3GPP TSG CN Plenary Meeting #13 **NP-010494**
Beijing, China, 19th –21st September 2001

Source: **TSG CN WG 1**

Title: **CRs to R99 (with mirror CRs) on Work Item GSM/UMTS interworking towards 23.009 and 29.018**

Agenda item: **7.15**

Document for: **APPROVAL**

Introduction:

This document contains **6** CRs on **R99 (with mirror CRs) to** Work Item **"GSM / UMTS interworking"**, that have been agreed by **TSG CN WG1**, and are forwarded to TSG CN Plenary meeting #13 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Version-Current	Workitem
23.009	048	1	N1-011310	R99	Usage of Location Reporting for Relocation and Inter-system Handover	F	3.7.0	GSM/UMTS interworking
23.009	049	1	N1-011311	Rel-4	Usage of Location Reporting for Relocation and Inter-system Handover	A	4.1.0	GSM/UMTS interworking
23.009	040		N1-011111	R99	GSM to UMTS Handover: Location Reporting in 3G_MSC-B for no call up case	F	3.7.0	GSM/UMTS interworking
23.009	041		N1-011112	Rel-4	GSM to UMTS Handover: Location Reporting in 3G_MSC-B for no call up case	A	4.1.0	GSM/UMTS interworking
29.018	017		N1-011173	R99	Correction of the length of the Service Area Identifcation	F	3.6.0	GSM/UMTS Interworking
29.018	018		N1-011174	Rel-4	Correction of the length of the Service Area Identifcation	A	4.0.0	GSM/UMTS Interworking

3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27.-31. August 2001

Tdoc N1-011111

CR-Form-v4

CHANGE REQUEST

⌘ **23.009** **CR** **040** ⌘ ev **-** ⌘ Current version: **3.7.0** ⌘

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

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

Title:	⌘	GSM to UMTS Handover: Location Reporting in 3G_MSC-B for no call up case
Source:	⌘	Lucent Technologies
Work item code:	⌘	GSM/UMTS Interworking
Date:	⌘	01-08-17
Category:	⌘	**F**
Release:	⌘	R99

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

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

Reason for change: ⌘

SDL not in line with Text. CR 23.009-18r2 SDL modifications missed the case when only a signalling connection is up (that is, no call up). The text in section 8.2 says "always" which implies that it is common for the circuit and no circuit cases:

> "If 3G_MSC-B or 3G-MSC-B' supports Location Reporting Control, 3G_MSC-B or 3G_MSC-B' shall always initiate the Location Reporting Control procedure towards the target RNS since no request for Location Reporting is received from MSC-A."

3G MSC-B or 3G MSC-B' should always initiate the Location Reporting Control procedure towards the target RNC since the MAP-E interface doesn't support initiation of the Location Reporting Control procedure from MSC-A in case of an inter-MSC GSM to UMTS handover, including the case when only a signalling connection is up (that is, no call up).

Summary of change: ⌘

Location Reporting Control within Handover Control Procedure in 3G MSC-B Sheet 2(54) and Sheet 32(54) of Procedure "3G MSC B HO" have been modified for GSM to UMTS HO.

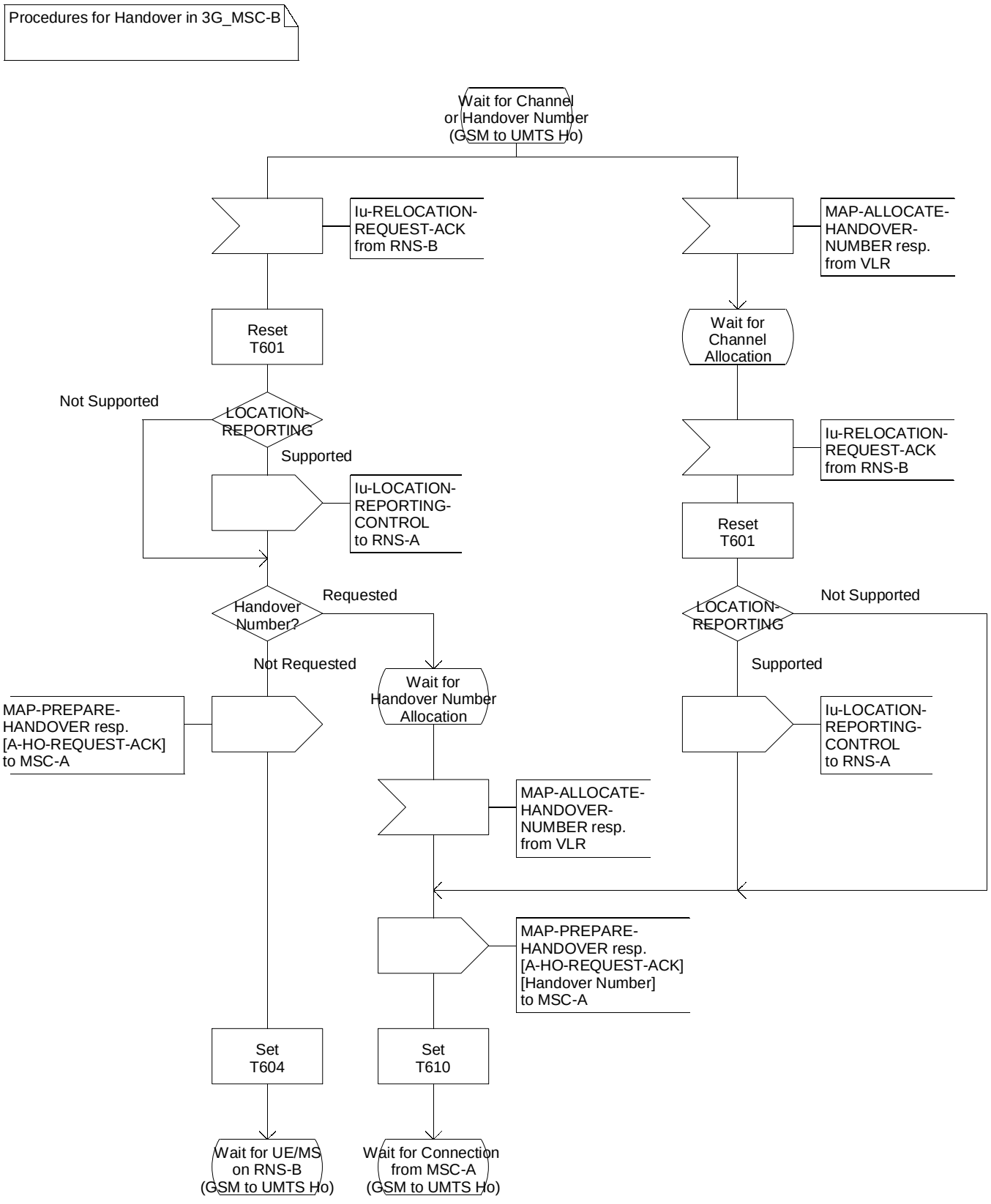
a) Modified Figure 44 sheet 2 of 54 first input leg to add a check "LOCATION REPORTING" supported or not before sending the Iu-LOCATION-REPORTING-CONTROL to RNS-A (which is really RNS-B at this time, which will become RNS-A). For instance, see the same type of check under the second call leg.

b) Modified Figure 44 sheet 32 of 54 to add a new leg similar to SDL leg from Figure 44 (sheet 24 of 54) 3rd input from left. That is, add the input "Iu-LOCATION REPORT from the RNS-A" and send message "MAP-PAS req.[A-HO-PERFORMED] to 3G MSC-A (which is actually a GSM MSC for the case of the already approved CR) and then go back to same state in this case: "UE/MS on 3G MSC-B (UTRAN)".

