ANNEX 5
DIGITAL INTERFACE SENTENCES FOR INLAND AIS

1.   Input sentences

The serial digital interface of the AIS is supported by existing IEC 61162 sentences. The detailed descriptions for the digital interface sentences are found in IEC 61162.

In addition the following digital interface sentences are defined for Inland AIS mobile station.

2.   Inland waterway static vessel data

This sentence is used to change settings, which are not covered by SSD and VSD.

$PIWWSSD,cccccccc,xxxx,x.x,x.x,x,x,x,x.x,x.x,x.x,x.x*hh<CR><LF>

field 1 2 3 4 5 6 7 8 9 10 11

Field	Format	Description
1	cccccccc	ENI
2	xxxx	Inland vessel type according to Annex 6
3	x.x	Length of vessel 0 to 800,0 metre
4	x.x	Beam of vessel 0 to 100,0 metre
5	x	Quality of speed information 1 = high or 0 = low
6	x	Quality of course information 1 = high or 0 = low
7	x	Quality of heading information 1 = high or 0 = low
8	x.x	B value for internal reference position (distance reference point to stern)
9	x.x	C value for internal reference position (distance reference point to port side)
10	x.x	B value for external reference position (distance reference point to stern)
11	x.x	C value for external reference position (distance reference point to port side)

3.   Inland waterway voyage data

This sentence is used to enter inland navigation voyage vessel data into an Inland AIS mobile station. For setting the inland voyage related data the sentence $PIWWIVD with the following content is used.

$PrWWIVD,x,x,x,x.x,x.x,x,xxx,xxxx,xxx,x.x,x.x,x.x,x.x*hh<CR><LF>

field 1 2 3 4 5 6 7 8 9 10 11 12 13

Field	Format	Description
1	x	See ITU-R M.1371 Msg 23 reporting interval settings, default setting: 0
2	x	Number of blue cones: 0-3, 4 = B-Flag, 5 = default = unknown
3	x	0 = not available = default, 1 = loaded, 2 = unloaded, rest not used
4	x.x	Static draught of vessel 0 to 20,00 metres, 0 = unknown = default, rest not used
5	x.x	Air draught of vessel 0 to 40,00 metres, 0 = unknown = default, rest not used
6	x	Number of assisting tugboats 0-6, 7 = default = unknown, rest not used
7	xxx	Number of crew members on board 0 to 254, 255 = unknown = default, rest not
8	xxxx	Number of passengers on board 0 to 8190, 8191 = unknown = default, rest not used
9	xxx	Number of shipboard personnel on board 0 to 254, 255 = unknown = default, rest not used
10	x.x	Convoy extension to bow in (metre.decimetre = resolution in dm)
11	x.x	Convoy extension to stern in (metre.decimetre = resolution in dm)
12	x.x	Convoy extension to port side in (metre.decimetre = resolution in dm)
13	x.x	Convoy extension to starboard side in (metre.decimetre = resolution in dm)

In case of null fields the corresponding configuration setting shall not be changed.

ANNEX 6
INLAND VESSEL AND CONVOY TYPES

This correspondence table is based on an excerpt of the 'Codes for Types of Means of Transport' according to UNECE Recommendation 28 and the maritime ship types as defined in ITU-R M.1371 'Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band'.
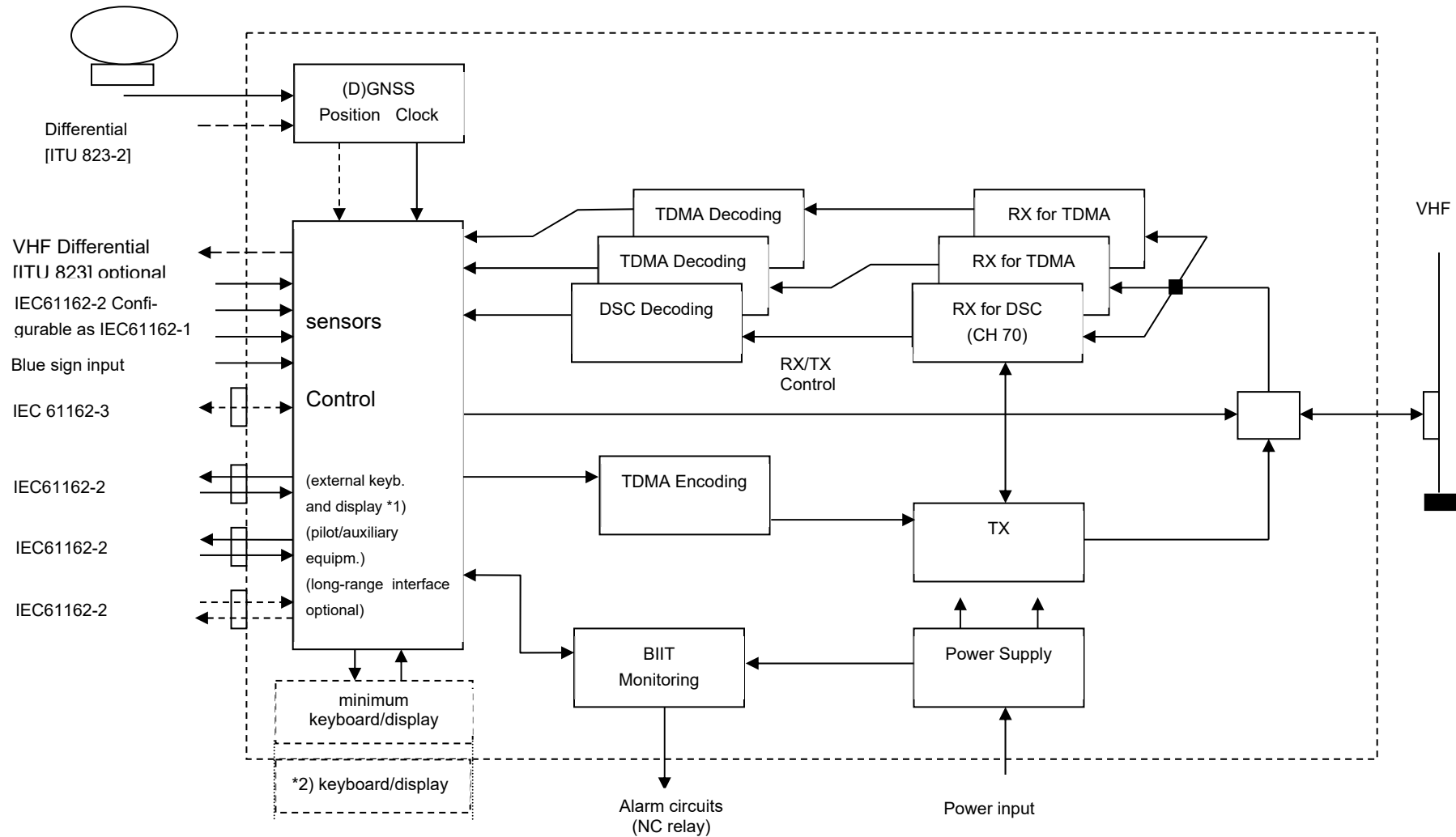
Inland vessel and convoy type		Maritime ship type	
code	Vessel name	1st digit	2nd digit
8000	Vessel, type unknown	9	9
8010	Motor freighter	7	9
8020	Motor tanker	8	9
8021	Motor tanker, liquid cargo, type N	8	0
8022	Motor tanker, liquid cargo, type C	8	0
8023	Motor tanker, dry cargo as if liquid (e.g. cement)	8	9
8030	Container vessel	7	9
8040	Gas tanker	8	0
8050	Motor freighter, tug	7	9
8060	Motor tanker, tug	8	9
8070	Motor freighter with one or more vessels alongside	7	9
8080	Motor freighter with tanker	8	9
8090	Motor freighter pushing one or more freighters	7	9
8100	Motor freighter pushing at least one tank-vessel	8	9
8110	Tug, freighter	7	9
8120	Tug, tanker	8	9
8130	Tug, freighter, coupled	3	1
8140	Tug, freighter/tanker, coupled	3	1
8150	Freightbarge	9	9
8160	Tankbarge	9	9
8161	Tankbarge, liquid cargo, type N	9	0
8162	Tankbarge, liquid cargo, type C	9	0
8163	Tankbarge, dry cargo as if liquid (e.g. cement)	9	9
8170	Freightbarge with containers	8	9

Inland vessel and convoy type		Maritime ship type	
code	Vessel name	1st digit	2nd digit
8180	Tankbarge, gas	9	0
8210	Pushtow, one cargo barge	7	9
8220	Pushtow, two cargo barges	7	9
8230	Pushtow, three cargo barges	7	9
8240	Pushtow, four cargo barges	7	9
8250	Pushtow, five cargo barges	7	9
8260	Pushtow, six cargo barges	7	9
8270	Pushtow, seven cargo barges	7	9
8280	Pushtow, eigth cargo barges	7	9
8290	Pushtow, nine or more barges	7	9
8310	Pushtow, one tank/gas barge	8	0
8320	Pushtow, two barges at least one tanker or gas barge	8	0
8330	Pushtow, three barges at least one tanker or gas barge	8	0
8340	Pushtow, four barges at least one tanker or gas barge	8	0
8350	Pushtow, five barges at least one tanker or gas barge	8	0
8360	Pushtow, six barges at least one tanker or gas barge	8	0
8370	Pushtow, seven barges at least one tanker or gas barge	8	0
8380	Pushtow, eight barges at least one tanker or gas barge	8	0
8390	Pushtow, nine or more barges at least one tanker or gas barge	8	0
8400	Tug, single	5	2
8410	Tug, one or more tows	3	1
8420	Tug, assisting a vessel or linked combination	3	1
8430	Pushboat, single	9	9
8440	Passenger vessel, ferry, red cross vessel, cruise vessel	6	9
8441	Ferry	6	9
8442	Red cross vessel	5	8
8443	Cruise vessel	6	9
8444	Passenger vessel without accommodation	6	9

Inland vessel and convoy type		Maritime ship type	
code	Vessel name	1st digit	2nd digit
8445	Day-trip high speed vessel	6	9
8446	Day-trip hydrofoil vessel	6	9
8447	Sailing cruise vessel	6	9
8448	Sailing passenger vessel without accommodation	6	9
8450	Service vessel, police patrol, port service	9	9
8451	Service vessel	9	9
8452	Police patrol vessel	5	5
8453	Port service vessel	9	9
8454	Navigation surveillance vessel	9	9
8460	Vessel, work maintenance craft, floating derrick, cable-vessel, buoy- vessel, dredge	3	3
8470	Object, towed, not otherwise specified	9	9
8480	Fishing boat	3	0
8490	Bunkervessel	9	9
8500	Barge, tanker, chemical	8	0
8510	Object, not otherwise specified	9	9
1500	General cargo Vessel maritime	7	9
1510	Unit carrier maritime	7	9
1520	Bulk carrier maritime	7	9
1530	Tanker	8	0
1540	Liquefied gas tanker	8	0
1850	Pleasure craft, longer than 20 metres	3	7
1900	Fast vessel	4	9
1910	Hydrofoil	4	9
1920	Catamaran fast	4	9

ANNEX 7
(INFORMATIVE) BLOCK DIAGRAM OF AIS

Differential
[ITU 823-2]

(D)GNSS
Position   Clock

VHF Differential
[ITU 823] optional

IEC61162-2 Confi-
gurable as IEC61162-1

Blue sign input

IEC 61162-3

IEC61162-2

IEC61162-2

IEC61162-2

sensors

Control

(external keyb.
and display *1)
(pilot/auxiliary
equipm.)
(long-range interface
optional)

minimum
keyboard/display

*2) keyboard/display

TDMA Decoding

TDMA Decoding

DSC Decoding

RX/TX
Control

RX for TDMA

RX for TDMA

RX for DSC
(CH 70)

VHF

TDMA Encoding

TX

BIIT
Monitoring

Power Supply

Alarm circuits
(NC relay)

Power input

*1)   The external keyboard/display may be e.g. a radar, ECDIS or dedicated devices.

