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Ref. T2-OSS/2.7.1

SN.1/Circ.289
2 June 2010

GUIDANCE ON THE USE OF AIS APPLICATION-SPECIFIC MESSAGES

- 1 The Maritime Safety Committee, at its seventy-eighth session (12 to 21 May 2004), approved SN/Circ.236 on Guidance on the application of AIS binary messages as prepared by the Sub-Committee on Safety of Navigation at its forty-ninth session (30 June to 4 July 2003).
- 2 The Sub-Committee on Safety of Navigation, at its forty-ninth session (30 June to 4 July 2003), selected seven (7) binary messages as shown in annex 2 to SN/Circ.236 to be used as a trial set of messages for a period of four years with no change. It was noted that four additional system-related messages were identified in Recommendation ITU-R M.1371 for the operation of the system.
- 3 The Sub-Committee on Safety of Navigation, at its fifty-fifth session (27 to 31 July 2009), after evaluating the use of binary messages in the trial period defined in SN/Circ.236, agreed on Guidance on the use of AIS Application-Specific Messages, including messages which are recommended for international use.
- 4 The Maritime Safety Committee, at its eighty-seventh session (12 to 21 May 2010), concurred with the Sub-Committee's views and approved the Guidance on the use of AIS Application Specific Messages, as set out at annex.
- 5 Member Governments are invited to bring the annexed Guidance to the attention of all concerned.
- 6 This circular revokes SN/Circ.236 as from 1 January 2013.

ANNEX

GUIDANCE ON THE USE OF AIS APPLICATION-SPECIFIC MESSAGES

1 Summary of AIS Application-Specific Messages

1.1 This document provides an overview of the purpose and scope of AIS Application-Specific Messages, and provides guidance on their use. AIS Application-Specific Messages described in this document are recommended for broad international use.

1.2 Table 1 provides a list of the AIS binary messages contained in SN/Circ.236 and the revised/new AIS Application-Specific Messages contained in this Guidance.

Table 1
Summary of AIS Application-Specific Messages
recommended for international use

FI	Message Name	Comments	Section
11	Met/Hydrological	SN/Circ.236 Trial message 1; not to be used after [1 Jan 2013]	--
12	Dangerous cargo indication	SN/Circ.236 Trial message 2; not to be used after [1 Jan 2013]	--
13	Fairway closed	SN/Circ.236 Trial message 3; not to be used after [1 Jan 2013]	--
14	Tidal window	SN/Circ.236 Trial message 4; not to be used after [1 Jan 2013]	--
15	Extended ship static and voyage-related data	SN/Circ.236 Trial message 5; not to be used after [1 Jan 2013]	--
16	Number of persons on board	SN/Circ.236 Trial message 6; corrected	5
17	VTS-generated/synthetic targets	SN/Circ.236 Trial message 7; renamed to "VTS-generated/Synthetic targets"	6
18	Clearance time to enter port	New message	7
19	Marine traffic signal	New message	8
20	Berthing data	New message	9
21	Weather observation report from ship	New message	10
22	Area notice – broadcast	New message	11
23	Area notice – addressed	New message	11
24	Extended ship static and voyage-related data	New message	4
25	Dangerous cargo indication	New message	2
26	Environmental	New message	12
27	Route information – broadcast	New message	13
28	Route information – addressed	New message	13
29	Text description – broadcast	New message	14

FI	Message Name	Comments	Section
30	Text description – addressed	New message	14
31	Meteorological and Hydrographic data	New message	1
32	Tidal window	New message	3
33-63		Reserved for Future Use	

1.3 The following system-related messages described in Annex 5 to Recommendation ITU-R M.1371-3 are also recommended for international use:

- .1 Interrogation for a specific IFM (FI = 2);
- .2 Capability interrogation (FI = 3);
- .3 Capability reply (FI = 4); and
- .4 Application acknowledgement to an addressed binary message (FI = 5).

2 System requirements

2.1 AIS Application-Specific Messages are transmitted and received by shipborne mobile AIS devices and AIS base stations. Shore-based stations can receive AIS Application-Specific Messages and distribute them to shore-based users.

2.2 The display capability of AIS Application-Specific Messages is not part of the mandatory functions of the Minimum Keyboard and Display (MKD). The display of the information transmitted by AIS Application-Specific Messages requires external hardware and dedicated software in addition to the AIS equipment.

2.3 The generation and transmission of AIS Application-Specific Messages also requires dedicated software and suitable equipment for entering the information.

3 Purpose and scope of AIS Application-Specific Messages

3.1 AIS was originally developed as a means for positive identification and tracking of ships. This was accomplished by transmitting and receiving static, dynamic, and voyage-related data about ships, as well as short safety-related messages. In addition, AIS was beneficial to the safety of navigation and protection of the environment by monitoring the maritime traffic and by providing various basic services. In particular, AIS may use binary messages for transmission of Application-Specific Messages as a means for certain types of limited communications.

3.2 AIS Application-Specific Messages may be either addressed or broadcasted. The technical characteristic and the structure of the AIS Application-Specific Messages are specified in Recommendation ITU-R M.1371. The content and format of the AIS Application-Specific Messages were tailored to different applications and were defined by the International Maritime Organization (IMO)

3.2.1 The transmission of any addressed AIS Application-Specific Message prompts a system acknowledgement on the VHF Data Link (VDL) by the receiving AIS station. This acknowledgement should not be confused with a user acknowledgment.

3.3 To avoid system overload, the number of AIS Application-Specific Messages and the frequency of transmission should be limited. Therefore, AIS Application-Specific Messages should be approved only if there is a compelling operational need for them. These messages have to be distinguished from "Addressed Safety-related Messages" and "Broadcast Safety-related Messages" both of which allow the exchange of format-free ASCII-text.

3.4 To obtain a high probability for reception, message transmissions should be made with access method Fixed Access Time Division Multiple Access (FATDMA) in reserved time slots. IALA Recommendation A124 Ed. 1.3 on AIS Shore Station and Networking Aspect relating to the AIS Service recommends FATDMA allocations not exceeding three (3) consecutive slots. As a general rule, messages occupying more than three (3) slots should be avoided, unless there is a low load on the VDL or a compelling reason to do so.

3.5 AIS Application-Specific Messages may provide a variety of capabilities for pre-defined information packages. For example:

- ships to report information to other ships and shore stations;
- shore stations to report navigation information, conditions and warnings; and
- ship reporting to be simplified.

3.5.1 It is also possible to interrogate a ship for a specific message and automatically receive the requested information, provided that the ship has the appropriate equipment installed. Moreover, AIS Application-Specific Messages may reduce verbal communications and enhance reliable information exchange and reduce operator's workload. AIS Application-Specific Messages are not intended to replace standard services such as the Global Maritime Distress and Safety System (GMDSS) and Search and Rescue Services (SAR).

4 Use of AIS Application-Specific Messages

4.1 The use of AIS Application-Specific Messages is permissible. AIS Application-Specific Messages may be created based on automatically generated or manual input. Pre-defined forms may be used to generate a message.

4.1.1 Since the use of AIS Application-Specific Messages places an additional load on the VDL, care must be taken to ensure the integrity of the VDL and not to impair the main functions of AIS. In this regard, longer AIS Application-Specific Messages and frequently transmitted messages have a greater impact on the VDL.

4.2 To ensure the safe use of the VDL, it may be beneficial that Contracting Governments appoint one national administration with a task to monitor and coordinate the use of the VDL within its area of responsibility. Slot utilizations should be monitored to determine the feasibility of using AIS Application-Specific Messages in the intended area. Further, this monitoring process should be conducted on an ongoing basis.

4.2.1 To determine if there is a risk for overload of the VDL, the operational requirements on coverage and received reporting rates for the main function of AIS must be compared with the actual performance. Overloading of the VDL may be indicated when the actual received reporting rate from ships within the required reporting area falls below the required reporting rate.

4.3 Although shipborne AIS equipments are capable of receiving AIS Application-Specific Messages, they may not be properly processed and displayed. [SN.1/Circ.[...] provides general Guidance for the presentation and display of AIS Application-Specific Messages.]

5 General format considerations for all messages

5.1 All geographical positions and coordinate points (latitude and longitude) should be based on the WGS 84 datum.

5.2 All times should be indicated as Coordinated Universal Time (UTC).

5.3 All directions indicated are true north.

ANNEX

AIS APPLICATION-SPECIFIC MESSAGES RECOMMENDED FOR INTERNATIONAL USE

1 Meteorological and Hydrographic data

1.1 This message allows the distribution of meteorological and hydrographic information.

1.2 This message should not be transmitted when positional information or time of measurement are not available. If there is no data available for that particular data field, it should be displayed as "not available".

