

**PROCEDURES FOR INTERWORKING BETWEEN INMARSAT STANDARD B SYSTEM AND THE
INTERNATIONAL PUBLIC SWITCHED TELEPHONE NETWORK/ISDN**

1 Introduction

This Recommendation presents the detailed procedures for interworking between INMARSAT Standard-B system and signalling systems of the fixed network. For a brief description of INMARSAT Standard-B system, see Appendix I to Recommendation Q.1111.

2 Conversion of information elements

Tables 1/Q.1112 to 16/Q.1112 give the relationship between signals of the fixed network signalling systems and the INMARSAT Standard-B system.

2.1 Signalling System No. 7 (TUP)

2.1.1 Table 1/Q.1112 gives the relationship between forward signals in Signalling System No. 7 TUP and messages and information elements sent on the radio path in INMARSAT Standard-B signalling system for shore to ship calls, i.e. interworking of Signalling System No. 7 TUP to INMARSAT Standard-B. In the comment column actions taken by the MSSC are indicated, in particular for signals of TUP which have no equivalent message or information element in INMARSAT Standard-B.

Table 2/Q.1112 shows the relationship between messages and information elements in INMARSAT Standard-B signalling system and forward signals in Signalling System No. 7 TUP for ship-to-shore calls, i.e. interworking of INMARSAT Standard-B to Signalling System No. 7 TUP.

The signal numbers for forward signals of Signalling System No. 7 TUP are those given in Table A-5bis of Annex A to Recommendations Q.601-Q.608.

2.1.2 Table 3/Q.1112 gives the relationship between messages and information elements in INMARSAT Standard-B signalling system and backward signals in Signalling System No. 7 TUP for shore-to-ship calls, i.e. interworking of Signalling System No. 7 to INMARSAT Standard-B.

Backward signals in Signalling System No. 7 TUP generated by the MSSC for unsuccessful shore- to-ship calls are given in Table 3bis/Q.1112. These signals are not related to any specific message or information element received from the ship earth station.

Table 4/Q.1112 gives the relationship between backward signals in Signalling System No. 7 TUP and messages and information elements in INMARSAT Standard-B signalling system for ship-to-shore calls, i.e. interworking of INMARSAT Standard-B to Signalling System No. 7 TUP. The comments column indicates specific actions taken by the MSSC.

The signal numbers for backward signals of Signalling System No. 7 TUP are those given in Table A-9bis of Annex A

to Recommendations Q.601-Q.608.

2.2_w Signalling System R2_w

2.2.1 Tables 5/Q.1112 and 6/Q.1112 are similar to Tables 1/Q.1112 and 2/Q.1112, respectively, and apply to forward signals in Signalling System R2.

The signal numbers for forward signals of Signalling System R2 are those of Table A-7 of Annex A to Recommendations Q.601-Q.608.

2.2.2 Tables 7/Q.1112, 7bis/Q.1112 and 8/Q.1112 are similar to Tables 3/Q.1112, 3bis/Q.1112 and 4/Q.1112, respectively, and apply to backward signals in Signalling System R2.

The signal numbers for backward signals in Signalling System R2 are those of Table A-11 of Annex A to Recommendations Q.601-Q.608.

2.3_w Signalling System No. 7 (ISUP)_w

The relationship between forward and backward signals of Signalling System No. 7 ISUP and messages and information elements of INMARSAT Standard-B signalling system is for further study.

Tables 9/Q.1112 through 12/Q.1112 are reserved for this purpose.

2.4_w Signalling System No. 5_w

2.4.1 Tables 12/Q.1112 and 14/Q.1112 are similar to Tables 1/Q.1112 and 2/Q.1112, respectively, and apply to forward signals in Signalling System No. 5.

the signal numbers for forward signals in Signalling System No. 5 are those given in Table A-4 Annex A to Recommendations Q.601-Q.608.

2.4.2 Tables 15/Q.1112, 15bis/Q.1112 and 16/Q.1112 are similar to Tables 3/Q.1112, 3bis/Q.1112 and 4/Q.1112, respectively, and apply to backward signals in Signalling System No. 5.

The signal numbers for backward signals in Signalling System No. 5 are those given in Table A-8 of Annex A to Recommendations Q.601-Q.608.

