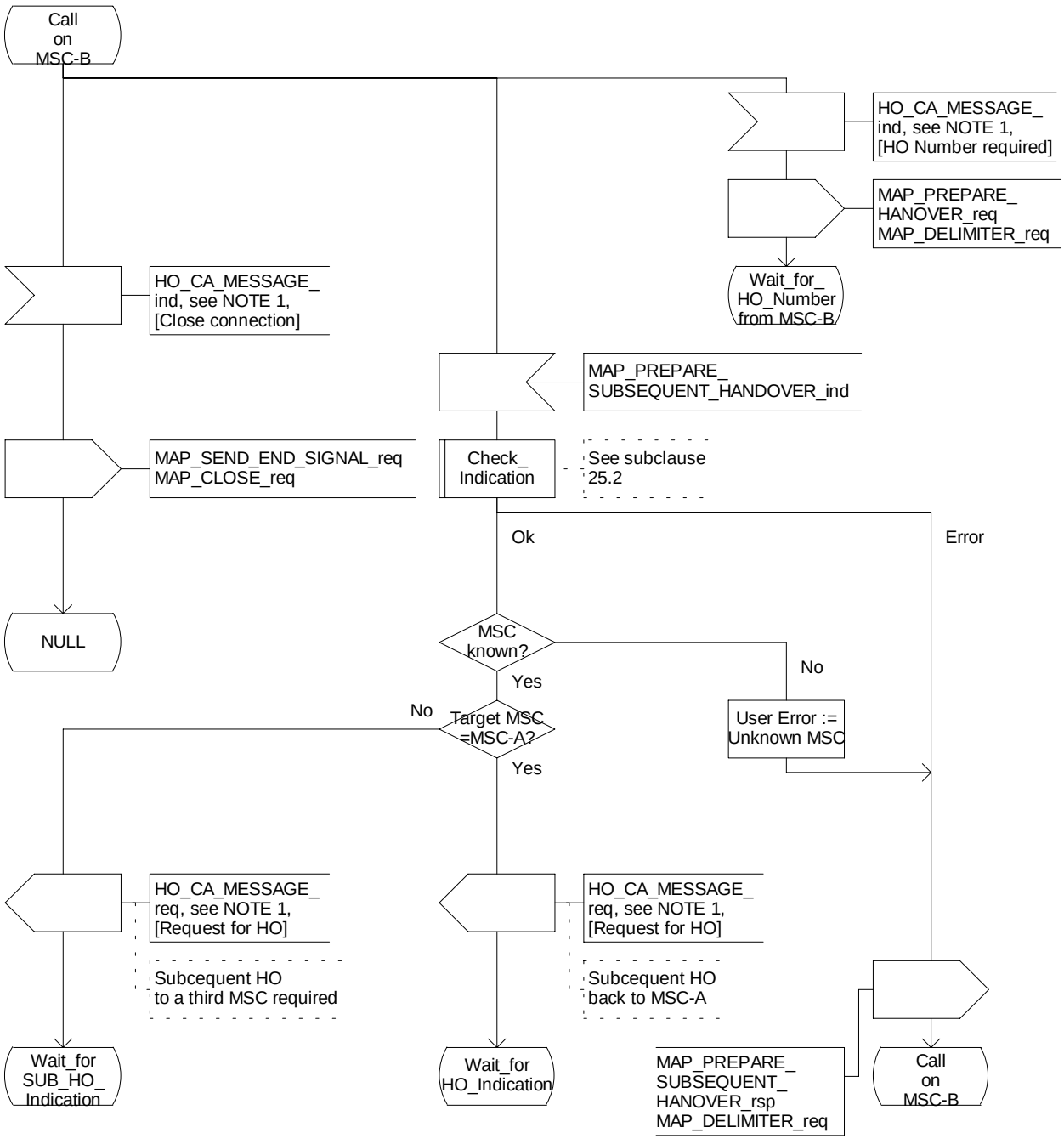



**Figure 19.2.2/1 (sheet 4 of 13): Process MSC_A_HO**

Figure 19.2 2/1: HO in MSC-A



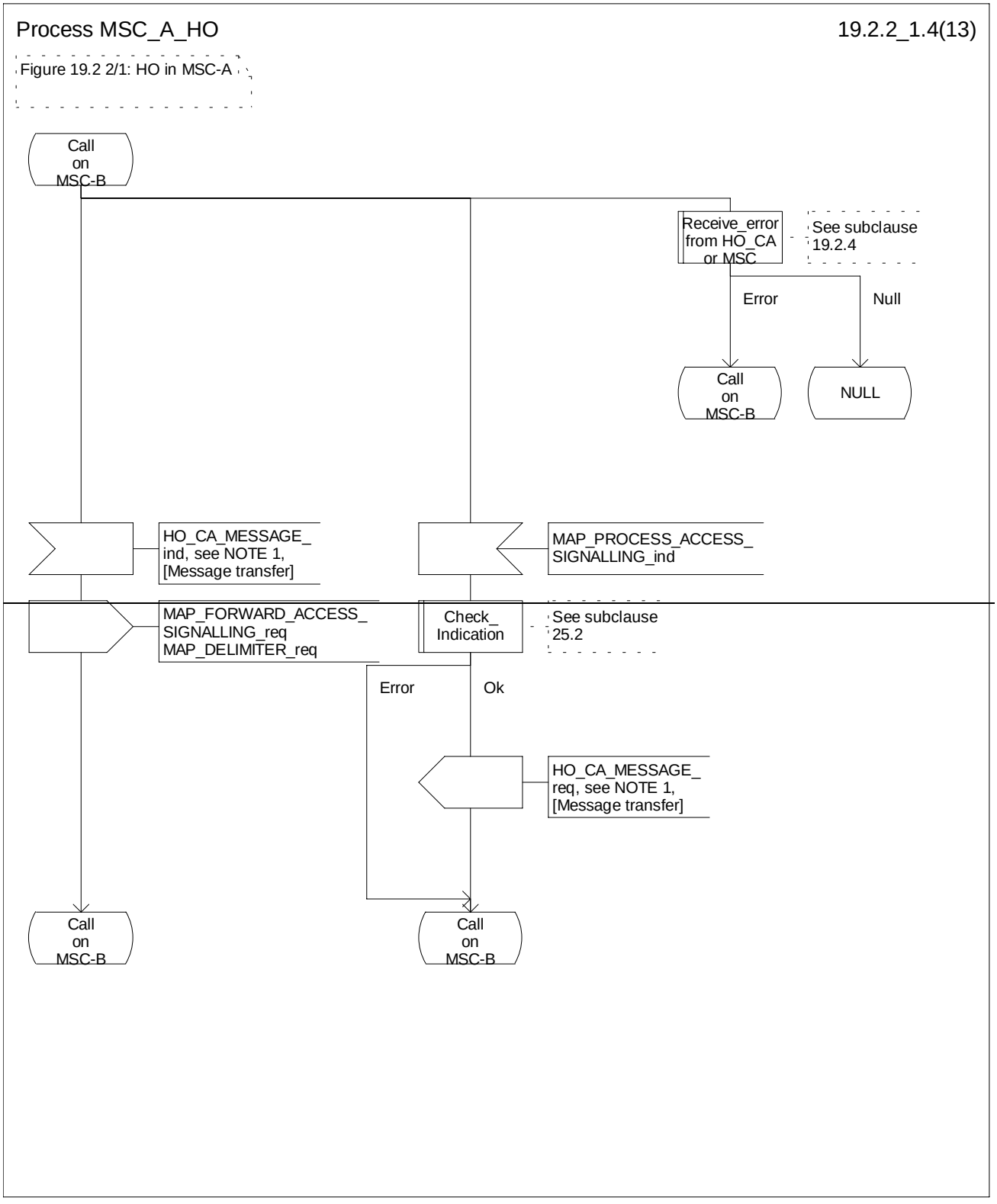



**Figure 19.2.2/1 (sheet 5 of 13): Process MSC_A_HO**

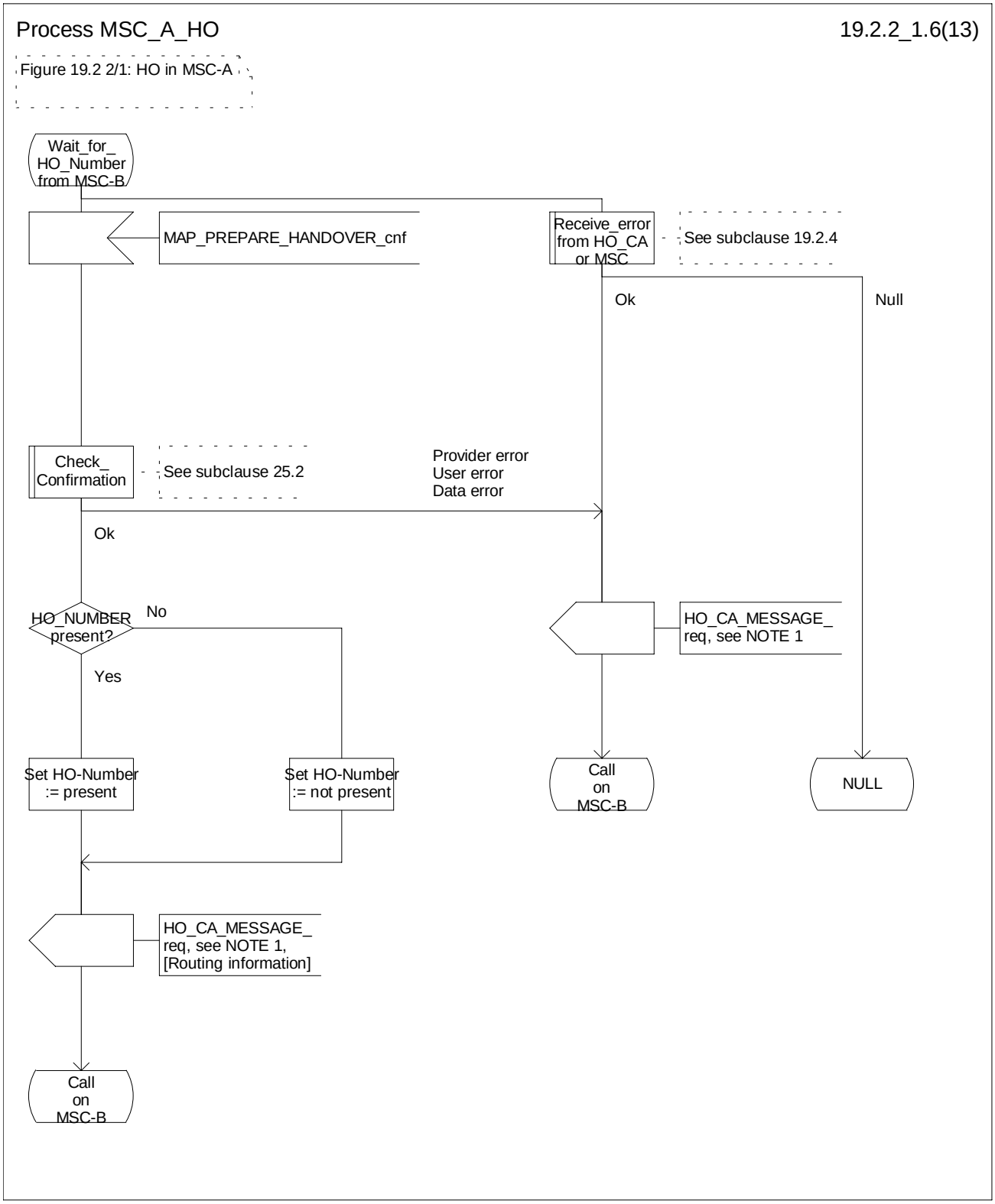



**Figure 19.2.2/1 (sheet 6 of 13): Process MSC_A_HO**

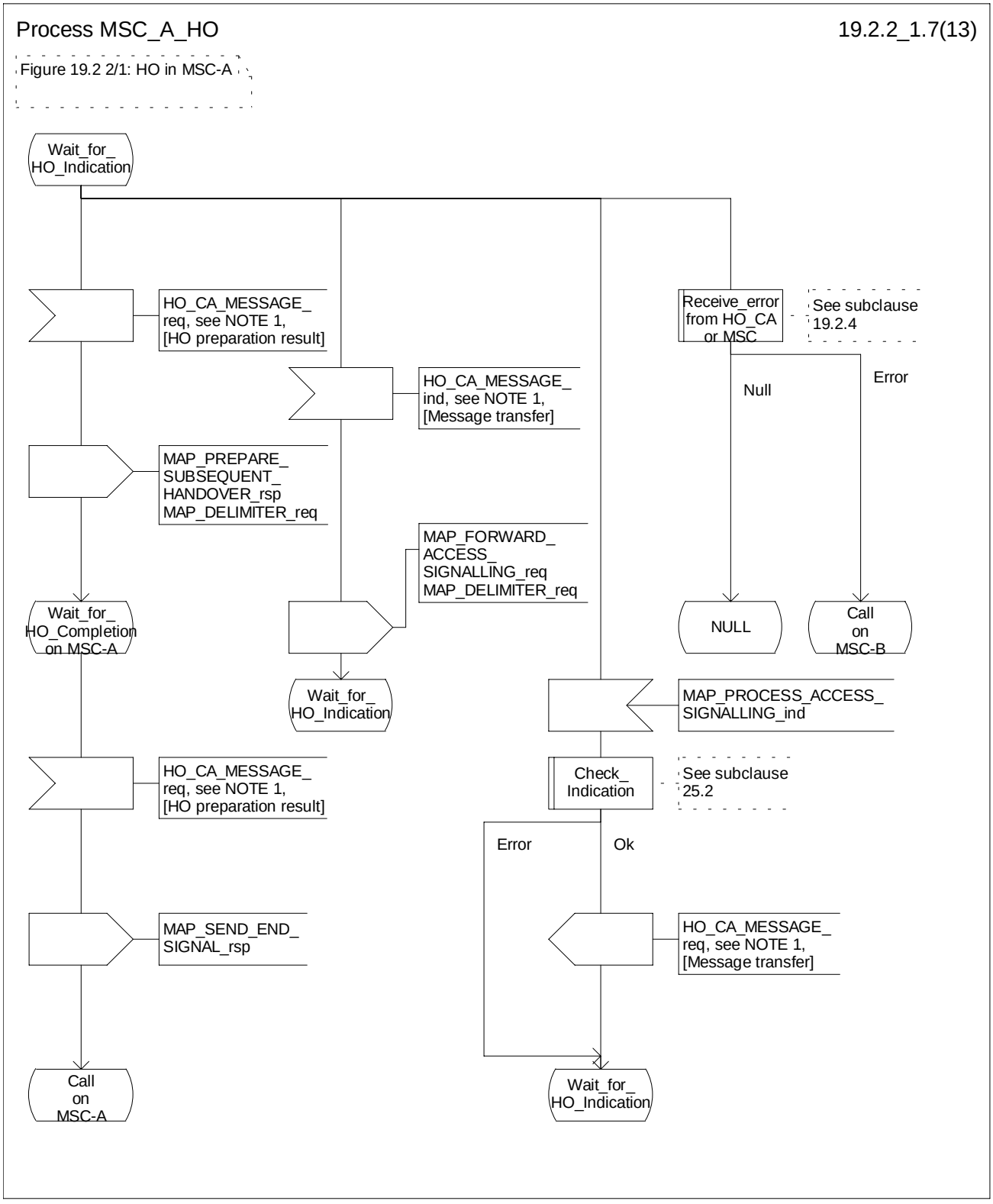



**Figure 19.2.2/1 (sheet 7 of 13): Process MSC_A_HO**

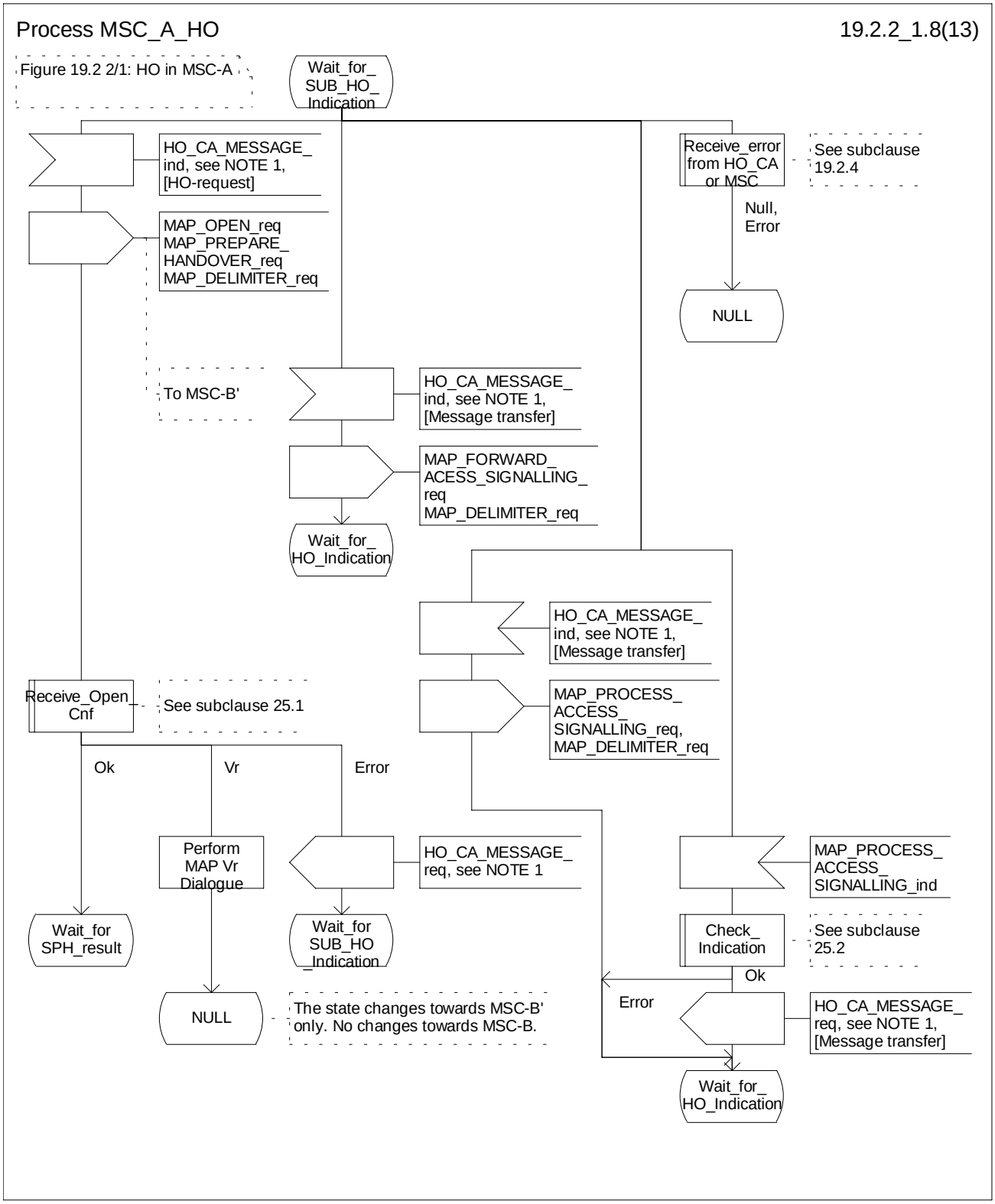
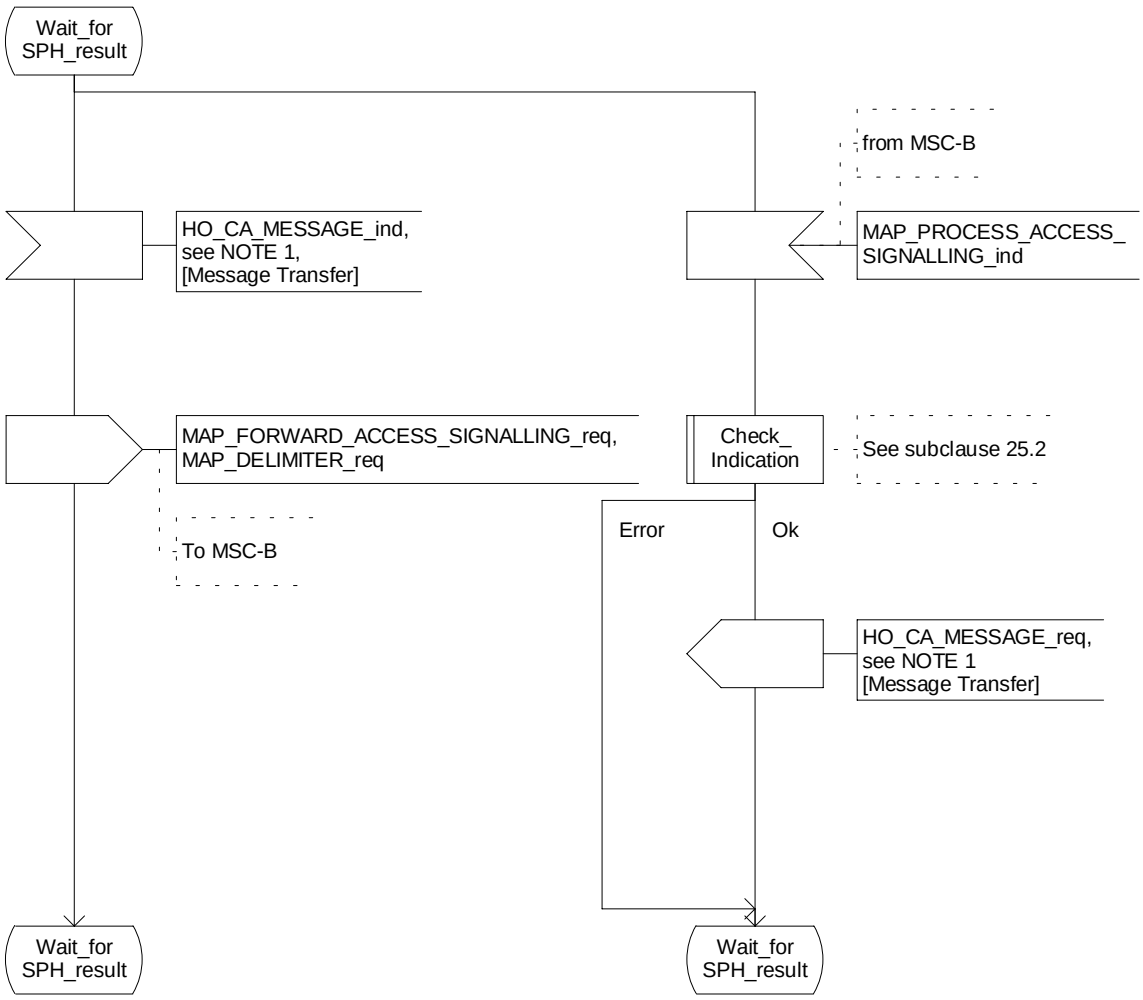



