

**3GPP TSG\_CN  
Plenary Meeting #8, Dusseldorf, Germany  
21<sup>st</sup> – 23<sup>rd</sup> June 2000.**

**Tdoc NP-000287**

**Source:** TSG\_N WG4  
**Title:** CRs to 3G Work Item “**ASCI**”  
**Agenda item:** 6.9.4  
**Document for:** APPROVAL

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**Introduction:**

This document contains “**2**” CRs on **Work Item “ASCI”**, that have been agreed by **TSG\_N WG4**, and are forwarded to **TSG\_N Plenary** meeting #8 for approval.

TDoc	SPEC	CR	REV	PHAS	VERS	SUBJECT	CAT	NEW_VERS
N4-000293	29.002	145		R99	3.4.0	Addition of state attributes in Forward group call signalling	F	3.5.0
N4-000294	29.002	146		R99	3.4.0	New user error 'target cell outside group call area' in MAP	F	3.5.0

<b>CHANGE REQUEST No :</b> <b>145</b>		<i>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</i>
<b>Technical Specification GSM / UMTS:</b> <b>29.002</b>		<b>Version</b> <b>3.4.0</b>
Submitted to TSG <b>CN#08</b> <small>list plenary meeting or STC here ↑</small>	for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>	without presentation ("non-strategic") <input checked="" type="checkbox"/> with presentation ("strategic") <input type="checkbox"/>

*PT SMG CR cover form. Filename: crf26\_3.doc*

**Proposed change affects:** SIM  ME  Network   
(at least one should be marked with an X)

**Work item:** ASCI

**Source:** N4 **Date:** 18.05.00

**Subject:** Addition of state attributes in Forward group call signalling.

<b>Category:</b>	F Correction <input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2 <input type="checkbox"/>
	A Corresponds to a correction in an earlier release <input type="checkbox"/>		Release 96 <input type="checkbox"/>
<small>(one category and one release only shall be marked with an X)</small>	B Addition of feature <input type="checkbox"/>		Release 97 <input type="checkbox"/>
	C Functional modification of feature <input type="checkbox"/>		Release 98 <input type="checkbox"/>
	D Editorial modification <input type="checkbox"/>		Release 99 <input checked="" type="checkbox"/>
			UMTS <input type="checkbox"/>

**Reason for change:** The states attributes used by the terminals needs to be sent from the Anchor MSC to the Relay MSC, so that the relay MSC can send the attributes to the terminals in a GCC DTAP message.

Adding the state attributes IE, which is based on the STATE ATTRIBUTES defined in 04.68/03.68, allows service logic running in an Anchor MSC to mute a VGCS talker even when the talker is served on a Relay MSC.

**Clauses affected:** 10.6 and 17.7.12.

<b>Other specs affected:</b>	Other releases of same spec <input type="checkbox"/>	→ List of CRs:	
	Other core specifications <input type="checkbox"/>	→ List of CRs:	
	MS test specifications / TBRs <input type="checkbox"/>	→ List of CRs:	
	BSS test specifications <input type="checkbox"/>	→ List of CRs:	
	O&M specifications <input type="checkbox"/>	→ List of CRs:	

**Other comments:**



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

## 10.6.2 10.6 MAP\_FORWARD\_GROUP\_CALL\_SIGNALLING service

### 10.6.2 10.6.1 Definitions

This service is used between Anchor MSC and Relay MSC for transmission of Group Call notifications.

The MAP\_FORWARD\_GROUP\_CALL\_SIGNALLING service is a non-confirmed service using the service primitives given in table 10.6

### 10.6.2 Service primitives

**Table 10.6: MAP\_FORWARD\_GROUP\_CALL\_SIGNALLING service**

Parameter name	Request	Indication
Invoke Id	M	M(=)
IMSI	C	C(=)
Uplink Request Acknowledgement	C	C(=)
Uplink Release Indication	C	C(=)
Uplink Reject Command	C	C(=)
Uplink Seized Command	C	C(=)
Uplink Release Command	C	C(=)
State Attributes	C	C(=)

### 10.6.3 Parameter definitions and use

#### IMSI

Identity of the service subscriber who has established the call and who is allowed to terminate the call.

#### Invoke Id

See definition in section 7.6.1

#### Uplink Request Acknowledgement

This information element is used for positive acknowledgement of an uplink request

#### Uplink Release Indication

This information element if included by the Anchor MSC indicates to the Relay MSC that the uplink has become free.

#### Uplink Reject Command

This information element is used for negative acknowledgement of an uplink request

#### Uplink Seized Command

This information element if included by the Anchor MSC indicates to the Relay MSC that the uplink is no longer free.

#### Uplink Release Command

This information element if included by the Anchor MSC indicates to the Relay MSC that the uplink which is granted to a MS in the relay MSC area shall be released.

## State Attributes

This information element is used to allow service logic running in an Anchor MSC to mute a VGCS talker even when the talker is served on a Relay MSC. The IE is used to build a GCC message that provides a mechanism to induce the VGCS talker terminal to mute/unmute the downlink at the Anchor MSC, as defined in GSM 04.68.

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

## 17.7.12 Group Call data types

```
MAP-GR-DataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-GR-DataTypes (23) version6 (6)}

DEFINITIONS

IMPLICIT TAGS

 ::=

BEGIN

EXPORTS
    PrepareGroupCallArg,
    PrepareGroupCallRes,
    SendGroupCallEndSignalArg,
    SendGroupCallEndSignalRes,
    ForwardGroupCallSignallingArg,
    ProcessGroupCallSignallingArg
;

IMPORTS
    ISDN-AddressString,
    IMSI,
    EMLPP-Priority,
    ASCII-CallReference
FROM MAP-CommonDataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}

    Ext-TeleserviceCode
FROM MAP-TS-Code {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-TS-Code (19) version6 (6)}

    Kc
FROM MAP-MS-DataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MS-DataTypes (11) version6 (6)}

    ExtensionContainer
FROM MAP-ExtensionDataTypes {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}
;
```

```
PrepareGroupCallArg ::= SEQUENCE {
    teleservice                Ext-TeleserviceCode,
    asciiCallReference         ASCII-CallReference,
    codec-Info                 CODEC-Info,
    cipheringAlgorithm         CipheringAlgorithm,
    groupKeyNumber             [0]GroupKeyNumber           OPTIONAL,
    groupKey                   [1]Kc                       OPTIONAL,
    priority                   [2]EMLPP-Priority           OPTIONAL,
    uplinkFree                 [3] NULL                     OPTIONAL,
    extensionContainer         [4] ExtensionContainer       OPTIONAL,
    ... }
```

```
PrepareGroupCallRes ::= SEQUENCE {
    groupCallNumber          ISDN-AddressString,
    extensionContainer       ExtensionContainer      OPTIONAL,
    ...}
```

```
SendGroupCallEndSignalArg ::= SEQUENCE {
    imsi                     IMSI                  OPTIONAL,
    extensionContainer       ExtensionContainer      OPTIONAL,
    ...}
```

```
SendGroupCallEndSignalRes ::= SEQUENCE {
    extensionContainer       ExtensionContainer      OPTIONAL,
    ...}
```

```
ForwardGroupCallSignallingArg ::= SEQUENCE {
    imsi                     IMSI                  OPTIONAL,
    uplinkRequestAck        [0] NULL              OPTIONAL,
    uplinkReleaseIndication [1] NULL              OPTIONAL,
    uplinkRejectCommand     [2] NULL              OPTIONAL,
    uplinkSeizedCommand     [3] NULL              OPTIONAL,
    uplinkReleaseCommand    [4] NULL              OPTIONAL,
    extensionContainer       ExtensionContainer      OPTIONAL,
    ...} ::= ...
stateAttributes            StateAttributes        OPTIONAL }
```

```
ProcessGroupCallSignallingArg ::= SEQUENCE {
    uplinkRequest           [0] NULL              OPTIONAL,
    uplinkReleaseIndication [1] NULL              OPTIONAL,
    releaseGroupCall       [2] NULL              OPTIONAL,
    extensionContainer       ExtensionContainer      OPTIONAL,
    ...}
```

```
GroupKeyNumber ::= INTEGER (0..15)
```

```
CODEC-Info ::= OCTET STRING (SIZE (5..10))
-- Refers to channel type
-- coded according to GSM 08.08
```

```
CipheringAlgorithm ::= OCTET STRING (SIZE (1))
-- Refers to 'permitted algorithms' in 'encryption information'
-- coded according to GSM 08.08:

-- Bits 8-1
-- 8765 4321
-- 0000 0001          No encryption
-- 0000 0010          GSM A5/1
-- 0000 0100          GSM A5/2
-- 0000 1000          GSM A5/3
-- 0001 0000          GSM A5/4
-- 0010 0000          GSM A5/5
-- 0100 0000          GSM A5/6
-- 1000 0000          GSM A5/7
```

```
StateAttributes ::= SEQUENCE {
    downlinkAttached        [5] NULL              OPTIONAL,
    uplinkAttached          [6] NULL              OPTIONAL,
    dualCommunication       [7] NULL              OPTIONAL,
    callOriginator          [8] NULL              OPTIONAL }

-- Refers to GSM 04.68 for definitions of StateAttributes fields.
```