TABLE 1/Q.1112

**Conversion of forward signals in Signalling System No. 7 TUP
and INMARSAT Standard-B Signalling System
shore-to-ship calls**

Signalling System No. 7		INMARSAT Standard-B		
Signal No.	Signal name	Message: info element: value		Comments
1	Address signals	Announcement message: SES number, called terminal	-	
2	Nature of address indicator national significant number	-	-	Interpreted and used by MSSC
3	Nature of address indicator international number	-	-	Interpreted and used by MSSC
4	Nature of circuit indicator one satellite in connection	-	-	Ignored by MSSC
5	Nature of circuit indicator one satellite in connection	-	-	Ignored by MSSC
6	Echo suppressor indicator out-going half-echo suppressor not included	-	-	MSSC will insert echo control device if needed
7	Echo suppressor indicator out-going half-echo suppressor included	-	-	Interpreted and used by MSSC
8-12	Calling party's category indicator, language digit	Assignment message: service: telephone priority: routine	-	
13	Calling party's category indicator, ordinary calling subscriber	Assignment message: service: telephone priority: routine	-	

14	Calling party's category indicator, calling subscriber with priority	Assignment message: service: telephone priority: further study	-
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**Conversion of forward signals in Signalling System No. 7 TUP
and INMARSAT Standard-B Signalling System
shore-to-ship calls**

Signalling System No. 7		INMARSAT Standard-B	
Signal No.	Signal name	Message: info element: value	Comments
15	Calling party's category indicator, data call	-	Not applicable
16	Clear forward signal	Channel release message	
17	Forward transfer signal	-	Not applicable
18	Continuity proved	-	Interpreted and used by MSSC
19	Continuity check failure	Channel release message	-
20	Continuity check required on this circuit	-	Interpreted by MSSC
21	Continuity check not required on this circuit	-	Interpreted by MSSC
22	Continuity check performed on previous circuit	-	Interpreted and used by MSSC
23	Service information	-	Interpreted by MSSC
24	General setup message	-	Interpreted by MSSC

TABLE 2/Q.1112

**Conversion of forward signals in Signalling System No. 7 TUP
and INMARSAT Standard-B Signalling System
ship-to-shore calls**

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INMARSAT standard-B	Signalling system No. 7
Message: info element: value	Signal name Signal No.
Address message: called number	Address signals: Nature of address indicator 1 2 or 3
Request message: -priority: routine -service: telephone or 3.1 kHz audio	Calling party's category indicator, ordinary 13 calling subscriber
Request message: -priority: urgency, safety or distress -service: telephone or 3.1 kHz audio	Calling party's category indicator, calling 14 subscriber with priority
Channel release message	Clear forward signal 16
Continuity check tone	Continuity check performed on previous circuit 22

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wNotew - Nature of circuit indicator, one satellite in connection (Signal No. 5) is generated by the MSSC.

**Conversion of backward signals in Signalling System No. 7 TUP
and INMARSAT Standard-B Signalling System
shore-to-ship calls**

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INMARSAT standard-B	Signalling system No. 7
Message: info element: value	Signal name Signal No.
Continuity check tone	AFC: Address complete subscriber free, charge 4
Connect message	ANC: Answer charge 16
Channel release message	CLB: Clear back 19
Call result: cause value:	
-user busy	SGB: Subscriber busy 12
-no channel available	CGC: Circuit group congestion 8
-destination out of service	LOS: Line out of service 13
-others	SST: Send special info tone 14

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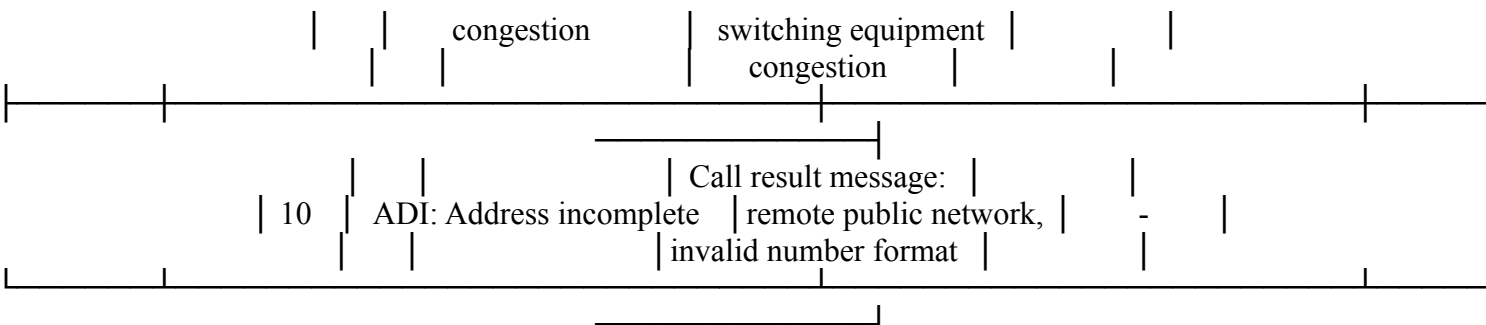
**Unsuccessful call events and backward signals in
Signalling System No. 7 TUP
shore-to-ship calls**