1.3 Not all the information specified in the table 1.1 will be available at all stations.

Table 1.1
Meteorological and Hydrographic data

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Spare	2	Not used. Set to zero.
IAI	16	DAC = 001; FI = 31
Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 = not available = default
Position Accuracy	1	1 = high (<10 m; Differential Mode of, e.g., DGNSS receiver) 0 = low (>10 m; Autonomous Mode of, e.g., GNSS receiver or of other electronic position fixing device) default = 0
Time Stamp		UTC date and time of the data.
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default

Parameter	No. of bits	Description
Average Wind Speed	7	Average of wind speed values for the last 10 minutes, in 1 knot steps. 0 - 125 knots 126 = wind 126 knots or greater 127 = not available = default
Wind Gust	7	Maximum wind speed reading during the last 10 minutes, in 1 knot steps. 0 - 125 knots 126 = wind 126 knots or greater 127 = not available = default
Wind Direction	9	Direction of the average wind during the last 10 minutes, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Wind Gust Direction	9	Direction of the maximum wind during the last 10 minutes, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (not for use)
Air Temperature	11	Dry bulb temperature in degrees Celsius (as per 2's complement), in 0.1 degree steps. -60 to +60 degrees Celsius 601 - 1,023 (reserved for future use) -1,024 = data not available = default -1,023 to -601 (reserved for future use)
Relative Humidity	7	Relative Humidity, in 1% steps. 0 - 100% 101 = not available = default 102 -127 (reserved for future use)
Dew Point	10	Dew point temperature in degrees Celsius (as per 2's complement), in 0.1 degree steps. -20.0 to +50.0 degrees 501 = not available = default 502 - 511 (reserved for future use) -511 to -201 (reserved for future use)
Air Pressure	9	Air pressure, defined as pressure reduced to sea level, in 1 hPa steps. 0 = pressure 799 hPa or less 1 - 401 = 800 - 1200 hPa 402 = pressure 1201 hPa or greater 403 - 510 (reserved for future use) 511 = not available = default
Air Pressure Tendency	2	0 = steady 1 = decreasing 2 = increasing 3 = not available = default

Parameter	No. of bits	Description
Horizontal Visibility	8	Horizontal visibility, in 0.1 Nautical Miles steps (00000000 to 01111111). 0.0 - 12.6 Nautical Miles The most significant bit (MSB) indicates that the maximum range of the visibility equipment was reached and the reading shall be regarded as > x.x NM. (e.g., if 10110010, then visibility is 5.0 NM or greater) 127 = data not available = default
Water level (incl. tide)	12	Deviation from local chart datum, in 0.01 metre steps. -10.0 to +30.0 metres A value representing 0 - 4,000 is sent by the 12 binary bits. The water level is achieved by adding -10.0 to the sent value. Water level = (Integer value /100) – 10 for Integer = 0-4,000 4,001 = not available = default 4,002 – 4,095 (reserved for future use)
Water Level Trend	2	0 = steady 1 = decreasing 2 = increasing 3 = not available = default
Surface Current Speed (incl. tide)	8	Speed of Current measured at the sea surface, in 0.1 knot steps. 0.0 - 25.0 knots 251 = speed 25.1 knots or greater 255 = not available = default 252-254 (reserved for future use)
Surface Current Direction	9	Direction of Current at the sea surface, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Current Speed, #2	8	Speed of Current 2 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as Surface Current Speed)
Current Direction, #2	9	Direction of Current 2, in 1 degree steps. (Same as Surface Current Direction)
Current Measuring level, #2	5	Measuring level below sea surface, in 1 metre increment. 0 - 30 metres 31 = not available = default
Current Speed, #3	8	Speed of Current 3 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as Surface Current Speed)
Current Direction, #3	9	Direction of Current 3, in 1 degree steps. (Same as Surface Current Direction)
Current Measuring level, #3	5	Measuring level below sea surface, in 1 metre steps. 0 - 30 metres 31 = data not available = default
Significant Wave Height	8	Height of the waves, in 0.1 metre steps. 0.0 - 25.0 metres 251 = height 25.1 metres or greater 255 = data not available = default 252 - 254 (reserved for future use)

Parameter	No. of bits	Description
Wave Period	6	Wave period, in 1 second steps. 0 - 60 seconds 61 - 62 (reserved for future use) 63 = not available = default
Wave Direction	9	Direction of waves, in 1 degree steps. 0 - 359 degrees 360 = data not available = default 361 - 511 (reserved for future use)
Swell Height	8	Height of the swell, in 0.1 metre steps. 0.0 - 25.0 metres 251 = height 25.1 metres or greater 255 = data not available = default 252 - 254 (reserved for future use)
Swell Period	6	Swell period, in 1 second steps. 0 - 60 seconds 61 - 62 (reserved for future use) 63 = not available = default
Swell Direction	9	Direction of swells, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Sea State	4	Beaufort Scale, as defined in Table 1.2
Water Temperature	10	Temperature of the water in degrees Celsius (as per 2's complement), in 0.1 degree steps. -10.0 to +50.0 degrees 501 = data not available = default 502 - 511 (reserved for future use) -511 to -101 (reserved for future use)
Precipitation (type)	3	According to WMO 306 Code table 4.201: 0 = reserved 1 = rain 2 = thunderstorm 3 = freezing rain 4 = mixed/ice 5 = snow 6 = reserved 7 = not available = default
Salinity	9	Salinity, in 0.1‰ (ppt) steps. 0.0 - 50.0 ‰ 50.1 = salinity 50.1 ‰ or greater 510 = not available = default 511 = sensor not available 502 - 509 (reserved for future use)
Ice	2	0 = No 1 = Yes 2 = (reserved for future use) 3 = not available = default
Spare	10	Not used. Set to zero
Total	360	Occupies 2 slots

Table 1.2
Beaufort scale

Scale	Sea Conditions
0	Flat.
1	Ripples without crests.
2	Small wavelets. Crests of glassy appearance, not breaking.
3	Large wavelets. Crests begin to break; scattered whitecaps.
4	Small waves.
5	Moderate (1.2 m) longer waves. Some foam and spray.
6	Large waves with foam crests and some spray.
7	Sea heaps up and foam begins to streak.
8	Moderately high waves with breaking crests forming spindrift. Streaks of foam.
9	High waves (6-7 m) with dense foam. Wave crests start to roll over. Considerable spray.
10	Very high waves. The sea surface is white and there is considerable tumbling. Visibility is reduced.
11	Exceptionally high waves.
12	Huge waves. Air filled with foam and spray. Sea completely white with driving spray. Visibility greatly reduced.
13	not available = default
14 - 15	(reserved for future use)

2 Dangerous cargo indication

2.1 This message should be used in response to a request for a summary of the Dangerous cargo information from a competent authority.

2.2 The message content is intended to provide a non-verbal method of transfer of information on the general categories on dangerous cargoes, i.e. as an outline assessment of the categories of ships and their cargoes to facilitate in their participation in ship reporting systems and as initial information supporting search and rescue (SAR), anti-pollution, fire/chemical response or other incident/accident response operations. More detailed information can be found from the emergency contact details, the ship and other sources in due course.

2.3 The data is intended for use by the shore-based authority with the ability to relay this information on a selective and secure basis to the relevant national authorities responsible for receiving reports (i.e. Maritime Reporting System) and for VTS, SAR, pollution response, fire-fighting and other shore-based activities in response to accidents or incidents. The competent authority is responsible for ensuring that necessary measures are applied to secure the appropriate confidentiality of information.

2.4 Up to twenty-eight dangerous cargo can be specified. Each cargo should be structured as defined in tables 2.2 to 2.6 depending on the code used.

Table 2.1
Dangerous cargo indication – addressed

Parameter	No. of bits	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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Sequence Number	2	0 - 3; refer to ITU-R M.1371-3, Annex 2, § 5.3.1.
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. Set to zero.
IAI	16	DAC = 001; FI = 25 (See ITU-R M.1371-3, Annex 5, § 2.1).
Unit of Quantity for Dangerous Cargo	2	0 = not available = default 1 = in kg 2 = in tonnes (10 E 3 kg) 3 = in 1,000 tonnes (10 E 6 kg)
Total Amount of Dangerous Cargo	10	0 = not available = default 1 - 1,023 = value of quantity (in units defined, above)

Parameter	No. of bits	Description
Code under which Cargo 1 is carried	4	0 = not available = default 1 = IMDG Code (in packed form) 2 = IGC Code 3 = BC Code (from 1.1.2011 IMSBC) 4 = MARPOL Annex I List of oils (Appendix 1) 5 = MARPOL Annex II IBC Code 6 = Regional use 7 - 15 (reserved for future use)
Cargo 1	13	Content depends on code selected. Refer to tables below.
Code under which Cargo 2 is carried	4	Optional. (Same as Cargo 1)
Cargo 2	13	Optional. Content depends on code selected. Refer to tables below.
Cargo ...	n x (17)	...
Code under which Cargo 28 is carried	4	Optional. (Same as Cargo 1)
Cargo 28	13	Optional. Content depends on code selected. Refer to tables below.
Total	117 - 576	Occupies 1 - 3 slots. (See Table 2.7)

Table 2.2
IMDG Code

Parameter	No. of bits	Description
IMDG class or division	7	0 = not available = default 1 - 9 (not used) 10 - 99 = first digit = main class, second digit = subclass or division (undefined subclasses and divisions should not be used) 100 - 127 (reserved for future use)
Spare	6	Not used. Set to zero.
Total	13	

Table 2.3
IGC Code

Parameter	No. of bits	Description
UN number	13	0 = not available = default 1 - 3,363 = Four digits UN number 3,364 - 8,191 (reserved for future use)
Total	13	

Table 2.4
BC Code (from 1.1.2011 IMSBC)

Parameter	No. of bits	Description
BC class	3	0 = not available = default 1 = A 2 = B 3 = C 4 = MHB - Material Hazardous in Bulk 5 - 7 (reserved for future use)
IMDG class	7	Only specified for class B 0 = not available = default 1 - 9 (not used) 10 - 99 = first digit = main class, second digit = subclass (undefined subclasses should not be used) 100 - 127 (not used)
Spare	3	Not used. Set to zero.
Total	13	

Table 2.5
MARPOL Annex I, List of oils (Appendix 1)

Parameter	No. of bits	Description
Type of oil	4	0 = not available = default 1 = asphalt solutions 2 = oils 3 = distillates 4 = gas oil 5 = gasoline blending stocks 6 = gasoline 7 = jet fuels 8 = naphtha 9 - 15 (reserved for future use)
Spare	9	Not used. Set to zero.
Total	13	

Table 2.6
MARPOL (Annex II, IBC Code)

Parameter	No. of bits	Description
Category	3	0 = not available = default 1 = Category X 2 = Category Y 3 = Category Z 4 = other substances 5 - 7 (reserved for future use)
Spare	10	Not used. Set to zero.
Total	13	

Table 2.7
Number of slots

Number of cargoes in the message	1-2	3-15	16-28
Number of slots used	1	2	3

3 Tidal window

3.1 This message should be used to inform vessels about tidal windows which allow a vessel the safe passage of a fairway.