*2)   The internal keyboard/display may be optionally

ANNEX 8
(NORMATIVE) AIS INTERFACE OVERVIEW

Sensor Inputs

| CH1 | → ⊕ → | 61162-1 61162-2 |

| CH2 | → ⊕ → | 61162-1 61162-2 |

| CH3 | → ⊕ → | 61162-1 61162-2 |

Minimum required input sentences:

Position	GNS, GLL, RMC	int/ext*
SOG	RMC, VBW, VTG	int/ext*
COG	RMC, VBW, VTG	int/ext*
Heading	HDT	ext
Rate of Turn	ROT	ext
RAIM	GBS	ext

*for priorities see IEC 61993-2

Input / Output of AIS Data

| CH4 | ⊕ ⇄ | external Display 61162-2 |

| CH5 | ⊕ ⇄ | aux. Display/ pilot port 61162-2 |

| CH6 | ⊕ ⇄ | optional 61162-3 |

INPUT
manual data input:
Voyage
VSD, EPV and $PIWWIVD
Static
SSD, EPV and $PIWWSSD

VDL-messages:
ABM
BBM
AIR   interrogation

Other:
ACA   channel ass.
ACK   alarm ack.

OUTPUT
VDL-messages:
VDM

(Data block of VDM representing binary Data contents of VDL messages)

Other:

VDO	own vessel data
ALR	alarm status
ABK	VDL ack.
TXT	sensor status
ACA	channel management information

| CH8 | ⊕ ⇄ | Long Range 61162-2 |

Long Range Port (optional)

| INPUT   LRI, LRF | OUTPUT   LRF, LR1,2,3 |

| CH9 | ⊕ ⇄ | DGNSS Data 823-2 |

DGNSS-Data Port

Correction data information

| CH10 | ← ⊕ | BIIT NC relay |

BIIT Output Port

ANNEX 9
(NORMATIVE) ADDITIONAL PI PORT SENTENCES FOR INLAND AIS

1.   Inland Waterway voyage data

$PIWWIVD,x,x,x,x.x,x.x,x,xxx,xxxx,xxx,x.x,x.x,x.x,x.x*hh<CR><LF>

field   1 2 3 4   5 6 7   8   9 10 11 12 13

Field	Format	Description
1	x	See ITU-R M.1371-5 message 23 for Reporting interval settings, default setting: 0
2	x	Number of blue cones: 0-3, 4=B-Flag, 5=default=unknown
3	x	0=not available=default, 1=loaded, 2=unloaded, rest not used
4	x.x	Static draught of ¨vessel 0 to 20,00 meters, 0=unknown=default, rest not used
5	x.x	Air draught of vessel 0 to 40,00 meters, 0=unknown=default, rest not used
6	x	Number of assisting tugboat 0-6, 7=default=unknown, rest not used
7	xxx	Number of crew members on board 0 to 254, 255=unknown=default, rest not used
8	xxxx	Number of passengers on board 0 to 8190, 8191=unknown=default, rest not used
9	xxx	Number of shipboard personnel on board 0 to 254, 255=unknown=default, rest not used
10	x.x	Convoy extension to bow in (meter.decimeter = resolution in dm)
11	x.x	Convoy extension to stern in (meter.decimeter = resolution in dm)
12	x.x	Convoy extension to port side in (meter.decimeter = resolution in dm)
13	x.x	Convoy extension to starboard side in (meter.decimeter = resolution in dm)

In case of null fields, the corresponding configuration setting shall not be changed.

2.   Inland Waterway Static Vessel data

This sentence is used to change settings, which are not covered by SSD and VSD.

$PIWWSSD,cccccccc,xxxx,x.x,x.x,x,x,x,x.x,x.x,x.x,x.x*hh<CR><LF>

field   1   2   3 4 5 6 7 8   9   10 11

Field	Format	Description
1	cccccccc	ENI
2	xxxx	Inland vessel and convoy type (see Annex 6)
3	x.x	Length of vessel 0 to 800,0 meter
4	x.x	Beam of vessel 0 to 100,0 meter
5	x	Quality of speed information 1=high or 0=low
6	x	Quality of course information 1=high or 0=low
7	x	Quality of heading information 1=high or 0=low
8	x.x	B value for internal reference position (distance reference point to stern)
9	x.x	C value for internal reference position (distance reference point to port side)
10	x.x	B value for external reference position (distance reference point to stern)
11	x.x	C value for external reference position (distance reference point to port side)

ANNEX 10
VESSEL DIMENSIONS

Figure 10-1
Parameters and the usage to calculate the dimensions for both RFM 10 and message 5

Input parameters using IWWSSD: (own vessel)
Password protected
BI (dm) and LS (dm)
CI (dm) and BS (dm)

Input parameters using SSD:
(own vessel)
Password protected
AI (=A_{SSD}), BI (=B_{SSD}), CI (=C_{SSD}), DI (=D_{SSD}) (dm)

Input parameters using EPV and IWWIVD:
(convoy extension)
Not password protected
EA (dm)
EB (dm)
EC (dm)
ED (dm)

Calculated internally:
Using IWWSSD
AI (dm) = LS - BI
DI (dm) = BS - CI
BC (dm) = BS + EC + ED
LC (dm) = LS + EA + EB

Using SSD
LC (dm) = AI + EA + BI +EB
BC (dm) = CI + EC + DI + ED

A (m) = AI + EA (rounded upwards)
B (m) = BI + EB (rounded upwards)
C (m) = CI + EC (rounded upwards)
D (m) = DI + ED (rounded upwards)

Output Msg 5:
A (m)
B (m)
C (m)
D (m)

Output RFM 10:
LC (dm)
BC (dm)
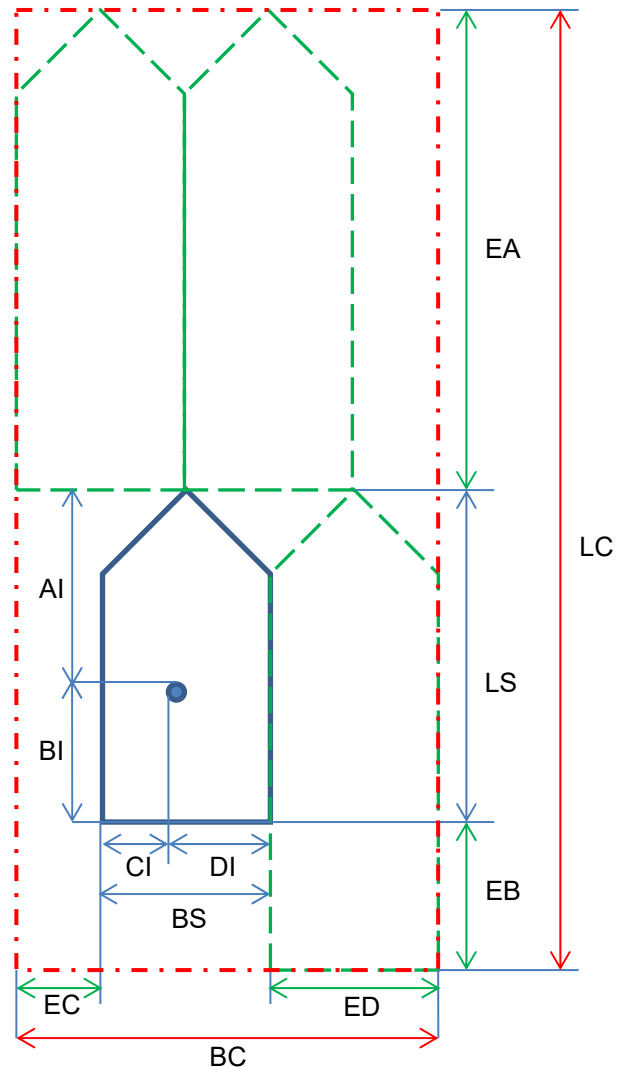
ANNEX 11
INLAND AIS MESSAGES

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1.   Overview of Inland Application Specific Messages (ASM)

Table 11-1
Overview of Inland AIS ASM

FI[1]	Version	Name of regional function message	Sent by	Broadcast	Addressed	Implemented in Inland AIS station
1	0	Control Message	Shore	X		
3	0	Inland Capability Interrogation	Shore		X	
4	0	Inland Capability Interrogation reply	Vessel		X	
10	-[2]	Inland Vessel static and voyage related data	Vessel	X		X
11	0	Convoy Message	Vessel	X		
21	-[2]	ETA at lock/bridge/Terminal	Vessel		X	
22	-[2]	RTA at lock/bridge/Terminal	Shore		X	
25	1	Present Bridge Clearance	Shore	X		
26	0	Water level	Shore	X		
41	0	Signal Station	Shore	X		
42	0	Geographic Notice	Shore	X	X	
44	0	ISRS Text message	Shore	X	X	
55	-[2]	Inland number of persons on board	Vessel	X	X	X

1   FI ranges: 1-9 = system messages, 10-19 = general shipborne use, 20-39 = VTS/VTM use, 40-54 = AtoN use, 55-63 = Search and Rescue use
2   no version indicator available

2.   Optional Application Specific Messages sent from Inland AIS mobile stations

2.1   Convoy Message (Inland specific message FI 11)

Table 11-2
Convoy message report

	Parameter	Bits	Description
	Message ID	6	Identifier for Message 8; always 8
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
	Source ID	30	MMSI number
	Spare	2	Not used, should be set to zero, reserved for future use
Binary data	Application Identifier	16	DAC = 200, FI = 11
	Version indicator	3	The version number of the message default = 0, other values for future use
	Formation Code	9	Bit- coded convoy formation type (see formation code XML)
	ENI (Barge 1)	27	Bit-coded ENI 0 = default = not used, 11111111 to 99999999, other values not used
	Load condition (Barge 1)	2	0 = unknown = default, 1 = loaded, 2 = unloaded, 3 = loaded with dangerous cargo
	ENI (Barge 2)	27	Bit-coded ENI 0 = default = not used, 11111111 to 99999999, other values not used
	Load condition (Barge 2)	2	0 = unknown = default, 1 = loaded, 2 = unloaded, 3 = loaded with dangerous cargo
	Spare	n[1]	Not used. Should be set to zero, reserved for future use
	Total	**max 424**	**Occupies 1 or 2 slots**

Additional information / usage notes

a)   The message shall be sent by vessels only.

b)   The control status of the message is default off.

c)   The timeout should be 18 minutes (3 times the reporting rate).

d)   The reporting rate should be 6 minutes.