INMARSAT standard-B	Signalling system No. 7
Event in INMARSAT system	Signal name Signal No.
Congestion in MSSC	SEC: switching equipment congestion 7
No satellite channel available	NNC: National network congestion 9
Incomplete SES number	ADI: Address incomplete 10
Unallocated SES number	UNN: Unallocated number 11
SES busy	SGB: Subscriber busy 12
Continuity test failure	LOS: Line out of service 13
SES absent (no response)	SST: Send special information tone 14
SES barred for incoming access	SST: Send special information tone 14
SES unauthorized	SST: Send special information tone 14

**Conversion of backward signals in Signalling System No. 7 TUP
and INMARSAT Standard B Signalling System
ship-to-shore calls**

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Signalling system No. 7		INMARSAT standard-B	
Signal No.	Signal name	Message: info element: value	Comments
1	ADC: Address complete, charge	-	Connect through circuit
2	ADN: Address complete, no charge	-	No-charge information used by MSSC only
3	ADX: Address complete, coinbox	-	Connect through circuit
4	AFC: Address complete, subscriber free, charge	-	Connect through circuit
5	AFN: Address complete, subscriber free, no charge	-	No-charge information used by MSSC only
6	AFX: Address complete, subscriber free, coinbox	-	Connect through circuit
7	SEC: Switching equipment congestion	Call result message: international network, switching equipment congestion	-
8	CGC: Circuit-group congestion	Call result message: international network, no channel available	-
9	NNC: National network	Call result message: remote public network,	-



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**Conversion of backward signals in Signalling System No. 7 TUP
and INMARSAT Standard-B Signalling System
ship-to-shore calls**

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Signalling system No. 7		INMARSAT standard-B	
Signal No.	Signal name	Message: info element: value	Comments
11	UNN: Unallocated number	Call result message: remote public network, unassigned number	-
12	SGB: Subscriber busy	Call result message: remote public network, user busy Call result message:	-
13	LOS: line out of service	remote public network, destination out of service	-
14	SST: Send special information tone	Call result message: international network, unspecified	-
15	CFL: Call failure	Call result message: international network, unspecified	-
16	ANC: Answer, charge	Connect message	-
17	ANN: Answer, no charge	Connect message No-charge information used by MSSC only	
18	RAN: Reanswer	Clearback supervision done by MSSC	

19	CLB: Clearback	Channel release	Clearback supervision done by MSSC
20	GRQ: General request message	-	Interpreted by MSSC
21	Call unsuccessful access barred	Call result message: remote public network, unspecified	-
22	DPN: Call unsuccessful digital path not provided	-	For further study

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**Conversion of forward signals in Signalling System R2 and
INMARSAT Standard-B Signalling System
shore-to-ship calls**

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Signalling system R2		INMARSAT standard-B		
Signal No.	Signal name	Message: info element: value	Comments	
1	Address signals	Announcement message: SES number, called terminal	-	
2-7	Language digit, discriminating digit	-	Ignored by MSSC	
8	I-11: Country code indicator, outgoing half-echo suppressor required	-	MSSC will suppress the country code and insert echo control device if needed	
9	I-12: Country code indicator, no echo suppressor required	-	The MSSC will suppress the country code	
10	I-14: Country code indicator, incoming half-echo suppressor required	-	The MSSC will suppress the country code	
11	I-14: Incoming half-echo suppressor required	-	Interpreted by MSSC	
12	II-7: Calling party's category, subscriber or operation without forward transfer facility	Assignment message: -service: telephone -priority: routine	-	
13	II-8: Calling party's category, data	-	Not applicable	

transmission control

14	II-9: Calling party's category, subscriber with priority	Assignment message: -service: telephone -priority: for further study	-
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TABLE 5/Q.1112 (contd)