3.2 This message includes predictions of current speed and current direction.

3.3 Up to three points of tidal information can be specified.

Table 3.1
Tidal window

Parameter	No. of bits	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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station
Sequence Number	2	0 - 3; refer to ITU-R M.1371-3, Annex 2, § 5.3.1
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. Set to zero.
IAI	16	DAC = 001; FI =32
Time Stamp		UTC date of the data.
UTC Month	4	1 - 12 0 = not available = default
UTC Day	5	1 - 31 0 = not available = default
Position #1 Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Position #1 Latitude	24	Latitude in 1/1,000 min, ± 90 degrees, as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
From UTC Hour	5	0 - 23 24 = not available = default
From UTC Minute	6	0 - 59 60 = not available = default
To UTC Hour	5	0 - 23 24 = not available = default
To UTC Minute	6	0 - 59 60 = not available = default

Parameter	No. of bits	Description
Current Direction predicted #1	9	Direction of Current 1, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361-511 (do not use)
Current Speed predicted #1	8	Speed of Current 1, in 0.1 knot steps. 0.0 – 25.0 knots 251 = speed 25.1 knots or greater 252 – 254 (reserved for future use) 255 = not available = default
Position #2 Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Position #2 Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
From UTC Hour	5	0 - 23 24 = not available = default
From UTC Minute	6	0 - 59 60 = not available = default
Current Direction predicted #2	9	Direction of Current 2, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361-511 (do not use)
Current Speed predicted #2	8	Speed of Current 2, in 0.1 knot steps. 0.0 – 25.0 knots 251 = speed 25.1 knots or greater. 252 - 254 (reserved for future use) 255 = not available = default
Position #2 Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Position #3 Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
From UTC Hour	5	0 - 23 24 = not available = default
From UTC Minute	6	0 - 59 60 = not available = default
To UTC Hour	5	0 - 23 24 = not available = default
To UTC Minute	6	0 - 59 60 = not available = default
Current Direction predicted #3	9	Direction of Current 3, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (not used)

Parameter	No. of bits	Description
Current Speed predicted #3	8	Speed of Current 3, in 0.1 knot steps. 0.0 - 25.0 knots 251 = speed 25.1 knots or greater 252 - 254 (reserved for future use) 255 = not available = default
Total	350	occupies 3 slots

4 Extended ship static and voyage-related data

4.1 This message should be used to obtain additional extended and static voyage-related data.

Table 4.1
Extended ship static and voyage-related data (broadcast)

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Spare	2	Not used. Set to zero.
IAI	16	DAC = 001; FI = 24 (See ITU-R M.1371-3, Annex 5, § 2.1)
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 first six digits of the source MMSI uniquely identify the sent message. 1 - 1,023 0 = not available = default
Air Draught	13	Air Draught is the vertical distance from the ship's waterline to the highest point on the ship (e.g., top of ship's mast), in 0.1 metre steps. Air Draught = total vessel height (e.g., from bottom of keel to top of ship's mast) minus the maximum static loaded draught. 1 - 81.9 metres 81.91 = distance 81.91 metres or greater 0 = not available = default
Last Port of call	30	UN LOCODE; 5 characters 6 bits ASCII "@@@@@" = not available = default
Next Port of call	30	UN LOCODE; 5 characters 6 bits ASCII "@@@@@" = not available = default
Second Port of call	30	UN LOCODE; 5 characters 6 bits ASCII "@@@@@" = not available = default
SOLAS Equipment status	52	Current status of SOLAS navigation/communications equipment. Each equipment is described using 2 bits, coded as: 0 = not available or requested = default "000000000000000000000000" 1 = equipment operational 2 = equipment not operational 3 = no data (equipment may or may not be on board/or its status is unknown) <u>Required SOLAS equipment (coded in the following order)</u> 1 = AIS Class A

Parameter	No. of bits	Description
		2 = ATA (Automatic Tracking Aid) 3 = BNWAS (Bridge Navigational Watch Alarm System) 4 = ECDIS Back-up 5 = ECDIS/Paper Nautical Chart 6 = echo sounder 7 = electronic plotting aid 8 = emergency steering gear 9 = navigation system (GPS, Loran-C, GLONASS) 10 = gyro compass 11 = LRIT 12 = magnetic compass 13 = NAVTEX 14 = radar (ARPA) 15 = radar (S-band) 16 = radar (X-band) 17 = radio HF 18 = radio INMARSAT 19 = radio MF 20 = radio VHF 21 = speed Log (over ground) 22 = speed Log (through water) 23 = THD (Transmitting Heading Device) 24 = track control system 25 = VDR/S-VDR 26 (reserved for future use)
Ice class	4	Ice Classes as defined by: IACS = International Association of Classification Societies PC = Polar Class. For further details, see IACS Req. 2007 <i>Requirements concerning POLAR CLASS</i> and MSC/Circ.1056 and MEPC/Circ.399 on <i>Guidelines for ships operating in Arctic ice-covered waters</i>. FSICR = Finnish-Swedish Ice Class Rules. For further details, see Finnish Maritime Administration's Bulletin No.10/10.12.2008 <i>Ice class regulations 2008 (Finnish-Swedish ice class rules)</i>. Note: Authorized classification society equivalents for the Finnish-Swedish Ice Class Rules should also be recognized, as issued in the Finnish Maritime Administration's Bulletin No.4/2.4.2007 (as amended). Both bulletins can be found at www.fma.fi. RS = Russian Maritime Register of Shipping. For further details see <i>Rules for the classification and construction of seagoing ships</i>, Edition 2008. 0 = not classified 1 = IACS PC 1 2 = IACS PC 2 3 = IACS PC 3 4 = IACS PC 4 5 = IACS PC 5 6 = IACS PC 6 / FSICR IA Super / RS Arc5 7 = IACS PC 7 / FSICR IA / RS Arc4 8 = FSICR IB / RS Ice3

Parameter	No. of bits	Description
		9 = FSICR IC / RS Ice2 10 = RS Ice1 11 - 14 (reserved for future use) 15 = not available = default
Shaft Horse power	18	Total horse power of ship, in 1 hp steps. 0 - 262,141 horse power 262,142 = 262,142 horse power or greater 262,143 = not available = default
VHF Working channel	12	The VHF working channel used by the sending vessel Channel number according to Recommendation ITU-R M.1084 0 = not available = default
Lloyd's Ship type	42	Lloyd's Register STATCODE 5 (e.g., A11A1AA); 7 characters 6 bits ASCII "@@@@@@" = not available = default (See http://www.lrfairplay.com/About/IMO_standards/imo_standards.html)
Gross tonnage	18	0 - 262,141 262,142 = 262,142 or greater 262,143 = not available = default
Laden or Ballast	2	0 = not available = default 1 = Laden 2 = Ballast 3 = not in use
Type of bunker oil		
Heavy fuel oil	2	0 = not available = default 1 = no 2 = yes 3 = not in use
Light fuel oil	2	0 = not available = default 1 = no 2 = yes 3 = not in use
Diesel	2	0 = not available = default 1 = no 2 = yes 3 = not in use
Total amount of bunker oil in tonnes	14	0 - 16,381 16,382 = 16,382 tonnes or greater 16,383 = not available = default
Number of Persons	13	Number of persons currently on board, including crew members. 0 = not available = default 1 - 8,190 8,191 = 8,191 or greater
Spare	10	Not used. Set to zero.
Total	360	Occupies 2 slots

5 Number of persons on board

5.1 This message should be used by a ship to report the number of persons on board (e.g., on request by a competent authority).

Table 5.1
Number of persons on board

Parameter	No. of bits	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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Sequence Number	2	0 - 3; refer to ITU-R M.1371-3, Annex 2, § 5.3.1.
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. Set to zero.
IAI	16	DAC = 001; FI =16 (see ITU-R M.1371-3, Annex 5, § 2.1).
Number of Persons	13	Number of persons currently on-board, including crew members. 0 = not available = default 1 - 8,190 8,191 = 8,191 or greater
Spare	35	Not used. Set to zero.
Total	136	Occupies one slot

6 VTS-generated/Synthetic targets

6.1 This message should be used to transmit VTS or other types of synthetic targets. This message can be variable in length, based on the amount of targets. The maximum number of Targets transmitted in one message should not exceed four (4).

6.2 A VTS-generated or synthetic target should only be used when the position of the target is known.

Table 6.1
VTS-generated/Synthetic targets

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	Name of source station.
Spare	2	Not used. Set to zero.
IAI	16	DAC = 001; FI =17
Target 1	120	Refer to Table 6.2
Target 2	120	Optional; refer to Table 6.2
Target 3	120	Optional; refer to Table 6.2
Target 4	120	Optional; refer to Table 6.2
Total	max 536	Occupies 2 - 3 slots

Table 6.2
Structure of the target

Parameter	No. of bits	Description
Type of Target Identifier	2	Identifier Type: 0 = The target identifier is the MMSI number 1 = The target identifier is the IMO number. 2 = The target identifier is the call sign 3 = Other (default)
Target Identifier	42	The Target Identifier depends on Type of Target Identifier (see above). When call sign or vessel name is used, it should be inserted using 6-bits ASCII characters. When MMSI or IMO number is used, the least significant bit should equal bit zero of the Target Identifier. If the target identity is unknown, Type of Target Identifier should be set to "3" and Target Identifier to "@@@".
Spare	4	Spare. Set to zero.