END

<b>CHANGE REQUEST No :</b> <b>146</b>		<i>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</i>
<b>Technical Specification GSM / UMTS:</b>	<b>29.002</b>	Version <b>3.4.0</b>
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*PT SMG CR cover form. Filename: crf26\_3.doc*

**Proposed change affects:** SIM  ME  Network   
(at least one should be marked with an X)

**Work item:** ASCI

**Source:** N4 **Date:** 18.05.00

**Subject:** New user error 'target cell outside group call area' in MAP Prepare Handover message.

<b>Category:</b>	F Correction <input checked="" type="checkbox"/>	<b>Release:</b>	Phase 2 <input type="checkbox"/>
	A Corresponds to a correction in an earlier release <input type="checkbox"/>		Release 96 <input type="checkbox"/>
	B Addition of feature <input type="checkbox"/>		Release 97 <input type="checkbox"/>
	C Functional modification of feature <input type="checkbox"/>		Release 98 <input type="checkbox"/>
	D Editorial modification <input type="checkbox"/>		Release 99 <input checked="" type="checkbox"/>
			UMTS <input type="checkbox"/>

*(one category and one release only shall be marked with an X)*

**Reason for change:** The target cell outside group call area error was created to provide the reason why the handover is not performed, as handover outside group call area is not foreseen for VGCS and VBS (as specified in section 11.3.4 of GSM 03.68 and 03.69).

**Clauses affected:** 7.6.1.4, 8.4.1.3, 17.5, 17.6, 17.7.7, 19.2.3.6

<b>Other specs affected:</b>	Other releases of same spec <input type="checkbox"/>	→ List of CRs:	
	Other core specifications <input type="checkbox"/>	→ List of CRs:	
	MS test specifications / TBRs <input type="checkbox"/>	→ List of CRs:	
	BSS test specifications <input type="checkbox"/>	→ List of CRs:	
	O&M specifications <input type="checkbox"/>	→ List of CRs:	

**Other comments:**



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

### 7.6.1.4 User error

This parameter can take values as follows:

NOTE: The values are grouped in order to improve readability; the grouping has no other significance.

- a) Generic error:

- system failure, i.e. a task cannot be performed because of a problem in another entity. The type of entity or network resource may be indicated by use of the network resource parameter;
- data missing, i.e. an optional parameter required by the context is missing;
- unexpected data value, i.e. the data type is formally correct but its value or presence is unexpected in the current context;
- resource limitation;
- initiating release, i.e. the receiving entity has started the release procedure;
- facility not supported, i.e. the requested facility is not supported by the PLMN;
- incompatible terminal, i.e. the requested facility is not supported by the terminal.

b) Identification or numbering problem:

- unknown subscriber, i.e. no such subscription exists;
- number changed, i.e. the subscription does not exist for that number any more;
- unknown MSC;
- unidentified subscriber, i.e. if the subscriber is not contained in the database and it has not or cannot be established whether or not a subscription exists;
- unallocated roaming number;
- unknown equipment;
- unknown location area.

c) Subscription problem:

- roaming not allowed, i.e. a location updating attempt is made in an area not covered by the subscription;
- illegal subscriber, i.e. illegality of the access has been established by use of authentication procedure;
- bearer service not provisioned;
- teleservice not provisioned;
- illegal equipment, i.e. the IMEI check procedure has shown that the IMEI is blacklisted or not whitelisted.

d) Handover problem:

- no handover number available;
- subsequent handover failure, i.e. handover to a third MSC failed for some reason.
- Target cell outside group call area.

e) Operation and maintenance problem:

- tracing buffer full, i.e. tracing cannot be performed because the tracing capacity is exceeded.

\*\*\* Next section with modification \*\*\*

## 8.4.1 MAP\_PREPARE\_HANOVER service

### 8.4.1.1 Definition

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

The MAP\_PREPARE\_HANOVER service is a confirmed service using the primitives from table 8.4/1.

### 8.4.1.2 Service primitives

**Table 8.4/1: MAP\_PREPARE\_HANOVER**

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Target Cell Id	C	C(=)		
HO-NumberNotRequired	C	C(=)		
BSS-APDU	C	C(=)	C	C(=)
Handover Number			C	C(=)
User error			C	C(=)
Provider error				O

### 8.4.1.3 Parameter use

#### Invoke Id

For definition of this parameter see subclause 7.6.1.

#### Target Cell Id

For definition of this parameter see subclause 7.6.2. This parameter is only included if the service is not in an ongoing transaction.

#### HO-Number Not Required

For definition of this parameter see subclause 7.6.6.

#### BSS-APDU

For definition of this parameter see subclause 7.6.9.

#### Handover Number

For definition of this parameter see subclause 7.6.2. This parameter shall be returned, unless the parameter HO-NumberNotRequired is sent.

#### User error

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

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

#### Provider error



See definition of provider errors in subclause 7.6.1.

**\*\*\* Next section with modifications \*\*\***

## 17.5 MAP operation and error codes

```
MAP-Protocol {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-Protocol (4) version6 (6)}

DEFINITIONS

 ::=

BEGIN

IMPORTS
    UpdateLocation,
    CancelLocation,
    PurgeMS,
    SendIdentification,
    UpdateGprsLocation,
    PrepareHandover,
    SendEndSignal,
    ProcessAccessSignalling,
    ForwardAccessSignalling,
    PrepareSubsequentHandover,
    SendAuthenticationInfo,
    AuthenticationFailureReport,
    CheckIMEI,
    InsertSubscriberData,
    DeleteSubscriberData,
    Reset,
    ForwardCheckSS-Indication,
    RestoreData,
    ProvideSubscriberInfo,
    AnyTimeInterrogation,
    AnyTimeSubscriptionInterrogation,
    AnyTimeModification,
    SendRoutingInfoForGprs,
    FailureReport,
    NoteMsPresentForGprs,
    NoteMM-Event,
    NoteSubscriberDataModified

FROM MAP-MobileServiceOperations {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-MobileServiceOperations (5)
    version6 (6)}

    ActivateTraceMode,
    DeactivateTraceMode,
    SendIMSI
FROM MAP-OperationAndMaintenanceOperations {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-OperationAndMaintenanceOperations (6)
    version6 (6)}

    SendRoutingInfo,
    ProvideRoamingNumber,
    ResumeCallHandling,
    ProvideSIWFSSNumber,
    SIWFSSignallingModify,
    SetReportingState,
    StatusReport,
    RemoteUserFree,
    IST-Alert,
    IST-Command
FROM MAP-CallHandlingOperations {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-CallHandlingOperations (7)
```

```

version6 (6)}

RegisterSS,
EraseSS,
ActivateSS,
DeactivateSS,
InterrogateSS,
ProcessUnstructuredSS-Request,
UnstructuredSS-Request,
UnstructuredSS-Notify,
RegisterPassword,
GetPassword,
SS-InvocationNotification,
RegisterCC-Entry,
EraseCC-Entry
FROM MAP-SupplementaryServiceOperations {
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-SupplementaryServiceOperations (8)
version6 (6)}

SendRoutingInfoForSM,
MO-ForwardSM,
MT-ForwardSM,
ReportSM-DeliveryStatus,
AlertServiceCentre,
InformServiceCentre,
ReadyForSM
FROM MAP-ShortMessageServiceOperations {
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-ShortMessageServiceOperations (9)
version6 (6)}

PrepareGroupCall,
ProcessGroupCallSignalling,
ForwardGroupCallSignalling,
SendGroupCallEndSignal
FROM MAP-Group-Call-Operations {
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-Group-Call-Operations (22)
version6 (6)}

ProvideSubscriberLocation,
SendRoutingInfoForLCS,
SubscriberLocationReport
FROM MAP-LocationServiceOperations {
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-LocationServiceOperations (24)
version6 (6)}

SystemFailure,
DataMissing,
UnexpectedDataValue,
FacilityNotSupported,
UnknownSubscriber,
NumberChanged,
UnknownMSC,
UnidentifiedSubscriber,
UnknownEquipment,
RoamingNotAllowed,
IllegalSubscriber,
IllegalEquipment,
BearerServiceNotProvisioned,
TeleserviceNotProvisioned,
NoHandoverNumberAvailable,
SubsequentHandoverFailure,
TracingBufferFull,
OR-NotAllowed,
NoRoamingNumberAvailable,
AbsentSubscriber,
BusySubscriber,
NoSubscriberReply,
CallBarred,
ForwardingViolation,
ForwardingFailed,
CUG-Reject,
ATI-NotAllowed,
IllegalSS-Operation,
SS-ErrorStatus,
SS-NotAvailable,