**Figure 19.2.2/1 (sheet 8 of 13): Process MSC_A_HO**

Figure 19.2 2/1: HO in MSC-A



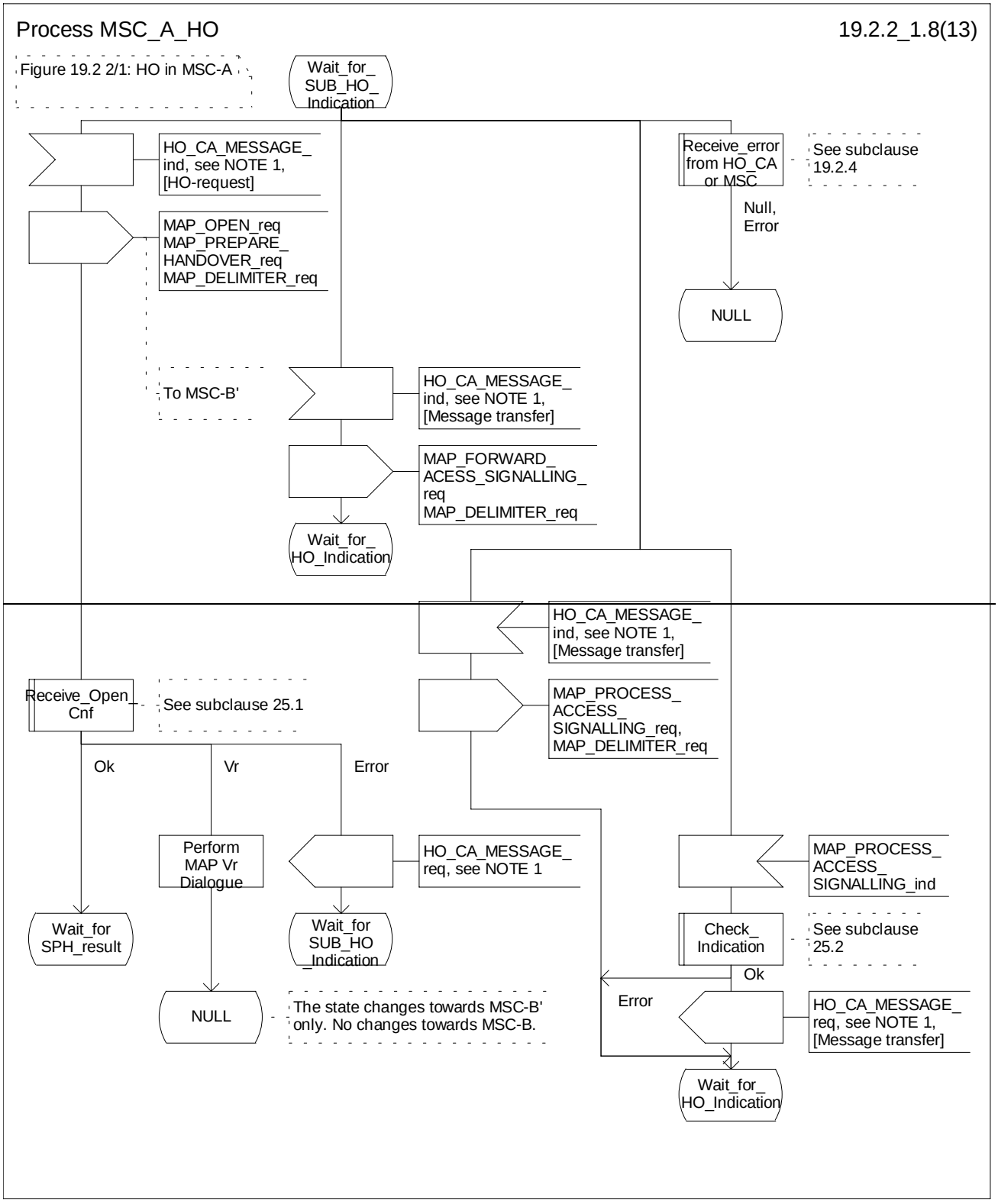



**Figure 19.2.2/1 (sheet 9 of 13): Process MSC_A_HO**

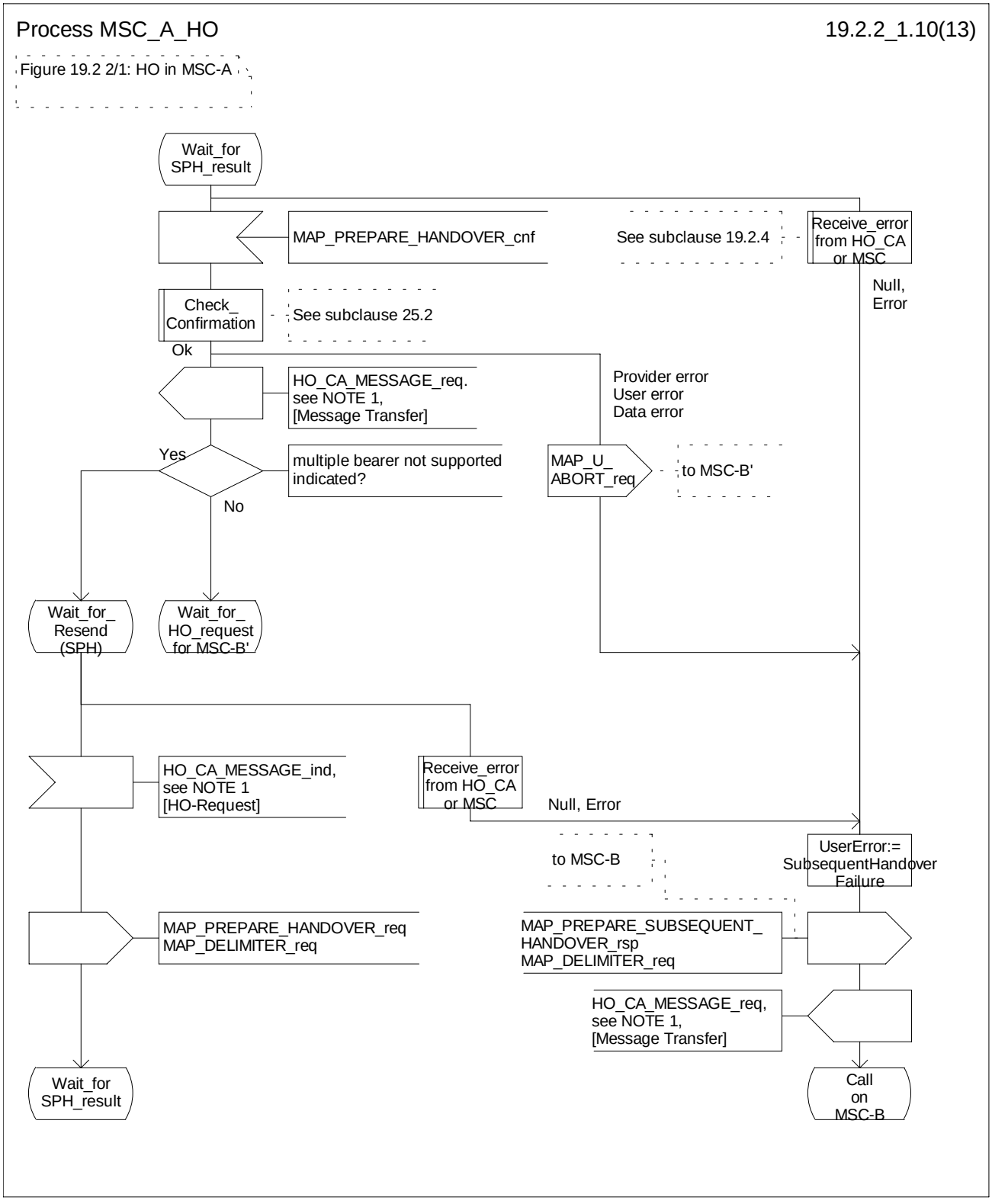



**Figure 19.2.2/1 (sheet 10 of 13): Process MSC_A_HO**

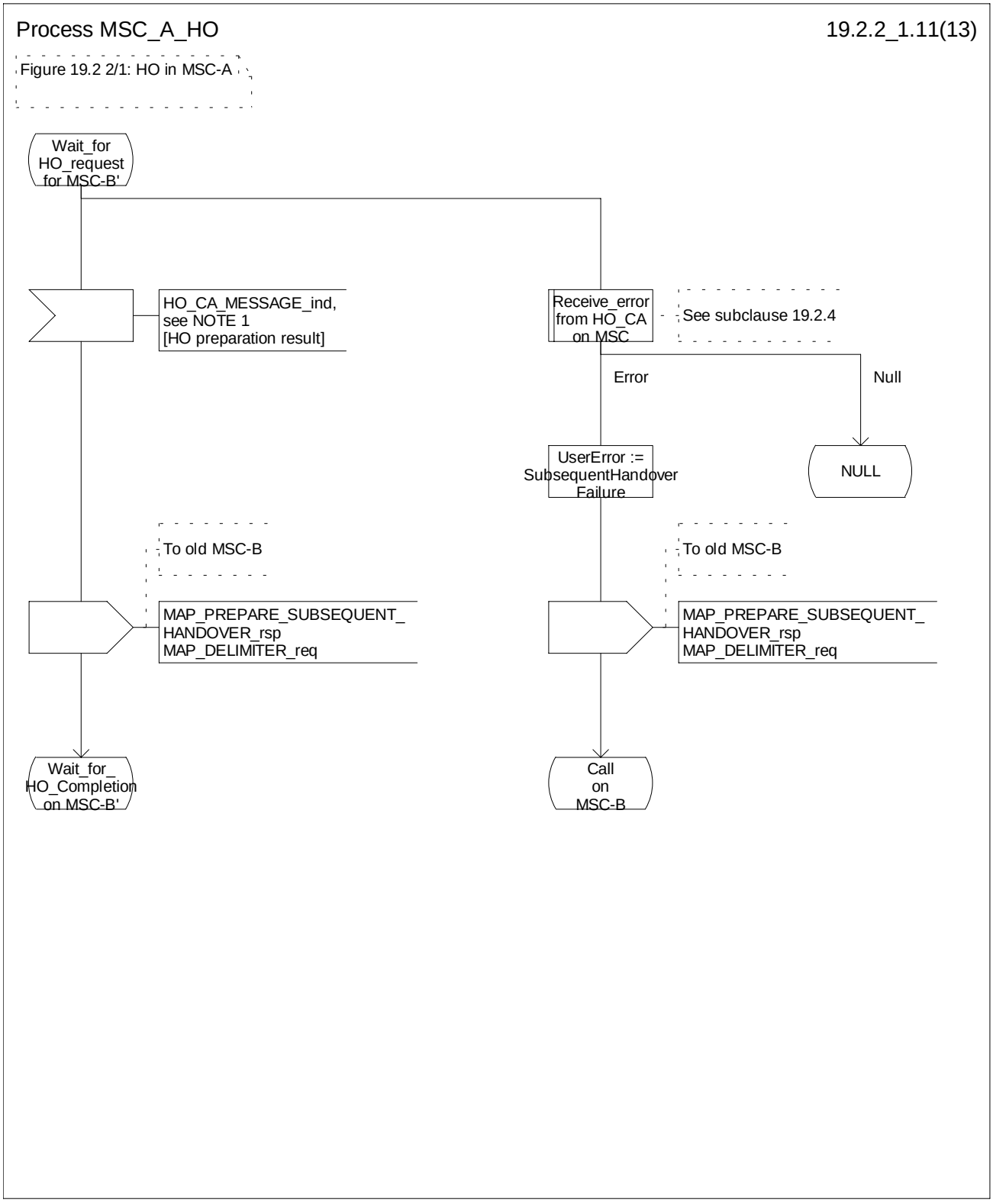



**Figure 19.2.2/1 (sheet 11 of 13): Process MSC_A_HO**

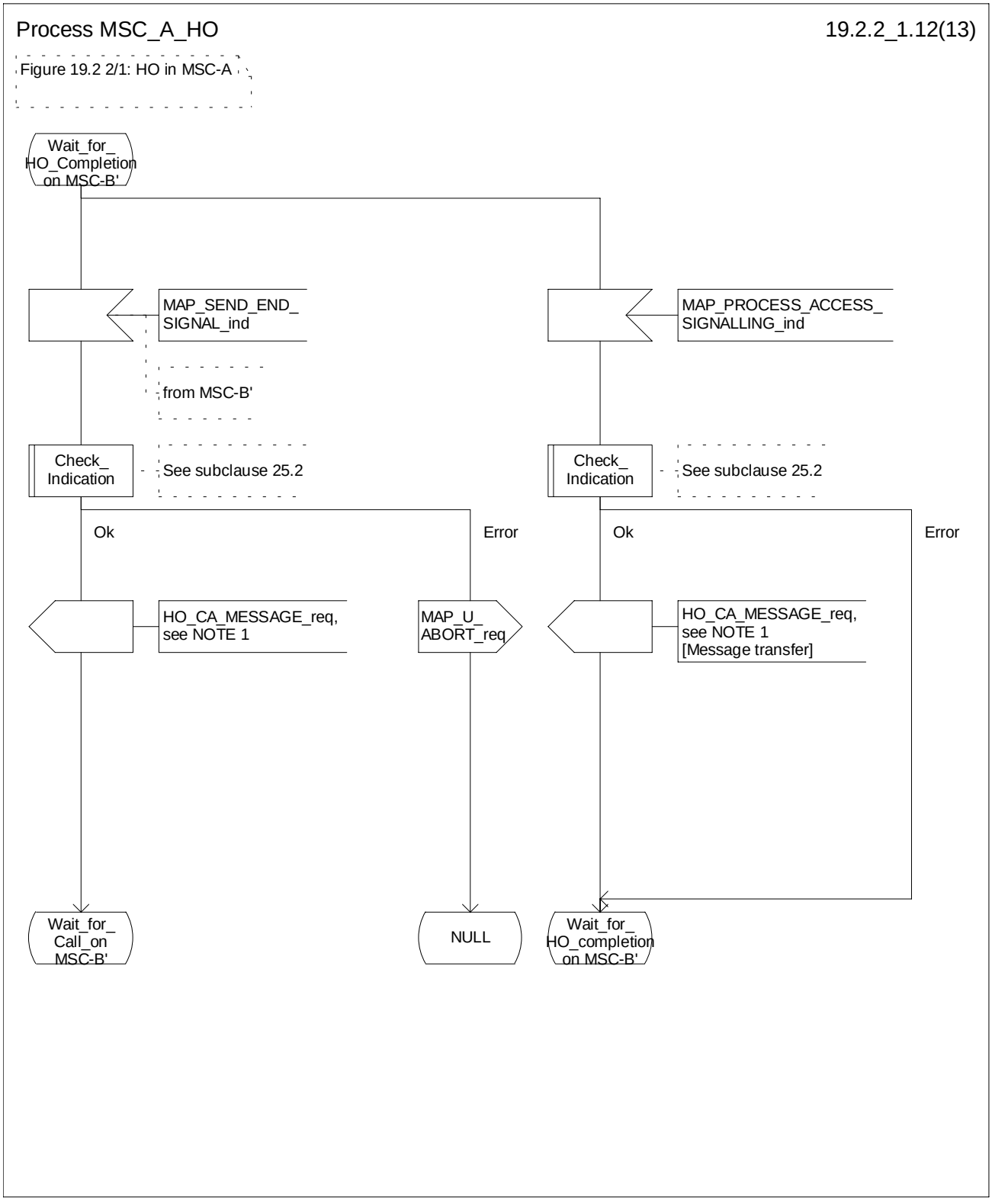



**Figure 19.2.2/1 (sheet 12 of 13): Process MSC_A_HO**

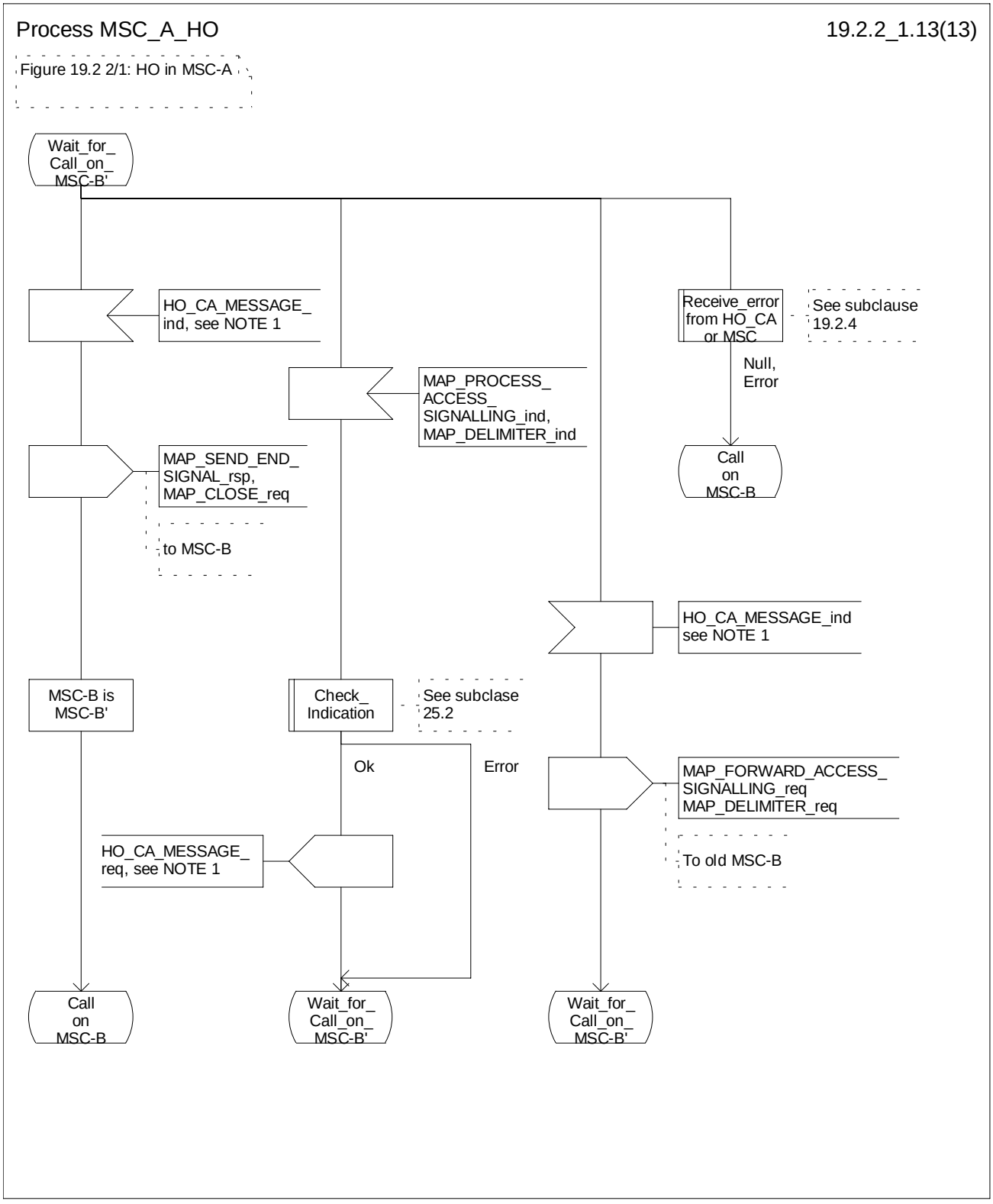



**Figure 19.2.2/1 (sheet 13 of 13): Process MSC_A_HO**

**3GPP TSG-N4 #4**
**Seattle, USA, 28 Aug - 01 Sep 2000**

***Tdoc 3GPP*** ***N4-000765***

# CHANGE REQUEST

| **29.010** | **CR** | **007r1** | Current Version: | 3.2.0 |
|---|---|---|---|---|

For submission to: TSG-CN#09

for approval [X]
for information [ ]

strategic [ ]
non-strategic [X]

**Proposed change affects:** (U)SIM [ ] ME [ ] UTRAN / Radio [X] Core Network [X]

**Source:** N4 **Date:** 31th August 2000

**Subject:** Corrections and updates to align with current R99 specs

**Work item:** TEI

**Category:**

| | | | |
|---|---|---|---|
| F | Correction | [X] | |
| A | Corresponds to a correction in an earlier release | [ ] | |
| 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:** 29.010 contains many messages used on various interfaces for handovers. In particular, the RANAP parameters and the MAP parameters introduced for UMTS have been added to 29.010. However in 29.010 v3.2.0 there are a number of these parameters that do not match the current specifications. These have been updated in this CR.

