3. TERMINOLOGY

3.1 DEFINITIONS

Emergency Services Call

A call requiring connection to a PSAP. The digits 9-1-1 require this treatment in the United States.

Public Safety Answering Point

An emergency services network element that is responsible for answering emergency calls.

Roamer Port

A terminating directory number supporting call delivery to mobile stations.

Selective Router

A Selective Router is an emergency services network element that is responsible for routing incoming emergency calls to the appropriate PSAP, and may be responsible for other functions, such as redirecting calls from a primary PSAP to a secondary PSAP. The specification of Selective Router functionality is outside the scope of this document.

3.2 SYMBOLS AND ABBREVIATIONS

ES	Emergency Services
ESRD	EmergencyServicesRoutingDigits parameter
MDN	MobileDirectoryNumber parameter
O	Optional
PSAP	Public Safety Answering Point
R	Required
S/R	Selective Router

4. *TIA/EIA-41* AUTOMATIC ROAMING MODIFICATIONS

4.1 Callback Using Standard Roamer Port

This scenario describes a callback from the PSAP using a roamer port.

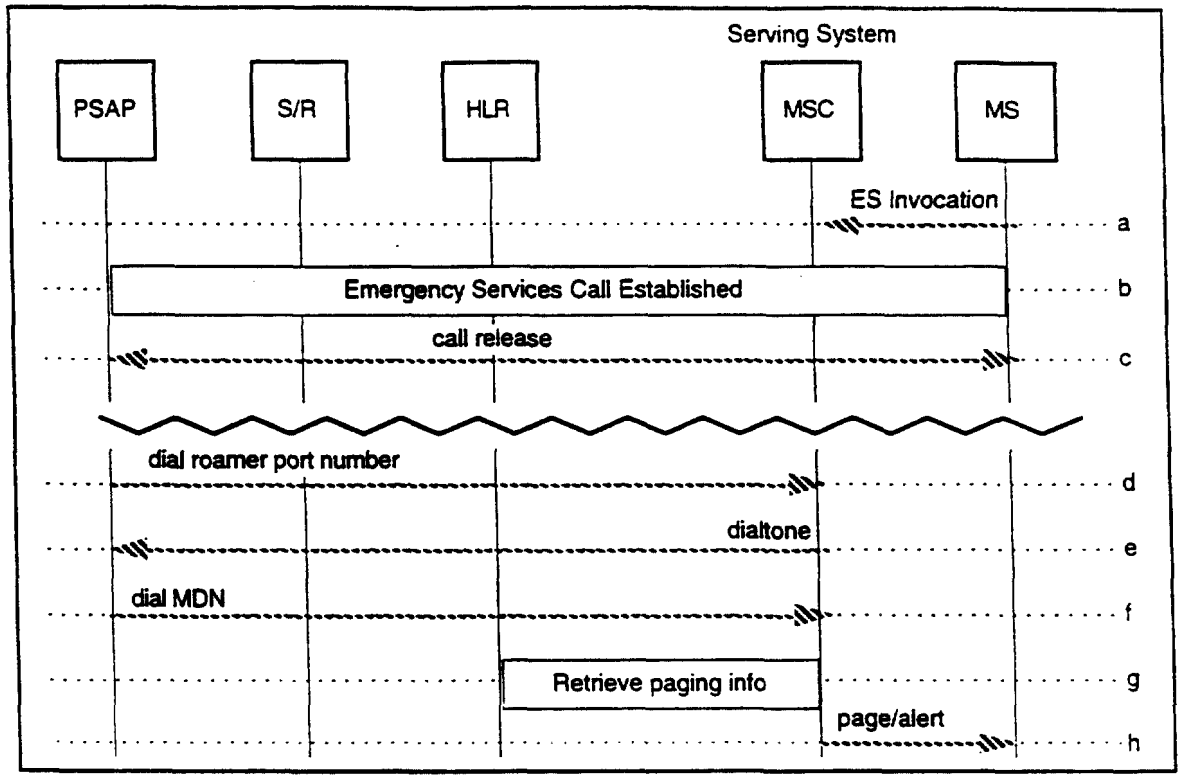

Figure 8 Callback Using Standard Roamer Port

a. An MS user initiates an Emergency Services Call (e.g., dials 9-1-1).

b. An emergency call is set up.

c. The call is disconnected.

d. Some time later, the PSAP determines that it needs to contact the Emergency Services Caller and dials the roamer port number of the system that the call was received from (determined from the ESRD information delivered during Step-b).

e. Second dial tone is provided to the PSAP to prompt it to enter the MS identification.

f. The PSAP dials the Mobile Directory Number (MDN).

g. Optionally, retrieve paging information. This will work only if at least one of the following is true:

   i. The MDN and MIN are the same.

   ii. The MS is in its home system.

iii. The MSC supports *TIA/EIA-41* recommendations to accept an MDN from a roamer port instead of a MIN.

h. The MSC presents the call to the MS by paging and alerting the MS.