```

```
SS-SubscriptionViolation,  
SS-Incompatibility,  
UnknownAlphabet,  
USSD-Busy,  
PW-RegistrationFailure,  
NegativePW-Check,  
NumberOfPW-AttemptsViolation,  
SubscriberBusyForMT-SMS,  
SM-DeliveryFailure,  
MessageWaitingListFull,  
AbsentSubscriberSM,  
ResourceLimitation,  
NoGroupCallNumberAvailable,  
ShortTermDenial,  
LongTermDenial,  
IncompatibleTerminal,  
UnauthorizedRequestingNetwork,  
UnauthorizedLCSCClient,  
PositionMethodFailure,  
UnknownOrUnreachableLCSCClient,  
ATSI-NotAllowed,  
ATM-NotAllowed,  
InformationNotAvailable,  
MM-EventNotSupported,  
TargetCellOutsideGroupCallArea
```

```
FROM MAP-Errors {  
  ccitt identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-Errors (10) version6 (6)}  
;
```

```
-- location registration operation codes
```

```
updateLocation UpdateLocation ::= localValue 2  
cancelLocation CancelLocation ::= localValue 3  
purgeMS PurgeMS ::= localValue 67  
sendIdentification SendIdentification ::= localValue 55
```

```
-- handover operation codes
```

```
prepareHandover PrepareHandover ::= localValue 68  
sendEndSignal SendEndSignal ::= localValue 29  
processAccessSignalling ProcessAccessSignalling ::= localValue 33  
forwardAccessSignalling ForwardAccessSignalling ::= localValue 34  
prepareSubsequentHandover PrepareSubsequentHandover ::=  
  localValue 69
```

```
-- authentication operation codes
```

```
sendAuthenticationInfo SendAuthenticationInfo ::= localValue 56  
authenticationFailureReport AuthenticationFailureReport ::= localValue 15
```

```
-- IMEI MANAGEMENT operation codes
```

```
checkIMEI CheckIMEI ::= localValue 43
```

```
-- subscriber management operation codes
```

```
insertSubscriberData InsertSubscriberData ::= localValue 7  
deleteSubscriberData DeleteSubscriberData ::= localValue 8
```

```
-- fault recovery operation codes
```

```
reset Reset ::= localValue 37  
forwardCheckSS-Indication ForwardCheckSS-Indication ::=  
  localValue 38  
restoreData RestoreData ::= localValue 57
```

```
-- operation and maintenance operation codes
```

```
activateTraceMode ActivateTraceMode ::= localValue 50
deactivateTraceMode DeactivateTraceMode ::= localValue 51
sendIMSI SendIMSI ::= localValue 58
```

*-- call handling operation codes*

```
sendRoutingInfo SendRoutingInfo ::= localValue 22
provideRoamingNumber ProvideRoamingNumber ::= localValue 4
resumeCallHandling ResumeCallHandling ::= localValue 6
provideSIWFSNumber ProvideSIWFSNumber ::= localValue 31
SIWFSSignallingModify SIWFSSignallingModify ::= localValue 32
setReportingState SetReportingState ::= localValue 73
statusReport StatusReport ::= localValue 74
remoteUserFree RemoteUserFree ::= localValue 75
istAlert IST-Alert ::= localValue 87
istCommand IST-Command ::= localValue 88
```

*-- supplementary service handling operation codes*

```
registerSS RegisterSS ::= localValue 10
eraseSS EraseSS ::= localValue 11
activateSS ActivateSS ::= localValue 12
deactivateSS DeactivateSS ::= localValue 13
interrogateSS InterrogateSS ::= localValue 14
processUnstructuredSS-Request ProcessUnstructuredSS-Request ::=
    localValue 59
unstructuredSS-Request UnstructuredSS-Request ::= localValue 60
unstructuredSS-Notify UnstructuredSS-Notify ::= localValue 61
registerPassword RegisterPassword ::= localValue 17
getPassword GetPassword ::= localValue 18
registerCC-Entry RegisterCC-Entry ::= localValue 76
eraseCC-Entry EraseCC-Entry ::= localValue 77
```

*-- short message service operation codes*

```
sendRoutingInfoForSM SendRoutingInfoForSM ::= localValue 45
mo-forwardSM MO-ForwardSM ::= localValue 46
mt-forwardSM MT-ForwardSM ::= localValue 44
reportSM-DeliveryStatus ReportSM-DeliveryStatus ::= localValue 47
informServiceCentre InformServiceCentre ::= localValue 63
alertServiceCentre AlertServiceCentre ::= localValue 64
readyForSM ReadyForSM ::= localValue 66
```

*-- provide subscriber info operation codes*

```
provideSubscriberInfo ProvideSubscriberInfo ::= localValue 70
```

*-- any time interrogation operation codes*

```
anyTimeInterrogation AnyTimeInterrogation ::= localValue 71
```

*-- any time information handling operation codes*

```
anyTimeSubscriptionInterrogation AnyTimeSubscriptionInterrogation ::= localValue 62
anyTimeModification AnyTimeModification ::= localValue 65
```

*-- subscriber data modification notification operation codes*

```
noteSubscriberDataModified NoteSubscriberDataModified ::= localValue 5
```

*-- supplementary service invocation notification operation codes*

```
ss-InvocationNotification SS-InvocationNotification ::= localValue 72
```

*--Group Call operation codes*

```
prepareGroupCall PrepareGroupCall ::= localValue 39
sendGroupCallEndSignal SendGroupCallEndSignal ::= localValue 40
processGroupCallSignalling ProcessGroupCallSignalling ::= localValue 41
forwardGroupCallSignalling ForwardGroupCallSignalling ::= localValue 42
```

-- gprs location updating operation codes

```
updateGprsLocation UpdateGprsLocation ::= localValue 23
```

-- gprs location information retrieval operation codes

```
sendRoutingInfoForGprs SendRoutingInfoForGprs ::= localValue 24
```

-- failure reporting operation codes

```
failureReport FailureReport ::= localValue 25
```

-- GPRS notification operation codes

```
noteMsPresentForGprs NoteMsPresentForGprs ::= localValue 26
```

-- Location service operation codes

```
provideSubscriberLocation ProvideSubscriberLocation ::= localValue 83
```

```
sendRoutingInfoForLCS SendRoutingInfoForLCS ::= localValue 85
```

```
subscriberLocationReport SubscriberLocationReport ::= localValue 86
```

-- Mobility Management operation codes

```
noteMM-Event NoteMM-Event ::= localValue 89
```

-- generic error codes

```
systemFailure SystemFailure ::= localValue 34
```

```
dataMissing DataMissing ::= localValue 35
```

```
unexpectedDataValue UnexpectedDataValue ::= localValue 36
```

```
facilityNotSupported FacilityNotSupported ::= localValue 21
```

```
incompatibleTerminal IncompatibleTerminal ::= localValue 28
```

```
resourceLimitation ResourceLimitation ::= localValue 51
```

-- identification and numbering error codes

```
unknownSubscriber UnknownSubscriber ::= localValue 1
```

```
numberChanged NumberChanged ::= localValue 44
```

```
unknownMSC UnknownMSC ::= localValue 3
```

```
unidentifiedSubscriber UnidentifiedSubscriber ::= localValue 5
```

```
unknownEquipment UnknownEquipment ::= localValue 7
```

-- subscription error codes

```
roamingNotAllowed RoamingNotAllowed ::= localValue 8
```

```
illegalSubscriber IllegalSubscriber ::= localValue 9
```

```
illegalEquipment IllegalEquipment ::= localValue 12
```

```
bearerServiceNotProvisioned BearerServiceNotProvisioned ::=  
localValue 10
```

```
teleserviceNotProvisioned TeleserviceNotProvisioned ::=  
localValue 11
```

-- handover error codes

```
noHandoverNumberAvailable NoHandoverNumberAvailable ::=  
localValue 25
```

```
subsequentHandoverFailure SubsequentHandoverFailure ::=  
localValue 26
```

```
targetCellOutsideGroupCallArea TargetCellOutsideGroupCallArea ::=  
localValue 42
```

-- operation and maintenance error codes

```
tracingBufferFull TracingBufferFull ::= localValue 40
```

-- call handling error codes

```

noRoamingNumberAvailable NoRoamingNumberAvailable ::= localValue 39
absentSubscriber AbsentSubscriber ::= localValue 27
busySubscriber BusySubscriber ::= localValue 45
noSubscriberReply NoSubscriberReply ::= localValue 46
callBarred CallBarred ::= localValue 13
forwardingFailed ForwardingFailed ::= localValue 47
or-NotAllowed OR-NotAllowed ::= localValue 48
forwardingViolation ForwardingViolation ::= localValue 14
cug-Reject CUG-Reject ::= localValue 15

```

-- any time interrogation error codes

```

ati-NotAllowed ATI-NotAllowed ::= localValue 49