In addition a few clarifications have been added to the text.

**Clauses affected:** 1.1, 4.6, 4.6.1, 4.6.2, 4.7, 4.7.1, 4.8, 4.8.1, 4.8.2, 4.8.4

**Other specs affected:**

| | | |
|---|---|---|
| Other 3G core specifications | [ ] | → List of CRs: |
| Other GSM core specifications | [ ] | → List of CRs: |
| MS test specifications | [ ] | → List of CRs: |
| BSS test specifications | [ ] | → List of CRs: |
| O&M specifications | [ ] | → List of CRs: |

**Other comments:**

# 1 Scope

The scope of the present document is:

i) to provide a detailed specification for the interworking between information elements contained in layer 3 messages sent on the MS-MSC interface (Call Control and Mobility Management parts of GSM 04.08) and parameters contained in MAP services sent over the MSC-VLR interface (GSM 09.02) where the MSC acts as a transparent relay of information;

ii) to provide a detailed specification for the interworking between information elements contained in BSSMAP messages sent on the BSC-MSC interface (GSM 08.08) and parameters contained in MAP services sent over the MSC-VLR interface (GSM 09.02) where the MSC acts as a transparent relay of information;

iii) to provide a detailed specification for the interworking as in i) and ii) above when the MSC also processes the information.

Interworking for supplementary services is given in GSM 09.11. Interworking for the short message service is given in GSM 03.40 and GSM 04.11. Interworking between the call control signalling of GSM 04.08 and the PSTN/ISDN is given in GSM 09.03, GSM 09.07 and GSM 09.08. Interworking between the 'A' and 'E' interfaces for inter-MSC handover signalling is given in GSM 09.07 and 09.08.

## 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.


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

[2] 3G TSº23.009: "Handover procedures".

[3] 3G TSº23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".

[4] 3G TSº24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols-Stage 3".

[5] 3G TSº24.010: "Mobile radio interface layer 3 Supplementary services specification - General aspects".

[6] 3G TSº24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[7] 3G TSº25.413: "Iu interface RANAP signalling".

[8] 3G TSº29.002: "Mobile Application Part (MAP) specification".

[9] 3G TSº29.007: "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] 3G TSº29.011: "Digital cellular telecommunications system (Phase 2+); Signalling interworking for supplementary services".

[11] GSM 08.08: "Digital cellular telecommunications system (Phase 2+); Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".

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

[13] GSM 09.08: "Digital cellular telecommunications system (Phase 2+); Application of the Base Station System Application Part (BSSAP) on the E-interface".

[14] 3G TSº29.108: "Application of the Radio Access Network Application Part (RANAP) on the E-interface"

## 1.2 Abbreviations

Abbreviations used in the present document are listed in 3G TS 21.905.

**NEXT MODIFIED SECTION**

## 4.6 Inter-MSC Handover (UMTS to GSM)

The general principles of the handover procedures are given in 3G TS 23.009. 3G TS 29.010 gives the necessary information for interworking between the 3G TS 25.413 RANAP protocol, GSM handover procedures and the 3G TS 29.002 MAP protocol. The RANAP protocol is used between the RNS and the 3G-MSC.

The following three principles apply for the Inter-MSC handover UMTS to GSM:

The BSSMAP parameters required for Inter-MSC handover UMTS to GSM are generated as in GSM.

Received BSSMAP parameters, e.g. cause code or Handover command, are mapped to the appropriate RANAP parameters, e.g. cause code transparent container to source RNS.

### 4.6.1 Basic Inter-MSC Handover

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

The signalling at initiation, execution, completion of the Basic Inter-MSC handover procedure is shown in figures 21 to 26 with both possible positive or negative outcomes.

Additionally figure 21b shows the possible interworking when the trace related message is transparently transferred on the E-Interface at Basic Inter-MSC Handover initiation.

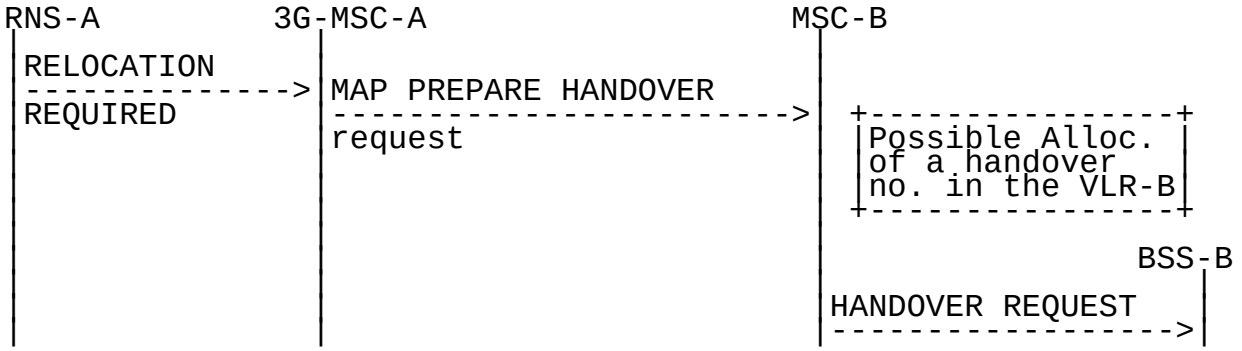



**Figure 21a: Signalling for Basic Inter-MSC Handover initiation (no trace related messages transferred)**

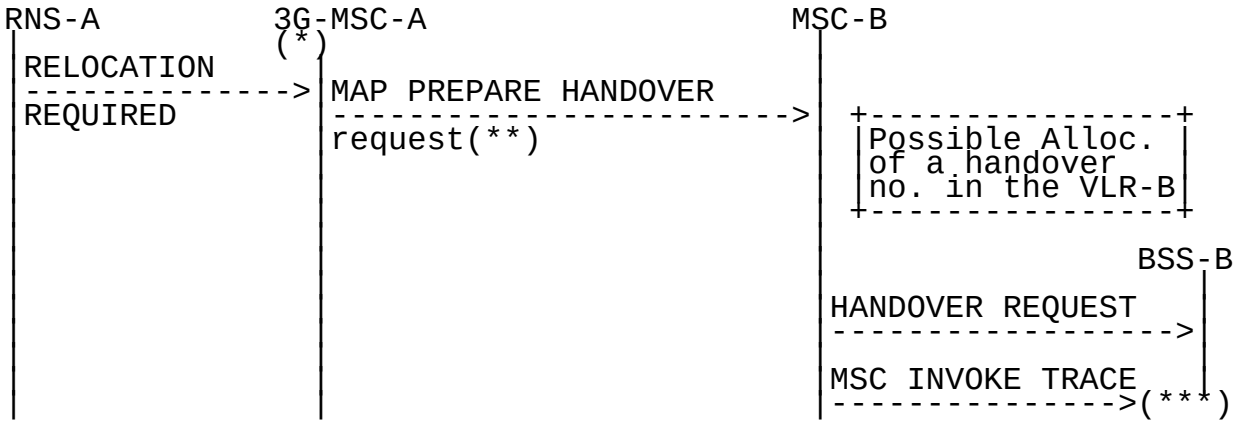



**Figure 21b: Signalling for Basic Inter-MSC Handover initiation (MSC invoke trace message transferred)**

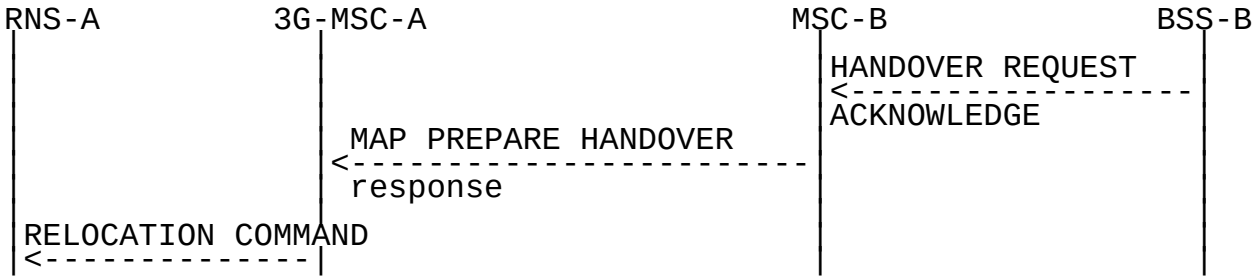
(*): Tracing invocation has been received from VLR.

(**): In that case, HANDOVER REQUEST and MSC INVOKE TRACE messages are included within the BSS-apdu parameter.

(***): MSC INVOKE TRACE is forwarded to BSS-B if supported by MSC-B.

Possible Positive outcomes:

a) successful radio resources allocation and handover number allocation (if performed):




b) radio resources allocation queued and successful handover number allocation (if performed). Later successful radio resources allocation indication:

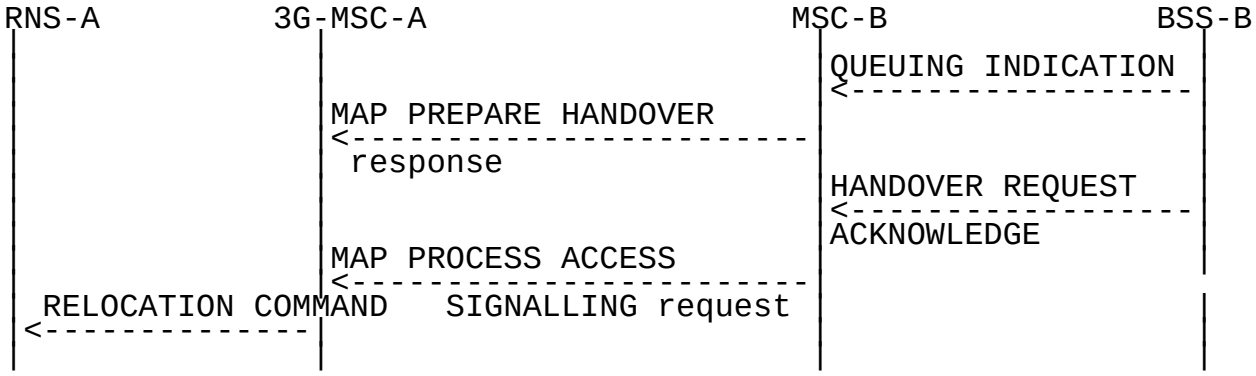
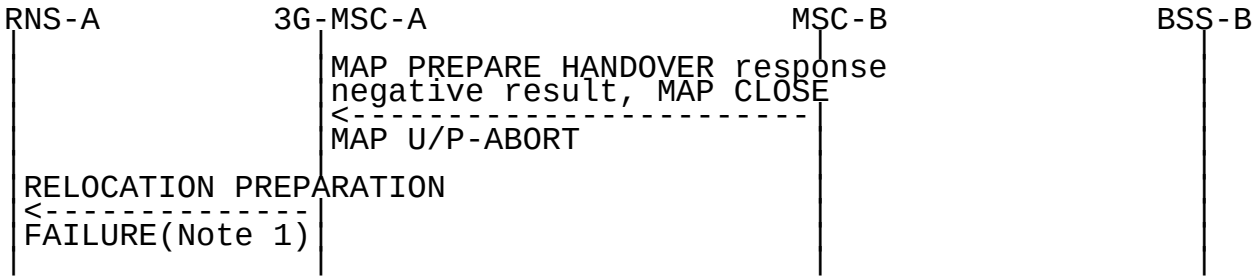


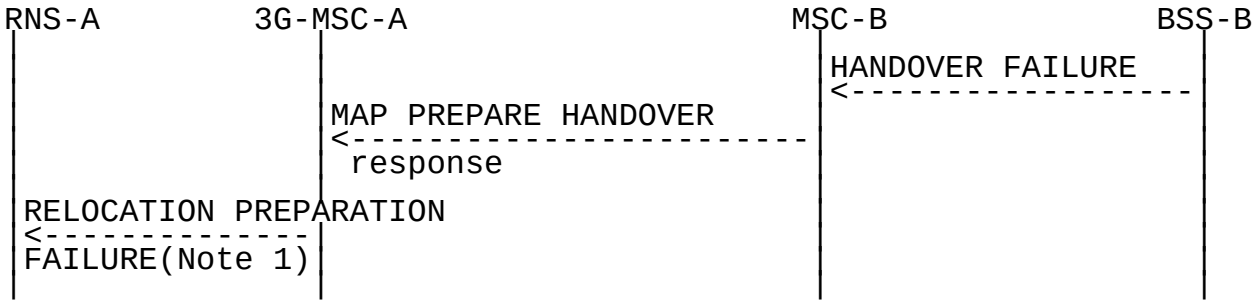

**Figure 22: Signalling for Basic Inter-MSC Handover execution (Positive outcomes)**

Possible Negative outcomes:

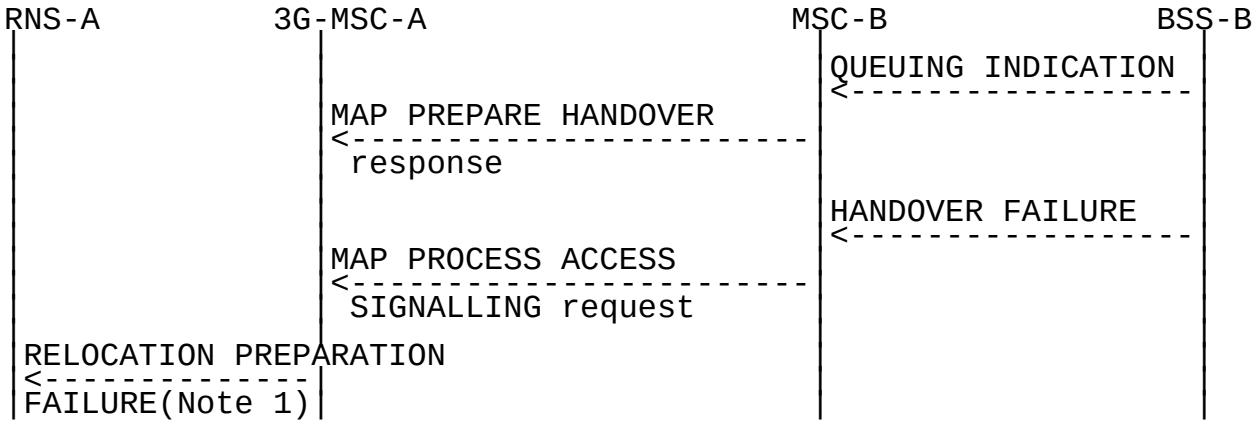
c) user error detected, or handover number allocation unsuccessful (if performed), or component rejection or dialogue abortion performed by MSC-B:




d) radio resources allocation failure:




e) radio resources allocation queued and successful handover number allocation (if performed). Later unsuccessful radio resources allocation:




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

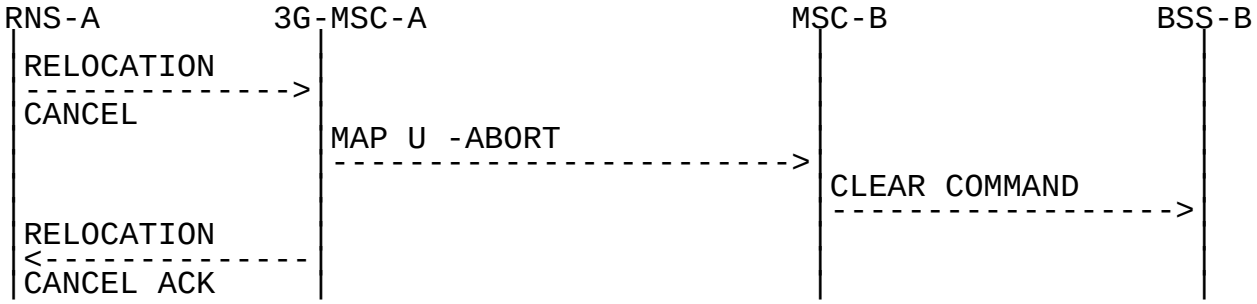



**Figure 23: Signalling for Basic Inter-MSC Handover execution (Negative outcomes)**

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

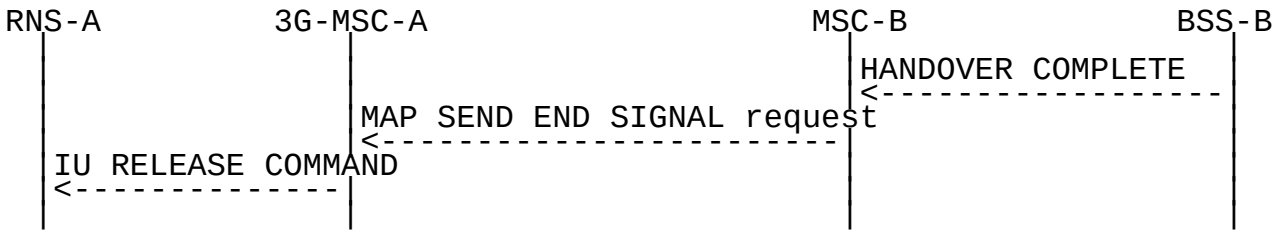



**Figure 24: Signalling for Basic Inter-MSC Handover completion**

Positive outcome:

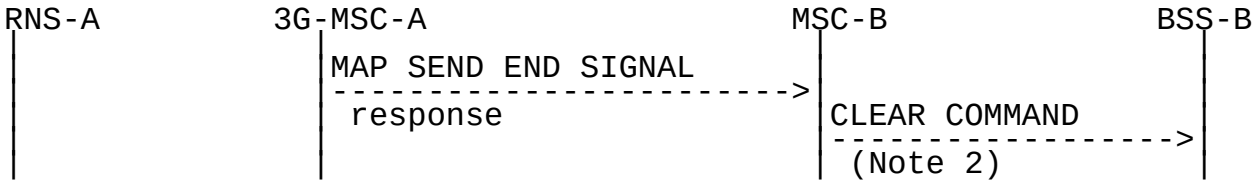



**Figure 25: Signalling for Basic Inter-MSC Handover completion (Positive outcome)**

Negative outcome:

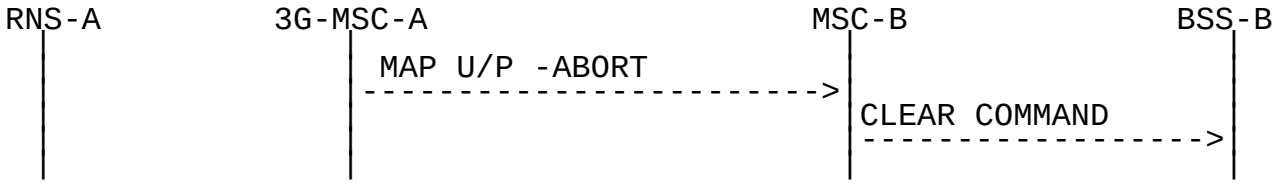



**Figure 26: Signalling for Basic Inter-MSC Handover completion (Negative outcome)**

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

The handover procedure is normally triggered by RNS-A by sending a RELOCATION REQUIRED message on Iu-Interface to 3G-MSC-A. The invocation of the Basic Inter-MSC handover procedure is performed and controlled by 3G-MSC-A. The sending of the MAP Prepare-Handover request to MSC-B is triggered in 3G-MSC-A upon receipt of the RELOCATION REQUIRED message. For compatibility reason, the cell identity of the cell where the call is to be handed over in MSC-B area, provided in the RELOCATION REQUIRED message, is mapped into targetCellId MAP parameter and the HANDOVER REQUEST message is encapsulated in the bss-APDU MAP parameter of the Prepare-Handover MAP request. MSC-B can invoke another operation towards the VLR-B (allocation of the handover number described in 3G TS 29.002).

Additionally, if tracing activity has been invoked, the trace related message can be transferred on the E-Interface encapsulated in the bss-APDU MAP parameter of the Prepare-Handover Request. If transferred, one complete trace related message at a time shall be included in the bss-APDU MAP parameter after the HANDOVER REQUEST message.