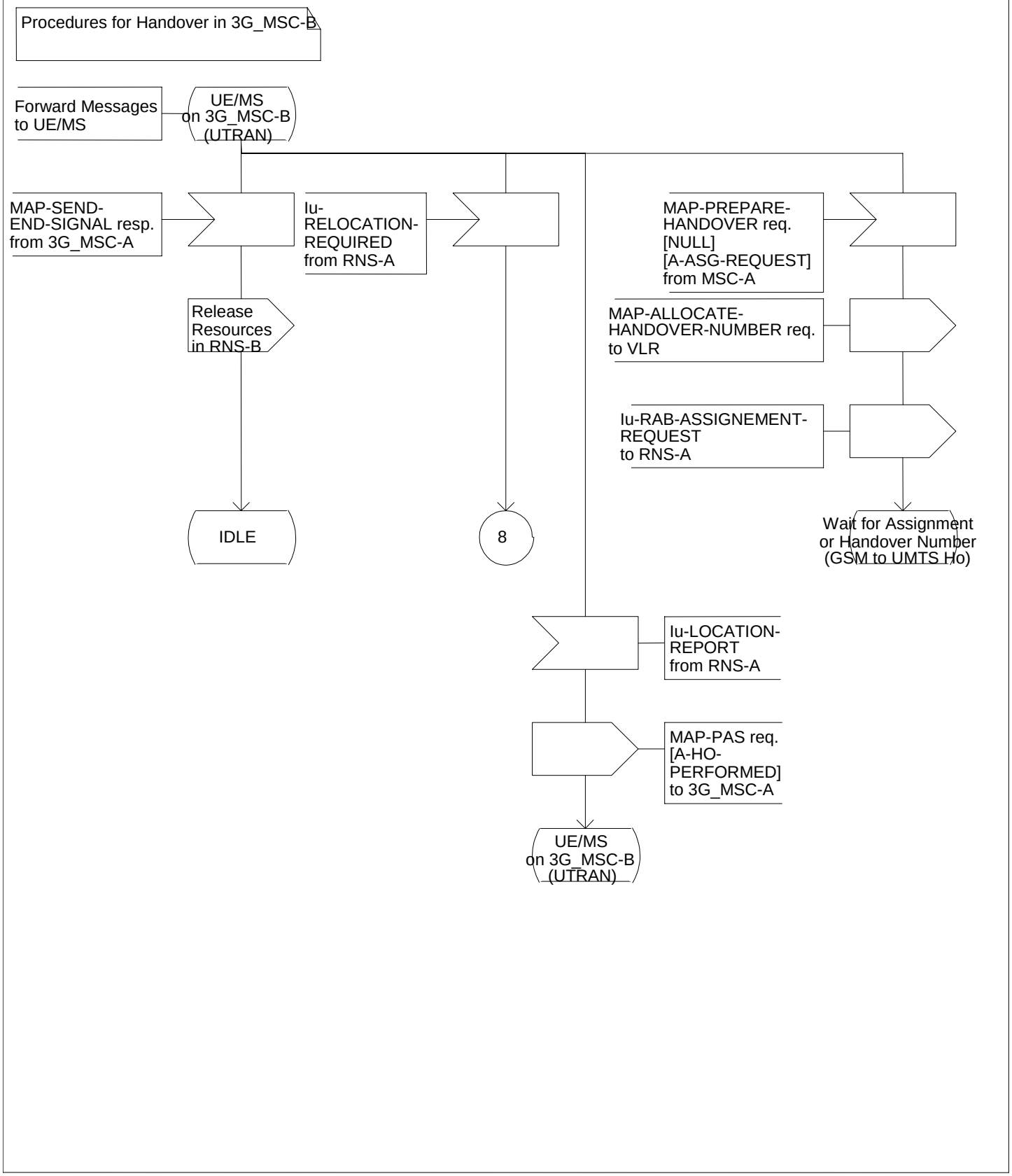
Consequences if not approved:	⌘	SDL mismatch with text. Neither Legal Interception nor Location based services will work properly after the GSM to UMTS HO, in the signalling only case (no call up).

Clauses affected:	⌘	Fig. 44 (sheet 2 and 32 of 54)		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘	This CR is a follow up of CR 23.009-18r2 in Tdoc ***N1-010086.***		

Procedure 3G_MSC_B_HO Sheet2(54)



Procedure 3G_MSC_B_HO Sheet32(54)



3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27.-31. August 2001

Tdoc N1-011112

CR-Form-v4

CHANGE REQUEST

⌘ **23.009** **CR** **041** ⌘ ev **-** ⌘ Current version: **4.1.0** ⌘

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

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

Title:	⌘	GSM to UMTS Handover: Location Reporting in 3G_MSC-B for no call up case
Source:	⌘	Lucent Technologies
Work item code:	⌘	GSM/UMTS Interworking
Date:	⌘	01-08-16
Category:	⌘	**A**
Release:	⌘	REL-4

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

Use one of the following releases:

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

Reason for change: ⌘ SDL not in line with Text. CR 23.009-18r2 SDL modifications missed the case when only a signalling connection is up (that is, no call up). The text in section 8.2 says "always" which implies that it is common for the circuit and no circuit cases:

> "If 3G_MSC-B or 3G-MSC-B' supports Location Reporting Control, 3G_MSC-B or 3G_MSC-B' shall always initiate the Location Reporting Control procedure towards the target RNS since no request for Location Reporting is received from MSC-A."

3G MSC-B or 3G MSC-B' should always initiate the Location Reporting Control procedure towards the target RNC since the MAP-E interface doesn't support initiation of the Location Reporting Control procedure from MSC-A in case of an inter-MSC GSM to UMTS handover, including the case when only a signalling connection is up (that is, no call up).

Summary of change: ⌘ Location Reporting Control within Handover Control Procedure in 3G MSC-B Sheet 2(54) and Sheet 32(54) of Procedure "3G MSC B HO" have been modified for GSM to UMTS HO.

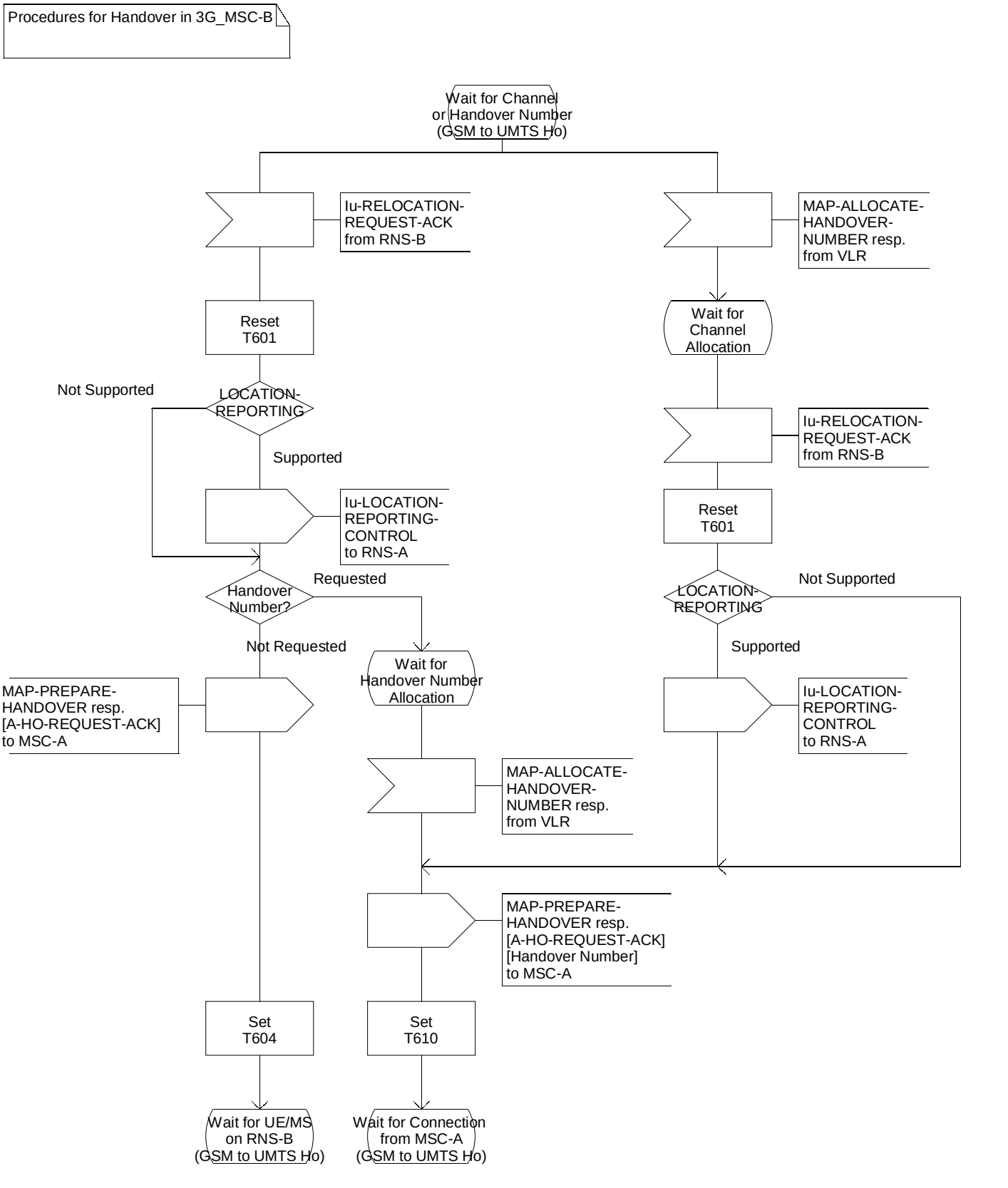
a) Modified Figure 44 sheet 2 of 54 first input leg to add a check "LOCATION REPORTING" supported or not before sending the Iu-LOCATION-REPORTING-CONTROL to RNS-A (which is really RNS-B at this time, which will become RNS-A). For instance, see the same type of check under the second call leg.