Parameter	No. of bits	Description
Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Course-over-ground (COG)	9	COG in degrees, in 1 degree steps. 0 - 359 360 = not available = default
Time Stamp	6	UTC time when the report was generated. 0 - 59 seconds 60 = not available = default
Speed-over-ground (SOG)	8	SOG in knots, in 1 knot steps. 0 - 254 255 = not available = default
Total	120	

7 Clearance time to enter port

7.1 This message provides specific ships with information on the granted port to call and time to enter.

7.2 This message is transmitted by a competent authority responsible for control of ships to enter/leave port.

Table 7.1
Clearance time to enter port (addressed)

Parameter	No. of bits	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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Sequence Number	2	0 - 3; refer to ITU-R M.1371-3, Annex 2, § 5.3.1.
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. Set to zero.
IAI	16	DAC = 001; FI = 18
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 first six digits of the source MMSI uniquely identify the sent message. 1 - 1,023 0 = not available = default
Clearance date/time to enter port		UTC date and time.
UTC Month	4	1 - 12 0 = not available = default
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default
Name of port and berth	120	Name of the port and berth. Maximum 20 characters 6 bits ASCII as defined in ITU-R M. 1371-3, Table 44. "@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@" = not available = default

Parameter	No. of bits	Description
Destination	30	UN LOCODE; 5 characters 6 bits ASCII "@@@@@" = not available = default
Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
Spare	43	Not used. Set to zero.
Total	360	Occupies 2 slots

8 Marine traffic signal

8.1 This message provides information on a signal station and status of the control signal at the entrance of a harbour or channel where the shipping direction controlled so that the traffic flow be kept in order.

8.2 This message is transmitted by a competent authority.

Table 8.1
Marine traffic signal

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Spare	2	Not used. Set to zero.
IAI	16	DAC =001; FI = 19
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, source MMSI and message FI uniquely identifies the sent message. 1 - 1,023 0 = not available = default
Name of Signal Station	120	Maximum 20 characters 6 bits ASCII, as defined in ITU-R M. 1371-3, Table 44 "@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@" = not available = default
Position of Station, Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Position of Station, Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
Status of Signal	2	0 = not available = default 1 = In regular service 2 = Irregular service 3 reserved for future use
Signal in Service	5	(see Table 8.2)

Parameter	No. of bits	Description
Time of next Signal Shift		Time of next Signal Shift in UTC
UTC Hour	5	0 - 23 24 = not available = default 25 - 31 (not used)
UTC Minute	6	0 - 59 60 = not available = default 61 - 63 (not used)
Expected Next Signal	5	(see Table 8.2)
Spare	102	Not used. Set to zero.
Total	360	Occupies 2 slots

Table 8.2
Signal in Service¹

Value	Description
0	Not available = default
1	IALA port traffic signal 1: Serious emergency – all vessels to stop or divert according to instructions.
2	IALA port traffic signal 2: Vessels shall not proceed.
3	IALA port traffic signal 3: Vessels may proceed. One way traffic.
4	IALA port traffic signal 4: Vessels may proceed. Two way traffic.
5	IALA port traffic signal 5: A vessel may proceed only when it has received specific orders to do so.
6	IALA port traffic signal 2a: Vessels shall not proceed, except that vessels which navigate outside the main channel need not comply with the main message.
7	IALA port traffic signal 5a: A vessel may proceed only when it has received specific orders to do so; except that vessels which navigate outside the main channel need not comply with the main message.
8	Japan Traffic Signal - I = "in-bound" only acceptable.
9	Japan Traffic Signal - O = "out-bound" only acceptable.
10	Japan Traffic Signal - F = both "in- and out-bound" acceptable.
11	Japan Traffic Signal - XI = Code will shift to "I" in due time.
12	Japan Traffic Signal - XO = Code will shift to "O" in due time.
13	Japan Traffic Signal - X = Vessels shall not proceed, except a vessel which receives the direction from the competent authority.
14 - 31	(reserved for future use)

¹ For further details, see IALA Recommendation E-111 on *Port Traffic Signals*, Edition 1.1, December 2005.

9 Berthing data

9.1 This message provides information on the ship's berth. If sent from a ship it is a berthing request; if it is transmitted by a competent authority it is a berthing assignment.

Table 9.1
Berthing data (addressed)

Parameter	No. of bits	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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Sequence Number	2	0 - 3; refer to ITU-R M.1371-3, Annex 2, § 5.3.1.
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, S set to zero.
IAI	16	DAC = 001; FI = 20
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 first six digits of the source MMSI uniquely identify the sent message. 1 - 1,023 0 = not available = default.
Berth Length	9	Berth length, in 1 metre steps. 1 - 510 metres 511 = 511 metres or greater 0 = undefined = default
Water Depth at Berth	8	Water depth at berth, in 0.1 metre steps. 0.1 - 25.4 metres 255 = 25.5 or greater 0 = undefined = default
Mooring Position	3	0 = undefined = default 1 = port-side to 2 = starboard-side to 3 = Mediterranean mooring 4 = mooring buoy 5 = anchorage 6 - 7 (reserved for future use)

Parameter	No. of bits	Description
Berth Date and Time		UTC Date and Time
UTC Month	4	1 - 12 0 = not available = default
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default
Services availability	1	0 = services types unknown = default; set all "Type of Services Available" indicated below to zero. 1 = services types are known; see "Type of Services Available" below.
Type of Services Available	52	Available services at berth. Each service described with 2 bits, coded as: 0 = service not available or requested = default 1 = service available 2 = no data or unknown 3 = not to be used <u>List of services</u> 1 = agent 2 = bunker/fuel 3 = chandler 4 = stevedore 5 = electrical 6 = potable water 7 = customs house 8 = cartage 9 = crane(s) 10 = lift(s) 11 = medical facilities 12 = navigation repair 13 = provisions 14 = ship repair 15 = surveyor 16 = steam 17 = tugs 18 = waste disposal (solid) 19 = waste disposal (liquid) 20 = waste disposal (hazardous) 21 = reserved ballast exchange 22 = additional services are also available 23 - 24 (reserved for regional use) 25 - 26 (reserved for future use)
Name of Berth	120	20 characters 6 bits ASCII, as defined in ITU-R M. 1371-3, Table 44.
Centre position of Berth, Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default

Parameter	No. of bits	Description
Centre position of Berth, Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
Spare	0	Not used. Set to zero.
Total	360	Occupies 2 slots

10 Weather observation report from ship

10.1 This message provides weather information observed on a ship in navigation.

10.2 Two different messages can be transmitted:

- .1 Weather observation report from ship; or
- .2 WMO Weather observation report from ship.

10.3 Table 10.1 outlines the parameters associated with the Weather observation report from ship message.

10.4 Table 10.2 outlines the parameters associated with the WMO Weather observation report from ship message.

10.4.1 The WMO Weather observation report from ship message is intended for ships which have been recruited by national meteorological services to undertake weather observations at sea in accordance with the provisions of SOLAS chapter V, regulation 5, and the World Meteorological Organization's Voluntary Observing Ship (VOS) Scheme. Because national meteorological services are the intended primary users of this message it has been developed to reflect the coding principles prescribed by WMO in its Binary Universal Form for the Representation of meteorological data (BUFR), and as contained in Part B of WMO Publication No.306, (Manual Codes, Volume I.2). The parameters coded in this message are therefore not fully compatible with the recommendations set out in ITU M.1371-3.

10.4.2 The WMO Weather observation report from ship message includes all the parameters that are typically reported by voluntary observing ships, as well as additional parameters reported by ships that are recruited to the VOS Scheme to report climate quality weather observations (indicated as VOSclim parameters in the message description). The message format also accords with formats being developed for use in connection with shipboard automatic weather stations.

Table 10.1
Weather observation report from ship

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; FI = 21
Type of Weather report	1	Always 0
Geographic Location	120	20 characters 6-bits ASCII as defined in ITU-R M. 1371-3, Table 44

Parameter	No. of bits	Description
Position of Observation, Longitude	25	Longitude in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Position of Observation, Latitude	24	Latitude in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
Date and Time of Observation		UTC Date and time of observation.
UTC Day	5	1 - 31 0 = not available
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default
Present Weather	4	(Based on WMO Code 45501) 0 = clear (no clouds at any level) 1 = cloudy 2 = rain 3 = fog 4 = snow 5 = typhoon/hurricane 6 = monsoon 7 = thunderstorm 8 = not available = default 9 - 15 (reserved for future use)
Horizontal Visibility	8	Horizontal visibility, in 0.1 Nautical Miles steps (00000000 to 01111111). 0.0 - 12.6 Nautical Miles The most significant bit (MSB) indicates that the maximum range of the visibility equipment was reached and the reading shall be regarded as > x.x NM. (e.g., if 10110010, then visibility is 5.0 NM or greater) 127 = data not available = default
Relative Humidity	7	Relative Humidity, in 1% steps. 0 - 100% 101 = not available = default 102 - 127 (reserved for future use)
Average Wind Speed	7	Average of wind speed values over the last 10 minutes, in 1 knot steps. 0 - 125 knots 126 = wind 126 knots or greater 127 = not available = default
Wind Direction	9	Direction of the average wind over the last 10 minutes, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)