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

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RELOCATION REQUIRED | MAP PREPARE HANDOVER request<br>-ho-NumberNotRequired<br>-targetCellId<br>-bss-APDU(<br>HANDOVER REQUEST, | 1<br>2 |
| | ~~BSSMAP~~ RANAP information elements | | |
| | MSC INVOKE TRACE) | | |
| Positive result | RELOCATION CMD | MAP PREPARE HANDOVER response<br>-handover number<br>-bss-APDU(<br>QUEUING INDICATION<br>or HANDOVER REQUEST<br>ACKNOWLEDGE) | 3 |
| Negative result | RELOCATION PREP FAILURE | MAP PREPARE HANDOVER | 4 |
| Failure | ~~equipment failure~~ Relocation failure in target RNC/CN or target system | System | |
| | ~~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 BSSMAP information elements are already stored in 3G-MSC.

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

NOTE 2: The process performed on the RAN~~P~~AP information elements received in the RELOCATION REQUIRED message is described in the 3G TS 25.413.

NOTE 3: The response to the Prepare-Handover request can include in its bss-APDU parameter, identifying the GSM 08.06 protocol, either a BSSMAP QUEUING INDICATION, or a BSSMAP HANDOVER REQUEST ACKNOWLEDGE.

In the first case, 3G-MSC-A shall wait for the radio resources allocation response from MSC-B, transmitted to 3G-MSC-A as described in subclause 4.5.4.

In the second case, the positive result triggers in 3G-MSC-A the sending on Iu-Interface of the RELOCATION CMD.

In the third case, the positive result triggers in 3G-MSC-A.

NOTE 4: The possible sending of the RELOCATION PREP FAILURE message is described in the 3G 25.413.

(The possible sending of the RELOCATION PREP FAILURE message upon receipt of the HANDOVER FAILURE is out of the scope of the 3G TS 29.010 and lies in the 3G TS 25.413).

The interworking between Send End Signal and HANDOVER COMPLETE in MSC-B is as follows:

| | 08.08 | 29.002 | Notes |
|---|---|---|---|
| Forward message | HANDOVER COMPLETE | MAP SEND END SIGNAL request -bss-APDU( HANDOVER COMPLETE) | |
| Positive result | CLEAR COMMAND -Call Control release | MAP SEND END SIGNAL response | 1 |
| Negative result | CLEAR COMMAND -Call Control release<br>-Call Control release | MAP CLOSE<br>MAP U/P -ABORT | 2 |

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

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

The interworking between Send End Signal and IU RELEASE COMMAND in 3G_MSC-A is as follows:

| | 29.002 | 25.413 | Notes |
|---|---|---|---|
| Forward message | MAP SEND END SIGNAL response -bss-APDU( HANDOVER COMPLETE) | IU RELEASE COMMAND -~~Handover~~ Successful Relocation | |
| Positive result | | | |
| Negative result | | | |

The interworking between RELOCATION CANCEL in case of reversion to old channel of the UE and User Abort in 3G-MSC-A is as follows:

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RELOCATION CANCEL<br>- ~~Reversion to old channel~~Relocation cancelled | MAP U -ABORT | |
| Positive result | RELOCATION CANCEL ACKNOWLEDGEMENT | | |
| Negative result | | | |

## 4.6.2 Subsequent Inter-MSC Handover from 3G-MSC-B back to MSC-A

When a Mobile Station is being handed over back to MSC-A, the procedure (described in TS 23.009) requires interworking between A-Interface, Iu-interface and E-Interface.

The signalling at initiation, execution and completion of the Subsequent Inter-MSC handover procedure is shown in figures 27 to 31.

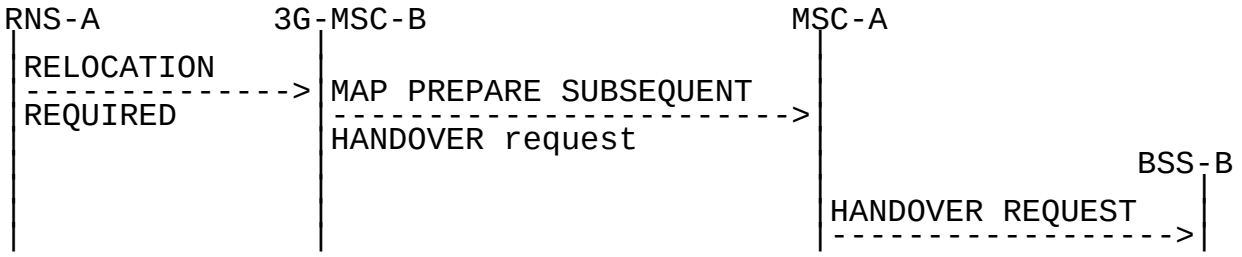
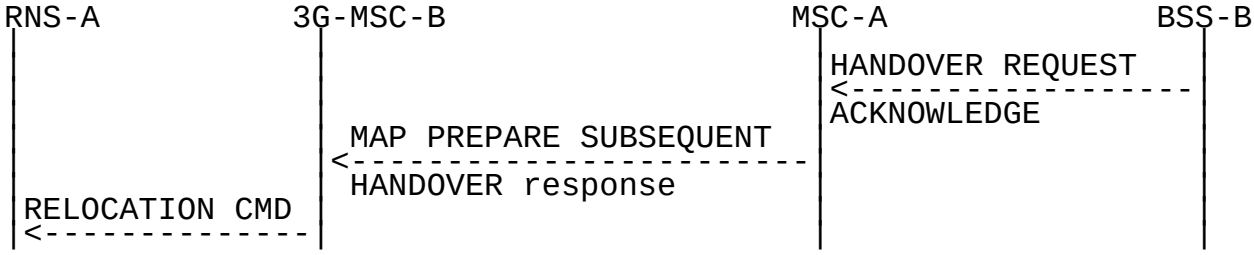



**Figure 27: Signalling for Subsequent Inter-MSC Handover back to MSC-A initiation**

Possible Positive outcomes:

a) successful radio resources allocation:




b) radio resources allocation queued. Later successful radio resources allocation indication:

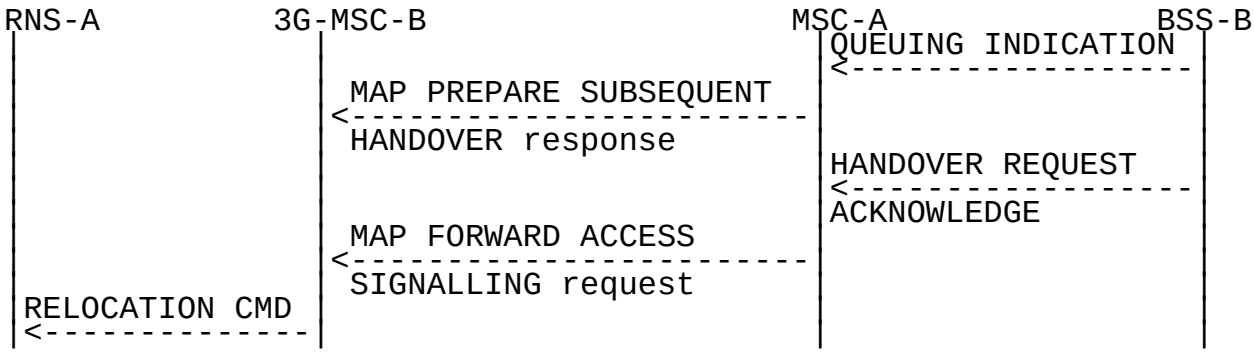
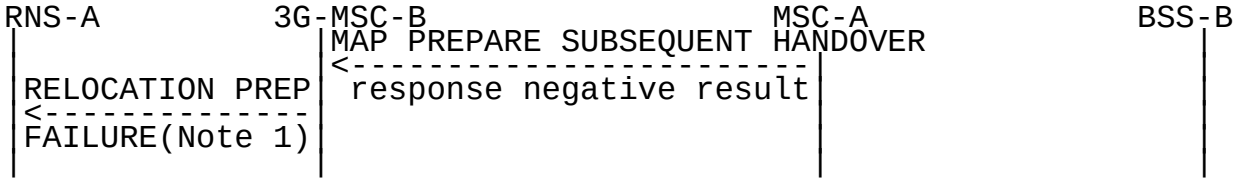


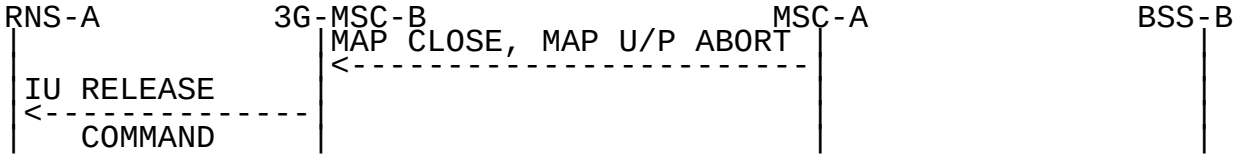

**Figure 28: Signalling for Subsequent Inter-MSC Handover back to MSC-A execution (Positive outcome)**

Possible Negative outcomes:

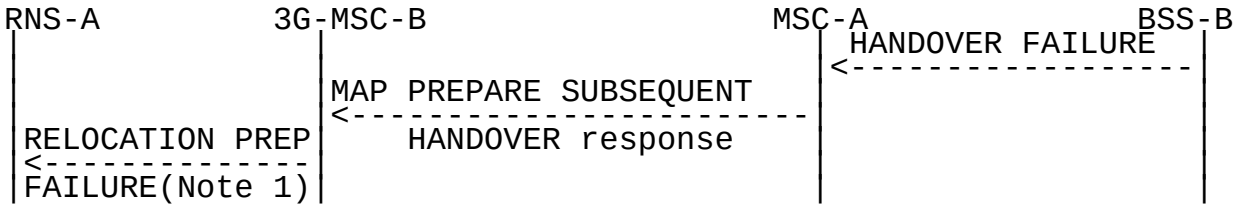
c) user error detected, or component rejection or dialogue abortion performed by MSC-A:




d) component rejection or dialogue abortion performed by MSC-A:




e) radio resources allocation failure:




f) radio resources allocation queued. Later unsuccessful radio resources allocation:

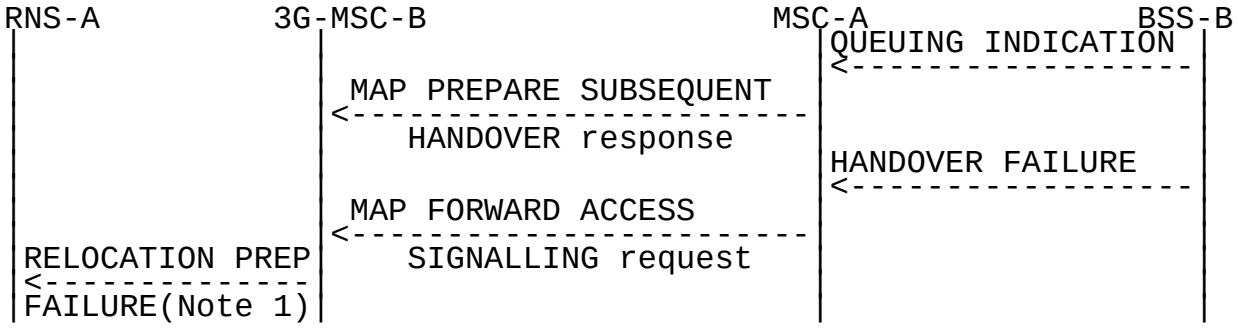



**Figure 29: Signalling for Subsequent Inter-MSC Handover back to MSC-A execution (Negative outcome)**

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

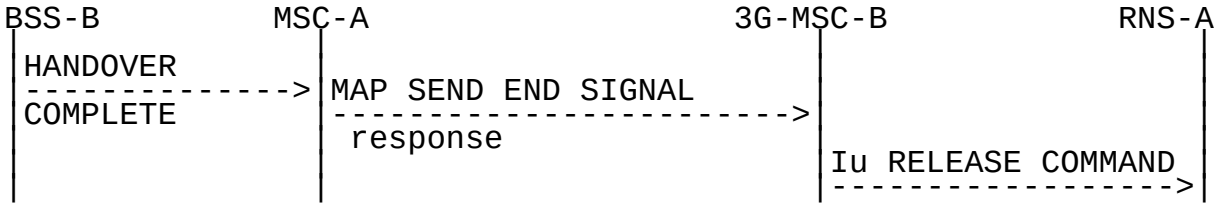



**Figure 30: Signalling for Subsequent Inter-MSC Handover back to MSC-A completion (Successful completion of the procedure)**

NOTE: Positive outcome case shown in figure 9.

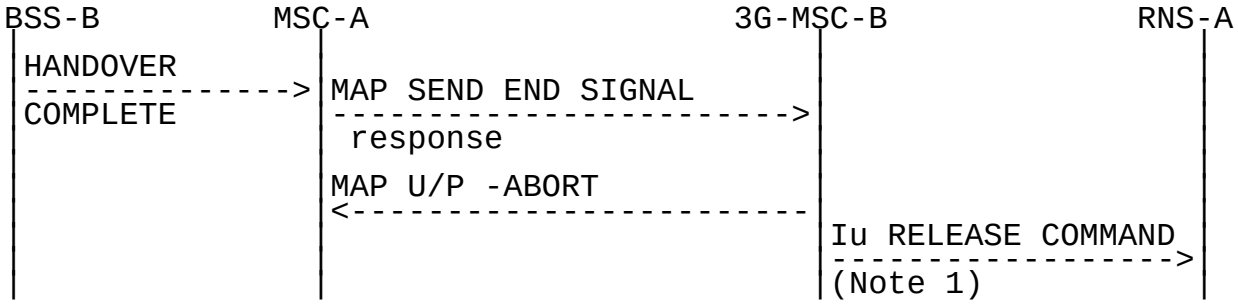



**Figure 31: Signalling for Subsequent Inter-MSC Handover back to MSC-A completion (Unsuccessful completion of the procedure)**

NOTE 1: Abnormal end of the procedure which triggers the clearing of all resources in 3G-MSC-B.

The interworking between Prepare Subsequent Handover and RELOCATION REQUIRED is as follows:

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | REL. REQUIRED | MAP PREPARE SUBSEQUENT HANDOVER request<br>-target MSC number<br>-targetCellId<br>-bss-APDU( HANDOVER REQUEST) | |
| | RANAP information elements: | BSSMAP information elements: | |
| | MS Classmark 2 | CM2 | |
| | Source Id | Cell Id (serving) | |
| | Target Id | Cell Id (target) | |
| | Cause | Cause | 1 |
| | MS Classmark 3 | CM3 | |
| | | info stored/generated in/by 3G-MSC-B:<br>Message Type<br>Channel Type<br>Speech version<br>Priority<br>Interference Band to be used | |
| Positive result | RELOCATION CMD. | MAP PREPARE SUBSEQUENT HANDOVER response<br>-bss-APDU( QUEUING INDICATION or HANDOVER REQUEST ACKNOWLEDGE or HANDOVER FAILURE) | 2 |
| | RANAP information elements: | BSSMAP information elements: | |
| | L3 information | L3 information | |
| Negative result | REL. PREP. FAILURE | MAP PREPARE SUBSEQUENT HANDOVER response | 3 |
| | equipment failure | Relocation Failure in Target CN/RNC or Target SystemUnknown MSC | |
| | equipment failure | Relocation Failure in Target CN/RNC or Target System Subsequent Handover Failure | |
| | equipment failure | Relocation Failure in Target CN/RNC or Target System UnexpectedDataValue | |
| | equipment failure | Relocation Failure in Target CN/RNC or Target System Data Missing | |
| | Iu RELEASE COMMAND | | |
| | equipment failure | Relocation Cancelled MAP CLOSE | |
| | equipment failure | Relocation Cancelled MAP U/P -ABORT | |

NOTE 1: The mapping of cause code values between BSSMAP and RANAP is FFS.

NOTE 2: The response to the Prepare-Subsequent-Handover request can include in its bss-APDU parameter, identifying the GSM 08.06 protocol, a BSSMAP QUEUING INDICATION, or a BSSMAP HANDOVER REQUEST ACKNOWLEDGE or a BSSMAP HANDOVER FAILURE.

In the first case, 3G-MSC-B shall wait for the radio resources allocation response from MSC-A, transmitted to 3G-MSC-B as described in subclause 4.5.4.

In the second case, the positive result triggers in 3GMSC-B the sending on Iu-Interface of the RELOCATION COMMAND.

In the third case, the positive result triggers in 3G-MSC-B the sending of the RELOCATION PREPARATION FAILURE.

NOTE 3: The possible sending of the RELOCATION PREPARATION FAILURE message is described in 3G TS 25.413.

The interworking between Send End Signal Result and HANDOVER COMPLETE in MSC-A is as follows:

| | 08.08 | 29.002 | Notes |
|---|---|---|---|
| Forward message | HANDOVER COMPLETE | MAP SEND END SIGNAL response | |
| Positive result | | | |
| Negative result | | MAP U/P -ABORT | 1 |

NOTE: The abortion of the dialogue ends the handover procedure with 3G-MSC-B.

## 4.6.3 Subsequent Inter-MSC Handover to third MSC

When a Mobile Station is being handed over to a third MSC, the procedure (described in 3G TS 23.009) does require one specific interworking case in MSC-A between E-Interface from 3G-MSC-B and E-Interface from MSC-B' other than the combination of the ones described in subclauses 4.6.1 and 4.6.2.

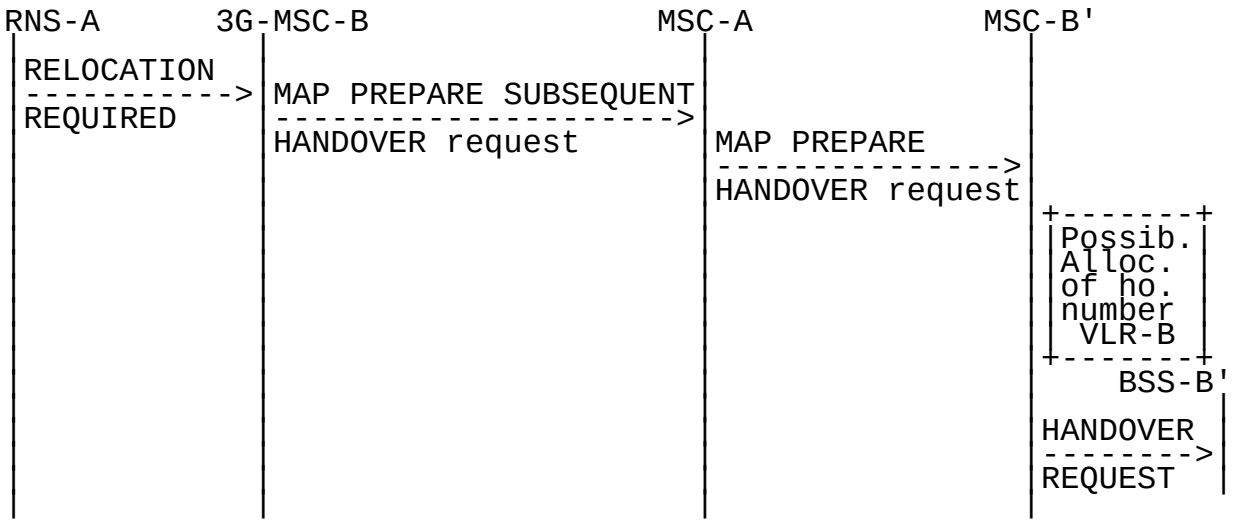
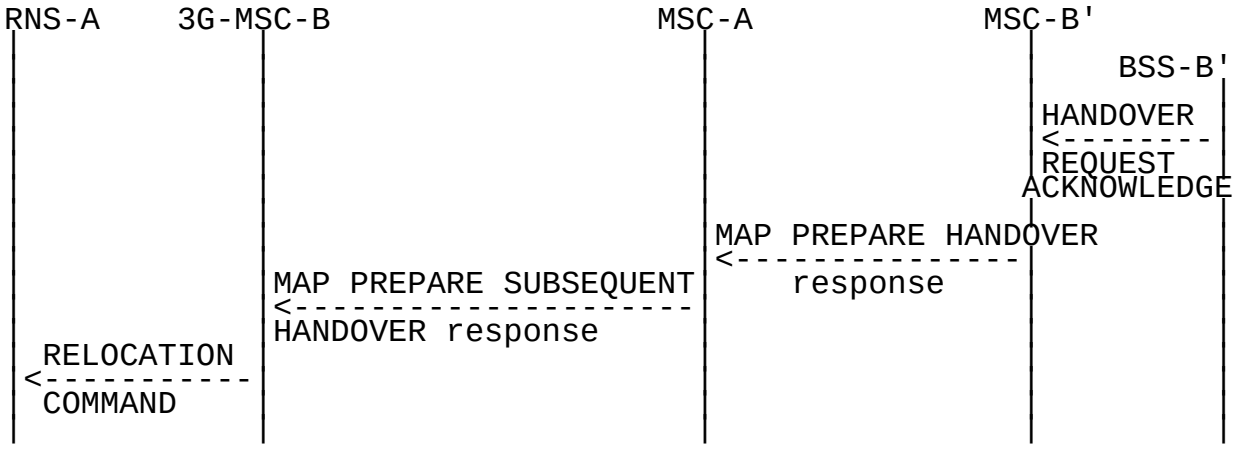