---

[1]   This need to be calculated depending on the number of barges

e) The input of the loading status is optional.

f) Additional barge information (ENI and loading condition) can be added as necessary.

g) The application creating the convoy message shall check that the formation code and the number of barge data (ENI and loading status) transmitted in the message match

h) Up to three barges can be transmitted in a single-slot message

i) Up to ten barges can be transmitted in a two-slot message

j) The XML file provided in Appendix 1 provides the details how to interpret the convoy code

k) The timeout cannot be set by the control message

l) The reporting rate cannot be set by the control message

2.2   Inland Capability reply from external application (Inland specific message FI 4)

Table 11-3
Inland Capability Reply

	Parameter	Bits	Description
	Message ID	6	Identifier for Message 6; always 6, ack needed
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. See ITU-R M.1371-5, § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
	Source ID	30	MMSI number of source station
	Sequence number	2	0 – 3; refer to ITU-R M.1371-5, Annex 2, § 5.3.1.
	Destination MMSI	30	MMSI number of destination station.
	Retransmit flag	1	Retransmit Flag. 0 = no retransmission = default; 1 = retransmitted.
	Spare	1	Not used, should be set to zero, reserved for future use
Binary data	Designated Area Code	10	DAC=200
	Function Identifier	6	FI=4
	Version indicator	3	The version number of the message default = 0, other values for future use
	Provided DAC code	10	DAC (default = 200)
	FI availability	192	FI capability table, triplets of three consecutive bits should be used for every FI, in the order FI 0, FI 1, … FI 63. The use of bits per triplet: xxx per FI: 000 = FI (ASM) is not implemented = default 001 to 111 = value for "version of ASM" (value = version number as provided in the ASM + 1); example: value 001 = FI (ASM) is implemented in version 0, value 111 = FI (ASM) is implemented in version 7 or 8
	Spare	59	Not used, should be set to zero, reserved for future use
	Total	**352**	**2 slot message**

Additional information / usage notes:

a) The message shall be sent by vessels only

b) The control status of the message is default on

c) The reporting rate should be on event

d) The timeout is undefined

e) This broadcast message from vessel is always available and cannot be influenced by the control message.

2.3   Estimated Time of Arrival (ETA) message (Inland specific message FI 21)

Table 11-4
ETA report

Parameter	Bit	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
Source ID	30	MMSI number of source station
Sequence Number	2	0 – 3
Destination ID	30	MMSI number of destination station
Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	not used. Should be set to zero, reserved for future use
Application Identifier	16	DAC = 200 FI = 21
UN country code	12	2*6 Bit characters
UN location code	18	3*6 Bit characters
Fairway section number	30	5*6 Bit characters
Object code	30	5*6 Bit characters
Fairway hectometre	30	5*6 Bit characters
ETA at lock/bridge/terminal	20	Estimated Time of Arrival; MMDDHHMM UTC Bits 19 - 16: month; 1 - 12; 0 = not available = default; Bits 15 - 11: day; 1 - 31; 0 = not available = default; Bits 10 - 6: hour; 0 - 23; 24 = not available = default; Bits 5 - 0: minute; 0 - 59; 60 = not available = default
number of assisting tugboats	3	0 - 6, 7 = unknown = default
Air draught	12	0 - 4000 (other values not used), in 1/100m, 0 = default = not used
Spare	5	Not used. Should be set to zero, reserved for future use
Total	**248**	**occupies 2 slots**

(The binary data group spans Application Identifier through Spare.)

Table 11-5
List of virtual MMSI numbers

V-MMSI	Country
002039991	Austria
n.a.	Belgium
n.a.	Bulgaria
n.a.	Germany
n.a.	Moldova
002268000	France
n.a.	Croatia
n.a.	Hungary
n.a.	The Netherlands
n.a.	Italy
n.a.	Luxembourg
n.a.	Poland
n.a.	Romania
n.a.	Slovak Republic
n.a.	Switzerland
n.a.	Czech Republic
n.a.	Ukraine
n.a.	Russian Federation
n.a.	Serbia

Additional information / usage notes

a)   The message shall be sent by vessels only

b)   The control status of the message is default on

c)   The reporting rate should be on event

d)   The timeout is undefined

e)   An acknowledgement by the RTA message (Inland ASM FI 22) should be received within 15 minutes. If not, the ETA message should be repeated once. After an additional 15 minutes the user is notified that no answer has been received.

f)   A virtual MMSI number matching the country of the destination addressed by the ETA (see Table 11-5) shall be used for each country. Each national AIS network shall route messages addressed to other countries or different national AIS networks using this virtual MMSI number or based on the ISRS code in the ASM (UN country code, UN location code, Fairway section number, Object code and Fairway hectometre)

g)   Should no virtual MMSI number be available, the ETA message shall be sent to the closest AIS Base Station

h)   UN country code, UN location code, Fairway section number, Object code and Fairway hectometre shall be derived from the ISRS code as part of the RIS Index published in the European Reference Data Management System (ERDMS).

i)   The ETA shall always be transmitted in UTC but for input and display converted into local time at the destination.

j)   The air draught shall be the minimum (e.g. with lowered wheelhouse / antenna mast) static air draught at speed = 0.

Optional information content from shore through Application Specific Messages

Inland AIS ASM DAC = 200 FI = 1 (Control Message), DAC = 200 FI = 3 (Inland Capability Interrogation), DAC = 200 FI = 22 (RTA at lock/bridge/terminal), DAC = 200 FI = 25 (Present Bridge Clearance), DAC = 200 FI = 26 (Water level), DAC = 200 FI = 41 (Signal Station), DAC = 200 FI = 42 (Geographic notice) and DAC = 200 FI = 44 (ISRS Text message) are optional messages. If supported they shall be received on the vessel but displayed and handled by an external application, such as Inland ECDIS (see (f), (g), (h), (i), (j), (k), (l) and (m)).

3.   Optional Application Specific Messages sent from AIS shore stations

3.1   Control Message (Inland specific message (FI 1)

Table 11-6
Control Report

	Parameter	Bit	Description
	Message ID	6	Identifier for Message 8; always 8
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
	Source ID	30	MMSI number
	Spare	2	Not used, should be set to zero, reserved for future use
Binary data	Application Identifier	16	DAC = 200, FI = 1
	Version indicator	3	The version number of the message default = 0, other values for future use
	UN country code	12	2*6 Bit characters UN Country code of applicable country
	Fairway section number	17	Bit coded numerical value, 1-99999, 0 = not applicable, to which control message it is applicable

Parameter	Bit	Description
Fairway kilometre Start	12	Start kilometre of the fairway section where the control message applies bit coded numerical value, 0-4000, 4095 = the whole fairway section, other values not used
Fairway kilometre End	12	End kilometre of the fairway section where the control message applies bit coded numerical value, 0-4000, 4095 = the whole fairway section, other values not used
Application Identifier of controlled ASM	16	DAC and FI of the shipborne ASM to be controlled DAC = 200, FI = XX
Timeout Value	11	Timeout of the Control Message in minutes bit coded numerical value, 0 = forever until disabled message has been received, 1-2047 timeout in minutes, default = 120
Reporting Interval	8	Reporting interval of the controlled ASM in minutes Bit coded numerical value, 0 = default = default value specified for the controlled ASM, 1-255 reporting interval
Enable-Disable	1	0 = Disable message, default 1 = Enable message
Spare	20	Not used. Should be set to zero, reserved for future use
Total	**168**	**Occupies 1 slot**

Additional information / usage notes

a) The message shall be sent from shore only

b) The reporting rate should be on event

c) The timeout is defined in the message

d) The reporting rate depends on the conditions

e) Each ASM from a vessel in this inventory has a default "on" or "off" value. This value regulates whether that message shall be broadcast or not prior to the receipt of a relevant Control Message.

f) The responsibility for initiating/withholding the broadcasting of an ASM from a vessel resides with the external application (e.g. Inland ECDIS). ASMs which are implemented in the Inland AIS station cannot be controlled by this message.

g) Each Control Message can control one specific ASM (DAC+FI). If more than on ASM has to be controlled, multiple Control Messages are needed.

h) A Control Message can only control the ASM behaviour for one country, given by the UN country code.

i) A Control Message can optionally be geographically limited to a specific waterway (fairway section code) or a specific fairway section, defined by start and end waterway-kilometre.

j) The competent authority has to define the timeout value for the Control Message. By setting the timeout value to 0 the message will never time out. That means the value is stored and will only be changed if a contrary Control Message is received.

k) The Control message can set or change the reporting rate of the controlled ASM. The reporting rate defined in the Control Message precedes any default setting given in this inventory document

l) The Control Message does not apply for responses to the Interrogation on specific IFM (IFM2) and not for responses to the Inland Capability Interrogation (DAC200/FM 3)

m) The ISRS code indicates the position of the fairway and shall allow the match with the Inland ECDIS display. It consists of UN country code, Fairway section number and fairway kilometre and is derived from the RIS Index as published in the ERDMS. A fairway section number is used not the alphanumeric fairway section code. This may place restrictions where an alphanumeric value is used for a fairway section.

3.2   Inland Capability Interrogation to external application (Inland specific message FI 3)

Table 11-7
Inland Capability Interrogation

	Parameter	Bit	Description
	Message ID	6	Identifier for Message 6; always 6, ack needed
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. See ITU-R M.1371-5, § 4.6.1, Annex 2; 0-3; 0 = default; 3 = do not repeat any more
	Source ID	30	MMSI number of source station
	Sequence number	2	0 – 3; refer to ITU-R M.1371-5, Annex 2, § 5.3.1.
	Destination MMSI	30	MMSI number of destination Inland AIS station.
	Retransmit flag	1	Retransmit Flag. 0 = no retransmission = default; 1 = retransmitted.
	Spare	1	not used, should be set to zero, reserved for future use
Binary data	Designated Area Code	10	DAC=200
	Function Identifier	6	FI=3
	Version indicator	3	The version number of the message default = 0, other values for future use
	Requested DAC code	10	DAC (default = 200)
	Spare	67	Not used, should be set to zero, reserved for future use
	Total	**168**	**1 slot message**

Additional information / usage notes

a) The message shall be sent from shore only.

b) The reporting rate should be on event.

c) The timeout for this message is undefined.

3.3   Requested Time of Arrival (RTA) message (Inland specific message FI 22)

Table 11-8
Requested Time of Arrival

	Parameter	Bit	Description
	Message ID	6	Identifier for Message 6; always 6
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
	Source ID	30	MMSI number of source station
	Sequence Number	2	0 - 3
	Destination ID	30	MMSI number of destination station
	Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
	Spare	1	not used, should be set to zero, reserved for future use
Binary data	Application Identifier	16	DAC = 200, FI = 22
	UN country code	12	2*6 Bit characters
	UN location code	18	3*6 Bit characters
	Fairway section number	30	5*6 Bit characters
	Terminal code	30	5*6 Bit characters
	Fairway hectometre	30	5*6 Bit characters
	RTA at lock/bridge/terminal	20	Recommended Time of Arrival; MMDDHHMM UTC Bits 19 - 16: month; 1 - 12; 0 = not available = default; Bits 15 - 11: day; 1 - 31; 0 = not available = default; Bits 10 - 6: hour; 0 - 23; 24 = not available = default; Bits 5 - 0: minute; 0 - 59; 60 = not available = default
	Lock/bridge/terminal status	2	0 = operational 1 = limited operation 2 = out of order 3 = unknown
	spare	2	not used. Should be set to zero, reserved for future use
	Total	**232**	**occupies 2 slots**

Additional information / usage notes

a)   The message shall be sent from shore only

b)   The reporting rate should be on event

c)   The timeout for this message is undefined

d)   In response to an ETA message, the RTA shall be sent within 15, maximum 30 minutes after receipt of the initial ETA message.

e)   An RTA message might also be initiated by a shore application alone, e.g. a lock, to notify the vessel for which the message is intended of the requested time of arrival. An optional ETA message may be sent from vessel to shore to confirm the proposed RTA. If the vessel agrees with the RTA, the time of arrival in the ETA answer shall match the RTA. In this case no further confirmation RTA is expected.

f)   UN country code, UN location code, Fairway section number, Terminal code and Fairway hectometre shall be derived from the ISRS code as part of the RIS Index published in the European Reference Data Management System (ERDMS).

g)   The RTA shall always be transmitted in UTC but for input and display converted into local time at the destination.