b) Modified Figure 44 sheet 32 of 54 to add a new leg similar to SDL leg from Figure 44 (sheet 24 of 54) 3rd input from left. That is, add the input "Iu-LOCATION REPORT from the RNS-A" and send message "MAP-PAS req.[A-HO-PERFORMED] to 3G MSC-A (which is actually a GSM MSC for the case of the already approved CR) and then go back to same state in this case: "UE/MS on 3G MSC-B (UTRAN)".

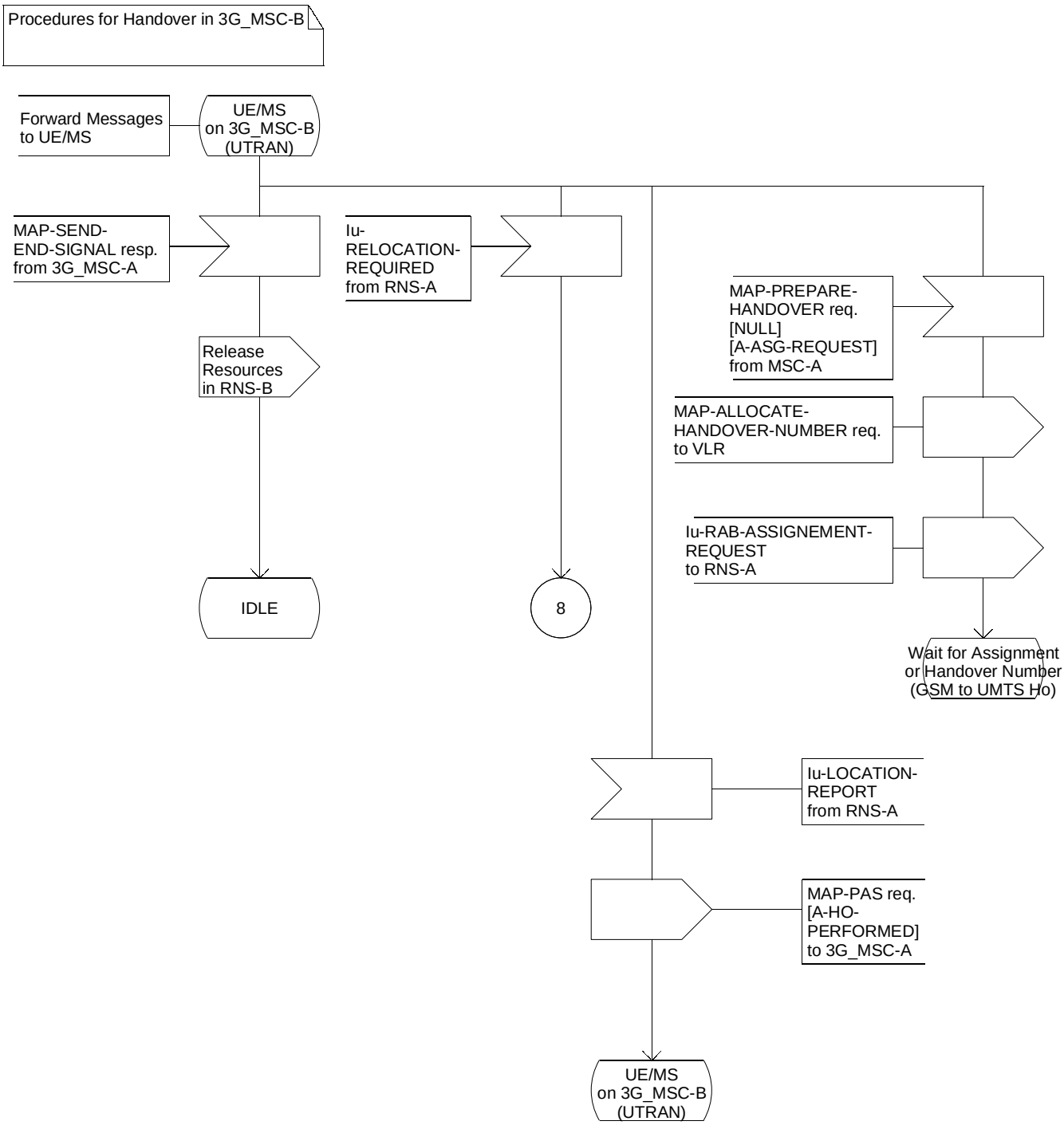
Consequences if not approved:	⌘	SDL mismatch with text. Neither Legal Interception nor Location based services will work properly after the GSM to UMTS HO, in the signalling only case (no call up).

Clauses affected:	⌘	Fig. 44 (sheet 2 and 32 of 54)		
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	⌘	
Other comments:	⌘			

Procedure 3G_MSC_B_HO Sheet2(54)



Procedure 3G_MSC_B_HO Sheet32(54)



Tdoc N1-011310
Tdoc N1-011265

3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27 - 31 August 2001

CR-Form-v3

CHANGE REQUEST

⌘ **23.009** **CR** **048** ⌘ rev **1** ⌘ Current version: **3.7.0** ⌘

for

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

Title:	⌘	Usage of Location Reporting for Relocation and Inter-system Handover
Source:	⌘	Ericsson
Work item code:	⌘	GSM – UMTS Interworking
Date:	⌘	2001-08-~~21~~30
Category:	⌘	**F**
Release:	⌘	R99

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

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

Reason for change:	⌘	Roles of 3G_MSC-A and 3G_MSC-B need to be clarified with respect to Location Reporting since it is not clear how a previously initiated location reporting procedure has to proceed after Handover/Relocation. The order to perform location reporting at change of Service Area has to be transferred to the target RNS in order to keep the procedure active. This contribution clarifies which network element performs this task in various scenarios.
Summary of change:	⌘	In the Inter-3G_MSC relocation case, 3G_MSC-A keeps the control of the Location Report Control procedure. However, re-issuing the Location Reporting Control messages after subsequent Intra-3G_MSC-B relocations is the responsibility of 3G_MSC-B.
Consequences if not approved:	⌘	The Location Reporting at change of Service Area procedure would be interrupted after an SRNS relocation.

Clauses affected:	⌘	4.3.1, 4.4.1, 6.2.2, 6.2.3, 8.2, 8.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

4.3.1 Role of 3G_MSC-A

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-A (simply termed 3G_MSC) controls the call, the mobility management and the radio resources before, during and after an Intra-3G_MSC handover/relocation. When RANAP or BSSMAP procedures have to be performed, they are initiated and driven by 3G_MSC-A.

In the case of intra-MSC handover of a speech call, 3G_MSC-A controls the transcoder in the core network. The 3G_MSC-A determines if a transcoder is required to be inserted or released in the CN.

In the case of Inter-3G_MSC relocation, 3G_MSC-A links out the transcoder.