WIRELESS ENHANCED EMERGENCY SERVICES:
ANSI J-STD-023 STAGE 2 MODIFICATIONS

CONTENTS

LIST OF FIGURES

LIST OF TABLES

None

FOREWORD

This Foreword is not part of this Interim Standard.

This is one of a series of recommendations titled

"WIRELESS ENHANCED EMERGENCY SERVICES"

which provides a solution for the limited capabilities of Wireless Enhanced Emergency Services. These capabilities include:

- provision of base station, cell site or sector identification information
- subscriber identification
- callback
- reconnect

The recommendations included in this series are:

- J-STD-034.1, Wireless Enhanced Emergency Services: Functional Overview
- J-STD-034.2, Wireless Enhanced Emergency Services: PSAP Perspective
- J-STD-034.3, Wireless Enhanced Emergency Services: Emergency Services Stage 2
- J-STD-034.4, Wireless Enhanced Emergency Services: *TIA/EIA-41* Intersystem Handoff Modifications
- J-STD-034.5, Wireless Enhanced Emergency Services: *TIA/EIA-41* Automatic Roaming Modifications
- J-STD-034.6, Wireless Enhanced Emergency Services: *ANSI J-STD-023* Stage 2 Modifications
- J-STD-034.7, Wireless Enhanced Emergency Services: *TIA/EIA/IS-93* Modifications
- J-STD-034.8, Wireless Enhanced Emergency Services: *TIA/EIA-41* Stage 3 Modifications
- J-STD-034.9, Wireless Enhanced Emergency Services: *ANSI J-STD-024* Modifications

REVISION HISTORY

Revision	Date	Remarks
0	October 1997	Initial Publication

NOTE

The unique numbering system assigned to these documents is intended to reflect their hierarchical structure.

1. INTRODUCTION

1.1 OBJECTIVE

This is one of a series of recommendations titled

"WIRELESS ENHANCED EMERGENCY SERVICES"

which provides a solution for the limited capabilities of Wireless Enhanced Emergency Services. These capabilities include:

- provision of base station, cell site or sector identification information
- subscriber identification
- callback
- reconnect

1.2 SCOPE

This document provides a solution for modifications to *ANSI J-STD-023* Stage 2 to support Wireless Enhanced Emergency Services.

1.3 ORGANIZATION

This document is organized by the following sections:

- Section 1, titled "Introduction," provides introductory information for this Interim Standard.
- Section 2, titled "References," lists the normative and informative references for this Interim Standard.
- Section 3, titled "Terminology," lists the definitions, symbols, abbreviations, and other documentation conventions used in this Interim Standard.
- Section 4, titled "*ANSI J-STD-023* Stage 2 Modifications," defines the modifications to the intersystem messaging in *ANSI J-STD-023* necessary to support Wireless Enhanced Emergency Services.

2. REFERENCES

The *ANSI J-STD-023* recommendations are:

- ANSI J-STD-023, *PCN to PCN Intersystem Operations based on PCS1900 Standard, approved for publication.*

3. TERMINOLOGY

3.1 DEFINITIONS

Callback Number

The Directory Number (e.g., MDN, MSISDN) provided to the PSAP to call back the Emergency Services Caller.

Emergency Services Call

A call requiring connection to a PSAP. The digits 9-1-1 require this treatment in the United States.

Emergency Services Network Entity

An entity which serves as the Emergency Services point of interface to an MSC (e.g., S/R, PSAP).

Public Safety Answering Point

An emergency services network element that is responsible for answering emergency calls.

Roamer Port

A terminating directory number supporting call delivery to mobile stations.

Selective Router

A Selective Router is an emergency services network element that is responsible for routing incoming emergency calls to the appropriate PSAP, and may be responsible for other functions, such as redirecting calls from a primary PSAP to a secondary PSAP. The specification of Selective Router functionality is outside the scope of this document.