Parameter	No. of bits	Description
Air Pressure	9	Air pressure at sea level, in 1 hPa steps. 0 = pressure 799 hPa or less 1 - 401 = 800 – 1200 hPa 402 = pressure 1201 hPa or greater 403 = not available = default 404 - 511 (reserved for future use).
Air Pressure tendency	4	Use WMO FM13 Codes for pressure characteristic over the last three hours. Codes 0 - 8
Air Temperature	11	Dry bulb temperature in degrees Celsius (as per 2's complement), in 0.1 degree steps. -60.0 to +60.0 degrees -1,024 = data not available = default 601 - 1,023 (reserved for future use) -1,023 to -601 (reserved for future use)
Water Temperature	10	Temperature of the water in degrees Celsius (as per 2's complement), in 0.1 degree steps. -10.0 to +50.0 degrees 501 = not available=default 502 - 511 (reserved for future use) -511 to -101 (reserved for future use)
Wave period	6	Wave period, in 1 second steps 0 - 60 seconds 63 = not available = default 61 - 62 (reserved for future use)
Significant Wave height	8	Height of the waves, in 0.1 metre steps. 0.0 - 25.0 metres 251 = height 25.1 metres or greater 255 = not available = default 252 - 254 (reserved for future use)
Wave Direction	9	Direction of waves, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Swell Height	8	Height of the swell, in 0.1 metre steps. 0.0 - 25.0 metres 251 = height 25.1 metres or greater 255 = not available = default 252 - 254 (reserved for future use)
Swell Direction	9	Direction of swells, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Swell Period	6	Swell period, in 1 second steps. 0 - 60 seconds 63 = not available = default 61 - 62 (reserved for future use)

Parameter	No. of bits	Description
Spare	3	Not used. Set to zero.
Total	360	Occupies 2 slots

Table 10.2
WMO Weather observation report from ship

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station
Spare	2	Not used. Set to zero.
IAI	16	DAC = 001; FI =21
Type of weather report	1	always 1
Position of Observation, Longitude	16	BUFR 006002 Longitude in 1/100 min, ±180 degrees (East = positive, West = negative) Lon = (Integer value / 100) – 180 for Integer = 0 - 36,000 65,535 = not available = default
Position of Observation, Latitude	15	BUFR 005002 Latitude in 1/100 min, ±90 degrees as per 2's complement (North = positive, South = negative) Lat = (Integer value / 100) – 9,000 for Integer = 0 - 18,000 32,767 = not available = default

Parameter	No. of bits	Description
Date and Time of Observation		UTC Date and time of observation.
UTC Month	4	BUFR 004002 1 - 12 (offset = 0) Month = Integer value 15 = not available = default
UTC Day	6	BUFR 004003 1 - 31 (offset = 0) Day = (Integer value) for integer = 1-31 63 = not available = default
UTC Hour	5	BUFR 004004 0 - 23 (offset = 0) Hour = Integer value 31 = not available = default
UTC Minute	3	BUFR 004005 0 - 50 (offset = 0) Minute = (Integer value * 10) for integer = 0-5 7 = not available = default
Ship's Course Over Ground (over the past 10 minutes)	7	BUFR 001012 (VOSCLim parameter) 005 - 360 deg. (offset = 0) COG = (Integer value * 5) for Integer = 1 - 72 0 = stopped 127 = not available = default
Average Speed Over Ground (over the past 10 minutes)	5	BUFR 001013 (VOSCLim parameter) 0 - 14.5 m/s (offset = 0) SOG = (Integer value * 0.5) for Integer = 0 - 29 30 = 15 m/s and more 31 = not available = default
Average heading of the ship (over the past 10 minutes)	7	BUFR (tbd) (VOSCLim parameter) 005 - 360 deg. (offset = 0) HDT = (Integer value * 5) for Integer = 1 - 72 127 = not available = default
Pressure reduced to sea level	11	BUFR 010051 900 - 1100 hPa (offset = 900) Pressure = (Integer value / 10) + 900 for Integer = 0 - 2,000 2,047 = not available = default
3-hour pressure change (relative value)	10	BUFR 010061 -50 to +50 hPa (offset = -50) Tend. = (Integer value/10) - 50 for Integer = 0 - 1,000 1,023 = not available = default
Characteristic of pressure tendency	4	BUFR 010063 WMO BUFR table 010063 for pressure characteristic over last three hours, Codes 0 - 8 15 = not available = default
True wind direction (average over 10 minutes)	7	BUFR 011001 005 - 360 deg. (offset = 0) Direction = (Integer value * 5) for Integer = 1 - 72 0 = calm 127 = not available = default

Parameter	No. of bits	Description
True wind speed (average over 10 minutes)	8	BUFR 011002 0 - 127 m/s (offset = 0) Speed = (Integer value * 0.5) for Integer = 0 - 254 255 = not available = default
Relative wind direction (average over 10 minutes)	7	BUFR (tbd) (VOSClm parameter) 005 - 360 deg. (offset = 0) Direction = (Integer value * 5) for Integer = 1 - 72 0 = calm 127 = not available = default
Relative wind speed (average over 10 minutes)	8	BUFR (tbd) VOSClm parameter 0 - 127 m/s (offset = 0) Speed = (Integer value * 0.5) for Integer = 0 - 254 255 = not available = default
Maximum wind gust speed	8	BUFR 011041 0 - 127 m/s (offset = 0) Speed = (Integer value * 0.5) for Integer = 0 - 254 255 = not available = default
Maximum wind gust direction	7	BUFR 011043 005 - 360 deg. (offset = 0) Direction = (Integer value * 5) for Integer = 1 - 72 0 = calm 127 = not available = default
Air temperature (dry bulb)	10	BUFR 012101 223 - 323 K (offset = 223) (i.e. circa -50 to +50 °C) Temp. = (Integer value/10) + 223 for Integer = 0 - 1,000 1,023 = not available = default
Relative humidity	7	BUFR 013003 0 - 100 % (offset = 0) Rh = (Integer value) for Integer = 0 - 100 127 = not available = default
Sea surface temperature	9	BUFR 022042 268 to 318 K (offset = 268) (i.e. circa -5 to +45 °C) Sea Temp. = (Integer value/10) + 268 for Integer = 0 - 500 511 = not available = default
Horizontal visibility	6	BUFR 020001 0 to 50,000 m (offset = 0) Visibility = ((Integer value)**2] * 13.073) for Integer = 0 - 62 63 = not available = default
Present weather	9	BUFR 020003 (WMO BUFR table 020003 for present weather, Codes 0 - 510) 511 = not available = default
Past weather 1	5	BUFR 020004 (WMO BUFR table 020004 for past weather, Codes 0 - 30) 31 = not available = default
Past weather 2	5	BUFR 020005 (WMO BUFR table 020005 for past weather, Codes 0 - 30) 31 = not available = default

Parameter	No. of bits	Description
Total cloud cover	4	BUFR 020010 0 to 100 % (offset = 0) Cover = (Integer value * 10) for Integer = 0 - 10 15 = not available = default
Cloud amount (low)	4	BUFR 020011 (WMO BUFR table 020011 for cloud amount, Codes 0 - 14) 15 = not available = default
Cloud type (low)	6	BUFR 020012 (WMO BUFR table 020012 for cloud type, Codes 0 - 62) 63 = not available = default
Cloud type (middle)	6	BUFR 020012 WMO BUFR table 020012 for cloud type, Codes 0 - 62 63 = not available = default
Cloud type (high)	6	BUFR 020012 (WMO BUFR table 020012 for cloud type, Codes 0 - 62) 63 = not available = default
Height of base of lowest cloud	7	BUFR 020013 0 - 2,500 m (offset = 0) Height = $[(\text{Integer value})^2] * 0.16$ for Integer = 0 - 125 126 = more than 2,500 m 127 = not available = default
Period of wind waves	5	BUFR 022012 0 - 30 s (offset = 0) Period = (Integer value) for Integer = 0 - 30 31 = not available = default
Height of wind waves	6	BUFR 022022 0 - 30 m (offset = 0) Height = (Integer value * 0.5) for Integer = 0 - 60 63 = not available = default
Direction of first swell (from which the swell is coming)	6	BUFR 022003 10 - 360 deg (offset 0). Direction = (Integer value * 10) for Integer = 1 - 36 0 = calm 63 = not available = default
Period of first swell	5	BUFR 022013 0 - 30 s (offset = 0) Period = (Integer value) for Integer = 0 - 30 31 = not available = default
Height of first swell	6	BUFR 022023 0 - 30 m (offset = 0) Height = (Integer value * 0.5) for Integer = 0 - 60 63 = not available = default
Direction of second swell (from which the swell is coming)	6	BUFR 022003 10 - 360 deg (offset 0). Direction = (Integer value * 10) for Integer = 1 - 36 0 = calm 63 = not available = default

Parameter	No. of bits	Description
Period of second Swell	5	BUFR 022013 0 - 30 s (offset = 0) Period = (Integer value) for Integer = 0 - 30 31 = not available = default
Height of second swell	6	BUFR 022023 0 - 30 m (offset = 0) Height = (Integer value * 0.5) for Integer = 0 - 60 63 = not available = default
Ice deposit (thickness)	7	BUFR 020031 0 - 126 cm (offset = 0) Thickness = (Integer value) for Integer = 0 - 126 127 = not available = default
Rate of ice accretion	3	BUFR 020032 (WMO BUFR table 020032 for rate of ice accretion, Codes 0 - 6) 7 = not available = default
Cause of ice accretion	3	BUFR 020033 (WMO BUFR table 020033 for cause of ice accretion, Codes 0 - 6) 7 = not available = default
Sea ice concentration	5	BUFR 020034 (WMO BUFR table 020034 for sea ice concentration, Codes 0 - 30) 31 = not available = default
Amount and type of ice	4	BUFR 020035 (WMO BUFR table 020035 for amount and type of ice, Codes 0 - 14) 15 = not available = default
Ice situation	5	BUFR 020036 (WMO BUFR table 020036 for ice situation, Codes 0 - 30) 31 = not available = default
Ice development	5	BUFR 020037 (WMO BUFR table 020037 for ice development, Codes 0 - 30) 31 = not available = default
Bearing of ice edge	4	BUFR 020038 045 - 360 deg. (offset = 0) Bearing = (Integer value * 45) for Integer = 1-8 15 = not available = default
Total	360	Occupies 2 slots

11 Area notice

11.1 This message provides dynamic information concerning a specified geographic area, polyline or positions. It should be only used to convey pertinent time-critical navigation safety information to mariners or authorities, and not as a means to convey information already provided by current official nautical charts or publications.