In the Inter-3G_MSC relocation case, 3G_MSC-A is the 3G_MSC that controls the call and the mobility management of the UE during the call, before, during and after a basic or subsequent relocation. When RANAP procedures related to dedicated resources have to be performed towards the UE, they are initiated and driven by 3G_MSC-A. The 3G_MSC-A - 3G_MSC-B interface works as a 3G_MSC - RNS interface for the RANAP procedures. The Direct Transfer signalling is relayed transparently by 3G_MSC-B between 3G_MSC-A and the UE.

During a successful relocation the order to perform location reporting at change of Service Area is not transferred to the target RNS. In the Intra-3G_MSC-A relocation case, the 3G_MSC-A re-issues the Location Reporting Control towards the target RNS. In the Inter-3G_MSC relocation case, 3G_MSC-A keeps the control of the Location Report Control procedure. However, re-issuing the Location Reporting Control messages due to subsequent Intra-3G_MSC-B relocations is the responsibility of 3G_MSC-B.

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

4.4 3G_MSC-B

For roles and functional composition of the 3G_MSC-B working as pure GSM MSC, please see previous clause ("MSC-B").

4.4.1 Role of 3G_MSC-B

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-B keeps the control of the whole Intra-3G_MSC handover/relocation procedure. 3G_MSC-B notifies MSC-A or 3G_MSC-A of intra-3G_MSC-B InterSystem handover and intra GSM handovers by using the A_HANDOVER_PERFORMED ~~procedure~~ message.
In case of intra-3G_MSC-B SRNS relocation, if security algorithms have been changed then:

a) When encapsulated BSS~~M~~AP is used on the E interface, the A_HANDOVER_PERFORMED message shall be sent.

b) When encapsulated RANAP is used on the E interface, the LOCATION REPORT message shall be sent.

On reception of an order to perform location reporting at change of Service Area from 3G_MSC-A, 3G_MSC-B shall be responsible to re-issue the Location Reporting Control message after subsequent Intra-3G_MSC-B relocations/handovers. This shall be performed immediately after the successful completion of the Relocation Resource Allocation procedure.

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

6.2.2 Intra-3G_MSC GSM to UMTS Handover

The procedure for a successful Intra-3G_MSC handover is shown in figure 9. It is assumed that selection of a candidate UE/MS has already taken place within the BSC based upon the criteria presented in clause 5. The exact algorithm, in the BSC, for determining a candidate UE/MS is not addressed in the present document. The procedures discussed do not make use of the Mobile Application Part (MAP), represented by signalling function 4 in figures 4 and 6. The procedure described in this subclause covers case ii).

In case of subsequent handover the following applies. If 3G_MSC-B supports ~~L~~location ~~R~~reporting ~~Control~~ at change of Service Area and if encapsulated BSSAP signalling is used on the E-interface, 3G_MSC-B shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS since no request for Location Reporting ~~is~~can be received from MSC-A. In that case, the Location Reporting Control procedure shall be initiated by 3G_MSC-B after the Relocation Resource Allocation procedure has been executed successfully.
The change of Service Area shall be reported to MSC-A within an A_HANDOVER_PERFORMED message.

In the case of ongoing voice group calls, the handover does not take place since voice group calls are not supported in UMTS.

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

6.2.3 Procedure for Intra-3G_MSC SRNS Relocation

The procedure for a successful Intra-3G_MSC SRNS Relocation is shown in figures 10 and 11. SRNS Relocation is used to relocate the serving RNS functionality from one RNS to another. The procedure may or may not involve change of the radio resources assigned for the corresponding UE. Whether or not the Relocation includes change of radio resources assigned for the UE does not affect the SRNS Relocation procedure in the Core Network.

In case of subsequent Intra-3G_MSC-B SRNS relocation the following applies:

- If 3G_MSC-B has previously received an order to perform location reporting at change of Service Area from 3G_MSC-A and if 3G_MSC-B also supports Location Reporting Control, it shall issue the Location Report Control message towards the target RNS immediately after successful completion of relocation. Upon receipt of Location Report, 3G_MSC-B shall forward it towards 3G_MSC-A via E interface.

- If 3G_MSC-B supports location reporting at change of Service Area and if encapsulated BSSAP signalling is used on the E-interface, 3G_MSC-B shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS, since no request for Location Reporting can be received from MSC-A. In that case the Location Reporting Control procedure shall be initiated by 3G_MSC-B after the Relocation Resource Allocation procedure has been executed successfully. The change of Service Area shall be reported to MSC-A within A_HANDOVER_PERFORMED message.

It is assumed that selection of a candidate UE has already taken place within RNS based upon the criteria presenting in clause 5. The exact algorithm, in RNS, for determining a candidate UE is not addressed in the present document. The procedure discussed does not make use of the Mobile Application Part (MAP), represented by signalling function 4 in figures 4 and 6. The procedure described in this subclause covers case ii).

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

8.2 Handover GSM to UMTS

The following subclauses describe two options for the Basic and Subsequent GSM to UMTS Handover procedures. The first, as described in subclauses 8.2.1 and 8.2.3 respectively, provides for a circuit connection between (3G_)MSC-A and (3G_)MSC-B. The second, as described in subclauses 8.2.2 and 8.2.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between (3G_)MSC-A and (3G_)MSC-B. In all the above mentioned subclauses, the following principles apply:

- during the handover resource allocation, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - shall be transferred on the E-interface;

- the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the subclauses 8.2.1 and 8.2.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

- ~~-~~If 3G_MSC-B or 3G-MSC-B' supports ~~L~~location ~~R~~reporting ~~C~~control at change of Service Area, 3G_MSC-B or 3G_MSC-B' shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS since no request for Location Reporting ~~is~~can be received from MSC-A. In that case the Location Reporting Control procedure shall be initiated after the Relocation Resource Allocation procedure has been executed successfully. The change of Service Area shall be reported to MSC-A within an A_HANDOVER_PERFORMED message.

- during the handover execution, i.e. while the UE/MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP messages until the communication with the UE/MS is resumed;

- finally, during supervision, i.e. while the UE/MS is not in the area of MSC-A after a successful Inter-3G_MSC GSM to UMTS handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 09.08 [7] - shall apply on the E-Interface;

- during the intra-3G_MSC-B GSM to UMTS handover execution, if any, the 3G_MSC-B shall queue all outgoing Direct Transfer messages until the communication with the UE/MS is resumed.

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

8.3 SRNS Relocation

The following subclauses describe two options for the Basic and Subsequent Relocation procedures. The first, as described in subclauses 8.3.1 and 8.3.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in subclauses 8.3.2 and 8.3.4 respectively, provides for a Basic and Subsequent Relocation without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B.

In all the above mentioned subclauses, the following principles apply:

- during the relocation resource allocation, only the handover related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface;

- the trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - can be sent by the 3G_MSC-A on the E-interface after successful relocation resource allocation. In the subclauses 8.3.1 and 8.3.2, it is however allowed at basic relocation initiation on the E-Interface to transfer one trace related message that is part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - together with the applicable relocation related message. The applicable relocation related message shall always appear as the first message;

- during the relocation execution, i.e. while the UE is not in communication with the network, the 3G_MSC-A shall queue all outgoing RANAP messages until the communication with the UE is resumed;

- finally, during supervision, i.e. while the UE is not in the area of 3G_MSC-A after a successful Inter-3G_MSC relocation, the subset of RANAP procedures and their related messages - as defined in 3GPP TS 29.108 [15] - shall apply on the E-Interface;

- during the intra-3G_MSC-B relocation execution, if any, the 3G_MSC-B shall queue all outgoing RANAP messages until the communication with the UE is resumed;

- after successful completion of the Intra-3G_MSC-B relocation, if 3G_MSC-B or 3G-MSC-B' has previously received an order to perform location reporting at change of Service Area from 3G_MSC-A, it shall act as specified in subclause 6.2.3.