**Figure 32: Signalling for Subsequent Inter-MSC Handover to third MSC (MSC-B') initiation**

Possible Positive outcomes:

a) successful radio resources allocation:




b) radio resources allocation queued and successful handover number allocation, if performed. Later successful radio resources allocation indication:

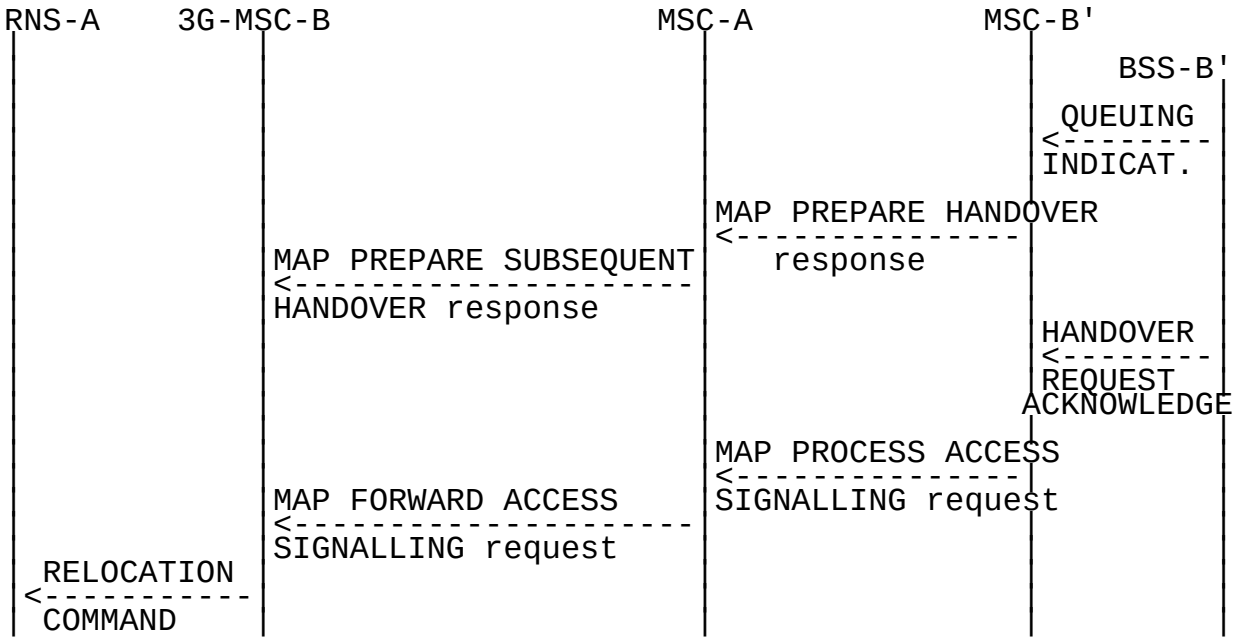
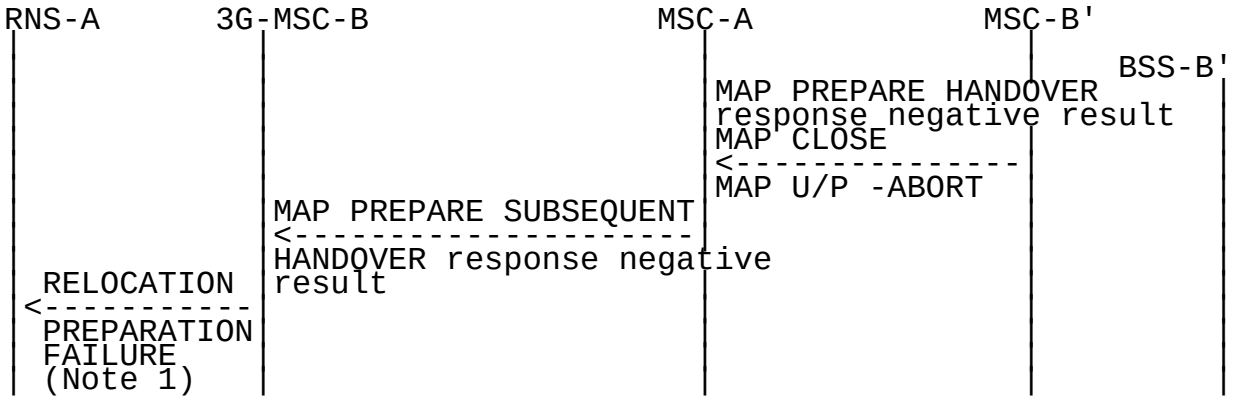


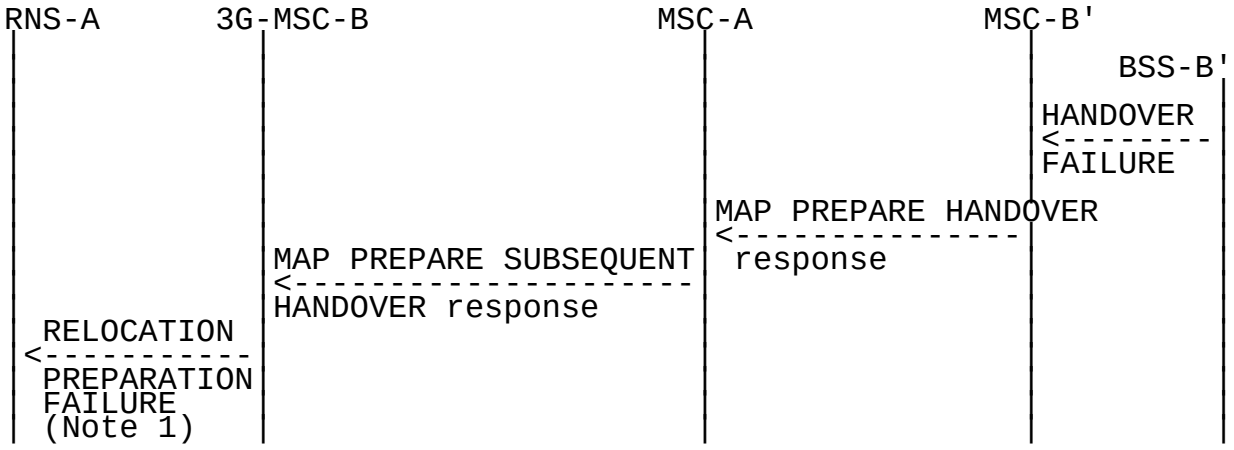

**Figure 33: Signalling for Subsequent Inter-MSC Handover to third MSC (MSC-B') execution (Positive outcome)**

Possible Negative outcomes:

c) user error detected, or component rejection or dialogue abortion performed by MSC-B':




d) radio resources allocation failure:




e) radio resources allocation queued and successful handover number allocation (if performed). Later unsuccessful radio resources allocation:

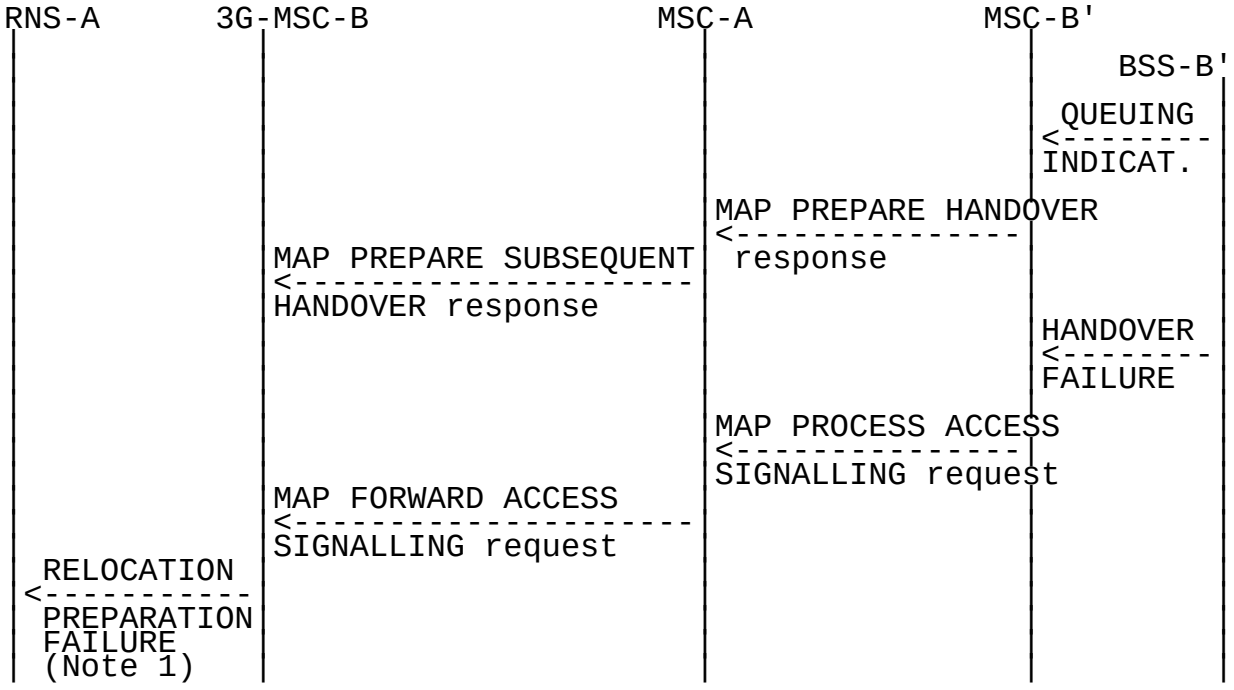



**Figure 34: Signalling for Subsequent Inter-MSC Handover to third MSC (MSC-B') execution (Negative outcome)**

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

Positive outcome:

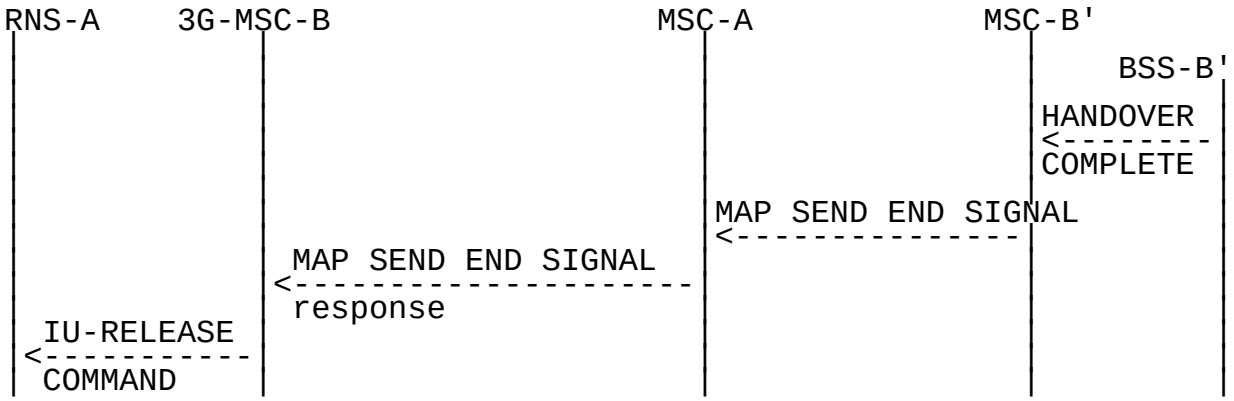



**Figure 35: Signalling for Subsequent Inter-MSC Handover to third MSC (MSC-B') completion (Successful completion of the procedure)**

Negative outcome:

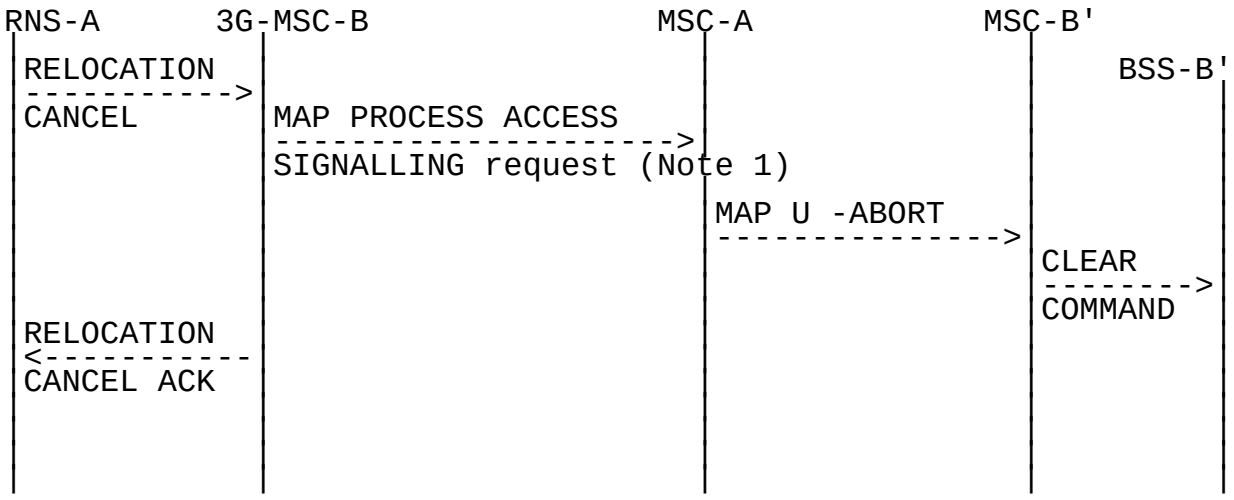



**Figure 36: Signalling for Subsequent Inter-MSC Handover to third MSC (MSC-B') completion (Unsuccessful completion of the procedure)**

NOTE 1: Specific interworking case detailed below.

The specific interworking case in MSC-A compared to the subclauses 4.5.1 and 4.5.2 occurs between HANDOVER FAILURE encapsulated in a Process Access Signalling from 3G-MSC-B and the abortion of the dialogue with MSC-B' in the case of a reversion to old channel of the MS:

| | 29.002 | 29.002 | Notes |
|---|---|---|---|
| Forward message | MAP PROCESS-SIGNALLING request -bss-APDU( HANDOVER FAILURE) | MAP U -ABORT | 1 |
| Positive result | | | |
| Negative result | | MAP U/P -ABORT | 2 |

NOTE 1: The abortion of the dialogue triggers in MSC-B' the clearing of the circuit connection with MSC-A, if any, and of the Resources between MSC-B' and BSS-B'.The abortion of the dialogue ends the handover procedure with MSC-B'.

NOTE 2: The abortion of the dialogue ends the handover procedure with 3G-MSC-B.

### 4.6.4 BSSAP Messages transfer on E-Interface

The handling is described in chapter 4.5.4.

## 4.7 Inter-MSC Handover (GSM to UMTS)

The general principles of the handover procedures are given in 3G TS 23.009. 3G TS 29.010 gives the necessary information for interworking between the 3G TS 25.413 RANAP protocol, GSM handover procedures and the 3G TS 29.002 MAP protocol. The RANAP protocol is used between the RNS and the 3G_MSC.

The following four principles apply for the Inter-MSC handover GSM to UMTS:

The BSSMAP parameters required for Inter-MSC handover GSM to UMTS are generated as in GSM.

Received RANAP parameters, e.g. cause code or transparent container, are mapped to the appropriate BSSMAP parameters, e.g. cause code or Handover command.

The RANAP parameters required for Inter-MSC handover GSM to UMTS are generated from received or stored GSM parameters.

### 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 3G 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.

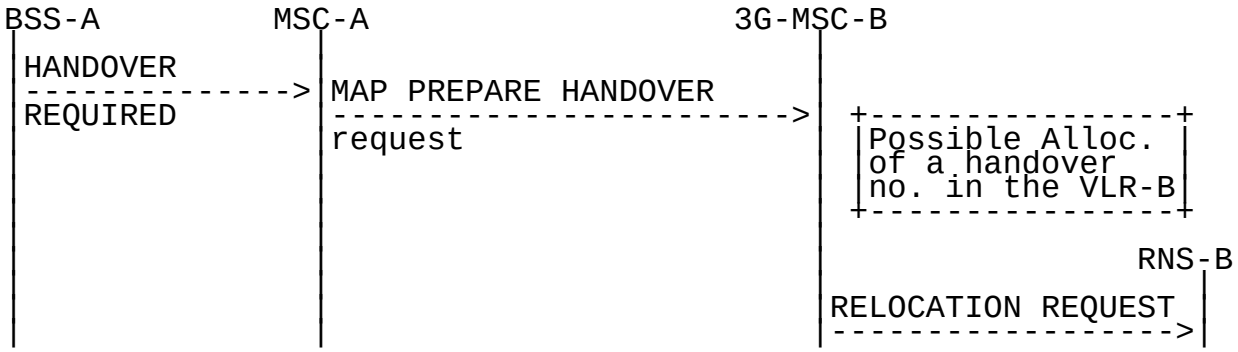



**Figure 37a: Signalling for Basic Inter-MSC Handover initiation (no trace related messages transferred)**

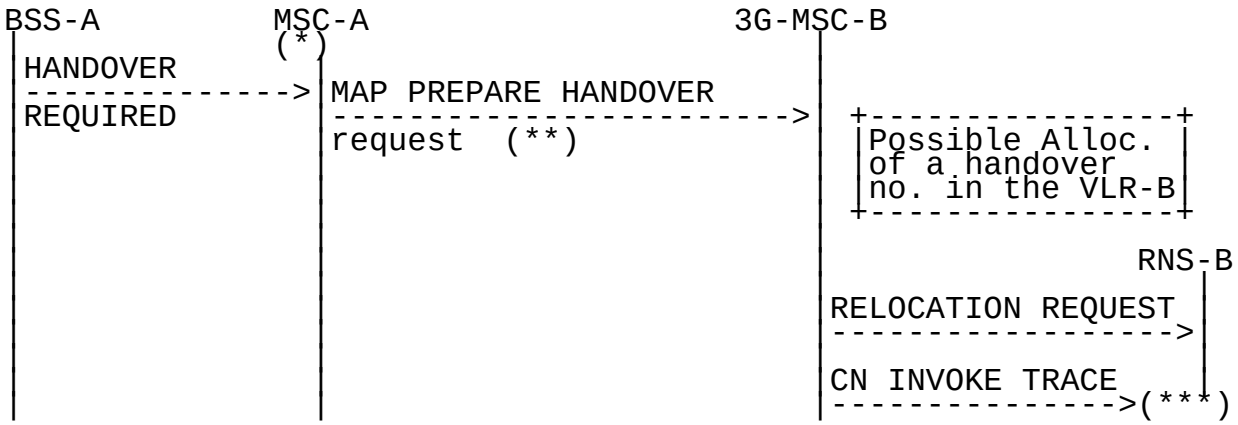



**Figure 37b: Signalling for Basic Inter-MSC Handover initiation (CN invoke trace message transferred)**

(*): 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):

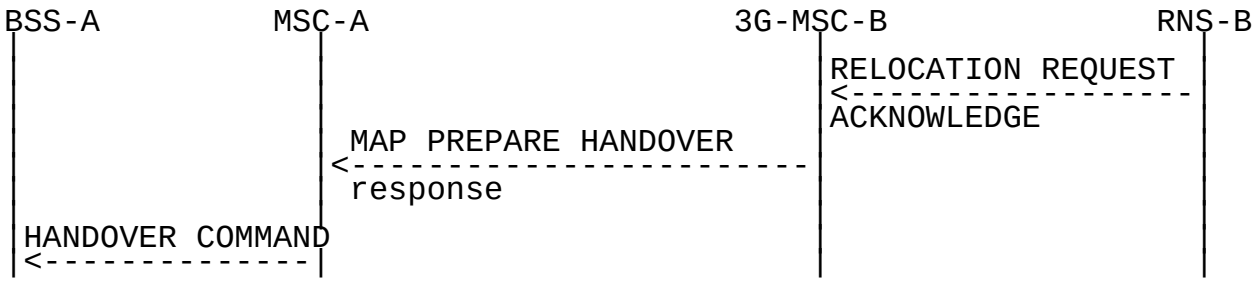
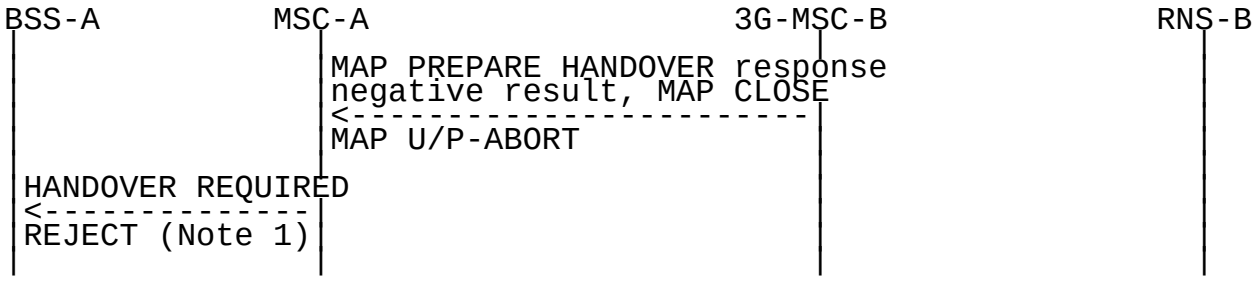