```

-- any time information handling error codes

```

atsi-NotAllowed ATSI-NotAllowed ::= localValue 60
atm-NotAllowed ATM-NotAllowed ::= localValue 61
informationNotAvailable InformationNotAvailable ::= localValue 62

```

-- Group Call error codes

```

noGroupCallNumberAvailable NoGroupCallNumberAvailable ::= localValue 50

```

-- supplementary service error codes

```

illegalSS-Operation IllegalSS-Operation ::= localValue 16
ss-ErrorStatus SS-ErrorStatus ::= localValue 17
ss-NotAvailable SS-NotAvailable ::= localValue 18
ss-SubscriptionViolation SS-SubscriptionViolation ::= localValue 19
ss-Incompatibility SS-Incompatibility ::= localValue 20
unknownAlphabet UnknownAlphabet ::= localValue 71
ussd-Busy USSD-Busy ::= localValue 72
pw-RegistrationFailure PW-RegistrationFailure ::= localValue 37
negativePW-Check NegativePW-Check ::= localValue 38
numberOfPW-AttemptsViolation NumberOfPW-AttemptsViolation ::=
    localValue 43
shortTermDenial ShortTermDenial ::= localValue 29
longTermDenial LongTermDenial ::= localValue 30

```

-- short message service error codes

```

subscriberBusyForMT-SMS SubscriberBusyForMT-SMS ::= localValue 31
sm-DeliveryFailure SM-DeliveryFailure ::= localValue 32
messageWaitingListFull MessageWaitingListFull ::= localValue 33
absentSubscriberSM AbsentSubscriberSM ::= localValue 6

```

-- location service error codes

```

unauthorizedRequestingNetwork UnauthorizedRequestingNetwork ::= localValue 52
unauthorizedLCSCClient UnauthorizedLCSCClient ::= localValue 53
positionMethodFailure PositionMethodFailure ::= localValue 54
unknownOrUnreachableLCSCClient UnknownOrUnreachableLCSCClient ::= localValue 58

```

-- Mobility Management error codes

```

mm-EventNotSupported MM-EventNotSupported ::= localValue 59

```

-- The following operation codes are reserved for operations  
-- existing in previous versions of the protocol

Operation Name	AC used	Oper. Code
--		
-- sendParameters	map-ac infoRetrieval (14) version1 (1)	localValue 9
-- processUnstructuredSS-Data	map-ac networkFunctionalSs (18) version1 (1)	localValue 19
-- performHandover	map-ac handoverControl (11) version1 (1)	localValue 28
-- performSubsequentHandover	map-ac handoverControl (11) version1 (1)	localValue 30
-- noteInternalHandover	map-ac handoverControl (11) version1 (1)	localValue 35
-- noteSubscriberPresent	map-ac mwdMngt (24) version1 (1)	localValue 48
-- alertServiceCentreWithoutResult	map-ac shortMsgAlert (23) version1 (1)	localValue 49
-- traceSubscriberActivity	map-ac handoverControl (11) version1 (1)	localValue 52
-- beginSubscriberActivity	map-ac networkFunctionalSs (18) version1 (1)	localValue 54

-- The following error codes are reserved for errors  
-- existing in previous versions of the protocol

Error Name	AC used	Error Code
-- unknownBaseStation	map-ac handoverControl (11) version1 (1)	localValue 2
-- invalidTargetBaseStation	map-ac handoverControl (11) version1 (1)	localValue 23
-- noRadioResourceAvailable	map-ac handoverControl (11) version1 (1)	localValue 24

END

## 17.6 MAP operation and error types

### 17.6.1 Mobile Service Operations

```
MAP-MobileServiceOperations {  
  ccitt identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-MobileServiceOperations (5)  
  version6 (6)}
```

DEFINITIONS

::=

BEGIN

EXPORTS

```
-- location registration operations  
UpdateLocation,  
CancelLocation,  
PurgeMS,  
SendIdentification,  
  
-- gprs location registration operations  
UpdateGprsLocation,  
  
-- subscriber information enquiry operations  
ProvideSubscriberInfo,  
  
-- any time information enquiry operations  
AnyTimeInterrogation,  
  
-- any time information handling operations  
AnyTimeSubscriptionInterrogation,  
AnyTimeModification,  
  
-- subscriber data modification notification operations  
NoteSubscriberDataModified,  
  
-- handover operations  
PrepareHandover,  
SendEndSignal,  
ProcessAccessSignalling,  
ForwardAccessSignalling,  
PrepareSubsequentHandover,  
  
-- authentication management operations  
SendAuthenticationInfo,  
AuthenticationFailureReport,  
  
-- IMEI management operations  
CheckIMEI,  
  
-- subscriber management operations  
InsertSubscriberData,  
DeleteSubscriberData,  
  
-- fault recovery operations  
Reset,  
ForwardCheckSS-Indication,  
RestoreData,
```

```

-- gprs location information retrieval operations
SendRoutingInfoForGprs,

-- failure reporting operations
FailureReport,

-- gprs notification operations
NoteMsPresentForGprs,

-- Mobility Management operations
NoteMM-Event

;

IMPORTS
OPERATION
FROM TCAPMessages {
  ccitt recommendation q 773 modules (2) messages (1) version2 (2)}

SystemFailure,
DataMissing,
UnexpectedDataValue,
UnknownSubscriber,
UnknownMSC,
UnidentifiedSubscriber,
UnknownEquipment,
RoamingNotAllowed,
ATI-NotAllowed,
NoHandoverNumberAvailable,
SubsequentHandoverFailure,
AbsentSubscriber,
MM-EventNotSupported,
ATSI-NotAllowed,
ATM-NotAllowed,
BearerServiceNotProvisioned,
TeleserviceNotProvisioned,
CallBarred,
IllegalSS-Operation,
SS-ErrorStatus,
SS-NotAvailable,
SS-Incompatibility,
SS-SubscriptionViolation,
InformationNotAvailable,
TargetCellOutsideGroupCallArea

FROM MAP-Errors {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-Errors (10) version6 (6)}

UpdateLocationArg,
UpdateLocationRes,
CancelLocationArg,
CancelLocationRes,
PurgeMS-Arg,
PurgeMS-Res,
SendIdentificationArg,
SendIdentificationRes,
UpdateGprsLocationArg,
UpdateGprsLocationRes,
PrepareHO-Arg,
PrepareHO-Res,
ForwardAccessSignalling-Arg,
ProcessAccessSignalling-Arg,
SendEndSignal-Arg,
SendEndSignal-Res,
PrepareSubsequentHO-Res,
PrepareSubsequentHO-Arg,
SendAuthenticationInfoArg,
SendAuthenticationInfoRes,
AuthenticationFailureReportArg,
AuthenticationFailureReportRes,
EquipmentStatus,
InsertSubscriberDataArg,
InsertSubscriberDataRes,
DeleteSubscriberDataArg,

```



```

DeleteSubscriberDataRes,
ResetArg,
RestoreDataArg,
RestoreDataRes,
ProvideSubscriberInfoArg,
ProvideSubscriberInfoRes,
AnyTimeSubscriptionInterrogationArg,
AnyTimeSubscriptionInterrogationRes,
AnyTimeModificationArg,
AnyTimeModificationRes,
NoteSubscriberDataModifiedArg,
NoteSubscriberDataModifiedRes,
AnyTimeInterrogationArg,
AnyTimeInterrogationRes,
SendRoutingInfoForGprsArg,
SendRoutingInfoForGprsRes,
FailureReportArg,
FailureReportRes,
NoteMsPresentForGprsArg,
NoteMsPresentForGprsRes,
NoteMM-EventArg,
NoteMM-EventRes

```

```

FROM MAP-MS-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-MS-DataTypes (11) version6 (6)}

```

IMEI

```

FROM MAP-CommonDataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}
;

```

*-- location registration operations*

<pre> <b>UpdateLocation</b> ::= OPERATION ARGUMENT   updateLocationArg          UpdateLocationArg RESULT   updateLocationRes          UpdateLocationRes ERRORS {   SystemFailure,   DataMissing,   UnexpectedDataValue,   UnknownSubscriber,   RoamingNotAllowed} </pre>	--Timer m
--	-----------

<pre> <b>CancelLocation</b> ::= OPERATION ARGUMENT   cancelLocationArg          CancelLocationArg RESULT   cancelLocationRes          CancelLocationRes   -- optional ERRORS {   DataMissing,   UnexpectedDataValue} </pre>	--Timer m
---	-----------

<pre> <b>PurgeMS</b> ::= OPERATION ARGUMENT   purgeMS-Arg                PurgeMS-Arg RESULT   purgeMS-Res                PurgeMS-Res   -- optional ERRORS {   DataMissing,   UnexpectedDataValue,   UnknownSubscriber} </pre>	--Timer m
---	-----------

```

SendIdentification ::= OPERATION --Timer s
  ARGUMENT
    sendIdentificationArg          SendIdentificationArg
  RESULT
    sendIdentificationRes         SendIdentificationRes
  ERRORS {
    DataMissing,
    UnidentifiedSubscriber}