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Signalling system R2		INMARSAT standard-B		
Signal No.	Signal name	Message: info element: value	Comments	
15	II-10: Calling party's category, operator with forward transfer facility	Assignment message: -service telephone -priority: routine	-	
16	Clear forward signal	Channel release message	-	
17	Forward transfer signal	-	Not applicable	
18	First digit I-1.....I-10	-	Interpreted and used by MSSC	
19	Reply to A-14	-	Not applicable	
20-21	Reply to A-13	-	Not applicable	

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TABLE 6/Q.1112

Conversion of forward signals in Signalling System R2 and INMARSAT Standard-B Signalling System ship-to-shore calls

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INMARSAT standard-B	Signalling system R2
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Message: info element: value	Signal name	Signal No.
Address message: called number	Address signals: Country code indicator	1 10
Request message: -priority: routine -service: telephone or 3.1 kHz audio	II-7: Calling party's category, subscriber or operator without forward transfer facility	12
Request message: -priority: urgency, safety or distress -service: telephone or 3.1 kHz audio	II-9: Calling party's category, subscriber with priority	14
Channel release message	Clear forward signal	16
Continuity check tone	Not applicable	-

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TABLE 7/Q.1112

**Conversion of backward signals in Signalling System R2
and INMARSAT Standard-B Signalling System
shore-to-ship calls**

INMARSAT standard-B		Signalling system R2	
Message: info element: value	Signal name	Signal No.	
Continuity check tone	International, subscriber line free, charge	13	
Connect message	Answer signal	11	
Channel release message	Clear back signal	12	
Call result message: cause value:			
-user busy	Subscriber line busy	5	
-no Channel available	Congestion on the national network	1	
-destination out of service	Subscriber line out of order	10	
-others	International, send special info tone	14	

**Unsuccessful call events and backward signals in
Signalling System R2
shore-to-ship calls**

INMARSAT standard-B	Signalling system R2	Signal No.	Signal name
Event in INMARSAT system	Signal name	Signal No.	Signal name
Congestion in MSSC	A-4: Congestion on the national network or B-4: Congestion	1 or 6	
No satellite channel available	A-4: Congestion on the national network or B-4: Congestion	1 or 6	
Incomplete SES number	B-5: Unallocated number	7	
Unallocated SES number	B-5: Unallocated number	7	
SES busy	B-3: Subscriber line busy	5	
Continuity test failure	B-8: Subscriber line out of order	10	
SES absent (no response)	B-2: Send special information tone	4	
SES barred for incoming access	B-2: Send special information tone	4	
SES unauthorised	B-2: Send special information tone	4	

TABLE 8/Q.1112

**Conversion of backward signals in Signalling System R2
and INMARSAT Standard-B Signalling System
ship-to-shore calls**

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Signalling system R2		INMARSAT standard-B	
Signal No.	Signal name	Message: info element: value	Comments
1	A-4: Congestion on the national network	Call result message: remote public network switching equipment congestion	-
2	A-6: Address complete charge, set up speech conditions	-	Connect through circuit
3	A-15: Congestion in an international exchange or at its output	Call result message: international network, switching equipment congestion	-
4	B-2: Send special information tone	Call result message: remote public network, unspecified	-
5	B-3: Subscriber line busy	Call result message: remote public network, user busy	-
6	B-4: Congestion	Call result message: remote public network, switching equipment congestion	-
7	B-5: Unallocated number	Call result message: remote public network, unassigned number	-
8	B-6: Subscriber line free, charge	-	Connect through circuit

| | B-7: Subscriber line free, |
| 9 | no charge |

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| No-charge infor- |
| mation used by |
| MSSC only |

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**Conversion of backward signals in Signalling System R2
and INMARSAT Standard-B Signalling System
ship-to-shore calls**

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Signalling system R2		INMARSAT standard-B	
Signal No.	Signal name	Message: info element: value	Comments
10	B-8: Subscriber line out of order	Call result message: remote public network, destination out of service	-
11	Answer signal	Connect message	Clearback supervision by MSSC
12	Clear back signal	Channel release	-
13	B-1: International, subscriber line free, charge	-	Connect through circuit
14	B-9, B-10: International, send special information tone	Call result message: international network, unspecified	-
15	B-11 to B-15	Call result message: remote public network, switching equipment congestion	-

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TABLE 9/Q.1112

**Conversion of forward signals in Signalling System No. 7
ISUP and INMARSAT Standard-B Signalling System
shore-to-ship calls**

For further study.