11.2 This message can also be used to convey advisory lines or tracks. However, the Route Information message should be used for recommended or directed routes.

11.3 The information is time-dependent (i.e. has start date and time and duration).

11.4 In order to allow advance notice, this message should be transmitted prior to the start date and time specified for the area. It should not be transmitted more than one day in advance.

11.5 This message should not be transmitted beyond the end date and time, except for a cancellation message. A cancellation message can be transmitted before the designated end date and time using the same Message Linkage ID with an Area Type of 126 (cancellation), a Duration = 0, and start date and time fields all set to not available.

11.6 ECDIS/ECS software should automatically remove the area notice from the display after the end date and time specified or after receiving a cancellation message.

11.7 Up to 5-slots message can be created, however messages with more than 3 slots should be avoided. Messages with more than 3 slots are less likely to be received due to radiofrequency noise or packet collision.

11.8 Waypoints can be specified using the polyline/waypoint sub-area. In case more precision is to be required then multiple circle/point sub-areas can be defined (e.g., one for each waypoint).

11.9 When waypoints are specified using polyline or circle/point sub-areas, they should be numbered and used in the order that they appear in the message.

11.10 Polyline/polygon sub-areas must follow immediately after a point sub-area (Area Shape 0) in the same Area Notice message. The point defines the start of the line segments. If more than 5 points were required for a polyline/polygon, then additional polyline/polygon sub-areas could be used. However, they must follow immediately after the first polyline/polygon sub-area.

11.11 The Message Linkage ID can be used to link additional text (e.g., a separate text message). However, both the Area Notice and additional Text Description message should be sent by the same source MMSI.

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

11.13 If the same Message Linkage ID is retransmitted with different sub-areas and/or times, then the ECDIS/ECS should replace the old Area with the new.

11.14 The Message Linkage ID must be unique across all binary messages to which it applies. In this way, the Message Linkage ID and Source MMSI are connected to the same text message.

Table 11.1
Area notice – (broadcast)

	Parameter		No. of bits	Description
Standard Message Header	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 (see ITU-R M.1371-3, Annex 2, § 4.6.1). 0 - 3 0 = default 3 = do not repeat anymore
	Source MMSI		30	MMSI number of source station.
	Spare		2	Not used. Set to zero.
Binary Data	Designated Area Code		10	DAC = 001
	Function Identifier		6	FI = 22
	Application Data	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 first six digits of the source MMSI uniquely identify the sent message. 1 - 1,023 0 = not available = default
		Notice Description	7	Notice description as defined in Table 11.11 Set to 0 - 127 according to description. If = 127 there must be associated text (see Table 11.10)
		Start date and time of Area	UTC Month	4 Start UTC month of the Area notice. 1 - 12 0 = not available = default 13 - 15 (reserved for future use)
			UTC Day	5 Start UTC day of the Area notice. 1 - 31 0 = not available = default
			UTC Hour	5 Start UTC hour of the Area notice. 0 - 23 24 = not available = default 25 - 31 (reserved for future use)
			UTC Minute	6 Start UTC minute of the Area notice. 0 - 59 60 = not available = default 61 - 63 (reserved for future use)
		Duration	18	Minutes until the end of Area notice, measured from start date and time of Area Notice. 0 = cancel Area Notice 262,143 = undefined = default Maximum duration is 262,142 minutes (182.04 days)

	Parameter		No. of bits	Description
		Sub-areas	max 870	From 1 to 10 sub-areas, each structured as in Tables 11.4 - 11.9. A short text description may be associated with the areas using Sub-area 5: Associated text (see Table 11.10). Total number of sub-areas is determined by the length of the message. Each sub-area is a fixed 87 bits.
Total			max 981	Occupies 2 - 5 slots (see Table 11.3)

Table 11.2
Area notice – (addressed)

	Parameter		No. of bits	Description
Standard Message Header	Message ID		6	Set to 6 (addressed, acknowledgement required).
	Repeat Indicator		2	Used by the repeater to indicate how many times a message has been repeated. See ITU-R M.1371-3, Annex 2, § 4.6.1. 0 - 3 0 = default 3 = do not repeat anymore
	Source MMSI		30	MMSI number of source station.
	Sequence number		2	Refer to ITU-R M.1371-3, Annex 2, § 5.3.1 0 - 3
	Destination MMSI		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. Set to zero.
Binary Data	Designated Area Code		10	DAC = 001
	Function Identifier		6	FI = 23
	Application Data	Message Linkage ID	10	Binary identifier for the defined area. This number uniquely identifies an Area and is used to link additional information with the Area. Source MMSI and this ID uniquely identify the zone. The number is unique across all binary messages to which Message Linkage ID applies. Set to 0 - 1,023 by message originator.
		Notice Description	7	Notice Description as defined in Table 11.11. Set to 0 - 127 according to description. If = 127 there must be associated text (Table 11.10)

	Parameter		No. of bits	Description
	Start date and time of Area	UTC Month	4	Start UTC month of the Area notice. 1 - 12 0 = not available = default 13 - 15 (reserved for future use)
		UTC Day	5	Start UTC day of the Area notice. 1 - 31 0 = not available = default
		UTC Hour	5	Start UTC hour of the Area notice. 0 - 23 24 = not available = default 25 - 31 (reserved for future use)
		UTC Minute	6	Start UTC minute of the Area notice. 0 - 59 60 = not available = default 61 - 63 (reserved for future use)
	Duration		18	Minutes until end of Area notice. Measured from start date and time of Area Notice. 0 = cancel Area Notice 262,143 = undefined = default Maximum duration is 262,142 minutes (182.04 days).
	Sub-areas		max 870	From 1 to 10 sub-areas, each structured as in Tables 11.4 - 11.9. A short text description may be associated with the areas using Sub-area 5: Associated text (see Table 11.10). Total number of sub-areas is determined by the length of the message. Each sub-area is a fixed 87 bits.
Total			max 1,013	Occupies 2 - 5 slots (see Table 11.3)

Table 11.3
Number of slots

Number of sub-areas transmitted	1	2	3	4	5	6	7	8	9	10
Number of bits used for a broadcast message	198	285	372	459	546	633	720	807	894	981
Number of slots used for a broadcast message	2	2	3	3	3	4	4	4	5	5
Number of bits used for an addresses message	230	317	404	491	578	665	752	839	926	1013
Number of slots used for an addressed message	2	2	3	3	3	4	4	5	5	5

Table 11.4
Sub-area table

Number	Area Shape	Table for Definition
0	circle or point	11.5
1	rectangle	11.6
2	sector	11.7
3	polyline	11.8
4	polygon	11.9
5	associated text	11.10
6 - 7	reserved	--

Table 11.5
Circle or point

	Parameter	No. of bits	Description
Area Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set 0 for Circle.
	Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1,000 (scale factor = 10^n where n=decimal value of scale factor).
	Longitude	25	Longitude of the centre in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
	Latitude	24	Latitude of the centre in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
	Precision	3	Precision of data in latitude and longitude parameters. Data to be truncated to the number of decimal places specified in this parameter. 0 - 4 4 = default
	Radius	12	Defines the size of the circular area. This is the radius of the circle in metre steps. 0 = point (default) 1 - 4,095 metres This is multiplied by the scale factor to give a maximum size of 4,095,000 metres (4,095 km).
	Spare	18	Not used. Set to zero.

Table 11.6
Rectangle

	Parameter	No. of bits	Description
Area Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set 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 = 10^n where n=decimal value of scale factor).
	Longitude	25	Longitude of the SW corner in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
	Latitude	24	Latitude of the SW corner in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
	Precision	3	Precision of data in latitude and longitude parameters. Data to be truncated to the number of decimal places specified in this parameter. 0 - 4 4 = default
	E dimension	8	Box dimension East from the corner point, in metre steps. This is multiplied by the scale factor to give a maximum dimension of 255,000 metres (255 km). 0 = line North-South (default) 1 - 255 * scale factor metres.
	N dimension	8	Box dimension North from the corner point, in metre steps. This is multiplied by the scale factor to give a maximum dimension of 255,000 m (255 km). 0 = line East-West (default) 1 - 255 * $10^{\text{scalefactor}}$ metres
	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	5	Not used Set to zero.

Figure 11-1
Description of the process required to define a "rectangle" area

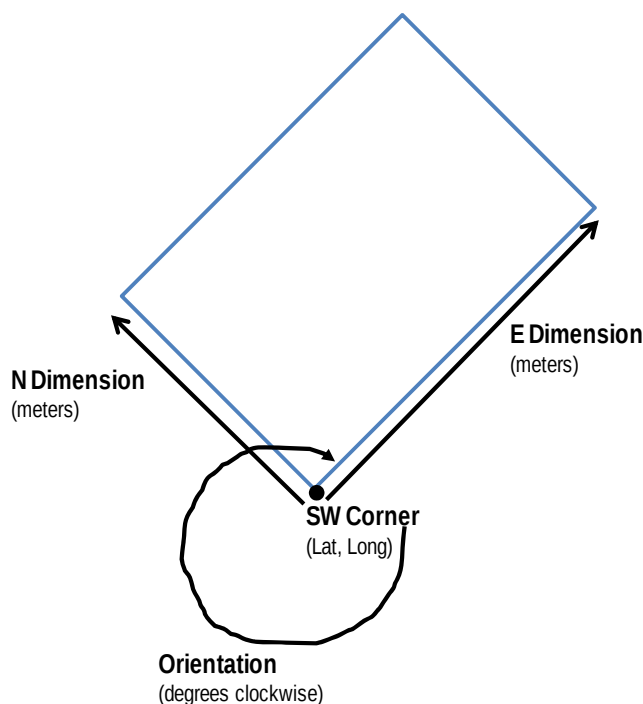
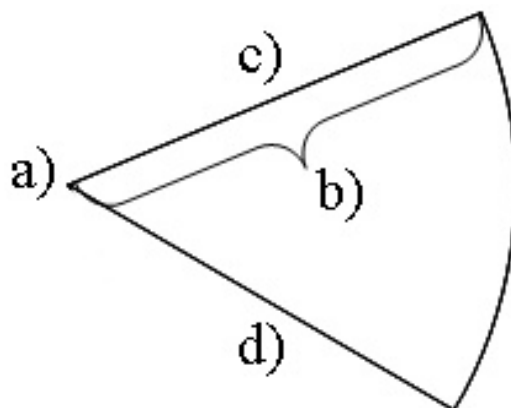