3.4   Present Bridge Clearance message (Inland specific message FI 25)

Table 11-9
Present Bridge Clearance message

Parameter	Bit	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
Source ID	30	MMSI number
Spare	2	Not used, should be set to zero, reserved for future use
Application Identifier	16	DAC = 200, FI = 25
Version indicator	3	The version number of the message default = 1, other values for future use
UN country code	12	2*6 Bit characters
Fairway section number	17	Bit coded numerical value 1-99999, 0=unknown, other values not used
Object code	30	5*6 Bit characters
Fairway hectometre	17	Bit coded numerical value 1-99999, 0=unknown, other values not used
Bridge Clearance	14	From water surface to lowest point of the bridge in the fairway [in cm] bit coded numerical value 1-9999, 0=unknown, other values not used

(The rows from Application Identifier through Bridge Clearance are grouped under "Binary data".)

Parameter	Bit	Description
Minutes of the day	11	Absolute time of measurement in minutes since UTC midnight 0-1439, 2047=unknown=default, other values not used
Accuracy	5	Bit coded numerical value indicating the accuracy of the bridge clearance 0=unknown, 1-30 = accuracy (+/-) in cm is better than the given value, 31=accuracy worse than +/- 30cm
Spare	3	Not used. Should be set to zero, reserved for future use
Total	**168**	**Occupies 1 slot**

Additional information / usage notes

a) The message shall be sent from shore only

b) The reporting rate should be 10 minutes

c) The timeout for this message should be 60 minutes

d) This message should only be sent by a competent/waterway authority from shore only.

e) The ISRS code indicates the position of the bridge opening and shall allow the match with the IECDIS display. It consists of UN country code, Fairway section number, Object code and fairway hectometre as published in the ISRS code as part of the RIS Index published in the European Reference Data Management System (ERDMS). A fairway section number is used not the alphanumeric fairway section code. This may place restrictions where an alphanumeric value is used for a fairway section.

f) The bridge clearance value is the actual measured distance from the water surface to the lowest part of the bridge opening according to the width of the fairway.

g) The "minutes of the day" provide the absolute time of measurement in minutes since UTC midnight and therefore allow an unambiguous transmission of the age of the data up to 24 hours.

h) It is recommended that the values transmitted are not older than 1 hour.

i) If accuracy information is provided it has to be subtracted from the given actual bridge clearance in worst case. It must by no means seen as indication of additional actual bridge clearance.

3.5 Water Level message (Inland specific message FI 26)

Table 11-10
Water Level message

Parameter	Bits	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
Source ID	30	MMSI number

Parameter	Bits	Description
Spare	2	Not used, should be set to zero. Reserved for future use.
Application Identifier	16	DAC = 200 IF = 26
Version indicator	3	The version number of the message default = 0, other values for future use
UN country code	12	UN country code using 2*6-Bit ASCII characters; 0 = not available = default
Gauge ID 1	11	National unique ID of gauge in RIS Index 1-2047, 0 = default = unknown
Water level reference 1	3	0=value of gauge=default, 1=relative to RIS Index reference value 1, 2=relative to RIS Index reference value 2, 3=relative to RIS Index reference value 3; 4=relative to zero point in RIS Index, other values reserved for future use
Water level value 1	17	-65535 to 65535 cm (as per 2's complement), -65536=unknown=default
Gauge ID 2	11	National unique ID of gauge in RIS Index 1-2047, 0 = default = unknown
Water level reference 2	3	0=value of gauge=default, 1=relative to RIS Index reference value 1, 2=relative to RIS Index reference value 2, 3=relative to RIS Index reference value 3; 4=relative to zero point in RIS Index, other values reserved for future use
Water level value 2	17	-65535 to 65535 cm (as per 2's complement), -65536=unknown=default
Gauge ID 3	11	National unique ID of gauge in RIS Index 1-2047, 0 = default = unknown
Water level reference 3	3	0=value of gauge=default, 1=relative to RIS Index reference value 1, 2=relative to RIS Index reference value 2, 3=relative to RIS Index reference value 3; 4=relative to zero point in RIS Index, other values reserved for future use
Water level value 3	17	-65535 to 65535 cm (as per 2's complement), -65536=unknown=default
Spare	4	
Total	**168**	**Occupies 1 slot**

(The rows from Application Identifier through Spare (4) are grouped under "Binary data".)

Additional information / usage notes

a) The message shall be sent from shore only

b) The reporting rate should be 5-15 minutes

c) The timeout for this message should be 18 minutes

d) This message should be sent from shore only, to give water level information to all vessels in a certain area. The message should be sent at regular intervals.

e) The UN country code and the national unique gauge ID shall be derived from the RIS Index of published in the European Reference Data Management System (ERDMS).

f) The water level data shall only be broadcasted for gauge stations which are included in the European RIS Index.

g) Consequently the message shall only be displayed on board if it can be successfully linked to the RIS Index gauge object(s).

3.6 Signal Station message (Inland specific message FI 41)

Table 11-11
Signal Station Message

Parameter	Bit	Description
Message ID	6	Identifier for Message 8; always 8
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
Source ID	30	MMSI number
Spare	2	Not used, should be set to zero, reserved for future use
Binary data — Application Identifier	16	DAC = 200, FI = 41
Version indicator	3	The version number of the message default = 0, other values for future use
UN country code	12	2*6 Bit characters, digits 1 and 2 of the ISRS code
Fairway section number	17	Bit coded numerical value 1-99999, 0=unknown, other values not used, digits 6 to 10 of the ISRS code
Object reference code - type of signal station	3	0-7; 0 = default = unknown, 1 = sistat_8 (Bridge), 2 = sistat_6 (Lock), 3 = sistat_10 (Traffic), 3 = sistat_2 (Port), other values reserved for future use, digits 13 and 14 of the ISRS code
Object reference code - number of signal station	4	0-16; 0-9 = number of signal station, 10 = default = unknown, other values not used, digit 15 of the ISRS code
Fairway hectometre	17	Bit coded numerical value 1-99999, 0=unknown, other values not used, digits 16 to 20 of the ISRS code
Signal form	4	0-15, 0 = unknown = default, 1-14 signal form according to Figure 11-2
Orientation of signal	9	0-511, 0 – 359 = orientation in degrees, 511 = not available = default, other values not used
Direction of impact	3	1 = upstream, 2 = downstream, 3 = to the left bank, 4 = to the right bank, 0 = unknown = default, other values not used
Light Status	30	Status (1 to 7) of up to 9 lights per signal according to Figure 11-3, 0 = default = unknown, 8-9 not used, 000000000 = default, 777777777 maximum, other values not used

Parameter	Bit	Description
Spare	10	Not used. Should be set to zero, reserved for future use
Total	**168**	**occupies 1 slot**

Additional information / usage notes

a)   The message shall be sent from shore only

b)   The reporting rate should be 1-2 minutes and on change

c)   The timeout for this message should be 4 minutes

d)   This message should only be sent by a competent authority from shore only. The message should be sent at regular intervals.

e)   The ISRS code indicates the position of the signal on the Inland ECDIS display. It consists of UN country code, Fairway section number, Object code and fairway hectometre, and is derived from the RIS Index as published in the ERDMS. A fairway section number is used not the alphanumeric fairway section code. This may place restrictions where an alphanumeric value is used for a fairway section.

f)   The object code is used in a reduced way. The first two characters of the ISRS code for signal stations, which are always "Si", are not transmitted. The type of the traffic signal station and its number, according to the RIS Index encoding guide, are transmitted separately using the codification given in the table below. The IENC application has to recover the ISRS code and match it with the ISRS code in the Inland ECDIS, taking into consideration that the UN location code is missing.

g)   The light status is coded from left to right from light signal 1 to 9.

Reference tables:

The examples show a grey background in a square of a fixed size of about 3 mm x 3 mm at all display scales with a "post" like it is used for the present static signal in the presentation library. The white point in the centre of the post indicates the position and the post itself allows the user to read the direction of impact. (At a lock, for example, there are often signals for vessels leaving the lock chamber and vessels entering the lock chamber on the inner and the outer side of the door construction) However, the manufacturer of the display software can design the shape of the symbol and the background colour.

The status of a traffic signal can be "No light", "white", "yellow", "green", "red", "white flashing" and "yellow flashing" according to CEVNI.

For harmonized display an SVG library is provided.
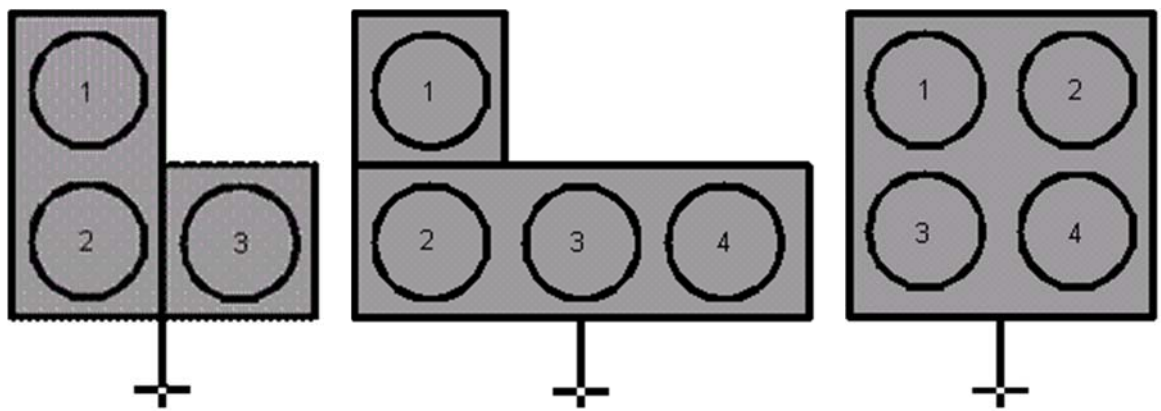
**Figure 11-1
Signal forms**
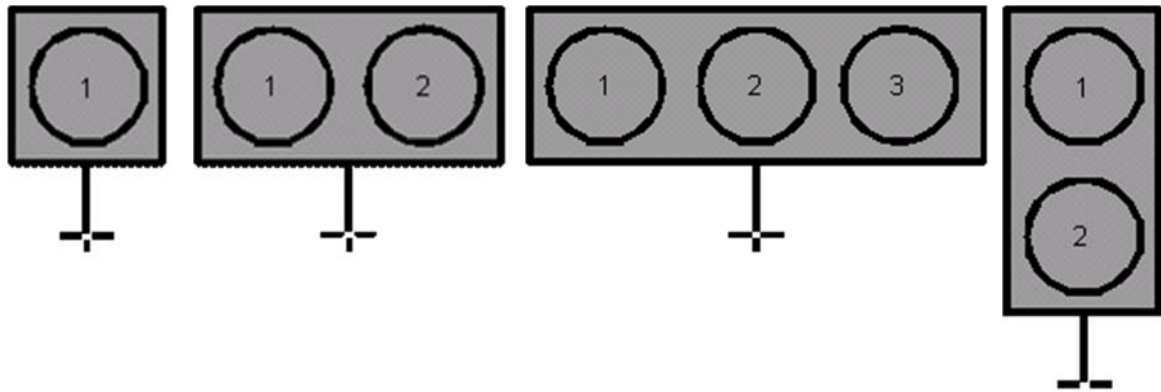
Form 1   Form 2   Form 3   Form4