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Tdoc N1-011266

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Helsinki, Finland, 27 - 31 August 2001

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CHANGE REQUEST

⌘ **23.009** **CR** **049** ⌘ rev **1** ⌘ Current version: **4.1.0** ⌘

for

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

Title:	⌘	Usage of Location Reporting for Relocation and Inter-system Handover
Source:	⌘	Ericsson
Work item code:	⌘	GSM – UMTS Interworking
Date:	⌘	2001-08-~~21~~30
Category:	⌘	**A**
Release:	⌘	Rel-4

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

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

Reason for change:	⌘	Roles of 3G_MSC-A and 3G_MSC-B need to be clarified with respect to Location Reporting since it is not clear how a previously initiated location reporting procedure has to proceed after Handover/Relocation. The order to perform location reporting at change of Service Area has to be transferred to the target RNS in order to keep the procedure active. This contribution clarifies which network element performs this task in various scenarios.
Summary of change:	⌘	In the Inter-3G_MSC relocation case, 3G_MSC-A keeps the control of the Location Report Control procedure. However, re-issuing the Location Reporting Control messages after subsequent Intra-3G_MSC-B relocations is the responsibility of 3G_MSC-B.
Consequences if not approved:	⌘	The Location Reporting at change of Service Area procedure would be interrupted after an SRNS relocation.

Clauses affected:	⌘	4.3.1, 4.4.1, 6.2.2, 6.2.3, 8.2, 8.3
Other specs affected:	⌘	☐ Other core specifications ⌘ ☐ Test specifications ☐ O&M Specifications
Other comments:	⌘	

4.3.1 Role of 3G_MSC-A

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-A (simply termed 3G_MSC) controls the call, the mobility management and the radio resources before, during and after an Intra-3G_MSC handover/relocation. When RANAP or BSSMAP procedures have to be performed, they are initiated and driven by 3G_MSC-A.

In the case of intra-MSC handover of a speech call, 3G_MSC-A controls the transcoder in the core network. The 3G_MSC-A determines if a transcoder is required to be inserted or released in the CN.

In the case of Inter-3G_MSC relocation, 3G_MSC-A links out the transcoder.

In the Inter-3G_MSC relocation case, 3G_MSC-A is the 3G_MSC that controls the call and the mobility management of the UE during the call, before, during and after a basic or subsequent relocation. When RANAP procedures related to dedicated resources have to be performed towards the UE, they are initiated and driven by 3G_MSC-A. The 3G_MSC-A - 3G_MSC-B interface works as a 3G_MSC - RNS interface for the RANAP procedures. The Direct Transfer signalling is relayed transparently by 3G_MSC-B between 3G_MSC-A and the UE.

During a successful relocation the order to perform location reporting at change of Service Area is not transferred to the target RNS. In the Intra-3G_MSC-A relocation case, the 3G_MSC-A re-issues the Location Reporting Control towards the target RNS. In the Inter-3G_MSC relocation case, 3G_MSC-A keeps the control of the Location Report Control procedure. However, re-issuing the Location Reporting Control messages due to subsequent Intra-3G_MSC-B relocations is the responsibility of 3G_MSC-B.

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

4.4 3G_MSC-B

For roles and functional composition of the 3G_MSC-B working as pure GSM MSC, please see previous clause ("MSC-B").

4.4.1 Role of 3G_MSC-B

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-B keeps the control of the whole Intra-3G_MSC handover/relocation procedure. 3G_MSC-B notifies MSC-A or 3G_MSC-A of intra-3G_MSC-B InterSystem handover and intra GSM handovers by using the A_HANDOVER_PERFORMED message. In case of intra-3G_MSC-B SRNS relocation, if security algorithms have been changed then:

a) When encapsulated BSS~~M~~AP is used on the E interface, the A_HANDOVER_PERFORMED message shall be sent.

b) When encapsulated RANAP is used on the E interface, the LOCATION REPORT message shall be sent.

On reception of an order to perform location reporting at change of Service Area from 3G_MSC-A, 3G_MSC-B shall be responsible to re-issue the Location Reporting Control message after subsequent Intra-3G_MSC-B relocations/handovers. This shall be performed immediately after the successful completion of the Relocation Resource Allocation procedure.

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

6.2.2 Intra-3G_MSC GSM to UMTS Handover

The procedure for a successful Intra-3G_MSC handover is shown in figure 9. It is assumed that selection of a candidate UE/MS has already taken place within the BSC based upon the criteria presented in clause 5. The exact algorithm, in the BSC, for determining a candidate UE/MS is not addressed in the present document. The procedures discussed do not make use of the Mobile Application Part (MAP), represented by signalling function 4 in figures 4 and 6. The procedure described in this subclause covers case ii).

In case of subsequent handover the following applies. If 3G_MSC-B supports ~~L~~location ~~R~~reporting ~~Control~~ at change of Service Area and if encapsulated BSSAP signalling is used on the E-interface, 3G_MSC-B shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS since no request for Location Reporting ~~is~~can be received from MSC-A. In that case, the Location Reporting Control procedure shall be initiated by 3G_MSC-B after the Relocation Resource Allocation procedure has been executed successfully.
The change of Service Area shall be reported to MSC-A within an A_HANDOVER_PERFORMED message.

In the case of ongoing voice group calls, the handover does not take place since voice group calls are not supported in UMTS.

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

6.2.3 Procedure for Intra-3G_MSC SRNS Relocation

The procedure for a successful Intra-3G_MSC SRNS Relocation is shown in figures 10 and 11. SRNS Relocation is used to relocate the serving RNS functionality from one RNS to another. The procedure may or may not involve change of the radio resources assigned for the corresponding UE. Whether or not the Relocation includes change of radio resources assigned for the UE does not affect the SRNS Relocation procedure in the Core Network.

In case of subsequent Intra-3G_MSC-B SRNS relocation the following applies:

- If 3G_MSC-B has previously received an order to perform location reporting at change of Service Area from 3G_MSC-A and if 3G_MSC-B also supports Location Reporting Control, it shall issue the Location Report Control message towards the target RNS immediately after successful completion of relocation. Upon receipt of Location Report, 3G_MSC-B shall forward it towards 3G_MSC-A via E interface.

- If 3G_MSC-B supports location reporting at change of Service Area and if encapsulated BSSAP signalling is used on the E-interface, 3G_MSC-B shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS, since no request for Location Reporting can be received from MSC-A. In that case the Location Reporting Control procedure shall be initiated by 3G_MSC-B after the Relocation Resource Allocation procedure has been executed successfully. The change of Service Area shall be reported to MSC-A within A_HANDOVER_PERFORMED message.

It is assumed that selection of a candidate UE has already taken place within RNS based upon the criteria presenting in clause 5. The exact algorithm, in RNS, for determining a candidate UE is not addressed in the present document. The procedure discussed does not make use of the Mobile Application Part (MAP), represented by signalling function 4 in figures 4 and 6. The procedure described in this subclause covers case ii).

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

8.2 Handover GSM to UMTS

The following subclauses describe two options for the Basic and Subsequent GSM to UMTS Handover procedures. The first, as described in subclauses 8.2.1 and 8.2.3 respectively, provides for a circuit connection between (3G_)MSC-A and (3G_)MSC-B. The second, as described in subclauses 8.2.2 and 8.2.4 respectively, provides for a Basic and Subsequent Handover without the provision of a circuit connection between (3G_)MSC-A and (3G_)MSC-B. In all the above mentioned subclauses, the following principles apply:

- during the handover resource allocation, only the handover related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - shall be transferred on the E-interface;

- the trace related messages that are part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - can be sent by the MSC-A on the E-interface after successful handover resource allocation. In the subclauses 8.2.1 and 8.2.2, it is however allowed at basic handover initiation on the E-Interface to transfer one trace related message that is part of the applicable BSSAP subset - as defined in 3GPP TS 09.08 [7] - together with the applicable handover related message. The applicable handover related message shall always appear as the first message;

- ~~-~~If 3G_MSC-B or 3G-MSC-B' supports ~~L~~location ~~R~~reporting ~~C~~control at change of Service Area, 3G_MSC-B or 3G_MSC-B' shall always initiate the Location Reporting Control procedure at change of Service Area towards the target RNS since no request for Location Reporting ~~is~~can be received from MSC-A. In that case the Location Reporting Control procedure shall be initiated after the Relocation Resource Allocation procedure has been executed successfully. The change of Service Area shall be reported to MSC-A within an A_HANDOVER_PERFORMED message.