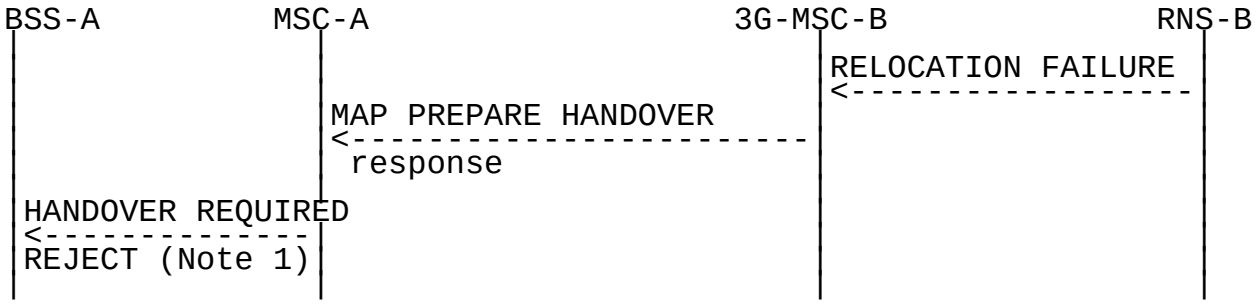

**Figure 38: Signalling for Basic Inter-MSC Handover execution (Positive outcome)**

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):

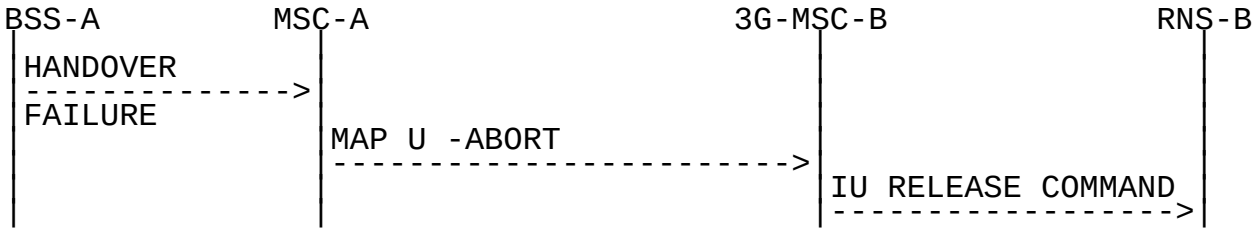



**Figure 39: Signalling for Basic Inter-MSC Handover execution (Negative outcomes)**

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

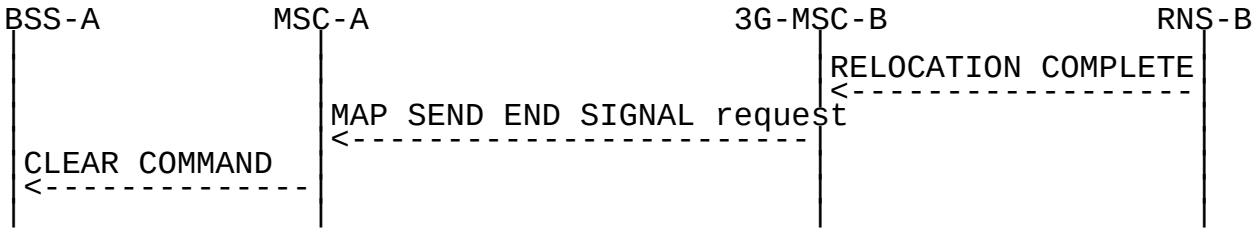



**Figure 40: Signalling for Basic Inter-MSC Handover completion**

Positive outcome:

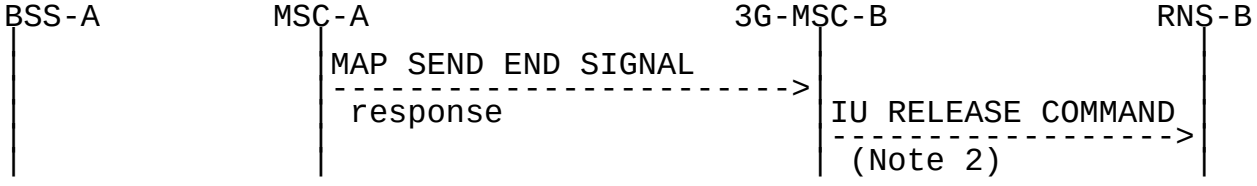



**Figure 41: Signalling for Basic Inter-MSC Handover completion (Positive outcome)**

Negative outcome:

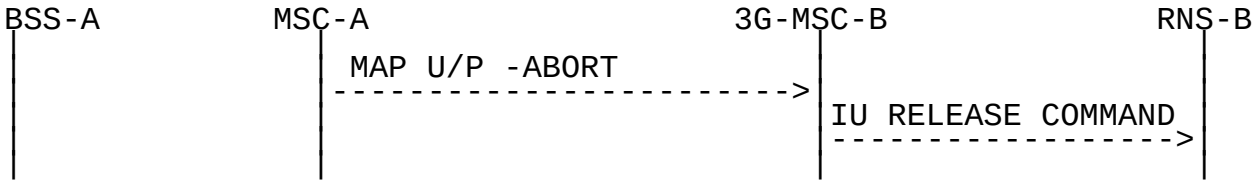



**Figure 42: Signalling for Basic Inter-MSC Handover completion (Negative outcome)**

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

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. For compatibility reason, the cell identity of the cell where the call is to be handed over in 3G_MSC-B area, provided in the HANDOVER REQUIRED message, is mapped into targetCellId 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 3G 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:

| | 08.08 | 29.002 | Notes |
|---|---|---|---|
| Forward message | HANDOVER REQUIRED<br><br>BSSMAP information elements | MAP PREPARE HANDOVER request<br>-ho-NumberNotRequired<br>-targetCellId<br>-IMSI<br>-Integrity protection info<br>-Encryption info<br>-an-APDU(<br>HANDOVER REQUEST,<br>MSC INVOKE TRACE) | <br>1<br><br>2<br><br>3~~2~~<br>4~~3~~ |
| Positive result | | MAP PREPARE HANDOVER response<br>-handover number<br>-an-APDU(<br>HANDOVER REQUEST ACKNOWLEDGE or<br>HANDOVER FAILURE) | 5~~4~~ |
| Negative result | HANDOVER REQUIRED REJECT<br><br>equipment failure<br>equipment failure<br><br>equipment failure<br>equipment failure<br><br>equipment failure<br>equipment failure | MAP PREPARE HANDOVER<br><br>System Failure<br>No Handover Number available<br><br>UnexpectedDataValue<br>Data Missing<br><br>MAP CLOSE<br>MAP U/P -ABORT | 6~~5~~ |

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 32: The process performed on the BSSMAP information elements received in the HANDOVER REQUIRED message is described in the GSM Recommendation 08.08.

NOTE 43: The process performed on the BSSMAP information elements received in the MSC INVOKE TRACE message is described in subclause 4.5.5.6.

NOTE 54: The response to the Prepare-Handover request can include in its an-APDU parameter, identifying the GSM 08.06 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 3G TS 29.010 and lies in GSM 08.08).

NOTE 65: The possible sending of the HANDOVER REQUIRED REJECT message is described in GSM 08.08.

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<br>-ho-NumberNotRequired<br>-targetCellId<br>-IMSI<br>-Integrity protection info<br>-Encryption info<br>-an-APDU(<br>HANDOVER REQUEST,<br>MSC INVOKE TRACE)<br><br>BSSMAP information elements:<br><br>Channel Type<br>Cause<br>sRNC to tRNC container | RELOCATION REQUEST<br><br>RANAP information elements:<br><br>RAB parameters<br>Cause<br>sRNC to tRNC container<br><br>info stored/generated in/by 3G_MSC-B:<br>CN domain indicator | 1 |
| Positive result | MAP PREPARE HANDOVER response<br>-an-APDU(<br>HANDOVER REQUEST ACK)<br><br>BSSMAP information elements:<br><br>Layer 3 info | RELOCATION REQUEST ACK<br><br>RANAP information elements:<br><br>tRNC to sRNC container | |
| Negative result | MAP PREPARE HANDOVER response<br>-an-APDU(<br>HANDOVER FAILURE) | RELOCATION FAILURE | |

NOTE 1: 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.

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 | 08.08 | 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:

| | 08.08 | 29.002 | Notes |
|---|---|---|---|
| Forward message | HANDOVER FAILURE - Reversion to old channel | MAP U -ABORT | |
| Positive result | | | |
| Negative result | | | |

# NEXT MODIFIED SECTION

## 4.8 ~~8~~Inter-MSC Relocation

The general principles of the relocation procedures are given in Technical Specification TS 23.009. TS 29.010 gives the necessary information for interworking between the TS 25.413 relocation protocol and the TS 29.002 MAP protocol.

For intra UMTS handovers, RANAP is carried over the MAP-E interface instead of BSSAP. Please refer to 3G TS 29.108.

### 4.8.1 Basic Inter-MSC Relocation

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

The signalling at initiation, execution and completion of the Basic Inter-MSC relocation procedure is shown in figures 50 to 54 with both possible positive or negative outcomes.

Additionally figure 50b shows the possible interworking when trace related messages are transparently transferred on the E-Interface at Basic Inter-MSC Relocation initiation.

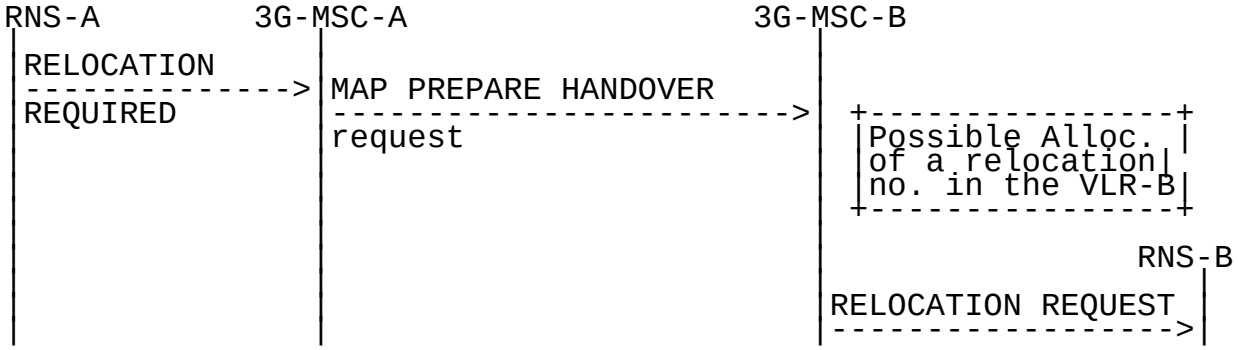



**Figure 50a: Signalling for Basic Inter-MSC Relocation initiation (no trace related messages transferred)**

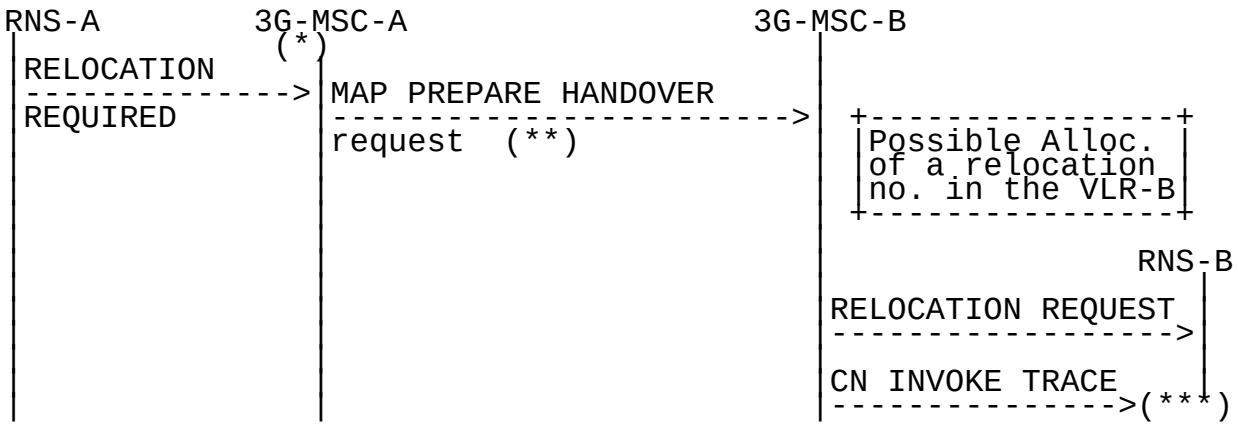


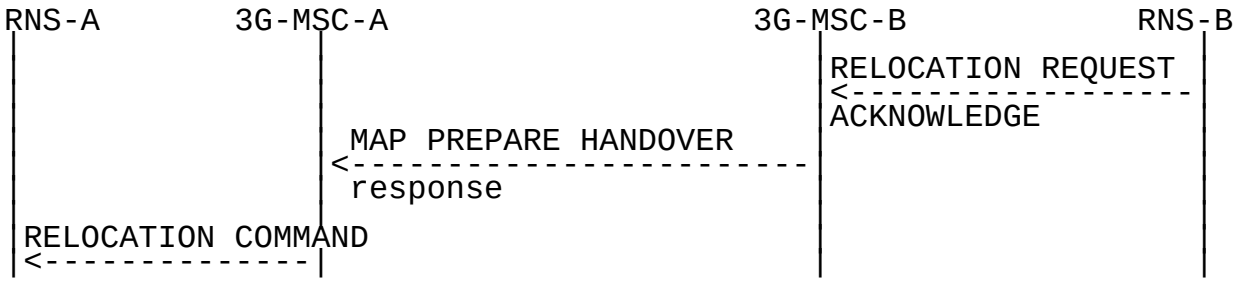

**Figure 50b: Signalling for Basic Inter-MSC Relocation initiation (CN invoke trace message transferred)**

(*): Tracing invocation has been received from VLR.

(**): In that case, RELOCATION REQUEST and CN INVOKE TRACE messages are included within the AN-apdu parameter.

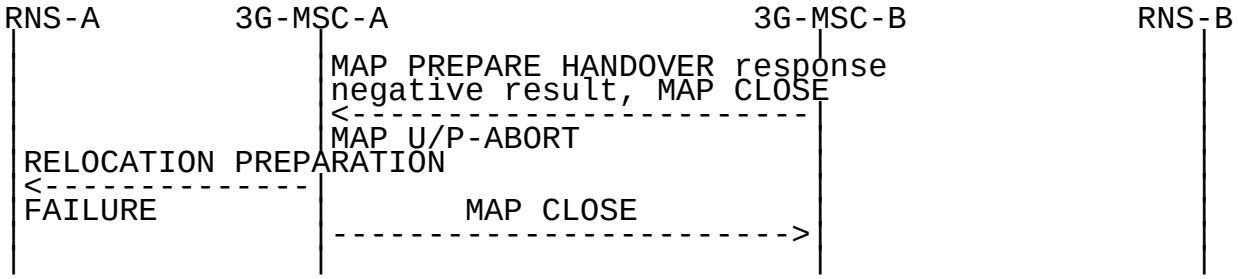
(***): CN INVOKE TRACE is forwarded to RNS-B if supported by 3G_MSC-B.

Possible Positive outcomes: successful radio resources allocation and relocation numbers allocation (if performed):

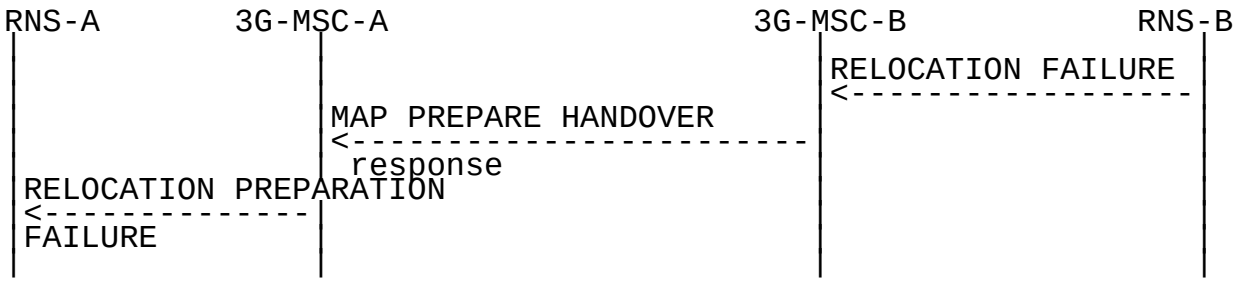



Possible Negative outcomes:

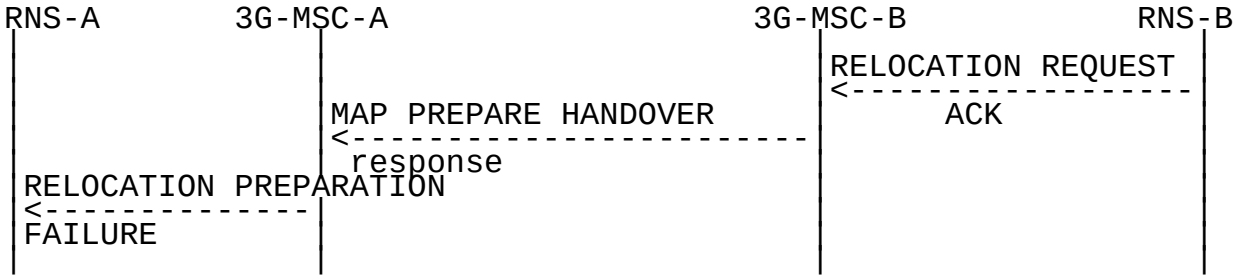
a) user error detected, or relocation numbers allocation unsuccessful (if performed), or component rejection or dialogue abortion performed by 3G_MSC-B:




b) radio resources allocation failure:




c) radio resources allocation partial failure (3G_MSC-A decides to reject the relocation):



d) unsuccessful relocation execution (relocation cancelled):

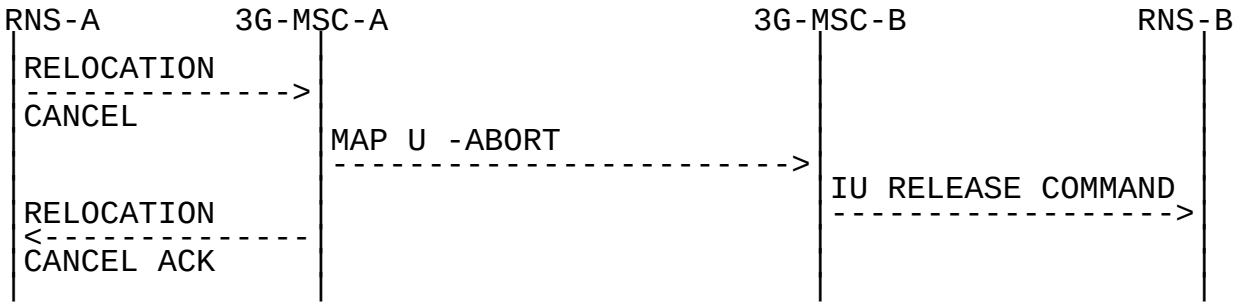



**Figure 51: Signalling for Basic Inter-MSC Relocation execution (Negative outcomes)**

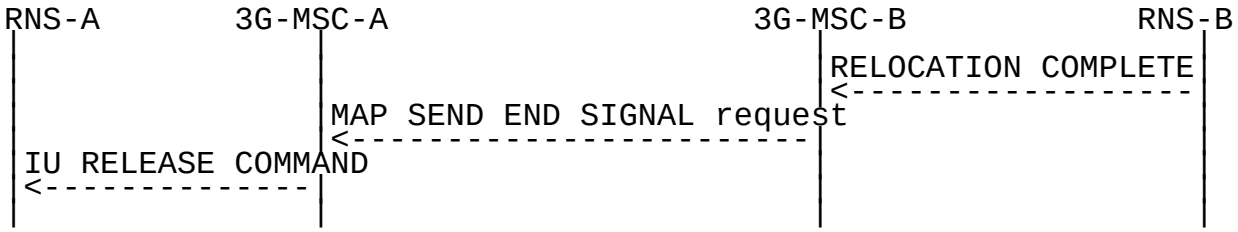



**Figure 52: Signalling for Basic Inter-MSC Relocation completion**

Positive outcome

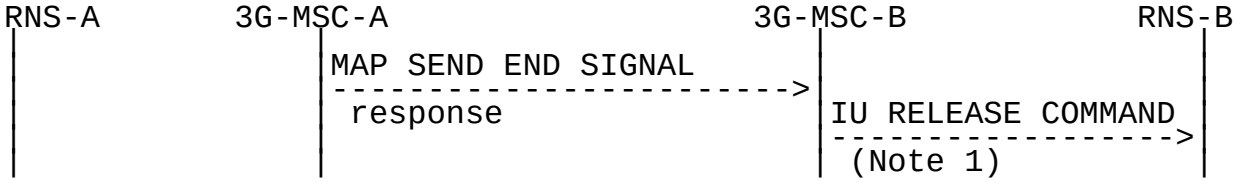



**Figure 53: Signalling for Basic Inter-MSC Relocation completion (Positive outcome)**

NOTE: From interworking between MAP and RANAP point of view.