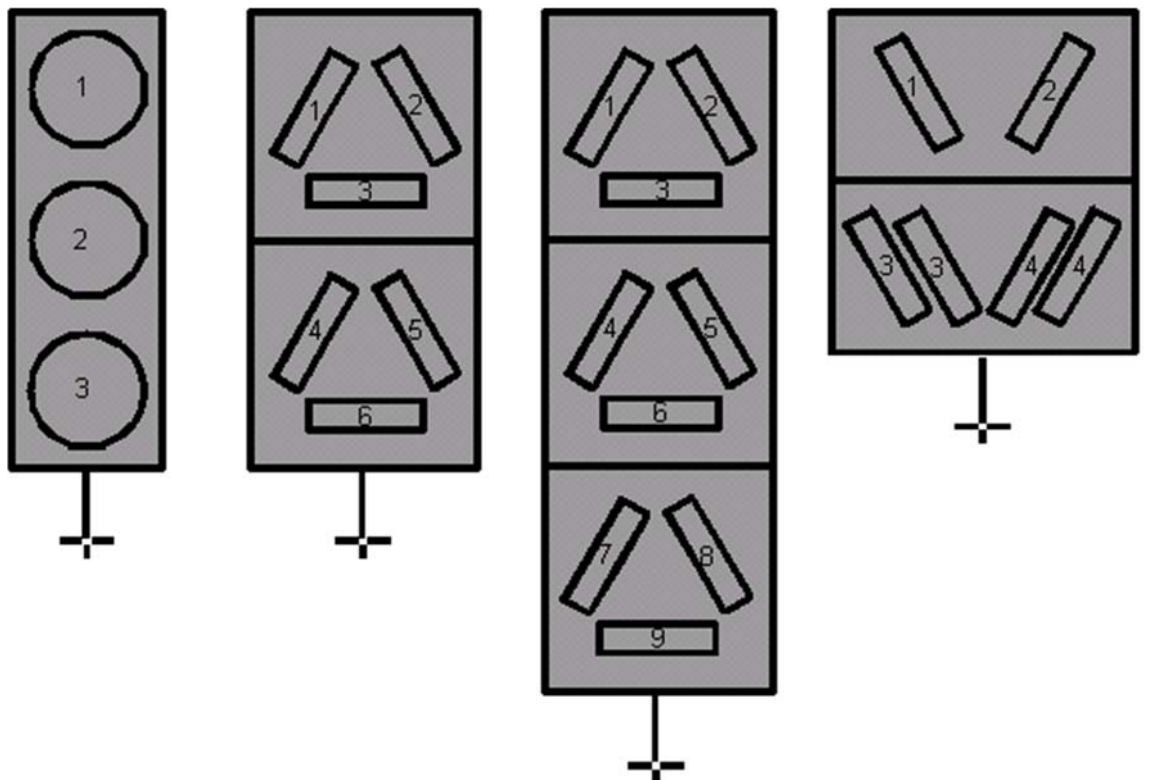Form 5   Form 6   Form 7

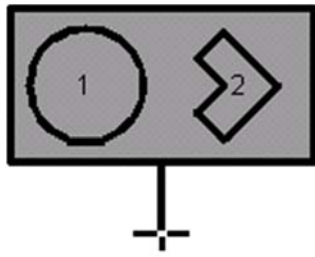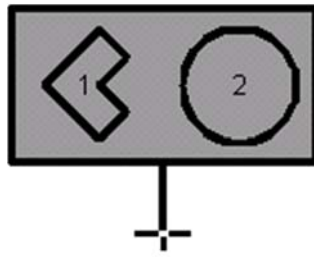Form 8   Form 9   Form 10   Form 11

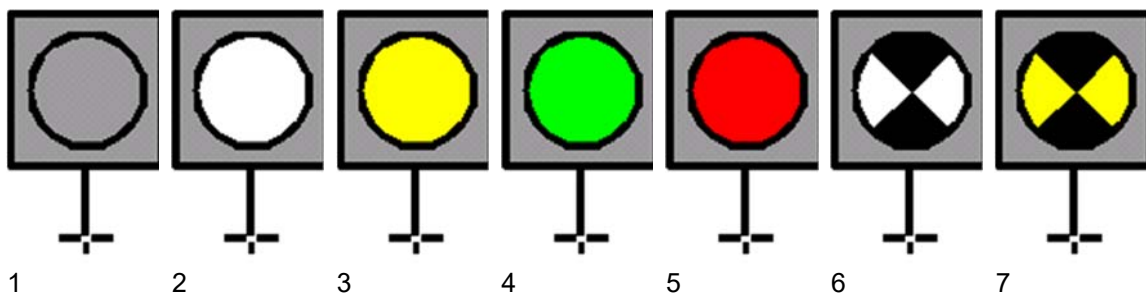Form 12   Form 13   Form 14

For each of these signals there are a lot of possible combinations of lights. It is required to use
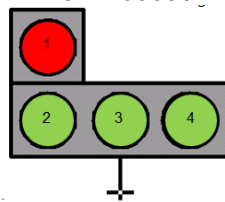
A number to indicate the kind of signal and

A number for each light on a signal to indicate its status
1 = no light,
2 = white,
3 = yellow,
4 = green,
5 = red,
6 = white flashing and
7 = yellow flashing.

Figure 11-2
Light Status

1   2   3   4   5   6   7

Example: Signal form: 6, light status: 544400000

3.7   Geographic Notice (Inland specific message FI 42)

Table 11-12
Geographic Notice message (Broadcasted Message)

Parameter		Bit	Description
Message ID		6	Identifier for Message 8; always 8
Repeat Indicator		2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
Source ID		30	MMSI number
Spare		2	not used, should be set to zero, reserved for future use
Binary data	Designated Area Code	10	DAC=200
	Function Identifier	6	FI=42
	Version indicator	3	The version number of the message default = 0, rest for future use
	Spare	3	not used, should be set to zero, reserved for future use
	Message Linkage ID	10	A source specific running number, unique across all binary messages equipped with Message Linkage ID. Used to link additional information to the message by a Text Description message. The Message Linkage ID and the source MMSI uniquely identify the sent message. 1 – 1,023; 0 = not available = default.
	Notice Description	7	Notice Description as per Table 11-21 Set to 0 – 127 according to description. If 127, there must be associated text (see Table 11-20).
	Start time of area — UTC month	4	UTC month of the Area start. 1 – 12; 0 = UTC month not available = default; 13 – 15 (reserved for future use).
	Start time of area — UTC day	5	UTC day of the Area start. 1 – 31; 0 = UTC day not available = default.
	Start time of area — UTC hour	5	UTC hour of the Area start. 0 – 23; 24 = UTC hour not available = default; 25 – 31 (reserved for future use).
	Start time of area — UTC minute	6	UTC minute of the Area start. 0 – 59; 60 = UTC minute not available = default;61 – 63 (reserved for future use.)
	Duration	18	Minutes until end of Geographic Notice, measured from start date and time of Geographic Notice. Maximum duration is 262.142 minutes (182.04 days). 0 = cancel Geographic Notice; 1 – 262.142; 262.143 = undefined = default.

Parameter	Bit	Description
Action	1	Action parameter: 0 = Advisement; 1 = Directive;
Spare	2	not used, should be set to zero, reserved for future use.
Sub-area 1	96	Area description, structured as in Table 11-16 to Table 11-20 A short text description may be associated with the areas using Sub-area 5: Associated text. 2-slot message.
Sub-area 2	96	optional additional area, structured as in 2-slot message.
Sub-area 3	96	optional additional area, structured as in Table 11-16 to Table 11-20 2-slot message.
Sub-area 4	96	optional additional area, structured as in Table 11-16 to Table 11-20 3-slot message.
Sub-area 5	96	optional additional area, structured as in Table 11-16 to Table 11-20 3-slot message.
Sub-area 6	96	optional additional area, structured as in Table 11-16 to Table 11-20 4-slot message.
Sub-area 7	96	optional additional area, structured as in Table 11-16 to Table 11-20 4-slot message.
Sub-area 8	96	optional additional area, structured as in Table 11-16 to Table 11-20 5-slot message.
Sub-area 9	96	optional additional area, structured as in Table 11-16 to Table 11-20 5-slot message.
Total	**216-984**	**2-5 slot message**

Table 11-13
Geographic Notice message (Addressed Message)

Parameter		Bit	Description
Message ID		6	Identifier for Message 6; always 6, ack needed
Repeat Indicator		2	Used by the repeater to indicate how many times a message has been repeated. (See ITU-R M.1371-5, Annex 2, § 4.6.1). 0-3; 0 = default; 3 = do not repeat any more. Set to 0 (default).
Source ID		30	MMSI number of source station
Sequence number		2	0 – 3; refer to ITU-R M.1371-5, Annex 2, § 5.3.1.
Destination MMSI		30	MMSI number of destination station.
Retransmit flag		1	Retransmit Flag. 0 = no retransmission = default; 1 = retransmitted.
Spare		1	not used, should be set to zero, reserved for future use
Binary data	Designated Area Code	10	DAC=200
	Function Identifier	6	FI=42
	Version indicator	3	The version number of the message default = 0, rest for future use
	Spare	3	not used, should be set to zero, reserved for future use
	Message Linkage ID	10	A source specific running number, unique across all binary messages equipped with Message Linkage ID. Used to link additional information to the message by a Text Description message. The Message Linkage ID and the source MMSI uniquely identify the sent message. 1 – 1,023; 0 = not available = default.
	Notice Description	7	Notice Description as per Table 11-21. Set to 0 – 127 according to description. If 127, there must be associated text (see Table 11-20)
	Start time of area UTC month	4	UTC month of the Area start. 1 – 12; 0 = UTC month not available = default; 13 – 15 (reserved for future use).
	UTC day	5	UTC day of the Area start. 1 – 31; 0 = UTC day not available = default.
	UTC hour	5	UTC hour of the Area start. 0 – 23; 24 = UTC hour not available = default; 25 – 31 (reserved for future use).
	UTC minute	6	UTC minute of the Area start. 0 – 59; 60 = UTC minute not available = default;61 – 63 (reserved for future use.)