TABLE 10/Q.1112

**Conversion of forward signals in Signalling System No. 7
ISUP and INMARSAT Standard-B Signalling System
ship-to-shore calls**

For further study.

TABLE 11/Q.1112

**Conversion of backward signals in Signalling System No. 7
ISUP and INMARSAT Standard-B Signalling System
shore-to-ship calls**

For further study.

TABLE 11bis/Q.1112

**Unsuccessful call events and backward signals in
Signalling System No. 7 ISUP and
INMARSAT Standard-B Signalling System
shore-to-ship calls**

For further study.

TABLE 12/Q.1112

**Conversion of backward signals in Signalling System No. 7
ISUP and INMARSAT Standard-B Signalling System
ship-to-shore calls**

For further study.

TABLE 13/Q.1112

**Conversion of forward signals in Signalling System No. 5
and INMARSAT Standard-B Signalling System
shore-to-ship calls**

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Signalling system No. 5		INMARSAT standard-B		
Signal No.	Signal name	Message: info element: value	Comments	
1	Address signal	Announcement message: -SES number, called terminal	-	
2-16	Language digit	-	Interpreted by MSSC	
7	Discriminating digit O	Announcement message: -service: telephone	-	
8	Start of pulsing KP1	-	Interpreted by MSSC	
9	Start of pulsing KP2	-	Interpreted by MSSC	
10	Clear forward message	Channel release	-	
11	Forward transfer	-	Not applicable	

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TABLE 14/Q.1112

**Conversion of forward signals in Signalling System No. 5
and INMARSAT Standard-B Signalling System
ship-to-shore calls**

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INMARSAT standard-B		signalling system No. 5	
Message: info element: value	Signal name	Signal No.	
Address Message: Called number	Address signals start of pulsing KP1 or	1 8	

	start of pulsing KP2	9
Continuity check tone	Not applicable	-
Channel release message	Clear forward	10
Request message: -priority: routine -service: telephone or 3.1 kHz audio	Discriminating digit O	7
Request message: -priority: urgency, safety or distress -service: telephone or 3.1 kHz audio	Discriminating digit O	7

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TABLE 15/Q.1112

**Conversion of backward signals in Signalling System No. 5
and INMARSAT Standard-B Signalling System
shore-to-ship calls**

INMARSAT standard-B	Signalling system No.5
Message: info element: value	Signal name Signal No.
Continuity check tone	Inform that ST has been sent 5
Connect message	Answer signal 2
Channel release	Clear back 3
Call attempt result: Cause value	
-User busy	Busy flash signal 1
-No channel available	Busy flash signal 1
-Destination out of service	Information tone (Note) -
-Others	Information tone (Note) -

Notew - May include appropriate recorded announcement.

TABLE 15bis/Q.1112

**Unsuccessful call events and backward signals in
Signalling System No. 5
shore-to-ship calls**

Events in INMARSAT system	Signalling system No. 5
Message: info element: value	Signal name Signal No.
Congestion in MSSC	Busy flash 1
No satellite channel available	Busy flash 1

SES busy	Busy flash	1	
Incomplete SES number	Information tone (Note)	-	
Unallocated SES number	Information tone (Note)	-	
Continuity test failure	Information tone (Note)	-	
SES absent	Information tone (Note)	-	
SES barred	Information tone (Note)	-	
SES unauthorised	Information tone (Note)	-	

Notew - May include appropriate recorded announcement

TABLE 16/Q.1112

**Conversion of backward signals in Signalling System No. 5
and INMARSAT Standard-B Signalling System
ship-to-shore calls**

Signalling system No. 5		INMARSAT standard-B		
Signal No.	Signal name	Message: info element: value	Comments	
1	Busy Flash	Call Result: international network, unspecified		
2	Answer signal	Connect		
3	Clear back	Channel release		
4	Proceed to send	-		
5	Inform that ST has been sent	-		

Incoming INMARSAT procedures (ship-to-shore calls)

Figure 1/Q.1112 contains the procedures for the incoming INMARSAT Standard-B system.