Negative outcome:

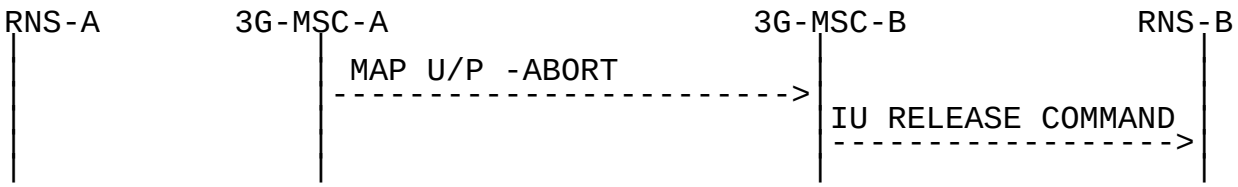



**Figure 54: Signalling for Basic Inter-MSC Relocation completion (Negative outcome)**

The relocation procedure is normally triggered by RNS-A by sending a RELOCATION REQUIRED message on Iu-Interface to 3G_MSC-A. The invocation of the Basic Inter-MSC relocation procedure is performed and controlled by 3G_MSC-A. The sending of the MAP Prepare-Handover request to 3G_MSC-B is triggered in 3G_MSC-A upon receipt of the RELOCATION REQUIRED message. The RELOCATION 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 relocation numbers described in 3G TS 29.002).

Additionally, if tracing activity has been invoked, the trace related messages 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 RELOCATION REQUEST message.

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

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RELOCATION REQUIRED | MAP PREPARE HANDOVER request | |
| | RANAP information elements | -ho-NumberNotRequired<br>~~-Channel Type~~ Radio Resource Info<br>-an-APDU( RELOCATION REQUEST, CN INVOKE TRACE) | 1<br><br>2 |
| Positive result | MAP PREPARE HANDOVER response | | 3 |
| | RELOCATION COMMAND | -relocation numbers<br>-an-APDU( RELOCATION REQUEST ACKNOWLEDGE or RELOCATION FAILURE) | |
| | RELOCATION PREP FAILURE | | |
| Negative result | RELOCATION PREP FAILURE | MAP PREPARE HANDOVER | |
| | Unspecified failure | System Failure | |
| | Unspecified failure | No Handover Number available | |
| | Unspecified failure | UnexpectedDataValue | |
| | Unspecified failure | Data Missing | |
| | Unspecified failure | MAP CLOSE | |
| | Unspecified failure | MAP U/P -ABORT | |

NOTE 1: The RANAP information elements are already stored in 3G_MSC.

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

NOTE 2: The process performed on the RANAP information elements received in the RELOCATION REQUIRED message is described in the 3G TS 25.413.

NOTE 3: The response to the Prepare-Handover request can include in its an-APDU parameter, identifying the 3G TS 25.413 protocol, either a RANAP RELOCATION REQUEST ACKNOWLEDGE or a RANAP RELOCATION FAILURE.

In the first case, the positive result triggers in 3G_MSC-A the sending on Iu-Interface of the RELOCATION CMD.

In the second case, the positive result triggers in 3G_MSC-A the sending of the RELOCATION PREP FAILURE.

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( RELOCATION COMPL) | |
| 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 3G_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 3G_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 3G_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 IU RELEASE COMMAND in 3G_MSC-A is as follows:

| | 29.002 | 25.413 | Notes |
|---|---|---|---|
| Forward message | MAP SEND END SIGNAL request -an-APDU( RELOCATION COMPLETE) | IU RELEASE COMMAND - Successful Relocation | |
| Positive result | | | |
| Negative result | | | |

The interworking between RELOCATION CANCEL in case of relocation cancelled and User Abort in 3G-MSC-A is as follows:

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RELOCATION CANCEL - Relocation cancelled | MAP U -ABORT | |
| Positive result | RELOCATION CANCEL ACKNOWLEDGEMENT | | |
| Negative result | | | |

### 4.8.2 Subsequent Inter-MSC Relocation back to 3G_MSC-A

When a Mobile Station is being relocated back to 3G_MSC-A, the procedure (described in TS 23.009) requires interworking between Iu-Interface and E-Interface.

The signalling at initiation, execution and completion of the Subsequent Inter-MSC relocation procedure is shown in figures 55 to 59.

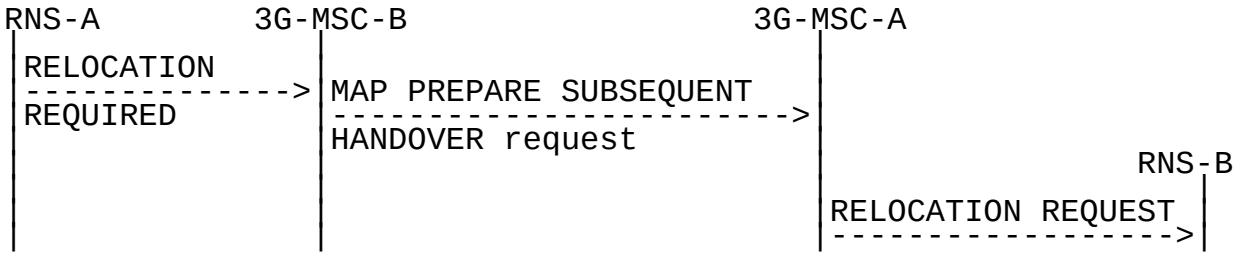



**Figure 55: Signalling for Subsequent Inter-MSC Relocation back to 3G_MSC-A initiation**

Possible Positive outcomes: successful radio resources allocation:

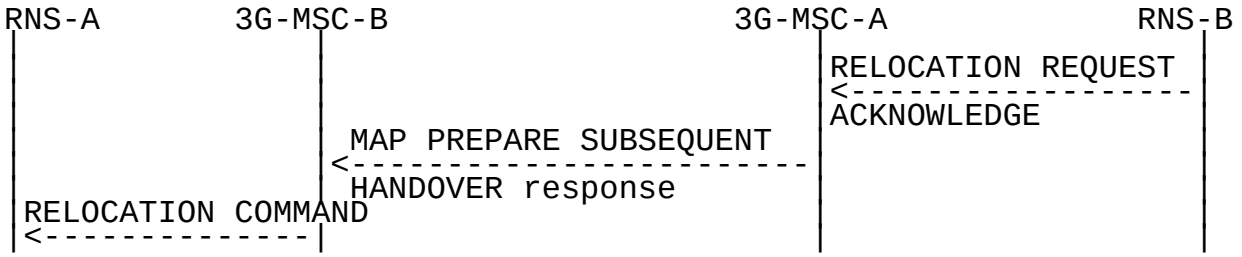
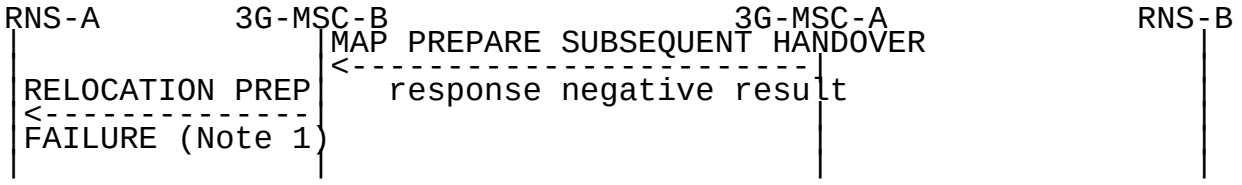


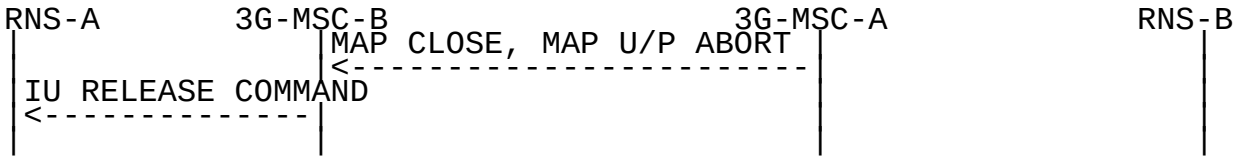

**Figure 56: Signalling for Subsequent Inter-MSC Relocation back to 3G_MSC-A execution (Positive outcome)**

Possible Negative outcomes:

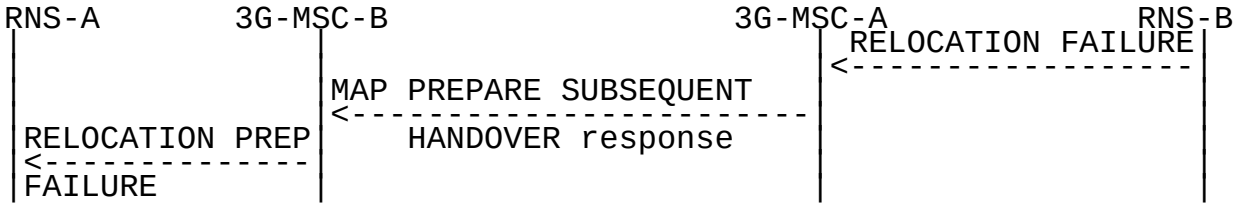
a) user error detected, or component rejection or dialogue abortion performed by 3G_MSC-A:



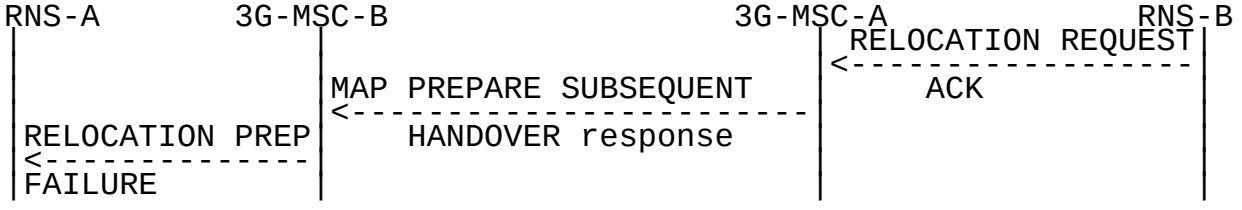

b) component rejection or dialogue abortion performed by 3G_MSC-A:




c) radio resources allocation failure:




d) radio resources allocation partial failure (3G_MSC-A decides to reject the relocation):



e) unsuccessful relocation execution (relocation cancelled):

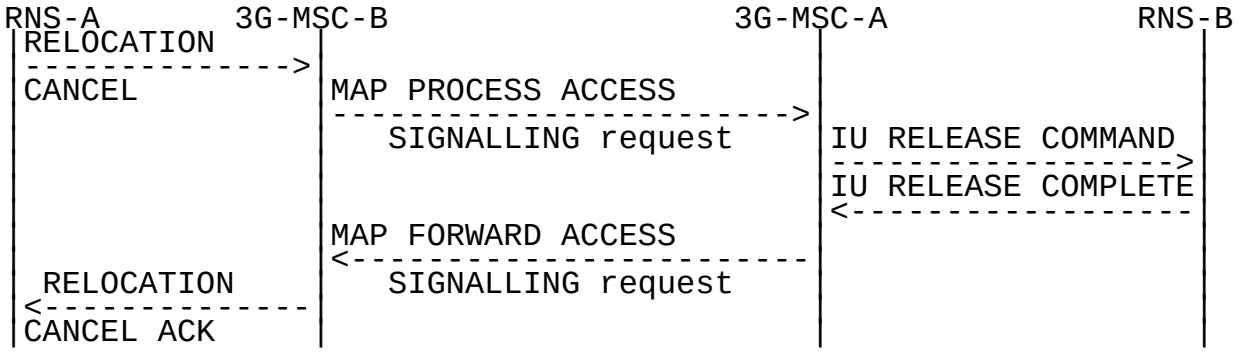



**Figure 57: Signalling for Subsequent Inter-MSC Relocation back to 3G_MSC-A execution (Negative outcome)**

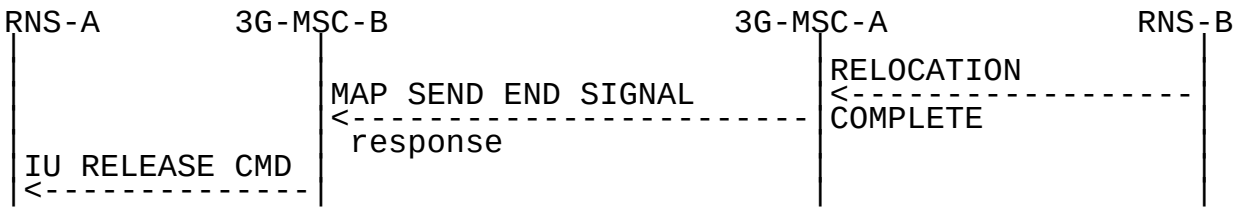



**Figure 58: Signalling for Subsequent Inter-MSC Relocation back to 3G_MSC-A completion (Successful completion of the procedure)**

NOTE: Positive outcome case shown in figure 53.

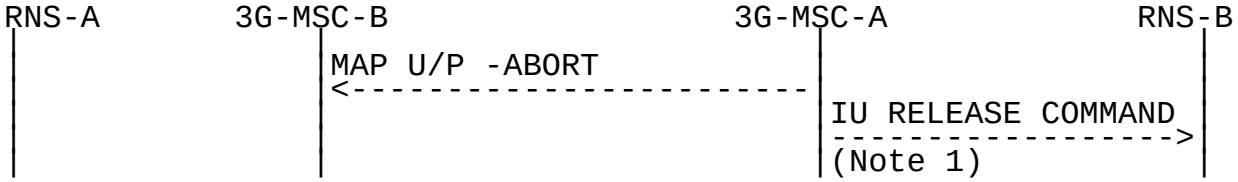



**Figure 59: Signalling for Subsequent Inter-MSC Relocation back to 3G_MSC-A completion (Unsuccessful completion of the procedure)**

NOTE: Abnormal end of the procedure that triggers the clearing of all resources in 3G_MSC-B.

The interworking between Prepare Subsequent Handover and RELOCATION REQUIRED is as follows:

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | REL. REQUIRED<br><br>RANAP information elements | MAP PREPARE SUBSEQUENT HANDOVER request<br><br>-target MSC number<br>-an-APDU( RELOCATION REQ) | 1 |
| Positive result | RELOCATION CMD.<br><br>RELOCATION PREP FAILURE | MAP PREPARE SUBSEQUENT HANDOVER response<br>-an-APDU( RELOCATION REQUEST ACKNOWLEDGE or RELOCATION FAILURE) | 2 |
| Negative result | REL. PREP. FAILURE<br>Unspecified failure<br>Unspecified failure<br>Unspecified failure<br>Unspecified failure<br>Iu RELEASE COMMAND<br>Unspecified failure<br>Unspecified failure | MAP PREPARE SUBSEQUENT HANDOVER response<br>Unknown MSC<br>Subsequent Handover Failure<br>UnexpectedDataValue<br>Data Missing<br>MAP CLOSE<br>MAP U/P –ABORT | |

NOTE 1: The processing performed on the RANAP information elements received in the RELOCATION REQUIRED message is out of the scope of the present document. The target MSC number is provided to 3G_MSC-A by 3G_MSB-B based on the information received from RNS-B.

NOTE 2: The response to the Prepare-Subsequent-Handover request can include in its an-APDU parameter, identifying the 3G TS 25.413 protocol, a RANAP RELOCATION REQUEST ACKNOWLEDGE or a RANAP RELOCATION FAILURE.

In the first case, the positive result triggers in 3G_MSC-B the sending on Iu-Interface of the RELOCATION COMMAND.

In the second case, the positive result triggers in 3G_MSC-B the sending of the RELOCATION PREPARATION FAILURE.

The interworking between RELOCATION CANCEL and MAP Process Signalling Request in 3G_MSC-A is as follows:

| | 29.002 | 25.413 | Notes |
|---|---|---|---|
| Forward message | MAP PROCESS-SIGNALLING request<br>-an-APDU( RELOCATION CANCEL) | IU RELEASE COMMAND | |
| Positive result | MAP FORWARD-SIGNALLING request<br>-an-APDU( RELOCATION CANCEL ACK) | IU RELEASE COMPLETE | |
| Negative result | | | |

The interworking between RELOCATION CANCEL and MAP Process Signalling Request in 3G_MSC-B is as follows:

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RELOCATION CANCEL | MAP PROCESS-SIGNALLING request -an-APDU( RELOCATION CANCEL) | |
| Positive result | RELOCATION CANCEL ACK | MAP FORWARD-SIGNALLING request -an-APDU( RELOCATION CANCEL ACK) | |
| Negative result | | | |

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

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RELOCATION COMPLETE | MAP SEND END SIGNAL response | |
| Positive result | | | |
| Negative result | | MAP U/P -ABORT | 1 |

NOTE: The abortion of the dialogue ends the relocation procedure with 3G_MSC-B.

### 4.8.3 Subsequent Inter-MSC Relocation to third MSC

When a Mobile Station is being relocated to a third MSC, the procedure (described in 3G TS 23.009) does require one specific interworking case in 3G_MSC-A (figure 64) between E-Interface from 3G_MSC-B and E-Interface from 3G_MSC-B' other than the combination of the ones described in the subclause 4.8.1 and 4.8.2.

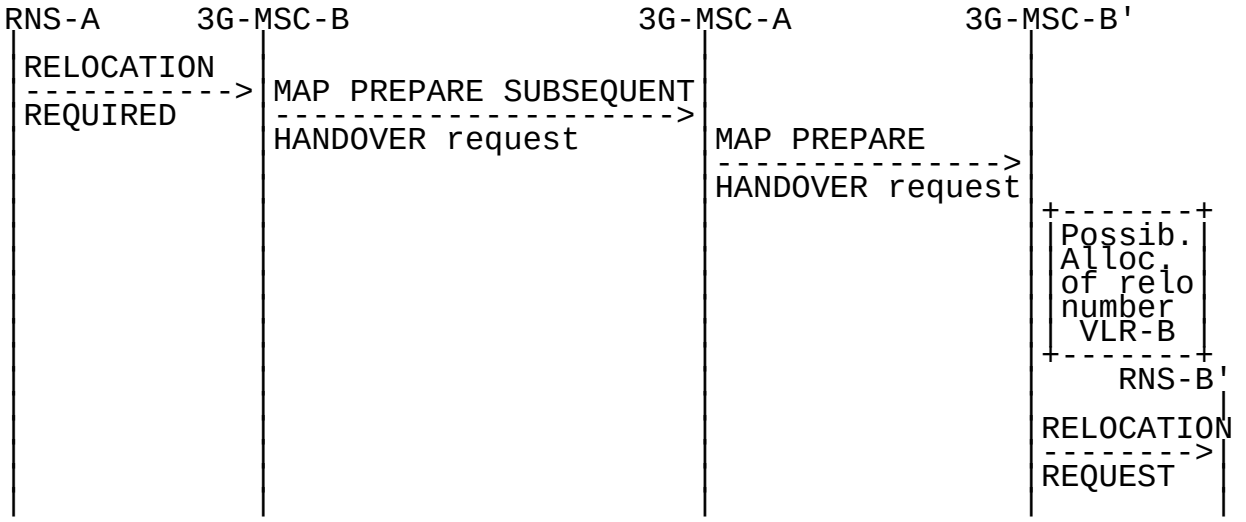



**Figure 60: Signalling for Subsequent Inter-MSC Relocation to third MSC (3G_MSC-B') initiation**

Possible Positive outcomes: successful radio resources allocation:

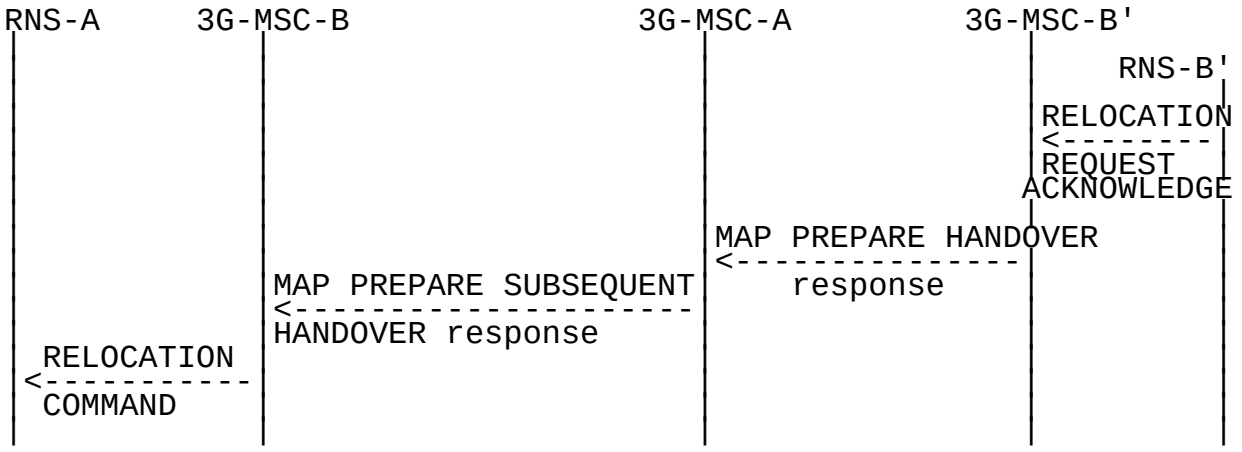
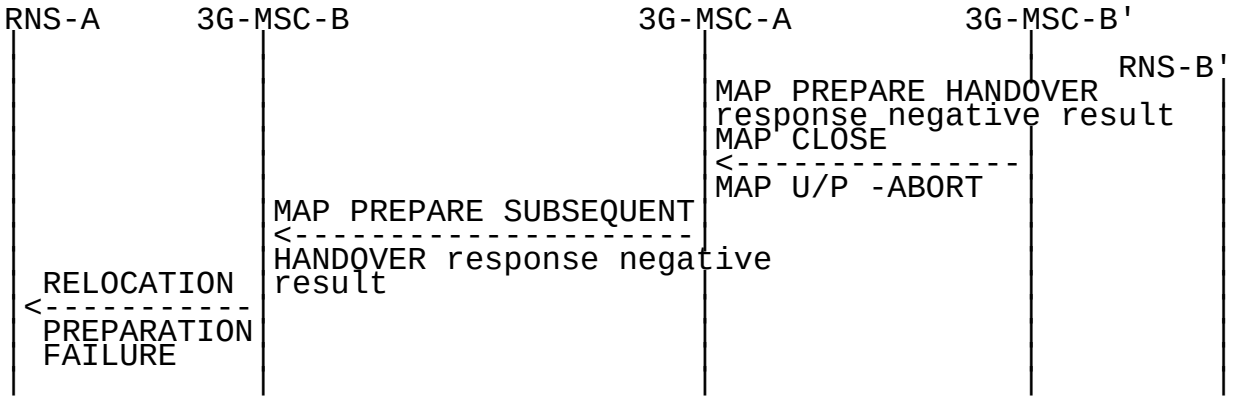


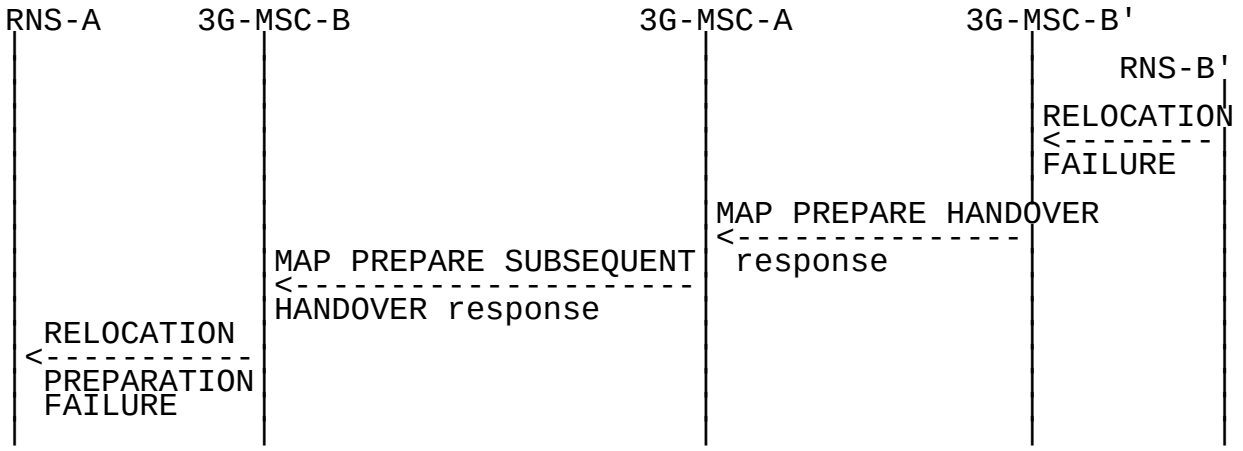

**Figure 61: Signalling for Subsequent Inter-MSC Relocation to third MSC (3G_MSC-B') execution (Positive outcome)**

Possible Negative outcomes:

a) user error detected, or component rejection or dialogue abortion performed by 3G_MSC-B':



b) radio resources allocation failure:




c) radio resources allocation partial failure (3G_MSC-A decides to reject the relocation):

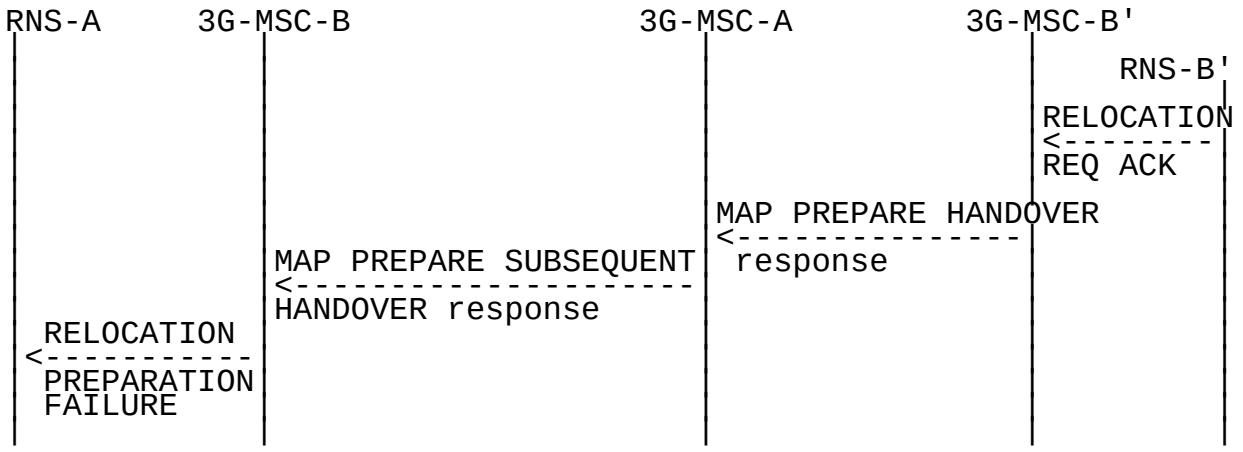



**Figure 62: Signalling for Subsequent Inter-MSC Relocation to third MSC (3G_MSC-B') execution (Negative outcome)**

Positive outcome:

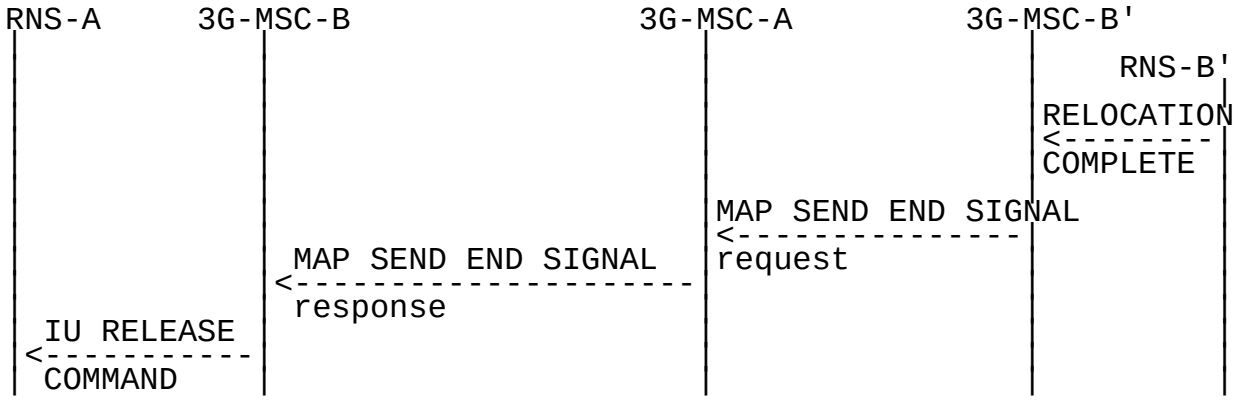



**Figure 63: Signalling for Subsequent Inter-MSC Relocation to third MSC (3G_MSC-B') completion (Successful completion of the procedure)**

Negative outcome:

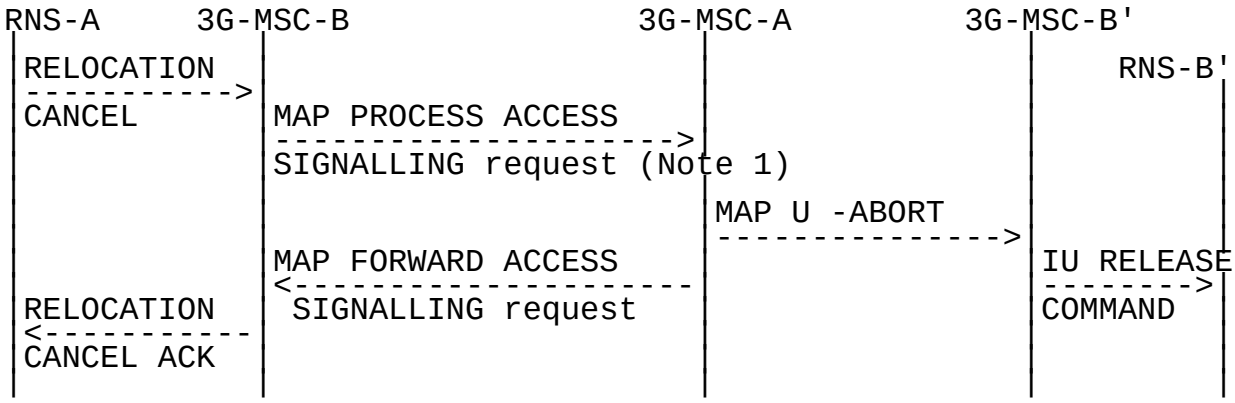



**Figure 64: Signalling for Subsequent Inter-MSC Relocation to third MSC (3G_MSC-B') completion (Unsuccessful completion of the procedure)**

NOTE: Specific interworking case detailed below.

The specific interworking case in 3G_MSC-A compared to the subclauses 4.8.1 and 4.8.2 occurs between RELOCATION FAILURE encapsulated in a Process Access Signalling from 3G_MSC-B and the abortion of the dialogue with 3G_MSC-B' in the case of relocation cancelled:

| | 29.002 | 29.002 | Notes |
|---|---|---|---|
| Forward message | MAP PROCESS-SIGNALLING request -an-APDU( RELOCATION CANCEL) | MAP U -ABORT | 1 |
| Positive result | MAP FORWARD-SIGNALLING request -an-APDU( RELOCATION CANCEL ACK) | | |
| Negative result | | MAP U/P -ABORT | 2 |

NOTE 1: The abortion of the dialogue triggers in 3G_MSC-B' the clearing of the circuit connection with 3G_MSC-A, if any, and of the Resources between 3G_MSC-B' and RNS-B'. The abortion of the dialogue ends the relocation procedure with 3G_MSC-B'.

NOTE 2: The abortion of the dialogue ends the relocation procedure with 3G_MSC-B.

## 4.8.4 RANAP Messages transfer on E-Interface

The following mapping applies to the encapsulation performed in 3G_MSC-A.

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RANAP messages | MAP FORWARD ACCESS SIGNALLING request<br>-an-APDU (RANAP messages) | 1 |
| Positive result | | | 2 |
| Negative result | | MAP CLOSE<br>MAP U/P -ABORT | |

NOTE 1: Complete RANAP messages to be sent on 3G_MSC-B - RNS-B interface are embedded into the an-APDU parameter.

NOTE 2: The Return Result does not apply. If 3G_MSC-B returns a message, this message will arrive in an Invoke: Process Access Signalling.

The following mapping applies to the encapsulation performed in 3G_MSC-B.

| | 25.413 | 29.002 | Notes |
|---|---|---|---|
| Forward message | RANAP messages | MAP PROCESS ACCESS SIGNALLING request<br>-an-APDU (RANAP messages) | 1 |
| Positive result | | | 2 |
| Negative result | | MAP CLOSE | |
| | IU RELEASE COMMAND | | |
| | Unspecified failure | MAP U/P -ABORT | 3 |

NOTE 1: Complete RANAP messages to be sent to 3G_MSC-A are embedded into the an-APDU parameter.

NOTE 2: The Return Result does not apply. If 3G_MSC-A returns a message, this message will arrive in an Invoke: Forward Access Signalling.

NOTE 3: The abortion of the dialogue triggers the clearing of the circuit connection with 3G_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 clearing of the Radio Resources (the clearing indication received from RNS-B is transmitted to 3G_MSC-A) or the loss of the SCCP connection between 3G_MSC-B and RNS-B, triggers in 3G_MSC-B the abortion of the dialogue on the E-Interface and the clearing of the circuit connection with 3G_MSC-A, if any.

## 4.8.5 Processing in 3G_MSC-B, and information transfer on E-interface

The following parameters require processing (e.g. to store the parameter, to internally generate the parameter) in 3G_MSC-B. The relevant RANAP procedures are mentioned to ease the comprehension, their detailed description is the scope of the TS 25.413. Each RANAP message being transferred on E-interface shall use the mechanisms given in subclause 4.8.4 and is described in TS 25.413.

### 4.8.5.1 Integrity Protection Information

A sequence of possible integrity protection algorithms can be sent to an RNS in Security Mode Command or Relocation Request. The RNS chooses one of the listed algorithms and reports this back to the 3G_MSC in Security Mode Complete or Relocation Request Acknowledge respectively.

The list of algorithms, the integrity protection key and the chosen algorithm shall be stored by 3G_MSC-B.

Transfer of Information:

If integrity protection has not been performed before Inter-MSC Relocation, this will be controlled by 3G_MSC-A after the completion of Inter-MSC Relocation.

Integrity protection control towards 3G_MSC-B:

If Integrity protection has been performed before Inter-MSC Relocation:

- in the Relocation Request RANAP message (information included).

  The Relocation Request Acknowledge should in this case contain the indication of the chosen algorithm.

If Integrity protection has NOT been performed before Inter-MSC Relocation:

- in the Security Mode Command procedure between 3G_MSC-A and 3G_MSC-B.

#### 4.8.5.2 Encryption Information

A sequence of possible encryption algorithms can be sent to an RNS in Security Mode Command or Relocation Request. The RNS chooses one of the listed algorithms and reports this back to the 3G_MSC in Security Mode Complete or Relocation Request Acknowledge respectively.

The list of algorithms, the ciphering key and the chosen algorithm shall be stored by 3G_MSC-B, and the chosen value sent to 3G_MSC-A.

Transfer of Information:

If ciphering has not been performed before Inter-MSC Relocation, this will be controlled by 3G_MSC-A after the completion of Inter-MSC Relocation.

Ciphering control towards 3G_MSC-B:

If Ciphering has been performed before Inter-MSC Relocation:

- in the Relocation Request RANAP message (information included).

  The Relocation Request Acknowledge should in this case contain the indication of the chosen algorithm.

If Ciphering has NOT been performed before Inter-MSC Relocation:

- in the Security Mode Command procedure between 3G_MSC-A and 3G_MSC-B.

#### 4.8.5.3 RAB Parameters

The parameters shall be stored by 3G_MSC-B to be used at internal Relocation in 3G_MSC-B.

Transfer of information:

Received by 3G_MSC-B from 3G_MSC-A in:

– The Relocation Request RANAP message.

If a new type of resource is to be assigned after Inter-MSC Relocation, this can be made with:

– The RAB Assignment Request RANAP message.

#### 4.8.5.4 Channel Type

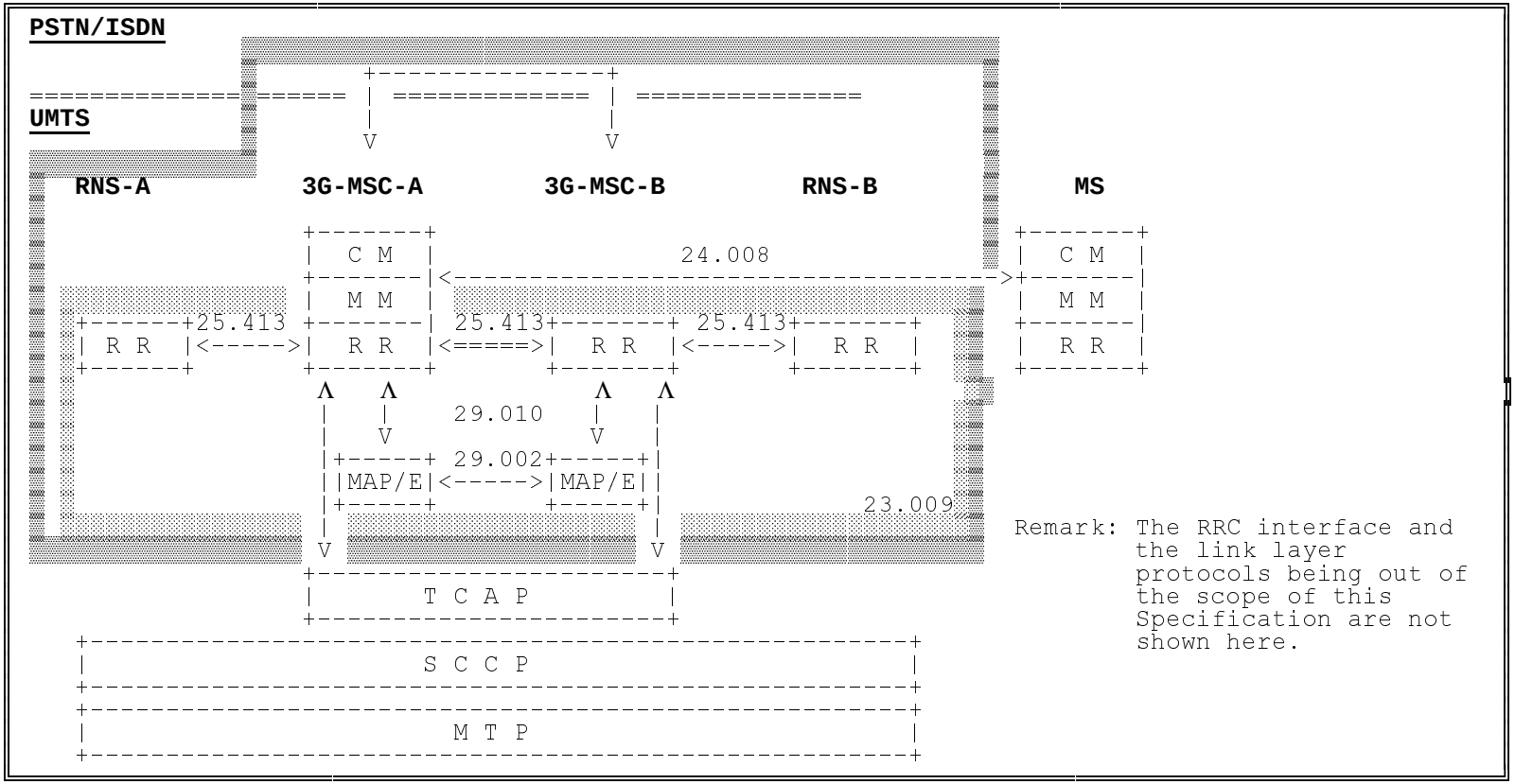
The parameter shall be stored by 3G_MSC-B and used for intra-MSC UMTS to GSM handover.

Transfer of information:

Received by 3G_MSC-B from 3G_MSC-A in:

- The Prepare Handover Request MAP message.

### 4.8.6 Overview of the Technical Specifications 3GPP interworking for the Inter-MSC Relocation


PSTN/ISDN
UMTS
RNS-A
3G-MSC-A
3G-MSC-B
RNS-B
MS
C M
M M
R R
24.008
25.413
29.010
29.002
MAP/E
23.009
T C A P
S C C P
M T P
Remark: The RRC interface and the link layer protocols being out of the scope of this Specification are not shown here.

# Annex A:
# Change history

| Change history | | | | | | |
|---|---|---|---|---|---|---|
| TSG CN# | Spec | Version | CR | <Phase> | New Version | Subject/Comment |
| Sept 1999 | GSM 09.10 | 7.0.0 | | | | Transferred to 3GPP CN |
| CN#04 | 29.010 | | | R99 | 3.0.0 | Approved by mail exploder at CN#04 |
| CN#06 | 29.010 | 3.0.0 | 001 | R99 | 3.1.0 | UMTS / GSM Interworking |
| CN#06 | 29.010 | 3.0.0 | 002 | R99 | 3.1.0 | Addition of LSA Information message |
| CN#07 | 29.010 | 3.1.0 | 003r1 | R99 | 3.2.0 | UMTS / GSM Interworking |
| CN#07 | 29.010 | 3.1.0 | 004r1 | R99 | 3.2.0 | GSM / UMTS Interworking |
| CN#07 | 29.010 | 3.1.0 | 005 | R99 | 3.2.0 | UMTS/UMTS Handover |