Parameter	Bit	Description
Duration	18	Minutes until end of Geographic Notice, measured from start date and time of Geographic Notice. Maximum duration is 262,142 minutes (182.04 days). 0 = cancel Geographic Notice; 1 – 262,142; 262,143 = undefined = default.
Action	1	Action parameter: 0 = Advisement; 1 = Directive;
Spare	2	not used, should be set to zero, reserved for future use
Sub-area 1	96	Area description, structured as in Table 11-16 to Table 11-20 A short text description may be associated with the areas using Sub-area 5: Associated text. 2-slot message.
Sub-area 2	96	optional additional area, structured as in Table 11-16 to Table 11-20 2-slot message.
Sub-area 3	96	optional additional area, structured as in Table 11-16 to Table 11-20 2-slot message.
Sub-area 4	96	optional additional area, structured as in Table 11-16 to Table 11-20 3-slot message.
Sub-area 5	96	optional additional area, structured as in Table 11-16 to Table 11-20 3-slot message.
Sub-area 6	96	optional additional area, structured as in Table 11-16 to Table 11-20 4-slot message.
Sub-area 7	96	optional additional area, structured as in Table 11-16 to Table 11-20 4-slot message.
Sub-area 8	96	optional additional area, structured as in Table 11-16 to Table 11-20 5-slot message.
Sub-area 9	96	optional additional area, structured as in Table 11-16 to Table 11-20 5-slot message.
Total	**248-1016**	**2-5 slot message**

Table 11-14
Number of sub-area transmitted

Number of sub-areas transmitted	1	2	3	4	5	6	7	8	9
Number of bits used for a broadcast message	216	312	408	504	600	696	792	888	984
Number of slots used for a broadcast message	2	2	3	3	3	4	4	5	5
Number of bits used for an addressed message	248	344	440	536	632	728	824	920	1016
Number of slots used for an addressed message	2	2	3	3	4	4	5	5	5

Table 11-15
Sub-areas

Value	Area Shape	Table for Definition
0	Circle or accurate polyline/polygon	Table 11-16
1	Rectangle	Table 11-17
2	Sector	Table 11-18
3	Polyline	Table 11-19
4	Polygon	Table 11-19
5	Associated text	Table 11-20
6-7	Reserved	--

Additional information / usage notes

a)   The message shall be sent from shore only. The reporting rate depends on the conditions.

b)   The timeout for this message should be 3 times the reporting rate, but max. 30 minutes

c)   The information is time-dependent (i.e., has start date/time and duration). If a Geographic Notice (except for a cancellation message – Notice Description 126) is received without a valid start date/time and duration then it should be discarded.

d)   When the current month is December and the notice start month is January, the notice start year shall be the current year plus one; the notice start year shall be the current year in all other cases.

e)   The message may be transmitted prior to the start time/date to allow for advance notice. To avoid confusion, it should not be transmitted more than one day in advance.

f)   The message should not be transmitted beyond the designated end date/time except for a cancellation message. A cancellation message can be transmitted before the designated end date/time using the same Message Linkage ID with a Notice Description of 126 (cancellation), a Duration = 0, and start time fields all set to "not available."

g) Presentation software should automatically remove the Geographic Notice from the display after the end date/time or upon receipt of a cancellation message.

h) Up to 5-slot messages can be created, but messages with more than three slots should be avoided. Messages with more slots are less likely to be received due to RF noise or packet collision.

i) A circular sub-area (Type 0) with a zero radius (scale factor should also be set to 0) is a point that can be used as a node in a polyline/polygon. This is used when more precision is needed than is possible using the points in the polyline/polygon subarea (the trade-off is more subareas and a longer message). If several points are submitted within one Geographic Notice, the link field shall be used to indicate if the points are related to a polyline(s) or polygon(s).

j) Polyline/polygon sub-areas (Type 3 or 4) must follow immediately after a circle/point sub-area (Type 0 sub-area with 0 radius) in the same Geographic Notice message. The point defines the start of the line segments. If more than five points are needed for a polyline/polygon, then additional polyline/polygon sub-areas can be used. However, they must follow immediately after the first polygon sub-area and be contained in the same Geographic Notice message.

k) The polyline/polygon sub-area (Type 3 or 4) should be used to create a polyline/polygon. However, if more precision is needed to specify the points in the polyline/polygon then the circle/point sub-area (Type 0 with radius set to zero) can be used, one sub-area per point. All points (sub-areas of Type 0) must occur in sequence and be contained within the same message. The polyline/polygon is formed by connecting the points.

l) Polylines could be formed with a mixture of subarea type 0 and type 3 but shall start with subarea type 0. The link indicator shall be 1 whereas the last points/polyline link indicator shall be 0.

m) Polygon could be formed with a mixture of subarea type 0 and type 4 but shall start with subarea type 0. The link indicator shall be 2 whereas the last points/polyline link indicator shall be 0. The last point (subarea type 0) or last point of the polygone (subarea type 4) shall be connected to the first point of the shape (closing the shape)

n) Distances and bearings between points in the Geographic Notice should be calculated using Rhumb lines not Great Circles.

o) The Message Linkage ID and the source MMSI can be used to link additional text (e.g., a separate Linked Text message). This information must be included in both the Geographic Notice and additional Linked Text message.

p) The total area defined by one Geographic Notice (one Message Linkage ID) is the union of all of the sub-areas contained in the message.

q) If the same Message Linkage ID is retransmitted with different sub-areas and/or times the presentation software should replace the old Area with the new.

r) The Message Linkage ID must be unique across all ASMs to which it applies. In this way, the Message Linkage ID and Source MMSI are connected to the same text message.
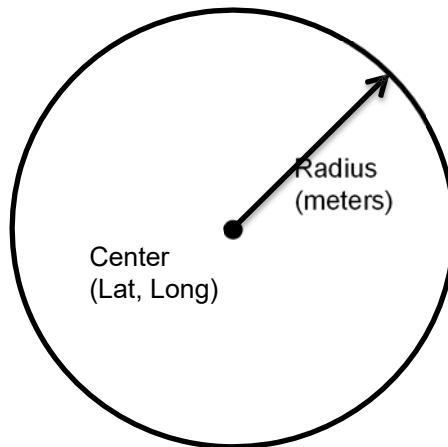
s)   A message version number is encoded as part of the message; If the received version number is different than what the display system has been programmed for, a message should be displayed to the operator indicating the mismatch in the version.

t)   All directions are relative to True North, all positions are WGS-84 Datum, and all distance calculations should be in accordance with IEC 61993-2 Annex G.

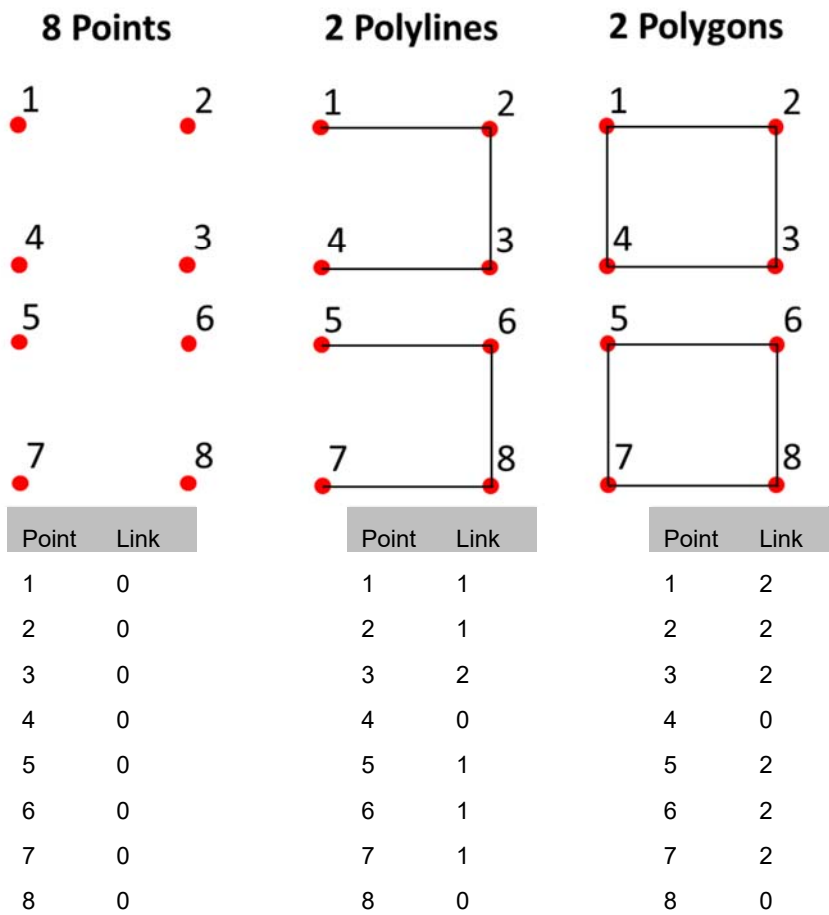### 3.7.1   Defining circles and accurate polyline/polygon

Table 11-16
Circle or accurate polyline/polygon

	Parameter	Bits	Description
Geographic Notice: Sub-area shape 0	Area Shape	3	Defines the shape of the area. Set to 0 for Circle, or accurate polyline/polygon.
	Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1,000 (scale factor = 10n where n=decimal value of scale factor). 0 = 1x (default), 1 = 10x; 2 = 100x, 3 = 1000x.
	Longitude	28	Longitude of the center in 1/10,000 minute (±180°). East = positive, West = negative (as per 2's complement); 181° (6791AC0h) = not available = default.
	Latitude	27	Latitude of the center in 1/10,000 minute (±90°). North = positive, South = negative (as per 2's complement); 91° (3412140h) = not available = default.
	Precision	3	Precision of the Lat/Long. Data to be truncated to the number of decimal places specified in this parameter. 0-4 decimal places. Default = 4 (no truncation). 5-6 = Reserved; 7 = Do not use.
	Radius	12	Defines the size of the circular area. This is the radius of the circle in meter increments. 0 = point (default); (scale factor should also be set to 0 in this case) 1 – 4,095m. This is multiplied by the scale factor to give a maximum size of 4.095m (4,095km).
	Link	2	Defines the possible link of the sub message 0 = single point / end point of polygon/polyline (default) 1 = start/additional point of polyline 2 = start/additional point of polygone 3 = unused
	Spare	19	not used, should be set to zero, reserved for future use
	Total	**96**	**96 bit subarea**

Figure 11-3
Circle diagram

Figure 11-4
Coding of point, polylines and polygons using circle sub-areas

Point	Link		Point	Link		Point	Link
1	0		1	1		1	2
2	0		2	1		2	2
3	0		3	2		3	2
4	0		4	0		4	0
5	0		5	1		5	2
6	0		6	1		6	2
7	0		7	1		7	2
8	0		8	0		8	0

Table 11-17
Rectangle or line or point

	Parameter	Bits	Description
Geographic Notice: Sub-area shape 1	Area Shape	3	Defines the shape of the area. Set to 1 for Rectangle.
	Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1,000 (scale factor = 10n where n=decimal value of scale factor). 0 = 1x (default), 1 = 10x; 2 = 100x, 3 = 1000x.
	Longitude	28	Longitude of the corner point*1 in 1/10,000 minute (±180°). East = positive, West = negative (as per 2's complement); 181° (6791AC0h) = not available = default.
	Latitude	27	Latitude of the corner point *1 in 1/10,000 minute (±90°). North = positive, South = negative (as per 2's complement); 91° (3412140h) = not available = default.
	Precision	3	Precision of the Lat/Long. Data to be truncated to the number of decimal places specified in this parameter. 0-4 decimal places. Default = 4 (no truncation). 5-6 = Reserved; 7 = Do not use.
	E dimension	8	Box dimension East from the corner point in meter increments. This is multiplied by the scale factor to give a maximum dimension of 255,000m (255 km). 0=line North-South (default); 1 – 255 * scale factor meters.
	N dimension	8	Box dimension North from the corner point in meter steps. This is multiplied by the scale factor to give a maximum dimension of 255,000m (255 km). 0=line East-West (default); 1 - 255 * scale factor meters.
	Orientation	9	Rotation of area in degree steps. Area is rotated clockwise this number of degrees about the position above. 0 = no rotation = default; 1 - 359 = rotation in degrees; 360 – 511 (reserved for future use).
	Spare	8	not used, should be set to zero, reserved for future use
	Total	**96**	**96 bit subarea**

Figure 11-5
Rectangle Diagram

N Dimension
(meters)

E Dimension
(meters)

orientation
(degrees
clockwise)