Table 11.7
Sector

	Parameter	No. of bits	Description
Area Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set 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 = 10^n where n=decimal value of scale factor)
	Longitude	25	Longitude of the centre in 1/1,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
	Latitude	24	Latitude of the centre in 1/1,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
	Precision	3	Precision of data in latitude and longitude parameters. Data to be truncated to the number of decimal places specified in this parameter. 0 - 4 4 = default
	Radius	12	Defines the size of the sector, in metre steps. This is multiplied by the scale factor to give a maximum size of 4,095,000 m (4,095 km). 0 = point = default 1 - 4,095 metres

	Parameter	No. of bits	Description
	Left Boundary	9	Orientation of the left boundary edge of the sector, in degree steps measured clockwise from true North about the centre 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, in degree steps measured clockwise from true North about the centre point. The 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	0	Not used. Set to zero.

**Figure 11-2
Sector Area**



- a) Centre point
- b) Sector radius
- c) Sector bearings from centre point, left boundary
- d) Sector bearings from centre point, right boundary

**Table 11.8
Waypoint/polyline points**

	Parameter	No. of bits	Description
Area Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set to 3 for Polyline (open area or line). The initial point (point 0) is defined by an Area Shape = 0 (circle)
	Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1,000 (scale factor = 10^n where n =decimal value of scale factor)

	Parameter	No. of bits	Description
	Point 1 Angle	10	True bearing, in half-degree steps, from Point 0 to Point 1 or from the last Point in a Polyline directly preceding this Polyline. Degrees bearing = decimal value (0-719)*.5 720 = not available = default 721 - 1,023 (reserved for future use)
	Point 1 Distance	10	Distance, in metre steps, from Point 0 to Point 1 or from the last Point in a Polyline directly preceding this Polyline. This number (1 - 1,023) is multiplied by the scale factor to give a maximum of 1,023,000 metres (1,023 km). 0 = default (no point).
	Point 2 Angle	10	True bearing, in half-degree steps, from Point 1 to Point 2. Degrees bearing = decimal value (0 - 719)*.5 720 = not available (no point) = default 721 - 1,023 (reserved for future use)
	Point 2 Distance	10	Distance, in metre steps, from Point 1 to Point 2. This number (1 - 1,023) is multiplied by the scale factor to give a maximum of 1,023,000 metres (1,023 km). 0 = default (no point).
	Point 3 Angle	10	True bearing, in half-degree steps, from Point 2 to Point 3. Degrees bearing = decimal value (0-719)*.5 720 = not available (no point) = default 721 - 1,023 (reserved for future use)
	Point 3 Distance	10	Distance, in metre steps, from Point 2 to Point 3. This number (1 - 1,023) is multiplied by the scale factor to give a maximum of 1,023,000 metres (1,023km). 0 = default (no point).
	Point 4 Angle	10	True bearing, in half-degree steps, from Point 3 to Point 4. Degrees bearing = decimal value (0 - 719)*.5 720 = not available (no point) = default 721 - 1,023 (reserved for future use)
	Point 4 Distance	10	Distance, in metre steps, from Point 3 to Point 4. This number (1 - 1,023) is multiplied by the scale factor to give a maximum of 1,023,000 metres (1,023 km). 0 = default (no point).
	Spare	2	Not used. Set to zero.

Figure 11-3

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))

Area Notice

Sub-Area: Point (0)
Radius: 0
"Initial Point 0"

Sub-Area: Polyline (3)
Point 1:
Point 1 Angle
Point 1 Distance
Point 2:
Point 2 Angle
Point 2 Distance
Point 3:
Point 3 Angle
Point 3 Distance

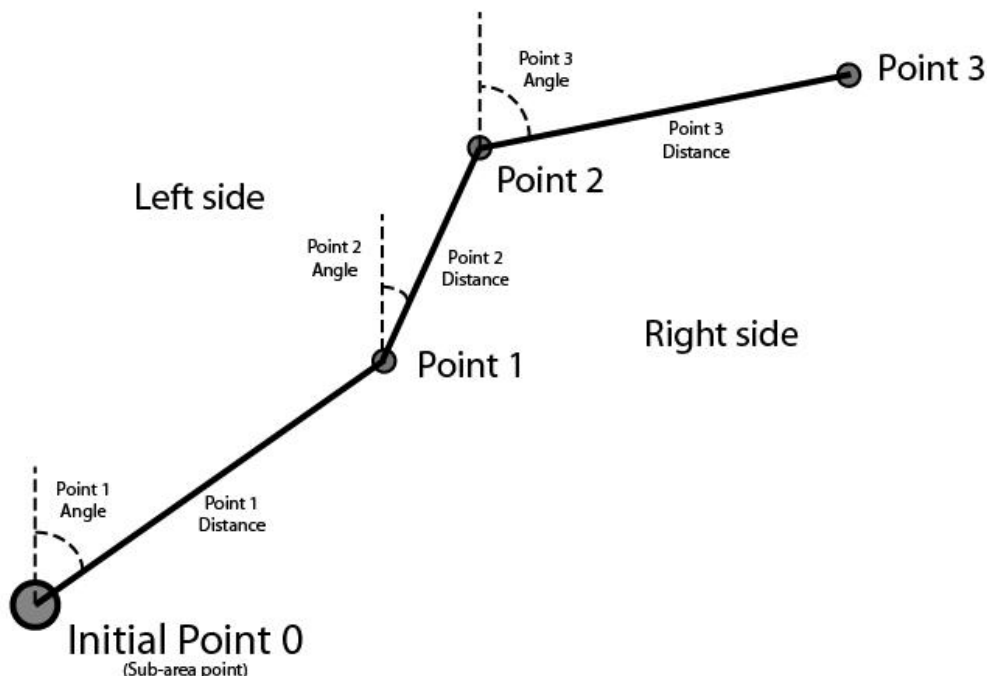


Figure 11-4

Graphic depiction of:

- 1) ice boundary between sea ice and open water, and
- 2) recommended route through the sea ice area

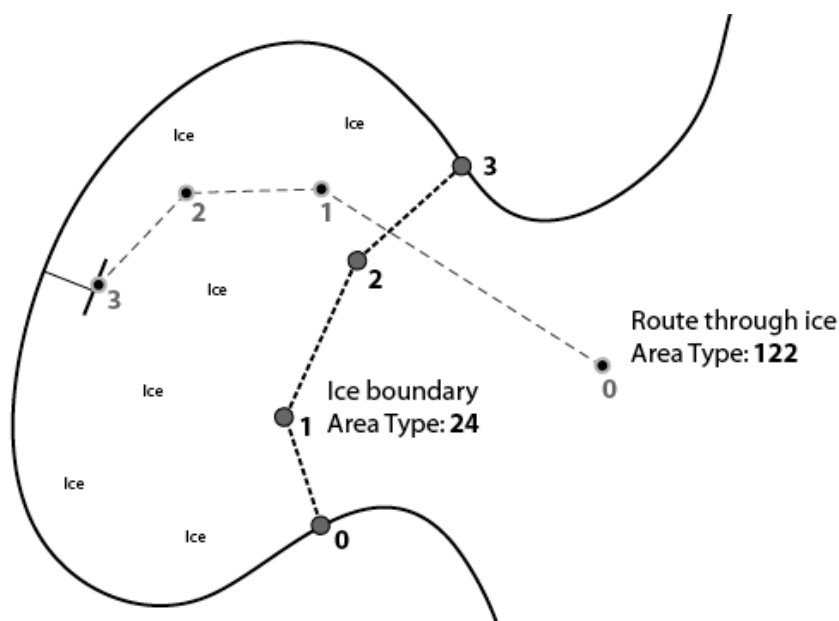


Figure 11-5
Graphic depiction of a storm front message

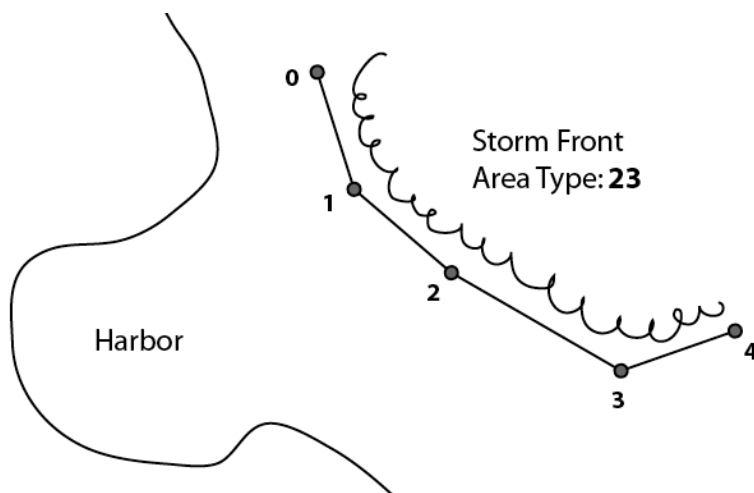


Table 11.9
Polygon

	Parameter	No. of bits	Description
Area Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set to 4 for Polygon (closed area). The polygon shape is closed by connecting the last defined point back to the initial point (Point 0). To be preceded by an Area Shape = 0 (circle)
	Scale Factor	2	This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1,000 (scale factor = 10^n where n =decimal value of scale factor)
	Point 1 Angle	10	True bearing in half-degree steps, from Point 0 to Point 1 or from the last Point in a Polygon directly preceding this Polygon. Degrees bearing = decimal value (0 - 719)*.5 720 = not available = default 721 - 1,023 (not for use)
	Point 1 Distance	10	Distance in metre steps, from Point 0 to Point 1 or from the last Point in a Polygon directly preceding this Polygon. This number (1 - 1,023) is multiplied by the scale factor to give a maximum of 1,023,000 metres (1,023 km).
	Point 2 Angle	10	True bearing in half-degree steps, from Point 1 to Point 2. Degrees bearing = decimal value (0 - 719)*.5 720 = not available (no point) = default 721 - 1,023 (not for use)
	Point 2 Distance	10	Distance in metre steps, from Point 1 to Point 2. This number (1 - 1,023) is multiplied by the scale factor to give a maximum of 1,023,000 metres (1,023 km). 0 = default (no point).
	Point 3 Angle	10	True bearing in half-degree steps, from Point 2 to Point 3. Degrees bearing = decimal value (0-719)*.5 720 = not available (no point) = default 721 - 1023 (reserved for future use)