This description only includes those aspects of the INMARSAT Standard-B system which have to be implemented for interworking purposes. Internal procedures, such as those required for setting up/clearing the satellite channel, are not shown. This also applies to pre-emption procedures for assigning channels to distress calls.

The following details should be noted.

3.1 A call is initiated by a ship earth station (SES), by means of an "access request" message. The coast earth station (CES) begins to set up a channel for the voice communication, upon receipt of this message. The call may be aborted at this point, if the requested service is not available, a satellite circuit is not available, or the calling SES is not authorized. The SES is informed of the call abortion by means of a "call result" message.

3.2 The called address and other information required for call set-up is contained in the service address message received from the ship.

Digit analysis (SPITE 12) commences when the service address has been received. This includes also check of address validity, and translation of prefixes to the appropriate destination number.

Unsuccessful events, shown as SPITEs 13, 15, 16, 17, 18 and 19, are indicated to the ship earth station by call result message with the cause field set as shown in Table 17/Q.1112.

The calling party's category indications used are related to information elements of the request message as shown in Table 18/Q.1112.

TABLE 17/Q.1112

**Relationship between result of digit analysis
and cause field in call result messages**

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SPITE	Cause field
13: Digit analysis	Local network, invalid number format
15: Unallocated number	Local network, unassigned number
16: Unprovided routing	Local network, no route to destination
17: Barred routing	Local network, call rejected
18: Switching equipment congestion	Local network, switching equipment congestion
19: Circuit group congestion	Local network, no circuit available



**Calling Party's category indications used for calls in
INMARSAT Standard-B Signalling System**

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INMARSAT information elements	Calling party's category fite
Priority: routine Service: telephone or 3.1 kHz audio	17: Subscriber, ordinary call
Priority: urgency, safety or distress Service: telephone or 3.1 kHz audio	18: Subscriber, call with priority

w

3.3 The interworking procedure is activated when continuity of the satellite circuit has been established. If there is no outgoing circuit available in the MSSC at that time, the satellite circuit is cleared by a call result message with the cause field set to "local network, no circuit available".

3.4 Upon receipt of an address complete indication (BITE 27) or an address complete, subscriber free signal (BITES 5, 6 or 7) the circuit is through-connected in the MSSC in order to allow supervisory tones to be passed to the ship earth station.

3.5 For unsuccessful call set-up one of the following BITES may be received from the interworking procedure: BITES 9 through 17, 19 and 20. The corresponding cause indicated in the call result message sent to the ship earth station should be as shown in Table 19/Q.1112.

**Relationship between unsuccessful call BITEs and cause field
in call result messages**

BITE	Cause field
9: Switching equipment congestion	International network, switching equipment congestion
10: Circuit group congestion	International network, no channel available
11: Switching equipment congestion or circuit group congestion	International network, switching equipment congestion
12: National network congestion	Remote public network, switching equipment congestion
13: Address complete, national network congestion	Remote public network switching equipment congestion
14: Address incomplete	Remote public network, invalid number format
15: Unallocated number	Remote public network, unassigned number
16: Address complete, subscriber busy	Remote public network, user busy
17: Address complete, line out of service	Remote public network, destination out of service
19: Call failure	International network, unspecified
20: Send special information tone	International network, unspecified

Notew - See also Tables 4/Q.1112, 8/Q.1112 and 16/Q.1112.

3.6 The connect message is sent when an answer signal is received.

3.7 Clear back from the fixed network is not immediately relayed to the ship earth station. However, clear-back supervision is done by the interworking procedure.

Normal clearing takes place when a channel release signal is received from the ship earth station or a clear-back indication (BITE 25) is received from the interworking procedure. BITE 25 is generated when the timer defined in Recommendation Q.118, § 4.3.2 expires, (see the various interworking procedures defined below).

3.8 Additional procedures required for interworking with ISUP are for further study.

**Logic procedures for incoming INMARSAT Standard B signalling
(ship to shore calls)**

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(ship to shore calls)**

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(ship to shore calls)**

4 Outgoing INMARSAT procedures (shore-to-ship calls)

Figure 2/Q.1112 contains the procedures for the outgoing INMARSAT Standard-B Signalling System.