- during the handover execution, i.e. while the UE/MS is not in communication with the network, the MSC-A shall queue all outgoing BSSAP messages until the communication with the UE/MS is resumed;

- finally, during supervision, i.e. while the UE/MS is not in the area of MSC-A after a successful Inter-3G_MSC GSM to UMTS handover, the subset of BSSAP procedures and their related messages - as defined in 3GPP TS 09.08 [7] - shall apply on the E-Interface;

- during the intra-3G_MSC-B GSM to UMTS handover execution, if any, the 3G_MSC-B shall queue all outgoing Direct Transfer messages until the communication with the UE/MS is resumed.

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

8.3 SRNS Relocation

The following subclauses describe two options for the Basic and Subsequent Relocation procedures. The first, as described in subclauses 8.3.1 and 8.3.3 respectively, provides for a circuit connection between 3G_MSC-A and 3G_MSC-B. The second, as described in subclauses 8.3.2 and 8.3.4 respectively, provides for a Basic and Subsequent Relocation without the provision of a circuit connection between 3G_MSC-A and 3G_MSC-B.

In all the above mentioned subclauses, the following principles apply:

- during the relocation resource allocation, only the handover related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - shall be transferred on the E-interface;

- the trace related messages that are part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - can be sent by the 3G_MSC-A on the E-interface after successful relocation resource allocation. In the subclauses 8.3.1 and 8.3.2, it is however allowed at basic relocation

initiation on the E-Interface to transfer one trace related message that is part of the applicable RANAP subset - as defined in 3GPP TS 29.108 [15] - together with the applicable relocation related message. The applicable relocation related message shall always appear as the first message;

- during the relocation execution, i.e. while the UE is not in communication with the network, the 3G_MSC-A shall queue all outgoing RANAP messages until the communication with the UE is resumed;

- finally, during supervision, i.e. while the UE is not in the area of 3G_MSC-A after a successful Inter-3G_MSC relocation, the subset of RANAP procedures and their related messages - as defined in 3GPP TS 29.108 [15] - shall apply on the E-Interface;

- during the intra-3G_MSC-B relocation execution, if any, the 3G_MSC-B shall queue all outgoing RANAP messages until the communication with the UE is resumed;

- after successful completion of the Intra-3G_MSC-B relocation, if 3G_MSC-B or 3G-MSC-B' has previously received an order to perform location reporting at change of Service Area from 3G_MSC-A, it shall act as specified in subclause 6.2.3.

3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27.-31. August 2001

Tdoc N1-011173

CR-Form-v4

CHANGE REQUEST

⌘ **29.018** **CR** **017** ⌘ ev **-** ⌘ Current version: **3.6.0** ⌘

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

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

Title:	⌘	Correction of the length of the Service Area Identification
Source:	⌘	Siemens AG
Work item code:	⌘	GPRS
Date:	⌘	11.07.01
Category:	⌘	**F**
Release:	⌘	R99

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

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

Reason for change:	⌘	When the Service Area Identification IE was introduced in 29.018, its length was specified as 10 octets. However, according to TS 25.413 (and TS 23.003) the Service Area Identification is specified as PLMN-ID + LAC + SAC (3 + 2 + 2 = 7 octets). This gives a length of 9 octets for IEI + length indicator + value part.
Summary of change:	⌘	The length of the IE is changed to 9 octets.
Consequences if not approved:	⌘	Possible interworking problems between SGSN and VLR. A total length of 10 octets could be misinterpreted in such a way that also the RAC is part of the Service Area Identification.

Clauses affected:	⌘	17.1.6, 17.1.8, 17.1.11, 17.1.14, 17.1.16, 17.1.22, 18.4.21b, 18.4.22
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

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

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

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

17.1.6 BSSAP+-GPRS-DETACH-INDICATION message

This message is sent by the SGSN to the VLR to indicate a GPRS detach performed from the MS or the SGSN. The type of detach is indicated in the GPRS detach type IE.

Table 17.1.6/3GPP TS 29.018: BSSAP+-GPRS-DETACH-INDICATION message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
SGSN number	SGSN number 18.4.22	M	TLV	5-11
IMSI detach from GPRS service type	IMSI detach from GPRS service type 18.4.17	M	TLV	3
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.6.1 Cell global identity (A/Gb mode only)

In A/Gb mode, the SGSN shall include the Cell global identity where the mobile was in the last radio contact.

17.1.6.2 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

17.1.7 BSSAP+-IMSI-DETACH-ACK message

This message is sent by the VLR to the SGSN to acknowledge a previous BSSAP+-IMSI-DETACH-Indication message. The type of detach acknowledged is indicated in the IMSI detach type IE.

Table 17.1.7/3GPP TS 29.018: BSSAP+-IMSI-DETACH-ACK message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10

17.1.8 BSSAP+-IMSI-DETACH-INDICATION message

This message is sent by the SGSN to the VLR to indicate an IMSI detach performed from the MS. The type of detach is indicated in the IMSI detach type IE.

Table 17.1.8/3GPP TS 29.018: BSSAP+-IMSI-DETACH-INDICATION message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
SGSN number	SGSN number 18.4.22	M	TLV	5-11
Detach type	IMSI detach from non-GPRS service type 18.4.11	M	TLV	3
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Location information age	Location information age 18.4.14	O	TLV	4
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.8.1 Cell global identity (A/Gb mode only)

In A/Gb mode, the SGSN shall include the Cell global identity where the mobile was in the last radio contact.

17.1.8.2 Location information age

If the detach is due to implicit detach and the Cell global identity is available, then the SGSN should include the Location information age.

17.1.8.3 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

17.1.9 BSSAP+-LOCATION-UPDATE-ACCEPT message

This message is sent by the VLR to the SGSN to indicate that update or IMSI attach in the VLR has been completed.

Table 17.1.9/3GPP TS 29.018: BSSAP+-LOCATION-UPDATE-ACCEPT message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Location area identifier	Location area identifier 18.4.14	M	TLV	7
New TMSI, or IMSI	Mobile identity 18.4.17	O	TLV	6-10

17.1.9.1 New TMSI, or IMSI

This information element represents the identity to be used for (and then by) the MS.

If this information element is an IMSI, then the mobile station is not allocated any TMSI (and deletes any TMSI accordingly). If this information element is a TMSI, then the mobile station will use this TMSI as the new temporary identity (the MS deletes its old TMSI and stores the new TMSI). If neither a TMSI nor an IMSI are included in this information element, the old TMSI, if any available, will be kept.

17.1.10 BSSAP+-LOCATION-UPDATE-REJECT message

This message is sent by the VLR to the SGSN to indicate that location update or IMSI attach has failed.

Table 17.1.10/3GPP TS 29.018: BSSAP+-LOCATION-UPDATE-REJECT message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Reject cause	Reject cause 18.4.21	M	TLV	3

17.1.11 BSSAP+-LOCATION-UPDATE-REQUEST message

This message is sent by the SGSN to the VLR either to request update of its location file (normal update) or to request IMSI attach.

Table 17.1.11/3GPP TS 29.018: BSSAP+-LOCATION-UPDATE-REQUEST message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
SGSN number	SGSN number 18.4.22	M	TLV	5-11
Update type	GPRS location update type 18.4.6	M	TLV	3
New Cell global identity	Cell global identity 18.4.1	M	TLV	10
Mobile station classmark	Mobile station classmark 1 18.4.18	M	TLV	3
Old location area identifier	Location area identifier 18.4.14	O	TLV	7
TMSI status	TMSI status 18.4.24	O	TLV	3
New service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.11.1 Old location area identifier

This information element should be included. It is derived from the old routing area identification received in the ROUTING AREA UPDATING REQUEST message defined in 3GPP TS 24.008.

17.1.11.2 New cell global identity

In A/Gb mode, the cell global identity which shall be included is the one where the MS is in the current radio contact.

In Iu mode, the cell global identity which shall be included indicates where the MS is in the current location area. The cell identity part of this information shall be ignored by the VLR.

17.1.11.3 TMSI status

This information element shall be included if the TMSI status received in the ATTACH REQUEST or ROUTING AREA UPDATING REQUEST message from the MS indicates, that no valid TMSI is available in the MS.

17.1.11.4 Mobile station classmark

This information element does not serve any useful purpose, but shall be included for reasons of compatibility with earlier versions of the protocol. To ease interworking with old VLR equipment, the SGSN shall encode the contents of this information element as: revision level 'GSM phase 2', 'early classmark sending supported', 'encryption algorithm A5/1 supported', and RF power capability 'class 1'.