```

*-- gprs location registration operations*

```

UpdateGprsLocation ::= OPERATION --Timer m
  ARGUMENT
    updateGprsLocationArg         UpdateGprsLocationArg
  RESULT
    updateGprsLocationRes         UpdateGprsLocationRes
  ERRORS {
    SystemFailure,
    UnexpectedDataValue,
    UnknownSubscriber,
    RoamingNotAllowed}

```

*-- subscriber information enquiry operations*

```

ProvideSubscriberInfo ::= OPERATION --Timer m
  ARGUMENT
    provideSubscriberInfoArg      ProvideSubscriberInfoArg
  RESULT
    provideSubscriberInfoRes      ProvideSubscriberInfoRes
  ERRORS {
    DataMissing,
    UnexpectedDataValue}

```

*-- any time information enquiry operations*

```

AnyTimeInterrogation ::= OPERATION --Timer m
  ARGUMENT
    anyTimeInterrogationArg       AnyTimeInterrogationArg
  RESULT
    anyTimeInterrogationRes       AnyTimeInterrogationRes
  ERRORS {
    SystemFailure,
    ATI-NotAllowed,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber}

```

*-- any time information handling operations*

```

AnyTimeSubscriptionInterrogation ::= OPERATION --Timer m
  ARGUMENT
    anyTimeSubscriptionInterrogationArg AnyTimeSubscriptionInterrogationArg
  RESULT
    anyTimeSubscriptionInterrogationRes AnyTimeSubscriptionInterrogationRes
  ERRORS {
    ATSI-NotAllowed,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber,
    BearerServiceNotProvisioned,
    TeleserviceNotProvisioned,
    CallBarred,
    IllegalSS-Operation,
    SS-NotAvailable,
    InformationNotAvailable}

```

```

AnyTimeModification ::= OPERATION --Timer m
  ARGUMENT
    anyTimeModificationArg AnyTimeModificationArg
  RESULT
    anyTimeModificationRes AnyTimeModificationRes
  ERRORS {
    ATM-NotAllowed,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber,
    BearerServiceNotProvisioned,
    TeleserviceNotProvisioned,
    CallBarred,
    IllegalSS-Operation,
    SS-SubscriptionViolation,
    SS-ErrorStatus,
    SS-Incompatibility,
    InformationNotAvailable}

```

*-- subscriber data modification notification operations*

```

NoteSubscriberDataModified ::= OPERATION --Timer m
  ARGUMENT
    noteSubscriberDataModifiedArg NoteSubscriberDataModifiedArg
  RESULT
    noteSubscriberDataModifiedRes NoteSubscriberDataModifiedRes
    -- optional
  ERRORS {
    UnexpectedDataValue,
    UnknownSubscriber}

```

*-- handover operations*

```

PrepareHandover ::= OPERATION --Timer m
  ARGUMENT
    prepareHO-Arg PrepareHO-Arg
  RESULT
    prepareHO-Res PrepareHO-Res
  ERRORS {
    SystemFailure,
    DataMissing,
    UnexpectedDataValue,
    NoHandoverNumberAvailable,
    TargetCellOutsideGroupCallArea}

```

```

SendEndSignal ::= OPERATION --Timer l
  ARGUMENT
    sendEndSignal-Arg SendEndSignal-Arg
  RESULT
    sendEndSignal-Res SendEndSignal-Res

```

```

ProcessAccessSignalling ::= OPERATION --Timer s
  ARGUMENT
    processAccessSignalling-Arg ProcessAccessSignalling-Arg

```

```

ForwardAccessSignalling ::= OPERATION --Timer s
  ARGUMENT
    forwardAccessSignalling-Arg ForwardAccessSignalling-Arg

```

```

PrepareSubsequentHandover ::= OPERATION --Timer m
  ARGUMENT
    prepareSubsequentHO-Arg PrepareSubsequentHO-Arg
  RESULT
    prepareSubsequentHO-Res PrepareSubsequentHO-Res
  ERRORS {
    UnexpectedDataValue,
    DataMissing,
    UnknownMSC,
    SubsequentHandoverFailure}

```

*-- authentication management operations*

```

SendAuthenticationInfo ::= OPERATION --Timer m
  ARGUMENT
    sendAuthenticationInfoArg      SendAuthenticationInfoArg
  RESULT
    sendAuthenticationInfoRes      SendAuthenticationInfoRes
    -- optional
  ERRORS {
    SystemFailure,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber}

```

```

AuthenticationFailureReport ::= OPERATION --Timer m
  ARGUMENT
    authenticationFailureReportArg AuthenticationFailureReportArg
  RESULT
    authenticationFailureReportRes AuthenticationFailureReportRes
    -- optional
  ERRORS {
    SystemFailure,
    UnexpectedDataValue,
    UnknownSubscriber}

```

*-- IMEI management operations*

```

CheckIMEI ::= OPERATION --Timer m
  ARGUMENT
    imei          IMEI
  RESULT
    equipmentStatus      EquipmentStatus
  ERRORS {
    SystemFailure,
    DataMissing,
    UnknownEquipment}

```

*-- subscriber management operations*

```

InsertSubscriberData ::= OPERATION --Timer m
  ARGUMENT
    insertSubscriberDataArg      InsertSubscriberDataArg
  RESULT
    insertSubscriberDataRes      InsertSubscriberDataRes
    -- optional
  ERRORS {
    DataMissing,
    UnexpectedDataValue,
    UnidentifiedSubscriber}

```

```

DeleteSubscriberData ::= OPERATION --Timer m
  ARGUMENT
    deleteSubscriberDataArg      DeleteSubscriberDataArg
  RESULT
    deleteSubscriberDataRes      DeleteSubscriberDataRes
    -- optional
  ERRORS {
    DataMissing,
    UnexpectedDataValue,
    UnidentifiedSubscriber}

```

*-- fault recovery operations*

```

Reset ::= OPERATION --Timer m
  ARGUMENT
    resetArg      ResetArg

```

```

ForwardCheckSS-Indication ::= OPERATION --Timer s

```

```

RestoreData ::= OPERATION --Timer m
  ARGUMENT
    restoreDataArg      RestoreDataArg
  RESULT
    restoreDataRes      RestoreDataRes
  ERRORS {
    SystemFailure,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber}

```

-- gprs location information retrieval operations

```
SendRoutingInfoForGprs ::= OPERATION --Timer m
  ARGUMENT
    sendRoutingInfoForGprsArg      SendRoutingInfoForGprsArg
  RESULT
    sendRoutingInfoForGprsRes      SendRoutingInfoForGprsRes
  ERRORS {
    AbsentSubscriber,
    SystemFailure,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber}
```

-- failure reporting operations

```
FailureReport ::= OPERATION --Timer m
  ARGUMENT
    failureReportArg              FailureReportArg
  RESULT
    failureReportRes              FailureReportRes
    -- optional
  ERRORS {
    SystemFailure,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber}
```

-- gprs notification operations

```
NoteMsPresentForGprs ::= OPERATION --Timer m
  ARGUMENT
    noteMsPresentForGprsArg      NoteMsPresentForGprsArg
  RESULT
    noteMsPresentForGprsRes      NoteMsPresentForGprsRes
    -- optional
  ERRORS {
    SystemFailure,
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber}
```

```
NoteMM-Event ::= OPERATION --Timer m
  ARGUMENT
    noteMM-EventArg              NoteMM-EventArg
  RESULT
    noteMM-EventRes              NoteMM-EventRes
  ERRORS {
    DataMissing,
    UnexpectedDataValue,
    UnknownSubscriber,
    MM-EventNotSupported}
```

END

## 17.6.6 Errors

```
MAP-Errors {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-Errors (10) version6 (6)}
```

DEFINITIONS

::=

BEGIN

EXPORTS

```
-- generic errors
SystemFailure,
DataMissing,
UnexpectedDataValue,
FacilityNotSupported,
IncompatibleTerminal,
ResourceLimitation,
```

```

-- identification and numbering errors
UnknownSubscriber,
NumberChanged,
UnknownMSC,
UnidentifiedSubscriber,
UnknownEquipment,

-- subscription errors
RoamingNotAllowed,
IllegalSubscriber,
IllegalEquipment,
BearerServiceNotProvisioned,
TeleserviceNotProvisioned,

-- handover errors
NoHandoverNumberAvailable,
SubsequentHandoverFailure,
TargetCellOutsideGroupCallArea

-- operation and maintenance errors
TracingBufferFull,

-- call handling errors
OR-NotAllowed,
NoRoamingNumberAvailable,
BusySubscriber,
NoSubscriberReply,
AbsentSubscriber,
CallBarred,
ForwardingViolation,
ForwardingFailed,
CUG-Reject,

-- any time interrogation errors
ATI-NotAllowed,

-- any time information handling errors
ATSI-NotAllowed,
ATM-NotAllowed,
InformationNotAvailable,

-- supplementary service errors
IllegalSS-Operation,
SS-ErrorStatus,
SS-NotAvailable,
SS-SubscriptionViolation,
SS-Incompatibility,
UnknownAlphabet,
USSD-Busy,
PW-RegistrationFailure,
NegativePW-Check,
NumberOfPW-AttemptsViolation,
ShortTermDenial,
LongTermDenial,

-- short message service errors
SubscriberBusyForMT-SMS,
SM-DeliveryFailure,
MessageWaitingListFull,
AbsentSubscriberSM,

-- Group Call errors
NoGroupCallNumberAvailable,

-- location service errors
UnauthorizedRequestingNetwork,
UnauthorizedLCSCClient,
PositionMethodFailure,
UnknownOrUnreachableLCSCClient,

-- Mobility Management errors
MM-EventNotSupported

;

IMPORTS
ERROR
FROM TCAPMessages {