This description only includes those aspects of the INMARSAT Standard-B system which have to be implemented for interworking purposes. Internal procedures, such as those required for setting up and clearing the satellite channel, are not shown. This also applies to preemption procedures for assigning channels to distress calls.

The following details should be noted.

4.1 The satellite circuit is established when all digits of the SES number have been received. The MSSC will check if the SES is barred for incoming calls or busy. This may involve information exchange with the Network Coordination Station. Call barring is indicated to the fixed network by use of BITE 20: send special information tone. For ISDN interworking (Signalling System No. 7) the cause may be indicated more precisely.

4.2 Calling party's category indicators are converted to information elements in INMARSAT Standard B signalling system as shown in Table 20/Q.1112.

TABLE 20/Q.1112

Conversion of calling party's category indicators to information elements in INMARSAT Standard-B Signalling System

Calling party's category indicator FITE	Information elements in INMARSAT
9-13: Operator, language indication	
14: Operator with forward transfer facility	
15: Subscriber	Priority: routine
16: Subscriber or operator with forward transfer facility	Service: telephone
17: Subscriber, ordinary call	
18: Subscriber, call with priority	Priority: for further study Service : telephone
19: Data call	Priority: routine Service: telephone (3.1 kHz audio)

wNotew - FITEs 9-16 are converted to FITE 17 by the interworking procedure.

4.3 The following events may occur during call set-up:

- the SES is busy (BITE 16); this is indicated by the NCS during call set-up;

- there is no available satellite channel for the requested service; in this case network congestion indication (BITE 12) is provided back to the fixed network;

- the continuity test may fail; in this case the subscriber line out of service indication (BITE 17) is used.

If the called terminal on the ship is not available (even though the SES could make the connection) or does not support the requested service type, the SES will indicate this by a call result message. This is for further study.

4.4 When a clear forward signal is received from the fixed network, the MSSC will clear the satellite circuit with a channel release message.

The ship earth station may clear the satellite circuit by sending a channel release message to the MSSC. When receiving such a message, the MSSC will initiate clearing of the satellite circuit and provide a clear-back signal to the fixed network.

Precautions should be taken at the ship earth station in order to avoid unintentional clearing by the user. This could be done by allowing some time (e.g. five seconds) for a reanswer signal to appear before the channel release message is sent to the MSSC.

The MSSC may also release the circuit if problems are detected on the radio path. In this case also a clear-back signal should be provided to the fixed network.

4.5 Additional procedures required for interworking with ISUP are for further study.

**Logic procedures for outgoing INMARSAT Standard B signalling
(shore to ship calls)**

**Logic procedures for outgoing INMARSAT Standard B signalling
(shore to ship calls)**

**Logic procedures for outgoing INMARSAT Standard B signalling
(shore to ship calls)**

5 Interworking of incoming INMARSAT to outgoing INMARSAT

5.1 Figure 3/Q.1112 contains the procedures for interworking between incoming and outgoing procedures of INMARSAT Standard-B signalling system.

These procedures may also apply for interworking with the INMARSAT Standard-B and Standard-A systems.

5.2 The interworking procedure supervises the answer time (timer t1). The value of timer t1 is two to four minutes in compliance with Recommendation Q.118, § 4.3.1.

Interworking of INMARSAT Standard B System with itself

Interworking of INMARSAT Standard B System with itself

6 Interworking of Signalling System R2 to outgoing INMARSAT

6.1 Figure 4/Q.1112 contains the procedures for interworking of Signalling System R2 to INMARSAT Standard-B signalling system.

6.2 The ringing tone towards the calling subscriber of the fixed network is initiated by the interworking procedure. The tone should have characteristics in accordance with Recommendation Q.35.

Interworking of Signalling System R2 to INMARSAT Standard B System

Interworking of Signalling System R2 to INMARSAT Standard B System

7 Interworking of incoming INMARSAT to Signalling System R2

7.1 Figure 5/Q.1112 contains the procedure for interworking of Signalling System R2 to INMARSAT Standard-B signalling system.

7.2 If the call is destined to a country whose ISC has direct connection to the MSSC (result of SPITE 22, transit connection following?), the country code not included indication (FITE 2) is provided to the outgoing Signalling System R2 procedure. This indication is followed by an echo-suppressor indicator (FITE 4 or FITE 5). FITE 4 is used when an incoming echo control device is not required for the call (e.g. data call); otherwise FITE 5 should be used.