3.2 SYMBOLS AND ABBREVIATIONS

CM	Connection Management
ES	Emergency Services
ESNE	Emergency Services Network Entity
O	Optional
PCS	Personal Communications System
PCSC	PCS Switching Center
PS	Personal Station
PSAP	Public Safety Answering Point
R	Required
S/R	Selective Router

4. *J-STD-023* STAGE 2 MODIFICATIONS

4.1 Emergency Services Call Initiated During a Call After Intersystem Handoff

This scenario describes an Emergency Services Call initiated during a call causing a three-way call (with call processing modifications) following an intersystem handoff. This call will be set up from the Anchor PCSC (if an intersystem handoff has occurred).

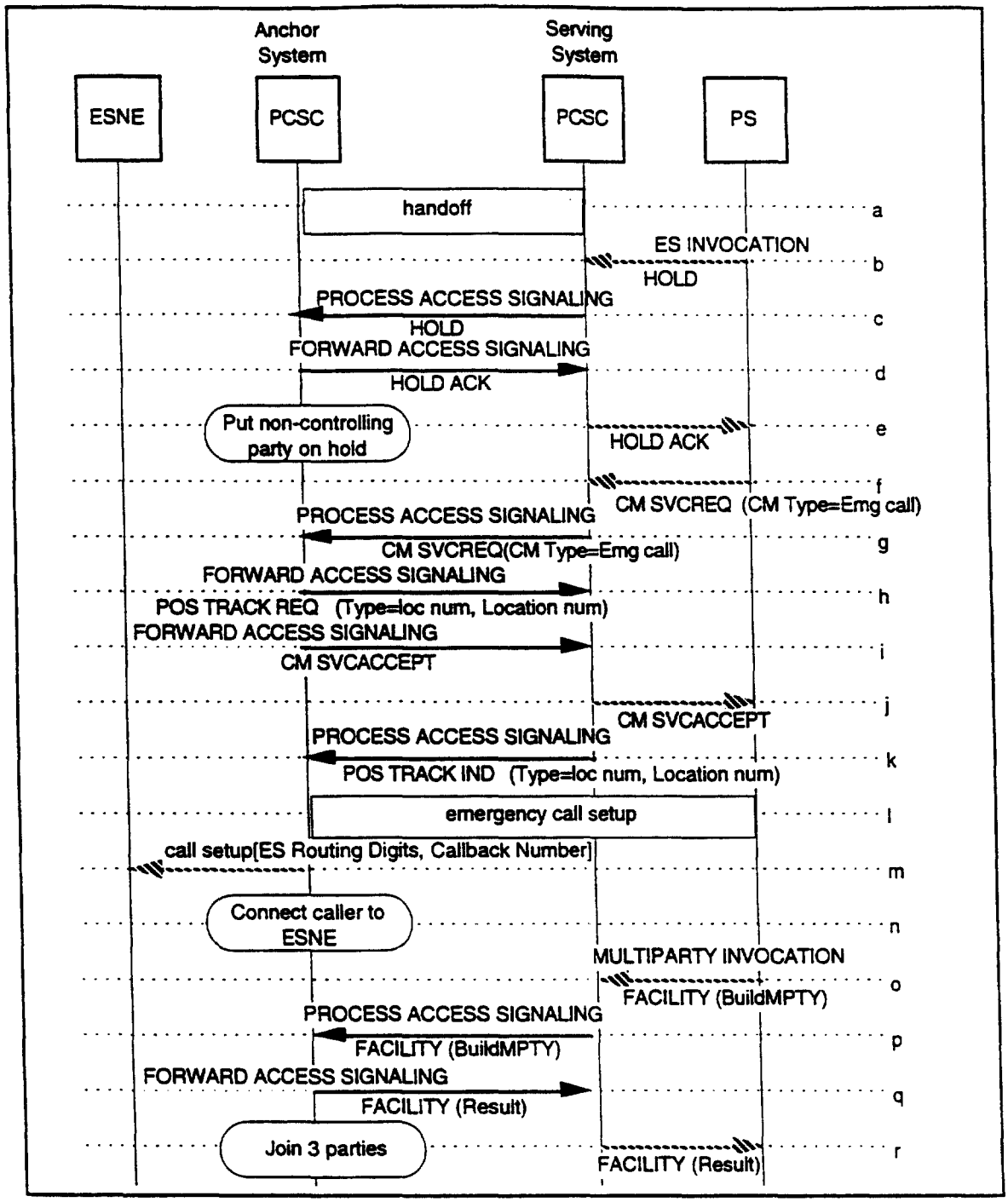

Figure 9 Emergency Services Call Dialed in Call After Intersystem Handoff

a. A call is handed off from one PCSC to another.