SW corner
(Lat, Long)
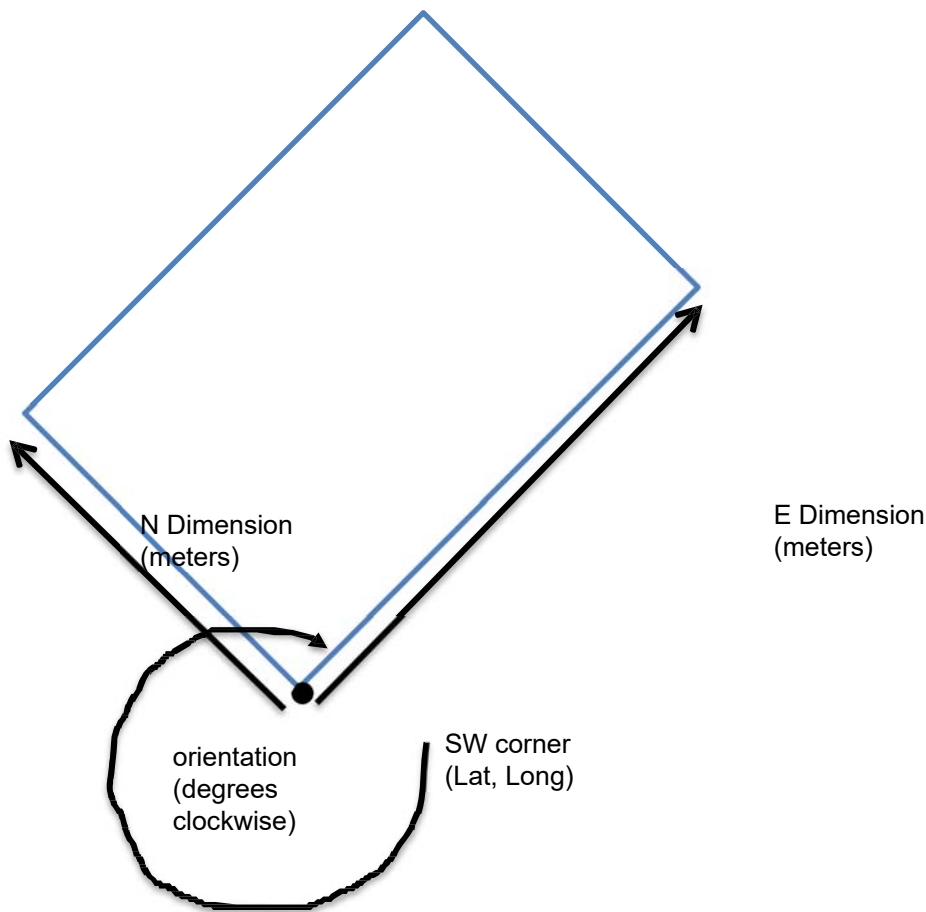
3.7.2   Defining Sectors

Table 11-18
Sector

	Parameter	Bits	Description
Geographic Notice: Sub-area shape 2	Area Shape	3	Defines the shape of the area. Set to 2 for Sector.
	Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1,000 (scale factor = 10n where n=decimal value of scale factor). 0 = 1x (default), 1 = 10x; 2 = 100x, 3 = 1000x.
	Longitude	28	Longitude of the center in 1/10,000 minute (±180°). East = positive, West = negative (as per 2's complement); 181°= not available = default.
	Latitude	27	Latitude of the center in 1/10,000 minute (±90°). North = positive, South = negative (as per 2's complement); 91° = not available = default.

Parameter	Bits	Description
Precision	3	Precision of the Lat/Long. Data to be truncated to the number of decimal places specified in this parameter. 0-4 decimal places. Default = 4 (no truncation). 5-6 = Reserved; 7 = Do not use.
Radius	12	Defines the size of the sector. This is the radius of the sector in meter increments. 1 – 4,095 m. This is multiplied by the scale factor to give a maximum size of 4.095m (4,095km).
Left boundary	9	Orientation of the left boundary edge of the sector. This is in degree steps measured clockwise from true North about the center point. 0 = no rotation = default; 1-359 = rotation in degrees; 360-511 (reserved for future use).
Right boundary	9	Orientation of the right boundary edge of the sector. This is in degree steps measured clockwise from true North about the center point. Total sector area is the area measured from the left boundary clockwise to the right boundary. 0 = no rotation = default; 1-359 = rotation in degrees; 360-511 (reserved for future use)
Spare	3	not used, should be set to zero, reserved for future use
Total	**96**	**96 bit subarea**

Figure 11-6
Sector description
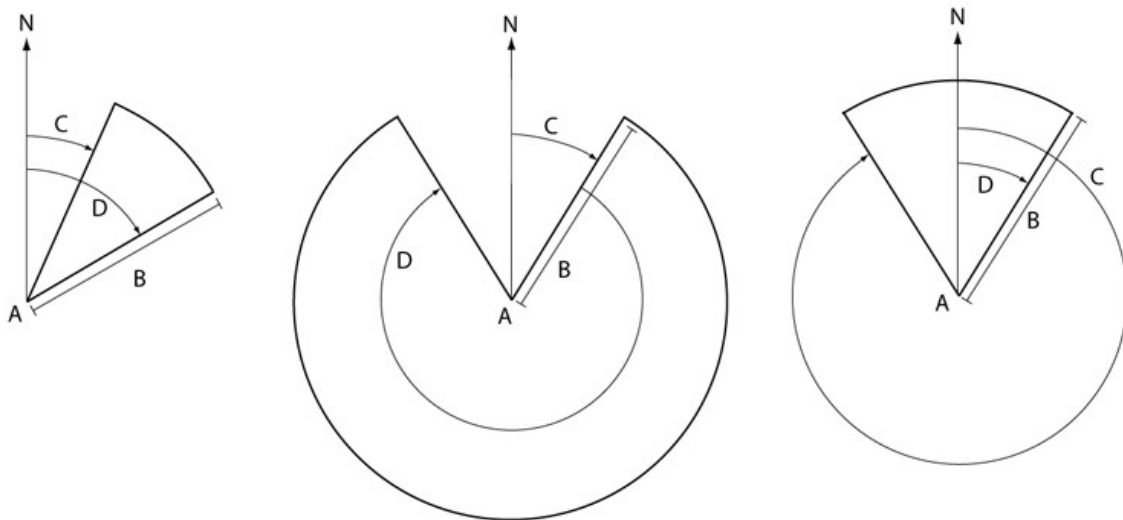
A) Center point,
B) Sector radius,
C) Sector bearings from center point, left boundary,
D) Sector bearings from center point, right boundary

3.7.3 Defining polylines and (way)points

Table 11-19
Polyline

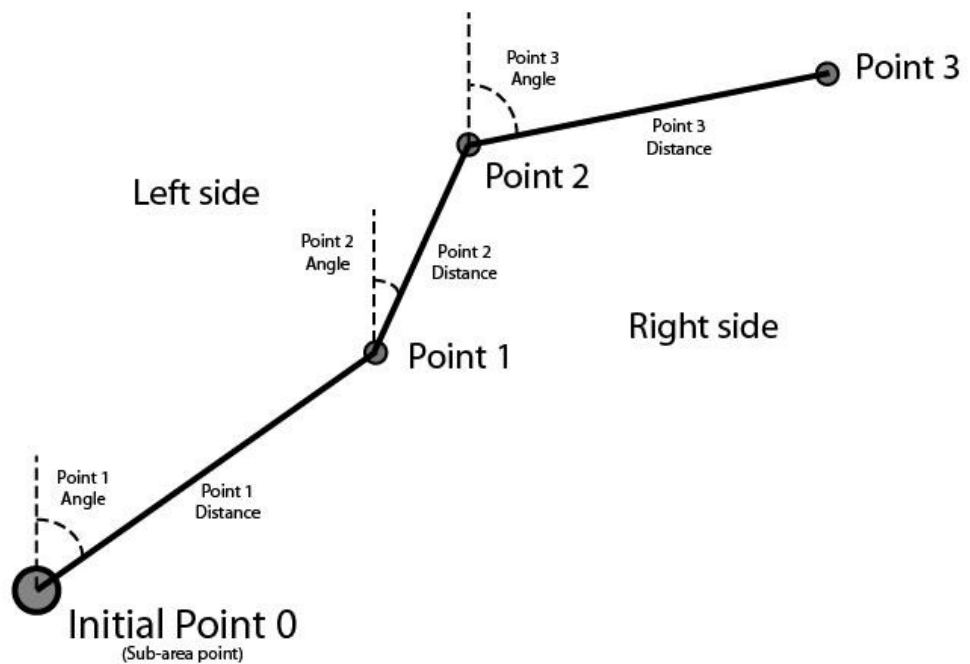| Parameter	Bits	Description
Area Shape	3	Defines the shape of the area. Set to 3 for Polyline (open area or line) or set to 4 for Polygon (closed area). The initial point (point 0) is defined by an Area Shape = 0 (Circle, point or accurate polyline/polygon). Or could be added to a previous Polyline/Polygon To close the polygon shape, connect the last defined point back to the initial point (Point 0).
Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1,000 (scale factor = 10n where n=decimal value of scale factor). 0 = 1x (default), 1 = 10x; 2 = 100x, 3 = 1000x.
Point 1 Angle	10	True bearing (in half-degree steps) from Point 0 to Point 1 or from the last Point in a Polyline/Polygon directly preceding this Polyline/Polygon to Point 1 in this Polyline/Polygon. Degrees bearing = decimal value (0-719)/2; 720 = not available (no point) = default; 721 – 1,023 (not for use).
Point 1 distance	11	Distance (in meters) from Point 0 or from the last Point in a Polyline/Polygon directly preceding this Polyline/Polygon to Point 1 in this Polyline/Polygon. Multiply by the scale factor to give a maximum of 2.047 m (2,047 km). 0 = default (no point); 1- 2047 * scale factor meters.
Point 2 Angle	10	True bearing (in half-degree steps) from Point 1 to Point 2 Degrees bearing = decimal value (0-719)/2; 720 = not available (no point) = default; 721 – 1,023 (not for use).
Point 2 distance	11	Distance (in meters) from Point 1 to Point 2. Multiply by the scale factor to give a maximum of 2.047m (2,047 km). 0 = default (no point); 1- 2047 * scale factor meters.
Point 3 Angle	10	True bearing (in half-degree steps) from Point 2 to Point 3 Degrees bearing = decimal value (0-719)/2; 720 = not available (no point) = default; 721 – 1,023 (not for use).
Point 3 distance	11	Distance (in meters) from Point 2 to Point 3. Multiply by the scale factor to give a maximum of 2.047m (2,047 km). 0 = default (no point); 1- 2047 * scale factor meters.
Point 4 Angle	10	True bearing (in half-degree steps) from Point 3 to Point 4 Degrees bearing = decimal value (0-719)/2; 720 = not available (no point) = default; 721 – 1,023 (not for use).

(The leftmost vertical cell spanning all rows reads: Geographic Notice: Sub-area shape 3 (polyline) or 4 (polygon))

Parameter	Bits	Description
Point 4 distance	11	Distance (in meters) from Point 3 to Point 4. Multiply by the scale factor to give a maximum of 2.047m (2,047 km). 0 = default (no point); 1- 2047 * scale factor meters.
Link	2	Defines the possible link of the sub message 0 = single polyline/polygon and/or end point of polygon/polyline (default) 1 = start/additional point of polyline 2 = start/additional point of polygon 3 = unused
Spare	5	not used, should be set to zero, reserved for future use
Total	**96**	**96 bit subarea**

Figure 11-7
Example of a single polyline (Area Shape = 3, Link = 0)

The Figure 11-7 is the graphic description of a waypoint/polyline, showing angle and distance between points. If one side of a polyline is to be a boundary (e.g., edge of ice area), this is defined by the left side of the line in order of sequence from the initial sub-area point (Point 0).