```

```
ccitt recommendation q 773 modules (2) messages (1) version2 (2)}
```

```
SS-Status
```

```
FROM MAP-SS-DataTypes {  
  ccitt identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-SS-DataTypes (14) version6 (6)}
```

```
SS-IncompatibilityCause,  
PW-RegistrationFailureCause,  
SM-DeliveryFailureCause,  
SystemFailureParam,  
DataMissingParam,  
UnexpectedDataParam,  
FacilityNotSupParam,  
UnknownSubscriberParam,  
NumberChangedParam,  
UnidentifiedSubParam,  
RoamingNotAllowedParam,  
IllegalSubscriberParam,  
IllegalEquipmentParam,  
BearerServNotProvParam,  
TeleservNotProvParam,  
TracingBufferFullParam,  
NoRoamingNbParam,  
OR-NotAllowedParam,  
AbsentSubscriberParam,  
BusySubscriberParam,  
NoSubscriberReplyParam,  
CallBarredParam,  
ForwardingViolationParam,  
ForwardingFailedParam,  
CUG-RejectParam,  
ATI-NotAllowedParam,  
SubBusyForMT-SMS-Param,  
MessageWaitListFullParam,  
AbsentSubscriberSM-Param,  
ResourceLimitationParam,  
NoGroupCallNbParam,  
IncompatibleTerminalParam,  
ShortTermDenialParam,  
LongTermDenialParam,  
UnauthorizedRequestingNetwork-Param,  
UnauthorizedLCSCClient-Param,  
PositionMethodFailure-Param,  
UnknownOrUnreachableLCSCClient-Param,  
MM-EventNotSupported-Param,  
ATSI-NotAllowedParam,  
ATM-NotAllowedParam,  
IllegalSS-OperationParam,  
SS-NotAvailableParam,  
SS-SubscriptionViolationParam,  
InformationNotAvailableParam,  
TargetCellOutsideGCA-Param
```

```
FROM MAP-ER-DataTypes {  
  ccitt identified-organization (4) etsi (0) mobileDomain (0)  
  gsm-Network (1) modules (3) map-ER-DataTypes (17) version6 (6)}  
;
```

```
-- generic errors
```

```
SystemFailure ::= ERROR  
  PARAMETER  
    systemFailureParam          SystemFailureParam  
  -- optional
```

```
DataMissing ::= ERROR  
  PARAMETER  
    dataMissingParam           DataMissingParam  
  -- optional  
  -- dataMissingParam must not be used in version <3
```

```
UnexpectedDataValue ::= ERROR
PARAMETER
    unexpectedDataParam          UnexpectedDataParam
    -- optional
    -- unexpectedDataParam must not be used in version <3
```

```
FacilityNotSupported ::= ERROR
PARAMETER
    facilityNotSupParam          FacilityNotSupParam
    -- optional
    -- facilityNotSupParam must not be used in version <3
```

```
IncompatibleTerminal ::= ERROR
PARAMETER
    incompatibleTerminalParam    IncompatibleTerminalParam
    -- optional
```

```
ResourceLimitation ::= ERROR
PARAMETER
    resourceLimitationParam      ResourceLimitationParam
    -- optional
```

*-- identification and numbering errors*

```
UnknownSubscriber ::= ERROR
PARAMETER
    unknownSubscriberParam       UnknownSubscriberParam
    -- optional
    -- unknownSubscriberParam must not be used in version <3
```

```
NumberChanged ::= ERROR
PARAMETER
    numberChangedParam           NumberChangedParam
    -- optional
```

```
UnknownMSC ::= ERROR
```

```
UnidentifiedSubscriber ::= ERROR
PARAMETER
    unidentifiedSubParam         UnidentifiedSubParam
    -- optional
    -- unidentifiedSubParam must not be used in version <3
```

```
UnknownEquipment ::= ERROR
```

*-- subscription errors*

```
RoamingNotAllowed ::= ERROR
PARAMETER
    roamingNotAllowedParam       RoamingNotAllowedParam
```

```
IllegalSubscriber ::= ERROR
PARAMETER
    illegalSubscriberParam       IllegalSubscriberParam
    -- optional
    -- illegalSubscriberParam must not be used in version <3
```

```
IllegalEquipment ::= ERROR
PARAMETER
    illegalEquipmentParam        IllegalEquipmentParam
    -- optional
    -- illegalEquipmentParam must not be used in version <3
```

```
BearerServiceNotProvisioned ::= ERROR
PARAMETER
    bearerServNotProvParam       BearerServNotProvParam
    -- optional
    -- bearerServNotProvParam must not be used in version <3
```

```
TeleserviceNotProvisioned ::= ERROR
PARAMETER
    teleservNotProvParam         TeleservNotProvParam
    -- optional
    -- teleservNotProvParam must not be used in version <3
```



-- handover errors

```
NoHandoverNumberAvailable ::= ERROR
```

```
SubsequentHandoverFailure ::= ERROR
```

```
TargetCellOutsideGroupCallArea ::= ERROR
```

```
PARAMETER  
    targetCellOutsideGCA-Param      TargetCellOutsideGCA-Param  
    -- optional
```

-- operation and maintenance errors

```
TracingBufferFull ::= ERROR
```

```
PARAMETER  
    tracingBufferFullParam          TracingBufferFullParam  
    -- optional
```

-- call handling errors

```
NoRoamingNumberAvailable ::= ERROR
```

```
PARAMETER  
    noRoamingNbParam               NoRoamingNbParam  
    -- optional
```

```
AbsentSubscriber ::= ERROR
```

```
PARAMETER  
    absentSubscriberParam          AbsentSubscriberParam  
    -- optional  
    -- absentSubscriberParam must not be used in version <3
```

```
BusySubscriber ::= ERROR
```

```
PARAMETER  
    busySubscriberParam            BusySubscriberParam  
    -- optional
```

```
NoSubscriberReply ::= ERROR
```

```
PARAMETER  
    noSubscriberReplyParam         NoSubscriberReplyParam  
    -- optional
```

```
CallBarred ::= ERROR
```

```
PARAMETER  
    callBarredParam               CallBarredParam  
    -- optional
```

```
ForwardingViolation ::= ERROR
```

```
PARAMETER  
    forwardingViolationParam       ForwardingViolationParam  
    -- optional
```

```
ForwardingFailed ::= ERROR
```

```
PARAMETER  
    forwardingFailedParam          ForwardingFailedParam  
    -- optional
```

```
CUG-Reject ::= ERROR
```

```
PARAMETER  
    cug-RejectParam               CUG-RejectParam  
    -- optional
```

```
OR-NotAllowed ::= ERROR
```

```
PARAMETER  
    or-NotAllowedParam            OR-NotAllowedParam  
    -- optional
```

-- any time interrogation errors

```
ATI-NotAllowed ::= ERROR
```

```
PARAMETER  
    ati-NotAllowedParam           ATI-NotAllowedParam  
    -- optional
```

-- any time information handling errors

<b>ATSI-NotAllowed ::= ERROR</b> PARAMETER atsi-NotAllowedParam                      ATSI-NotAllowedParam -- optional
--

<b>ATM-NotAllowed ::= ERROR</b> PARAMETER atm-NotAllowedParam                      ATM-NotAllowedParam -- optional
---

<b>InformationNotAvailable ::= ERROR</b> PARAMETER informationNotAvailableParam      InformationNotAvailableParam -- optional
--

-- supplementary service errors

<b>IllegalSS-Operation ::= ERROR</b> PARAMETER illegalSS-OperationParam              IllegalSS-OperationParam -- optional -- illegalSS-OperationParam must not be used in version <3
--

<b>SS-ErrorStatus ::= ERROR</b> PARAMETER ss-Status                              SS-Status -- optional
---

<b>SS-NotAvailable ::= ERROR</b> PARAMETER ss-NotAvailableParam                  SS-NotAvailableParam -- optional -- ss-NotAvailableParam must not be used in version <3
--