b. Later, the user initiates an Emergency Services Call. The PS generates a HOLD message to request that the existing call be placed on hold.

c. The Serving PCSC encapsulates the HOLD message into a PROCESS ACCESS SIGNALING message and sends it to the Anchor PCSC.

d. The Anchor PCSC verifies that the subscriber has access to the Hold service and if so, places the non-controlling party on hold and returns a HOLD ACK message (encapsulated in a FORWARD ACCESS SIGNALING message).

e. The Serving PCSC forwards the HOLD ACK message to the PS confirming that the call has been put on hold.

f. The PS sends a CM SERVICE REQUEST with type set to emergency call.

g. The Serving PCSC encapsulates the CM SERVICE REQUEST message into a PROCESS ACCESS SIGNALING message and sends it to the Anchor PCSC.

h. The Anchor PCSC recognizes that an emergency call is being requested and sends a POSITION TRACKING REQUEST (encapsulated in a FORWARD ACCESS SIGNALING message) to the Serving PCSC. The type of information requested is the location number and the response method is set to once only.

i. The Anchor PCSC accepts the emergency call setup request via the CM SERVICE ACCEPT (encapsulated in a FORWARD ACCESS SIGNALING message) to the PS (via the serving PCSC).

j. The Serving PCSC forwards the CM SERVICE ACCEPT to the PS.

k. The Serving PCSC provides the location number associated with the current position of the subscriber and returns this to the Anchor PCSC via the POSITION TRACKING INDICATION (encapsulated in a PROCESS ACCESS SIGNALING message).

l. An emergency call is setup according to the standard PCS1900 call setup flows.

m. The Anchor PCSC routes a call to an ESNE. The following information is transmitted.

Information	Usage	Type
ES Routing Digits	Emergency Services Routing Digits. A unique identifier of a specific base station, cell site or sector. This parameter should be encoded as per the protocol used to route the call.	R
Callback Number	The Directory Number provided to cal back the Emergency Services caller.	R

n. The caller is connected with the Emergency Services network.

o. Later, the user invokes the Multiparty Service (e.g., 3 + SEND). This causes the PS to generate a FACILITY message (with encapsulated BuildMPTY) requesting that a multiparty call be built.

p. The Serving PCSC encapsulates the FACILITY message in a PROCESS ACCESS SIGNALING message (with encapsulated BuildMPTY) and sends it to the Anchor PCSC.

q. The Anchor PCSC checks that the subscriber has multiparty capability and if so joins the held and active parties. A FACILITY response message is returned to the PS (encapsulated in a FORWARD ACCESS SIGNALING message) via the Serving PCSC.

r. The serving PCSC forwards the FACILITY response message to the PS.

4.2 Emergency Call Reconnect After Intersystem Handoff

For further study.

4.3 Callback Using Standard Roamer Port

For further study.

WIRELESS ENHANCED EMERGENCY SERVICES:
TIA/EIA/IS-93 MODIFICATIONS

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LIST OF FIGURES

LIST OF TABLES

FOREWORD

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- subscriber identification
- callback
- reconnect

The recommendations included in this series are:

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- J-STD-034.7, Wireless Enhanced Emergency Services: *TIA/EIA/IS-93* Modifications
- J-STD-034.8, Wireless Enhanced Emergency Services: *TIA/EIA-41* Stage 3 Modifications
- J-STD-034.9, Wireless Enhanced Emergency Services: *ANSI J-STD-024* Modifications

REVISION HISTORY

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- callback
- reconnect

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This document provides a solution for modifications to *TIA/EIA/IS-93* to support Wireless Enhanced Emergency Services.

1.3 ORGANIZATION

This document is organized by the following sections:

- Section 1, titled "Introduction," provides introductory information for this Interim Standard.
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- Section 3, titled "Terminology," lists the definitions, symbols, abbreviations, and other documentation conventions used in this Interim Standard.
- Section 4, titled "*TIA/EIA/IS-93* Modifications," defines the modifications to the A_i and D_i interfaces, defined in *TIA/EIA/IS-93*, to support Wireless Enhanced Emergency Services.