17.1.11.5 New service area identification

In Iu mode, the service area identification which should be included is the one where the MS is in the current radio contact.

17.1.12 BSSAP+-MM-INFORMATION-REQUEST

This message is sent by the VLR to the SGSN to provide the MS with subscriber specific information.

Table 17.1.12/3GPP TS 29.018: BSSAP+-MM-INFORMATION-REQUEST message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
MM information	MM information 18.4.16	O	TLV	3-n

17.1.12.1 MM information

This information element should be included in this message.

17.1.13 BSSAP+-MOBILE-STATUS message

This message is sent by both the SGSN or the VLR to indicate an error.

Table 17.1.13/3GPP TS 29.018: BSSAP+-MOBILE-STATUS message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	O	TLV	6-10
Gs Cause	Gs Cause 18.4.7	M	TLV	3
Erroneous message	Erroneous message 18.4.5	M	TLV	3-n

17.1.13.1 IMSI

If the MS is identified by the IMSI, then this information element shall be included.

17.1.14 BSSAP+-MS-ACTIVITY-INDICATION message

This message is sent by the SGSN to the VLR to indicate that activity from an MS has been detected.

Table 17.1.14/3GPP TS 29.018: BSSAP+-MS-ACTIVITY-INDICATION message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.14.1 Cell global identity (A/Gb mode only)

In A/Gb mode, the SGSN shall include the cell global identity where the MS was in the last radio contact.

17.1.14.2 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

17.1.15 BSSAP+-MS-INFORMATION-REQUEST message

This message is sent from the VLR to the SGSN to request information associated with the indicated IMSI. The type of information requested is specified in the Information requested IE.

Table 17.1.15/3GPP TS 29.018: BSSAP+-MS-INFORMATION-REQUEST message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Information requested	Information requested 18.4.13	M	TLV	3

17.1.16 BSSAP+-MS-INFORMATION-RESPONSE message

This message is sent from the SGSN to the VLR as a response to a previous BSSAP+- MS-INFORMATION - REQUEST message. (At least one of the requested identities shall be sent).

Table 17.1.16/3GPP TS 29.018: BSSAP+-MS-INFORMATION-RESPONSE message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
TMSI	TMSI 18.4.23	O	TLV	6
PTMSI	PTMSI 18.4.20	O	TLV	6
IMEI	IMEI 18.4.8	O	TLV	10
IMEISV	IMEISV 18.4.9	O	TLV	10
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Location information age	Location information age 18.4.15	O	TLV	4
Mobile station state	Mobile station state 18.4.19	O	TLV	3
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.16.1 IMEI

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.2 IMIESV

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.3 Cell global identity (A/Gb mode only)

In A/Gb mode, cell global identity where the MS was in the last radio contact.

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.4 Location information age

Time in minutes since the MS last established a radio transaction.

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.5 Mobile station state

This information element should be included in this message, irrespective of the information requested.

17.1.16.6 TMSI

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable. .

17.1.16.7 Service area identification (Iu mode only)

In Iu mode, service area identification where the MS was in the last radio contact.

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

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

17.1.22 BSSAP+-TMSI-REALLOCATION-COMPLETE message

This message is sent by the SGSN to the VLR to indicate that TMSI reallocation or deletion on the MS has been successfully completed.

Table 17.1.22/3GPP TS 29.018: BSSAP+-TMSI-REALLOCATION-COMPLETE message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.22.1 Cell global identity (A/Gb mode only)

The SGSN shall include the cell global identity where the Mobile Station was in the last radio contact.

17.1.22.2 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

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

18.4.21b Service Area Identification

This information element uniquely identifies one service area.

	8	7	6	5	4	3	2	1
Octet 1	IEI							
Octet 2	Length indicator							
Octet 3 to Octet 9~~10~~	The rest of the information element is coded as the the value part of the SAI IE defined in 3GPP TS 25.413 (not including 3GPP TS 25.413 IEI and 3GPP TS 25.413 length indicator).							

Figure 18.4.27/3GPP TS 29.018: Service Area Identification IE~~18.4.22 SGSN number~~

18.4.22 SGSN number

The SGSN number is coded as a sequence of TBCD digits (as specified in 3GPP TS 29.002), compressed two into each octet. The Number is in international E.164 format as indicated by Octet 3 which coding is specified in 29.002. This is a variable length information element, and includes a length indicator. The value part of the SGSN number information element (not including IEI, Length indicator and Octet 3) shall not exceed 15 digits.

	8	**7**	**6**	**5**	**4**	**3**	**2**	**1**
Octet 1	IEI							
Octet 2	Length indicator							
Octet 3	1	0	0	1	0	0	0	1
Octet 4	digit 2				digit 1			
Octet n	digit i+1				digit i			

Figure 18.4.22/3GPP TS 29.018: SGSN number IE

3GPP TSG-CN1 Meeting #19
Helsinki, Finland, 27.-31. August 2001

Tdoc N1-011174

CR-Form-v4

CHANGE REQUEST

⌘ **29.018** **CR** **018** ⌘ ev **-** ⌘ Current version: **4.0.0** ⌘

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

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

Title:	⌘	Correction of the length of the Service Area Identification
Source:	⌘	Siemens AG
Work item code:	⌘	GPRS
Date:	⌘	11.07.01
Category:	⌘	**A**
Release:	⌘	REL-4

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

Use one of the following releases:

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

Reason for change:	⌘	When the Service Area Identification IE was introduced in 29.018, its length was specified as 10 octets. However, according to TS 25.413 (and TS 23.003) the Service Area Identification is specified as PLMN-ID + LAC + SAC (3 + 2 + 2 = 7 octets). This gives a length of 9 octets for IEI + length indicator + value part.
Summary of change:	⌘	The length of the IE is changed to 9 octets.
Consequences if not approved:	⌘	Possible interworking problems between SGSN and VLR. A total length of 10 octets could be misinterpreted in such a way that also the RAC is part of the Service Area Identification.

Clauses affected:	⌘	17.1.6, 17.1.8, 17.1.11, 17.1.14, 17.1.16, 17.1.22, 18.4.21b, 18.4.22
Other specs affected:	⌘	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications
	⌘	
Other comments:	⌘	

How to create CRs using this form:

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

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

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

17.1.6 BSSAP+-GPRS-DETACH-INDICATION message

This message is sent by the SGSN to the VLR to indicate a GPRS detach performed from the MS or the SGSN. The type of detach is indicated in the GPRS detach type IE.

Table 17.1.6/3GPP TS 29.018: BSSAP+-GPRS-DETACH-INDICATION message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
SGSN number	SGSN number 18.4.22	M	TLV	5-11
IMSI detach from GPRS service type	IMSI detach from GPRS service type 18.4.17	M	TLV	3
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.6.1 Cell global identity (A/Gb mode only)

In A/Gb mode, the SGSN shall include the Cell global identity where the mobile was in the last radio contact.

17.1.6.2 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

17.1.7 BSSAP+-IMSI-DETACH-ACK message

This message is sent by the VLR to the SGSN to acknowledge a previous BSSAP+-IMSI-DETACH-Indication message. The type of detach acknowledged is indicated in the IMSI detach type IE.

Table 17.1.7/3GPP TS 29.018: BSSAP+-IMSI-DETACH-ACK message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10

17.1.8 BSSAP+-IMSI-DETACH-INDICATION message

This message is sent by the SGSN to the VLR to indicate an IMSI detach performed from the MS. The type of detach is indicated in the IMSI detach type IE.

Table 17.1.8/3GPP TS 29.018: BSSAP+-IMSI-DETACH-INDICATION message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
SGSN number	SGSN number 18.4.22	M	TLV	5-11
Detach type	IMSI detach from non-GPRS service type 18.4.11	M	TLV	3
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Location information age	Location information age 18.4.14	O	TLV	4
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.8.1 Cell global identity (A/Gb mode only)

In A/Gb mode, the SGSN shall include the Cell global identity where the mobile was in the last radio contact.

17.1.8.2 Location information age

If the detach is due to implicit detach and the Cell global identity is available, then the SGSN should include the Location information age.