<b>SS-SubscriptionViolation ::= ERROR</b> PARAMETER ss-SubscriptionViolationParam      SS-SubscriptionViolationParam -- optional -- ss-NotAvailableParam must not be used in version <3
---

<b>SS-Incompatibility ::= ERROR</b> PARAMETER ss-IncompatibilityCause              SS-IncompatibilityCause -- optional
---

<b>UnknownAlphabet ::= ERROR</b>
----------------------------------

<b>USSD-Busy ::= ERROR</b>
----------------------------

<b>PW-RegistrationFailure ::= ERROR</b> PARAMETER pw-RegistrationFailureCause      PW-RegistrationFailureCause
--

<b>NegativePW-Check ::= ERROR</b>
-----------------------------------

<b>NumberOfPW-AttemptsViolation ::= ERROR</b>
---

<b>ShortTermDenial ::= ERROR</b> PARAMETER shortTermDenialParam                  ShortTermDenialParam -- optional
--

<b>LongTermDenial ::= ERROR</b> PARAMETER longTermDenialParam                  LongTermDenialParam -- optional
---

-- short message service errors

```
SubscriberBusyForMT-SMS ::= ERROR
  PARAMETER
    subBusyForMT-SMS-Param          SubBusyForMT-SMS-Param
  -- optional
```

```
SM-DeliveryFailure ::= ERROR
  PARAMETER
    sm-DeliveryFailureCause          SM-DeliveryFailureCause
```

```
MessageWaitingListFull ::= ERROR
  PARAMETER
    messageWaitListFullParam        MessageWaitListFullParam
  -- optional
```

```
AbsentSubscriberSM ::= ERROR
  PARAMETER
    absentSubscriberSM-Param         AbsentSubscriberSM-Param
  -- optional
```

-- Group Call errors

```
NoGroupCallNumberAvailable ::= ERROR
  PARAMETER
    noGroupCallNbParam              NoGroupCallNbParam
  -- optional
```

-- location service errors

```
UnauthorizedRequestingNetwork ::= ERROR
  PARAMETER
    unauthorizedRequestingNetwork-Param  UnauthorizedRequestingNetwork-Param
  -- optional
```

```
UnauthorizedLCSClient ::= ERROR
  PARAMETER
    unauthorizedLCSClient-Param         UnauthorizedLCSClient-Param
  -- optional
```

```
PositionMethodFailure ::= ERROR
  PARAMETER
    positionMethodFailure-Param        PositionMethodFailure-Param
  -- optional
```

```
UnknownOrUnreachableLCSClient ::= ERROR
  PARAMETER
    unknownOrUnreachableLCSClient-Param  UnknownOrUnreachableLCSClient-Param
  -- optional
```

```
MM-EventNotSupported ::= ERROR
  PARAMETER
    mm-EventNotSupported-Param         MM-EventNotSupported-Param
  -- optional
```

END

## 17.7.7 Error data types

```
MAP-ER-DataTypes {
  ccitt identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-ER-DataTypes (17) version6 (6)}
```

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

```
  RoamingNotAllowedParam,
  CallBarredParam,
  CUG-RejectParam,
  SS-IncompatibilityCause,
  PW-RegistrationFailureCause,
  SM-DeliveryFailureCause,
  SystemFailureParam,
```

```

DataMissingParam,
UnexpectedDataParam,
FacilityNotSupParam,
OR-NotAllowedParam,
UnknownSubscriberParam,
NumberChangedParam,
UnidentifiedSubParam,
IllegalSubscriberParam,
IllegalEquipmentParam,
BearerServNotProvParam,
TeleservNotProvParam,
TracingBufferFullParam,
NoRoamingNbParam,
AbsentSubscriberParam,
BusySubscriberParam,
NoSubscriberReplyParam,
ForwardingViolationParam,
ForwardingFailedParam,
ATI-NotAllowedParam,
SubBusyForMT-SMS-Param,
MessageWaitListFullParam,
AbsentSubscriberSM-Param,
AbsentSubscriberDiagnosticSM,
ResourceLimitationParam,
NoGroupCallNbParam,
IncompatibleTerminalParam,
ShortTermDenialParam,
LongTermDenialParam,
UnauthorizedRequestingNetwork-Param,
UnauthorizedLCSCClient-Param,
PositionMethodFailure-Param,
UnknownOrUnreachableLCSCClient-Param,
MM-EventNotSupported-Param,
ATSI-NotAllowedParam,
ATM-NotAllowedParam,
IllegalSS-OperationParam,
SS-NotAvailableParam,
SS-SubscriptionViolationParam,
InformationNotAvailableParam,
TargetCellOutsideGCA-Param

```

```
;
```

```
IMPORTS
```

```
SS-Status
```

```
FROM MAP-SS-DataTypes {
```

```
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-SS-DataTypes (14) version6 (6)}
```

```
SignalInfo,
```

```
BasicServiceCode,
```

```
NetworkResource
```

```
FROM MAP-CommonDataTypes {
```

```
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}
```

```
SS-Code
```

```
FROM MAP-SS-Code {
```

```
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-SS-Code (15) version6 (6)}
```

```
ExtensionContainer
```

```
FROM MAP-ExtensionDataTypes {
```

```
ccitt identified-organization (4) etsi (0) mobileDomain (0)
gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}
```

```
;
```

<pre> RoamingNotAllowedParam ::= SEQUENCE {     roamingNotAllowedCause      RoamingNotAllowedCause,     extensionContainer           ExtensionContainer     ...} </pre>	<pre>OPTIONAL,</pre>
---	----------------------

<pre> RoamingNotAllowedCause ::= ENUMERATED {     plmnRoamingNotAllowed (0),     operatorDeterminedBarring (3)} </pre>
--

```

CallBarredParam ::= CHOICE {
    callBarringCause          CallBarringCause,
    -- call BarringCause must not be used in version 3
    extensibleCallBarredParam  ExtensibleCallBarredParam
    -- extensibleCallBarredParam must not be used in version <3
}

```

```

CallBarringCause ::= ENUMERATED {
    barringServiceActive (0),
    operatorBarring (1)}

```

```

ExtensibleCallBarredParam ::= SEQUENCE {
    callBarringCause          CallBarringCause          OPTIONAL,
    extensionContainer        ExtensionContainer         OPTIONAL,
    ... ,
    unauthorisedMessageOriginator [1] NULL            OPTIONAL }

```

```

CUG-RejectParam ::= SEQUENCE {
    cug-RejectCause          CUG-RejectCause          OPTIONAL,
    extensionContainer        ExtensionContainer         OPTIONAL,
    ...}

```

```

CUG-RejectCause ::= ENUMERATED {
    incomingCallsBarredWithinCUG (0),
    subscriberNotMemberOfCUG (1),
    requestedBasicServiceViolatesCUG-Constraints (5),
    calledPartySS-InteractionViolation (7)}

```

```

SS-IncompatibilityCause ::= SEQUENCE {
    ss-Code                  [1] SS-Code                OPTIONAL,
    basicService              BasicServiceCode           OPTIONAL,
    ss-Status                 [4] SS-Status              OPTIONAL,
    ...}

```

```

PW-RegistrationFailureCause ::= ENUMERATED {
    undetermined (0),
    invalidFormat (1),
    newPasswordsMismatch (2)}

```

```

SM-EnumeratedDeliveryFailureCause ::= ENUMERATED {
    memoryCapacityExceeded (0),
    equipmentProtocolError (1),
    equipmentNotSM-Equipped (2),
    unknownServiceCentre (3),
    sc-Congestion (4),
    invalidSME-Address (5),
    subscriberNotSC-Subscriber (6)}

```

```

SM-DeliveryFailureCause ::= SEQUENCE {
    sm-EnumeratedDeliveryFailureCause SM-EnumeratedDeliveryFailureCause,
    diagnosticInfo                    SignalInfo          OPTIONAL,
    extensionContainer                 ExtensionContainer    OPTIONAL,
    ...}

```

```

AbsentSubscriberSM-Param ::= SEQUENCE {
    absentSubscriberDiagnosticSM      AbsentSubscriberDiagnosticSM  OPTIONAL,
    -- AbsentSubscriberDiagnosticSM can be either for non-GPRS
    -- or for GPRS
    extensionContainer                ExtensionContainer          OPTIONAL,
    ... ,
    additionalAbsentSubscriberDiagnosticSM [0] AbsentSubscriberDiagnosticSM OPTIONAL }
    -- if received, additionalAbsentSubscriberDiagnosticSM
    -- is for GPRS and absentSubscriberDiagnosticSM is
    -- for non-GPRS

```

```

AbsentSubscriberDiagnosticSM ::= INTEGER (0..255)
    -- AbsentSubscriberDiagnosticSM values are defined in ETS 300 536 (GSM 03.40)

```

```

SystemFailureParam ::= CHOICE {
    networkResource          NetworkResource,
    -- networkResource must not be used in version 3
    extensibleSystemFailureParam  ExtensibleSystemFailureParam
    -- extensibleSystemFailureParam must not be used in version <3
}