2. REFERENCES

See Section 4.2.1.

3. TERMINOLOGY

3.1 DEFINITIONS

See Section 4.4.

3.2 SYMBOLS AND ABBREVIATIONS

See Section 4.3.

4. *TIA/EIA/IS-93* MODIFICATIONS

4.1 Foreword (This foreword is not part of this Interim Standard.)

The specification of interface compatibility requirements for interfaces between Cellular Carrier networks and other carrier networks was initiated under the auspices of the ANSI accredited Telecommunications Industry Association Committee TR-45.

The purpose of this Interim Standard is to enable separate telecommunications elements to provide compatible interconnecting equipment and signaling.

To accomplish this purpose, this Interim Standard provides signaling protocol requirements for interfaces that interconnect a switching system in a Cellular Carrier network with a switching system in another network (i.e., Exchange Carrier (EC), Interexchange Carrier (IC), International Carrier (INC), Consolidated Carrier or other carrier network). Within the context of this Interim Standard, a Cellular Carrier network can provide the capabilities available in other carrier networks.

It is expected that the telecommunications industry will combine protocols, or parts of protocols, from this Interim Standard to provide telecommunications services.

~~There is one annex in this Interim Standard. Annex A is informative and is not considered part of this Interim Standard.~~

4.2 References (IS-93 Section 2)

4.2.1 Normative References

American National Standards Institute (ANSI) T1 standards:

American National Standard for Telecommunications. *Routing, Bridging and Transfer of Emergency Service Calls*: Exchange Carriers Standards Association Committee T1: T1.628-1993.

ANSI T1.113: *Signalling System No. 7 (SS7) -- Integrated Services Digital Network (ISDN) User Part*: 1995.

Telecommunications Industry Association (TIA) standards, Interim Standards and Telecommunications Services Bulletins (TSBs):

ANSI/TIA/EIA-41: *Cellular Radiotelecommunications Intersystem Operations, 1997.*

~~EIA/TIA Interim Standard IS-41-B, *Cellular Radio Telecommunications Intersystem Operations*; December, 1991.~~

ANSI/TIA/EIA-664: *Cellular Features Description*, 1996.

~~EIA/TIA Interim Standard IS-53, *Cellular Features Description*; August, 1991.~~

International Telecommunications Union (ITU) (International Telegraph and Telephone Consultative Committee (CCITT)) standards:

CCITT 1988 (Blue Book), Volume II - Fascicle II.2, *Telephone Network and ISDN - Operation, Numbering, Routing and Mobile Service*; Recommendations E.100 - E.333.

CCITT 1988 (Blue Book), Volume VI - Fascicle VI.9, *Specifications of Signaling System No. 7*; Recommendations Q.771 - Q.795.

4.3 Acronyms (IS-93 Section 3.1)

ESNE Emergency Services Network Entity

ESRD EmergencyServicesRoutingDigits parameter

ITU-T International Telecommunications Union--Telecommunications Sector

~~ESAP Emergency Services Access Point~~

MDN MobileDirectoryNumber (equivalent to a Mobile Station ISDN number) parameter

PSAP Public Safety Answering Point

4.4 Definitions (IS-93 Section 3.2)

For the purposes of this Interim Standard, the following definitions apply.

Emergency Services Network Entity - An entity which serves as the Emergency Services point of interface to an MSC (e.g., S/R, PSAP)

Emergency Services Routing Digits - A digit string that uniquely identifies a base station, cell site or sector. This number may also be a network routable number (but not necessarily a dialable number).

~~**Emergency Services Access Point** An emergency services network element that is responsible for answering emergency calls.~~

Public Safety Answering Point - An Emergency Services Network Element that is responsible for answering emergency calls.

World Numbering Plan - A plan created by the ITU-T~~CCITT~~ that provides each telephone subscriber with a unique number. Each world telephone number consists of a country code followed by the national number as defined in ITU-T~~CCITT~~ Recommendations~~ E.163 and~~ E.164.

World Zone 1 (WZ1) - The group of countries in the World Numbering Plan that are identified by the single-digit country code 1. World Zone 1 is defined in ITU-T~~CCITT~~ Recommendations~~ E.163 and~~ E.164.