For calls requiring a transit ISC the country code indicator FITE 7 or FITE 8 should be used. FITE 7 is used when an incoming echo control device is not required at the remote end and FITE 8 when such a device is to be inserted.

See also Recommendation Q.1111 for control of echo control devices.

7.3 The interworking procedure supervises the answer time and the clear-back time (timers t1 and t2, respectively).

Timers t1 and t2 take values as follows:

t1 = two to four minutes, Recommendation Q.118, § 4.3.1

t2 = one to two minutes, Recommendation Q.118, § 4.3.2.

When timer t1 expires, a forced release message is returned to the incoming INMARSAT procedure (BITE 29). When timer t2 expires, a clear-back message is sent to the incoming INMARSAT procedure (BITE 25).

Interworking of INMARSAT Standard B System to Signalling System R2

Interworking of INMARSAT Standard B System to Signalling System R2

Interworking of INMARSAT Standard B System to Signalling System R2

8 Interworking of Signalling System No. 7 TUP to outgoing INMARSAT

8.1 Figure 6/Q.1112 contains the procedures for interworking of Signalling System No. 7 TUP to INMARSAT Standard-B signalling system.

8.2 Activation of the outgoing INMARSAT procedure takes place when a continuity indicator (FITE 24 or FITE 25) is received from Signalling System No. 7. Any digits received during this time are stored by the interworking procedure and then provided to the outgoing INMARSAT procedure when continuity has been indicated.

8.3 The ringing tone towards the calling subscriber of the fixed network is initiated by the interworking procedure. The tone should have characteristics in accordance with Recommendation Q.35.

Interworking of Signalling System No. 7 TUP of INMARSAT Standard B System

Interworking of Signalling System No. 7 TUP of INMARSAT Standard B System

9 Interworking of incoming INMARSAT to Signalling System No. 7 TUP

9.1 Figure 7/Q.1112 contains the procedures for interworking of incoming INMARSAT Standard-B signalling system to Signalling System No. 7 TUP.

9.2 The interworking procedure provides the following information to the outgoing Signalling System No. 7 procedure in order to initialize the information elements of the initial address message.

- continuity check required or not required (FITE 25 or FITE 26);
- one satellite link included (FITE 21);
- country code indicator: FITE 2 if the call is destined for a country whose ISC has direct connections to the MSSC and FITE 3 in all other cases;
- echo control indicator: FITE 4 when an echo control device is not required and FITE 5 when such a device is required at the incoming end.

9.3 The interworking procedure supervises the answer time and the clear-back time (timers t1 and t2, respectively).

Timers t1 and t2 take values as follows:

t1 = two to four minutes, Recommendation Q.118, § 4.3.1

t2 = one to two minutes, Recommendation Q.118, § 4.3.2.

When timer t1 expires, a forced release message is returned to the incoming INMARSAT procedure (BITE 29). When timer t2 expires, a clear-back message is sent to the incoming INMARSAT procedure (BITE 25).

Interworking of INMARSAT Standard B System to Signalling System No. 7 TUP

Interworking of INMARSAT Standard B System to Signalling System No. 7 TUP

Interworking of INMARSAT Standard B System to Signalling System No. 7 TUP

10 Interworking of Signalling System No. 7 ISUP to outgoing INMARSAT

For further study.

11 Interworking of incoming INMARSAT to Signalling System No. 7 ISUP

For further study.

12 Interworking of Signalling System No. 5 to outgoing INMARSAT

Figure 8/Q.1112 contains the procedures for the interworking of Signalling System No. 5 to the INMARSAT Standard-B signalling system.

13 Interworking of incoming INMARSAT to Signalling System No. 5

Figure 9/Q.1112 contains the procedures for the interworking of INMARSAT Standard-B signalling system to Signalling System No. 5.

Interworking of Signalling System No. 5 to INMARSAT Standard B System

Interworking of Signalling System No. 5 to INMARSAT Standard B System

Interworking of INMARSAT Standard B System to Signalling System No. 5

Interworking of INMARSAT Standard B System to Signalling System No. 5

Interworking of INMARSAT Standard B System to Signalling System No. 5