```

<b>ExtensibleSystemFailureParam</b> ::= SEQUENCE { networkResource                      NetworkResource                      OPTIONAL, extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>DataMissingParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>UnexpectedDataParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>FacilityNotSupParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>OR-NotAllowedParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>UnknownSubscriberParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ..., unknownSubscriberDiagnostic        UnknownSubscriberDiagnostic        OPTIONAL}
<b>UnknownSubscriberDiagnostic</b> ::= ENUMERATED { imsiUnknown (0), gprsSubscriptionUnknown (1), ..., npdbMismatch (2)} -- if unknown values are received in -- unknownSubscriberDiagnostic they shall be discarded
<b>NumberChangedParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>UnidentifiedSubParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>IllegalSubscriberParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>IllegalEquipmentParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>BearerServNotProvParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>TeleservNotProvParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>TracingBufferFullParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>NoRoamingNbParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ...}
<b>AbsentSubscriberParam</b> ::= SEQUENCE { extensionContainer                    ExtensionContainer                    OPTIONAL, ..., absentSubscriberReason              [0] AbsentSubscriberReason        OPTIONAL}

```

AbsentSubscriberReason ::= ENUMERATED {
    imsiDetach (0),
    restrictedArea (1),
    noPageResponse (2),
    ... ,
    purgedMS (3)}
-- exception handling: at reception of other values than the ones listed the
-- AbsentSubscriberReason shall be ignored.
-- The AbsentSubscriberReason: purgedMS is defined for the Super-Charger feature
-- (see TS 23.116). If this value is received in a Provide Roaming Number response
-- it shall be mapped to the AbsentSubscriberReason: imsiDetach in the Send Routing
-- Information response

```

```

BusySubscriberParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ... ,
    ccbs-Possible               [0] NULL                 OPTIONAL,
    ccbs-Busy                   [1] NULL                 OPTIONAL}

```

```

NoSubscriberReplyParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

ForwardingViolationParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

ForwardingFailedParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

ATI-NotAllowedParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

ATSI-NotAllowedParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

ATM-NotAllowedParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

IllegalSS-OperationParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

SS-NotAvailableParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

SS-SubscriptionViolationParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

InformationNotAvailableParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

SubBusyForMT-SMS-Param ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ... ,
    gprsConnectionSuspended    NULL                    OPTIONAL }
-- If GprsConnectionSuspended is not understood it shall
-- be discarded

```

```

MessageWaitListFullParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```

ResourceLimitationParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}

```

```
NoGroupCallNbParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}
```

```
IncompatibleTerminalParam ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}
```

```
ShortTermDenialParam ::= SEQUENCE {
    ...}
```

```
LongTermDenialParam ::= SEQUENCE {
    ...}
```

```
UnauthorizedRequestingNetwork-Param ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}
```

```
UnauthorizedLCSCClient-Param ::= SEQUENCE {
    unauthorizedLCSCClient-Diagnostic [0] UnauthorizedLCSCClient-Diagnostic OPTIONAL,
    extensionContainer                [1] ExtensionContainer          OPTIONAL,
    ... }
```

```
UnauthorizedLCSCClient-Diagnostic ::= ENUMERATED {
    noAdditionalInformation (0),
    clientNotInMSPrivacyExceptionList (1),
    callToClientNotSetup (2),
    privacyOverrideNotApplicable (3),
    disallowedByLocalRegulatoryRequirements (4),
    ... }
-- exception handling:
-- any unrecognized value shall be ignored
```

```
PositionMethodFailure-Param ::= SEQUENCE {
    positionMethodFailure-Diagnostic [0] PositionMethodFailure-Diagnostic OPTIONAL,
    extensionContainer                [1] ExtensionContainer          OPTIONAL,
    ... }
```

```
PositionMethodFailure-Diagnostic ::= ENUMERATED {
    congestion (0),
    insufficientResources (1),
    insufficientMeasurementData (2),
    inconsistentMeasurementData (3),
    locationProcedureNotCompleted (4),
    locationProcedureNotSupportedByTargetMS (5),
    qosNotAttainable (6),
    ... }
-- exception handling:
-- any unrecognized value shall be ignored
```

```
UnknownOrUnreachableLCSCClient-Param ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}
```

```
MM-EventNotSupported-Param ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}
```

```
TargetCellOutsideGCA-Param ::= SEQUENCE {
    extensionContainer          ExtensionContainer          OPTIONAL,
    ...}
```

END



### 19.2.3.6 SDL Diagrams

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

The services used are defined in subclause 8.4.

NOTE 1: The message primitives HO\_CA\_MESSAGE 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 procedure, see 3G TS 23.009.

NOTE 2: The order in the SDL diagrams to allocate first the handover number and then the radio resources is not binding.

Process MSC\_B\_HO

1(11)

Figure 19.2.3/1: HO in MSC-B

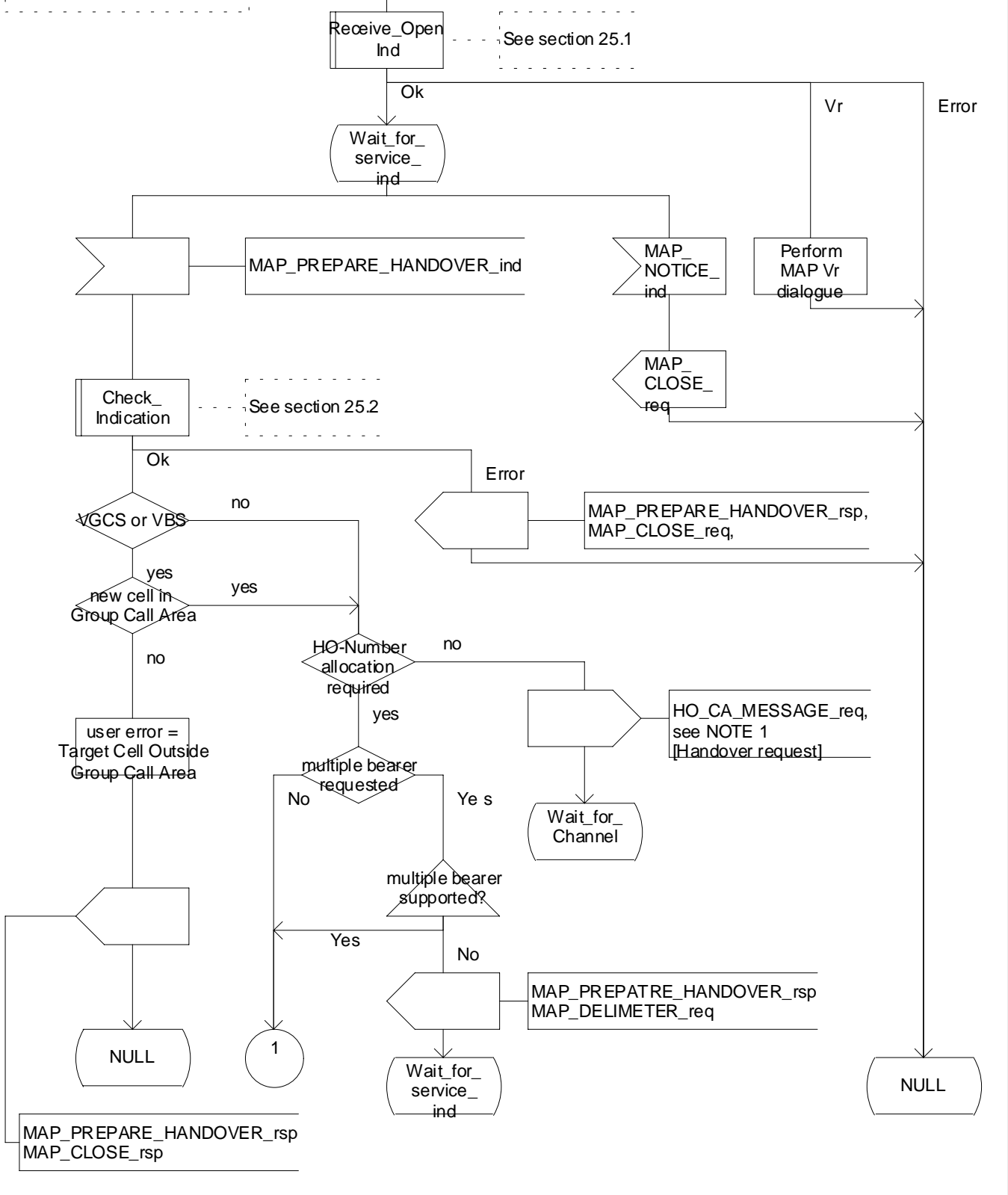


Figure 19.2.3/1 (sheet 1 of 11): Process MSC\_B\_HO