17.1.8.3 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

17.1.9 BSSAP+-LOCATION-UPDATE-ACCEPT message

This message is sent by the VLR to the SGSN to indicate that update or IMSI attach in the VLR has been completed.

Table 17.1.9/3GPP TS 29.018: BSSAP+-LOCATION-UPDATE-ACCEPT message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Location area identifier	Location area identifier 18.4.14	M	TLV	7
New TMSI, or IMSI	Mobile identity 18.4.17	O	TLV	6-10

17.1.9.1 New TMSI, or IMSI

This information element represents the identity to be used for (and then by) the MS.

If this information element is an IMSI, then the mobile station is not allocated any TMSI (and deletes any TMSI accordingly). If this information element is a TMSI, then the mobile station will use this TMSI as the new temporary identity (the MS deletes its old TMSI and stores the new TMSI). If neither a TMSI nor an IMSI are included in this information element, the old TMSI, if any available, will be kept.

17.1.10 BSSAP+-LOCATION-UPDATE-REJECT message

This message is sent by the VLR to the SGSN to indicate that location update or IMSI attach has failed.

Table 17.1.10/3GPP TS 29.018: BSSAP+-LOCATION-UPDATE-REJECT message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Reject cause	Reject cause 18.4.21	M	TLV	3

17.1.11 BSSAP+-LOCATION-UPDATE-REQUEST message

This message is sent by the SGSN to the VLR either to request update of its location file (normal update) or to request IMSI attach.

Table 17.1.11/3GPP TS 29.018: BSSAP+-LOCATION-UPDATE-REQUEST message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
SGSN number	SGSN number 18.4.22	M	TLV	5-11
Update type	GPRS location update type 18.4.6	M	TLV	3
New Cell global identity	Cell global identity 18.4.1	M	TLV	10
Mobile station classmark	Mobile station classmark 1 18.4.18	M	TLV	3
Old location area identifier	Location area identifier 18.4.14	O	TLV	7
TMSI status	TMSI status 18.4.24	O	TLV	3
New service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.11.1 Old location area identifier

This information element should be included. It is derived from the old routing area identification received in the ROUTING AREA UPDATING REQUEST message defined in 3GPP TS 24.008.

17.1.11.2 New cell global identity

In A/Gb mode, the cell global identity which shall be included is the one where the MS is in the current radio contact.

In Iu mode, the cell global identity which shall be included indicates where the MS is in the current location area. The cell identity part of this information shall be ignored by the VLR.

17.1.11.3 TMSI status

This information element shall be included if the TMSI status received in the ATTACH REQUEST or ROUTING AREA UPDATING REQUEST message from the MS indicates, that no valid TMSI is available in the MS.

17.1.11.4 Mobile station classmark

This information element does not serve any useful purpose, but shall be included for reasons of compatibility with earlier versions of the protocol. To ease interworking with old VLR equipment, the SGSN shall encode the contents of this information element as: revision level 'GSM phase 2', 'early classmark sending supported', 'encryption algorithm A5/1 supported', and RF power capability 'class 1'.

17.1.11.5 New service area identification

In Iu mode, the service area identification which should be included is the one where the MS is in the current radio contact.

17.1.12 BSSAP+-MM-INFORMATION-REQUEST

This message is sent by the VLR to the SGSN to provide the MS with subscriber specific information.

Table 17.1.12/3GPP TS 29.018: BSSAP+-MM-INFORMATION-REQUEST message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
MM information	MM information 18.4.16	O	TLV	3-n

17.1.12.1 MM information

This information element should be included in this message.

17.1.13 BSSAP+-MOBILE-STATUS message

This message is sent by both the SGSN or the VLR to indicate an error.

Table 17.1.13/3GPP TS 29.018: BSSAP+-MOBILE-STATUS message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	O	TLV	6-10
Gs Cause	Gs Cause 18.4.7	M	TLV	3
Erroneous message	Erroneous message 18.4.5	M	TLV	3-n

17.1.13.1 IMSI

If the MS is identified by the IMSI, then this information element shall be included.

17.1.14 BSSAP+-MS-ACTIVITY-INDICATION message

This message is sent by the SGSN to the VLR to indicate that activity from an MS has been detected.

Table 17.1.14/3GPP TS 29.018: BSSAP+-MS-ACTIVITY-INDICATION message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.14.1 Cell global identity (A/Gb mode only)

In A/Gb mode, the SGSN shall include the cell global identity where the MS was in the last radio contact.

17.1.14.2 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

17.1.15 BSSAP+-MS-INFORMATION-REQUEST message

This message is sent from the VLR to the SGSN to request information associated with the indicated IMSI. The type of information requested is specified in the Information requested IE.

Table 17.1.15/3GPP TS 29.018: BSSAP+-MS-INFORMATION-REQUEST message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Information requested	Information requested 18.4.13	M	TLV	3

17.1.16 BSSAP+-MS-INFORMATION-RESPONSE message

This message is sent from the SGSN to the VLR as a response to a previous BSSAP+- MS-INFORMATION - REQUEST message. (At least one of the requested identities shall be sent).

Table 17.1.16/3GPP TS 29.018: BSSAP+-MS-INFORMATION-RESPONSE message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
TMSI	TMSI 18.4.23	O	TLV	6
PTMSI	PTMSI 18.4.20	O	TLV	6
IMEI	IMEI 18.4.8	O	TLV	10
IMEISV	IMEISV 18.4.9	O	TLV	10
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Location information age	Location information age 18.4.15	O	TLV	4
Mobile station state	Mobile station state 18.4.19	O	TLV	3
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.16.1 IMEI

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.2 IMIESV

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.3 Cell global identity (A/Gb mode only)

In A/Gb mode, cell global identity where the MS was in the last radio contact.

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.4 Location information age

Time in minutes since the MS last established a radio transaction.

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

17.1.16.5 Mobile station state

This information element should be included in this message, irrespective of the information requested.

17.1.16.6 TMSI

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable. .

17.1.16.7 Service area identification (Iu mode only)

In Iu mode, service area identification where the MS was in the last radio contact.

This information element should be included if it was requested in the BSSAP+-MS-INFORMATION-REQUEST message and if this information is obtainable.

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

17.1.22 BSSAP+-TMSI-REALLOCATION-COMPLETE message

This message is sent by the SGSN to the VLR to indicate that TMSI reallocation or deletion on the MS has been successfully completed.

Table 17.1.22/3GPP TS 29.018: BSSAP+-TMSI-REALLOCATION-COMPLETE message content

Information Element	Type/Reference	Presence	Format	Length
Message type	Message type 18.2	M	V	1
IMSI	IMSI 18.4.10	M	TLV	6-10
Cell global identity	Cell global identity 18.4.1	O	TLV	10
Service area identification	Service area identification 18.4.21b	O	TLV	9~~10~~

17.1.22.1 Cell global identity (A/Gb mode only)

The SGSN shall include the cell global identity where the Mobile Station was in the last radio contact.

17.1.22.2 Service area identification (Iu mode only)

In Iu mode, the SGSN should include the Service area identification where the mobile was in the last radio contact.

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

18.4.21b Service Area Identification

This information element uniquely identifies one service area.

	8	7	6	5	4	3	2	1
Octet 1	IEI							
Octet 2	Length indicator							
Octet 3 to Octet 9~~10~~	The rest of the information element is coded as the the value part of the SAI IE defined in 3GPP TS 25.413 (not including 3GPP TS 25.413 IEI and 3GPP TS 25.413 length indicator).							

Figure 18.4.27/3GPP TS 29.018: Service Area Identification IE~~18.4.22 SGSN number~~

18.4.22 SGSN number

The SGSN number is coded as a sequence of TBCD digits (as specified in 3GPP TS 29.002), compressed two into each octet. The Number is in international E.164 format as indicated by Octet 3 which coding is specified in 29.002. This is a variable length information element, and includes a length indicator. The value part of the SGSN number information element (not including IEI, Length indicator and Octet 3) shall not exceed 15 digits.

	8	**7**	**6**	**5**	**4**	**3**	**2**	**1**
Octet 1	IEI							
Octet 2	Length indicator							
Octet 3	1	0	0	1	0	0	0	1
Octet 4	digit 2				digit 1			
Octet n	digit i+1				digit i			

Figure 18.4.22/3GPP TS 29.018: SGSN number IE