Figure 11-8
Graphic depiction of (1) ice boundary between sea ice and open water,
and (2) recommended route through the sea ice area
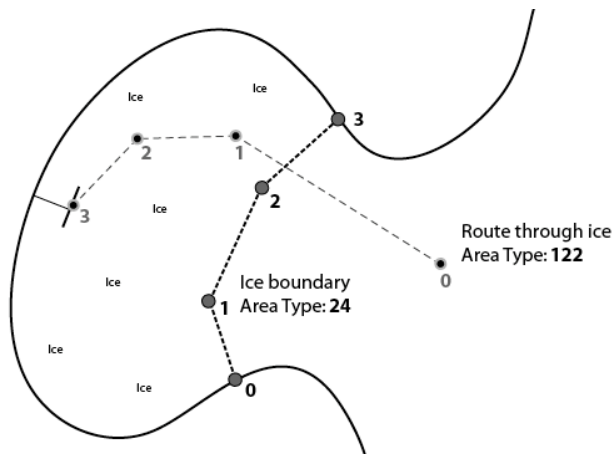
Figure 11-9
A graphic depiction of a storm front message
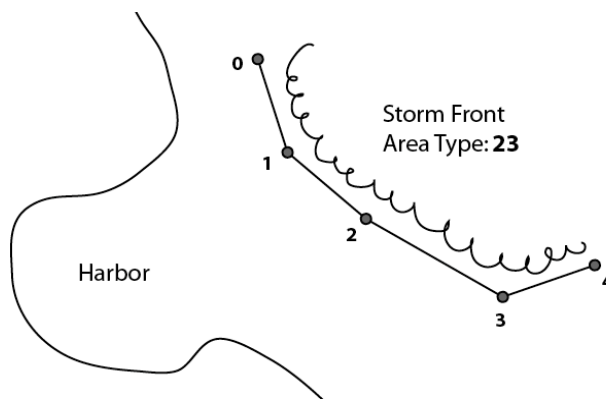
3.7.4 Associating text to geographical areas

Table 11-20
Associated Text

	Parameter	Bits	Description
Geographic Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set to 5 for Associated Text. This text is associated with the area defined in this binary message. Multiple Associated Text sub-areas are glued together in the order they appear in the message.
	Text	90	Fifteen 6-Bit ASCII characters, 6 Bit ASCII characters as per Table 44 in ITU 1371-4. If less than 15 characters are required, then the remainder of the field should be filled with "@" characters (set bits to 0). On the ECS the @ characters at the end should not be displayed.
	Spare	3	not used, should be set to zero, reserved for future use
	Total	**96**	**96 bit subarea**

Table 11-21
Notice Description

Value	Description
0	Caution: Marine mammal habitat
1	Caution: Marine mammals in area - reduce speed
2	Caution: Marine mammals in area - stay clear
3	Caution: Marine mammals in area - report sightings
4	Caution: Protected Habitat - reduce speed
5	Caution: Protected habitat - stay clear
6	Caution: Protected habitat - no fishing or anchoring
7	Caution: Derelicts (drifting objects)
8	Caution: Traffic congestion
9	Caution: Marine event or regatta
10	Caution: Divers down
11	Caution: Swim area
12	Caution: Dredge operations
13	Caution: Survey operations
14	Caution: Underwater operation
15	Caution: Seaplane operations

Value	Description
16	Caution: Fishery - nets in water
17	Caution: Cluster of fishing vessels
18	Caution: Fairway closed
19	Caution: Harbor closed
20	Caution: Submerged pipeline or cable
21	Caution: Unmanned vehicle operation
22	Caution: other (define in associated text field)
23	Environmental Caution: Storm front (line squall)
24	Environmental Caution: Hazardous sea ice i.e. icebergs and growlers
25	Environmental Caution: Storm warning (storm cell or line of storms)
26	Environmental Caution: High wind
27	Environmental Caution: High waves
28	Environmental Caution: Restricted visibility (fog, rain, etc)
29	Environmental Caution: Strong currents
30	Environmental Caution: Heavy icing
31	Environmental Caution: Oil or other hazardous substance in area
32	Environmental Caution: other (define in associated text field)
33	Restriction: Fishing prohibited
34	Restriction: Entry approval required prior to transit
35	Restriction: Entry prohibited
36	Restriction: Active military OPAREA
37	Restriction: Firing - danger area
38	Restriction: Drifting mines
39	Restriction: other (define in associated text field)
40	Anchorage: Anchorage open
41	Anchorage: Anchorage closed
42	Anchorage: Anchoring prohibited
43	Anchorage: Deep draft anchorage
44	Anchorage: Shallow draft anchorage
45	Anchorage: Vessel transfer operations

Value	Description
46	Anchorage: other (define in associated text field)
47	Ice Report: Ice Edge
48	Ice Report: New Ice (<10cm ocean < 5 cm lake)
49	Ice Report: Young Ice (10-30cm)
50	Ice Report: Thin 1st year ice (30-70cm ocean, 5-15 cm lake)
51	Ice Report: Medium 1st year ice (70-120cm ocean, 15-30 cm lake)
52	Ice Report: Thick 1st year ice (120-200 cm ocean, 30-70 cm lake)
53	Ice Report: Old /very thick ice (>200cm ocean, > 70 cm lake)
54	Ice Report: Undetermined or unknown thickness
55	Reserved for Future Use
56	Security Alert - Implement USA MARSEC Level 1
57	Security Alert - Implement USA MARSEC Level 2
58	Security Alert - Implement USA MARSEC Level 3
59	Reserved for Future Use
60	Reserved for Future Use
61	Reserved for Future Use
62	Reserved for Future Use
63	Reserved for Future Use
64	Distress: Vessel disabled and adrift
65	Distress: Vessel sinking
66	Distress: Vessel abandoning ship
67	Distress: Vessel requests medical assistance
68	Distress: Vessel flooding
69	Distress: Vessel fire/explosion
70	Distress: Vessel grounding
71	Distress: Vessel collision
72	Distress: Vessel listing/capsizing
73	Distress: Vessel under assault
74	Distress: Person overboard
75	Distress: SAR area

Value	Description
76	Distress: Pollution response area
77	Distress: other (define in associated text field)
78	Reserved for Future Use
79	Reserved for Future Use
80	Instruction: Contact VTS at this point/juncture
81	Instruction: Contact Port Administration at this point/juncture
82	Instruction: Do not proceed beyond this point/juncture
83	Instruction: Await instructions prior to proceeding beyond this point/juncture
84	Instruction: Proceed to this location – await instructions
85	Instruction: Clearance granted – proceed to berth/lock
86	Instruction: other (define in associated text field)
87	Reserved for Future Use
88	Information: Pilot boarding position
89	Information: Icebreaker waiting area
90	Information: Places of refuge
91	Information: Position of icebreakers
92	Information: Location of response units
93	Information: VTS active target
94	Information: Rogue or suspicious vessel
95	Information: Vessel requesting non-distress assistance
96	Information: other (define in associated text field)
97	Chart Feature: Submerged object / sunken vessel (describe in associated text field)
98	Chart Feature: Semi-submerged object
99	Chart Feature: Shoal area
100	Chart Feature: Shoal area due north
101	Chart Feature: Shoal area due east
102	Chart Feature: Shoal area due south
103	Chart Feature: Shoal area due west
104	Chart Feature: Channel obstruction
105	Chart Feature: Reduced vertical clearance

Value	Description
106	Chart Feature: Bridge/Gate/Lock/other closed
107	Chart Feature: Bridge/Gate/Lock/other partially open (opening)
108	Chart Feature: Bridge/Gate/Lock/other fully open
109	Chart Feature: Bridge/Gate/Lock/other partially closed (closing)
110	Chart Feature: Bridge/Gate/Lock/AtoN/other inoperative or not working properly
111	Chart Feature: other (define in associated text field)
112	Report from vessel: Icing info
113	Report from vessel: Intended route
114	Report from vessel: other (define in associated text field)
115	Reserved for Future Use
116	Reserved for Future Use
117	Reserved for Future Use
118	Reserved for Future Use
119	Reserved for Future Use
120	Route: Recommended Route
121	Route: Alternative Route
122	Route: Recommended Route through ice
123	Route: other (define in associated text field)
124	Reserved for Future Use
125	Other – Define in associated text field
126	Cancellation – cancel area as identified by Message Linkage ID
127	Undefined (default)

3.8 ISRS Text message (Inland specific message FI 44)

Table 11-22
ISRS Text message description (Broadcast Message)

	Parameter	Bit	Description
	Message ID	6	Identifier for Message 8; always 8
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
	Source ID	30	MMSI number
	Spare	2	not used, should be set to zero, reserved for future use
Binary data	Application Identifier	16	DAC = 200, FI = 44
	Version indicator	3	The version number of the message default = 0, other values for future use
	UN country code	12	2*6 Bit characters, digits 1 and 2 of the ISRS code
	Fairway section number	17	bit coded numerical value 1-99999, 0=unknown, other values not used, digits 6 to 10 of the ISRS code
	Object code	30	5*6 Bit characters
	Fairway hectometre	17	bit coded numerical value 1-99999, 0=unknown, other values not used, digits 16 to 20 of the ISRS code
	Spare	1	reserved; should be set to 0
	Text	222- 450	37 to 75 x 6-Bit ASCII as defined in ITU-R M.1371
	Spare	max 6	Not used for data and should be set to zero. Spare bits are needed to maintain byte boundaries. NOTE 1 – When a 6-Bit spare is needed to satisfy the 8-bit byte boundary rule, the 6-Bit spare will be interpreted as a valid 6-Bit character (all zeros is the "@" character).
	Total		**Occupies 2 to 3 slots**

Table 11-23
ISRS Text message description (Addressed Message)

Parameter	Bit	Description
Message ID	6	Identifier for Message 6; always 6
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
Source ID	30	MMSI number
Sequence Number	2	0 – 3
Destination ID	30	MMSI number
Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	not used, should be set to zero, reserved for future use

	Parameter	Bit	Description
Binary data	Application Identifier	16	DAC = 200, FI = 44
	Version indicator	3	The version number of the message default = 0, other values for future use
	UN country code	12	2*6 Bit characters, digits 1 and 2 of the ISRS code
	Fairway section number	17	bit coded numerical value 1-99999, 0=unknown, other values not used, digits 6 to 10 of the ISRS code
	Object code	30	5*6 Bit characters
	Fairway hectometre	17	bit coded numerical value 1-99999, 0=unknown, other values not used, digits 16 to 20 of the ISRS code
	Text	195-419	32 to 70 x 6-bit ASCII as defined in ITU-R M.1371
	Spare	max 7	Not used for data and should be set to zero. Spare bits are needed to maintain byte boundaries. NOTE 1 – When a 6 or 7-Bit spare is needed to satisfy the 8-bit byte boundary rule, the 6-Bit spare will be interpreted as a valid 6 Bit character (all zeros is the "@" character).
	Total		**occupies 2 to 3 slots**

Additional information / usage notes

a) The message shall be sent from shore only

b) The reporting rate should be 6 minutes

c) The timeout for this message should be 18 minutes

d) Spare bits shall be used as necessary to maintain byte boundaries.

e) If an ISRS text message shall be deleted, then the text parameter shall be filled with two @ ASCII characters in a row as the first two characters.

f) Either the local language where the river is situated or the applicable international language should be used.

g) The ISRS code indicates the position of the text and shall allow the match with the Inland ECDIS display. It consists of UN country code, Fairway section number, Object code and fairway hectometre and is derived from the RIS Index as published in the ERDMS. A fairway section number is used not the alphanumeric fairway section code. This may place restrictions where an alphanumeric value is used for a fairway section.

Appendix 1   Convoy formation codes (Distributed separately)