	Parameter	No. of bits	Description
	Point 3 Distance	10	Distance in metre steps, from Point 2 to Point 3. This number (1 - 1,023) is combined with the scale factor to give a maximum of 1,023,000 metres (1,023 km). 0 = default (no point).
	Point 4 Angle	10	True bearing in half-degree steps, from Point 3 to Point 4. Degrees bearing = decimal value (0-719)*.5 720 = not available (no point) = default 721 - 1,023 (not for use)
	Point 4 Distance	10	Distance in metre steps, from Point 3 to Point 4. This number (1 - 1,023) is multiplied by the scale factor to give a maximum of 1,023,000 metres (1,023 km). 0 = default (no point).
	Spare	2	Not used. Set to zero.

Table 11.10
Associated text

	Parameter	No. of bits	Description
Area Notice Sub-area	Area Shape	3	Defines the shape of the area. Set 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	84	14 characters 6-bits ASCII characters, as defined in ITU-R M. 1371-3, Table 44. If less than 14 characters are required, then the remainder of the field should be filled with "@" characters.
	Spare	0	Not used. Set to zero.

Table 11.11
Notice Description

0	Caution Area: Marine mammals habitat	32	Restricted Area: Fishing prohibited	64	Distress Area: Vessel disabled and adrift	96	Chart Feature: Sunken vessel
1	Caution Area: Marine mammals in area – reduce speed	33	Restricted Area: No anchoring.	65	Distress Area: Vessel sinking	97	Chart Feature: Submerged object
2	Caution Area: Marine mammals in area – stay clear	34	Restricted Area: Entry approval required prior to transit	66	Distress Area: Vessel abandoning ship	98	Chart Feature: Semi-submerged object
3	Caution Area: Marine mammals in area – report sightings	35	Restricted Area: Entry prohibited	67	Distress Area: Vessel requests medical assistance	99	Chart Feature: Shoal area
4	Caution Area: Protected habitat – reduce speed	36	Restricted Area: Active military OPAREA	68	Distress Area: Vessel flooding	100	Chart Feature: Shoal area due north
5	Caution Area: Protected habitat – stay clear	37	Restricted Area: Firing – danger area.	69	Distress Area: Vessel fire/explosion	101	Chart Feature: Shoal area due east
6	Caution Area: Protected habitat – no fishing or anchoring	38	Restricted Area: Drifting Mines	70	Distress Area: Vessel grounding	102	Chart Feature: Shoal area due south
7	Caution Area: Derelicts (drifting objects)	39	(reserved for future use)	71	Distress Area: Vessel collision	103	Chart Feature: Shoal area due west
8	Caution Area: Traffic congestion	40	Anchorage Area: Anchorage open	72	Distress Area: Vessel listing/capsizing	104	Chart Feature: Channel obstruction
9	Caution Area: Marine event	41	Anchorage Area: Anchorage closed	73	Distress Area: Vessel under assault	105	Chart Feature: Reduced vertical clearance
10	Caution Area: Divers down	42	Anchorage Area: Anchoring prohibited	74	Distress Area: Person overboard	106	Chart Feature: Bridge closed
11	Caution Area: Swim area	43	Anchorage Area: Deep draft anchorage	75	Distress Area: SAR area	107	Chart Feature: Bridge partially open
12	Caution Area: Dredge operations	44	Anchorage Area: Shallow draft anchorage	76	Distress Area: Pollution response area	108	Chart Feature: Bridge fully open
13	Caution Area: Survey operations	45	Anchorage Area: Vessel transfer operations	77	(reserved for future use)	109	(reserved for future use)

14	Caution Area: Underwater operation	46	(reserved for future use)	78	(reserved for future use)	110	(reserved for future use)
15	Caution Area: Seaplane operations	47	(reserved for future use)	79	(reserved for future use)	111	(reserved for future use)
16	Caution Area: Fishery – nets in water	48	(reserved for future use)	80	Instruction: Contact VTS at this point/juncture	112	Report from ship: Icing info
17	Caution Area: Cluster of fishing vessels	49	(reserved for future use)	81	Instruction: Contact Port Administration at this point/juncture	113	(reserved for future use)
18	Caution Area: Fairway closed	50	(reserved for future use)	82	Instruction: Do not proceed beyond this point/juncture	114	Report from ship: Miscellaneous information – define in Associated text field
19	Caution Area: Harbour closed	51	(reserved for future use)	83	Instruction: Await instructions prior to proceeding beyond this point/juncture	115	(reserved for future use)
20	Caution Area: Risk (define in Associated text field)	52	(reserved for future use)	84	Proceed to this location – await instructions	116	(reserved for future use)
21	Caution Area: Underwater vehicle operation	53	(reserved for future use)	85	Clearance granted – proceed to berth	117	(reserved for future use)
22	(reserved for future use)	54	(reserved for future use)	86	(reserved for future use)	118	(reserved for future use)
23	Environmental Caution Area: Storm front (line squall)	55	(reserved for future use)	87	(reserved for future use)	119	(reserved for future use)
24	Environmental Caution Area: Hazardous sea ice	56	Security Alert – Level 1	88	Information: Pilot boarding position	120	Route: Recommended route
25	Environmental Caution Area: Storm warning (storm cell or line of storms)	57	Security Alert – Level 2	89	Information: Icebreaker waiting area	121	Route: Alternative route
26	Environmental Caution Area: High wind	58	Security Alert – Level 3	90	Information: Places of refuge	122	Route: Recommended route through ice
27	Environmental Caution Area: High waves	59	(reserved for future use)	91	Information: Position of icebreakers	123	(reserved for future use)

28	Environmental Caution Area: Restricted visibility (fog, rain, etc.)	60	(reserved for future use)	92	Information: Location of response units	124	(reserved for future use)
29	Environmental Caution Area: Strong currents	61	(reserved for future use)	93	VTS active target	125	Other – Define in associated text field
30	Environmental Caution Area: Heavy icing	62	(reserved for future use)	94	Rouge or suspicious vessel	126	Cancellation – cancel area as identified by Message Linkage ID
31	(reserved for future use)	63	(reserved for future use)	95	Vessel requesting non-distress assistance	127	Undefined (default)

12 Environmental

12.1 This message provides environmental information from 1 to 8 sensor reports (e.g., 1 sensor report uses 2 slots while a message with 8 sensor reports can use up to 5 slots). Each sensor report carries the dynamic or static information relating to a specific sensor.

12.2 Each Environmental Message has 56 bits of standard header, with 12 bits available for payload. Each sensor report has 27 bits of common data leaving 85 bits for sensor data. Table 12.3 provides the framework for the sensor report.

12.2.1 Table 12.4 outlines a variety of sensor types that can be transmitted using this message.

12.2.2 The sensor data is defined in accordance to the sensor type. Tables 12.5 to 12.15 provide details for the 85 bits of information for each sensor report type. In each case "Sensor not available" means that the specific reading is not ever possible from that sensor location and "Data not available" means that the reading is possible but is not available for the current report (i.e. the sensor could be malfunctioning).

Table 12.1
Environmental

Parameter		No. of bits	Description
Standard Message Header	Message ID	6	Identifier for Message 8; Set to 8 (broadcast, no acknowledgement).
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated (see ITU-R M.1317, Annex 2, § 4.6.1). 0 - 3 0 = default 3 = do not repeat any more Set to 0 (default).
	Source MMSI	30	MMSI number of source station. Varies according to the transmitter ID.
	Spare	2	Not used. Set to zero.
Binary Data	Designated Area Code	10	DAC = 001
	Function Identifier	6	FI = 26
	Application Data	Max 952	From 1 to 8 sensor reports, each structured as in Table 12.3. The total number of reports is determined by the receiver based on the length of the data.
Total		max 1,008	Occupies 2 - 5 slots. (see Table 12.2)

Table 12.2
Number of slots

Number of bits used	168	280	392	504	616	728	840	952
Number of slots required (168 bits in first 210 in 2-5)	1	2 (max 378)	3 (max 588)	3	4 (max 798)	4	5 (max 1,008)	5

Table 12.3
Environmental message – Sensor report framework

Parameter	No of bits	Description
Report Type	4	Environmental Report Type as defined in Table 12.4
Time Stamp		UTC date and time.
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default
Site ID	7	Binary identifier of sensor site, combined with transmitter MMSI to fully identify sensor site (i.e. there can be more than one physical sensors, each one reporting different data types at a sensor site)
Sensor Data	85	Sensor data according to the sensor type (see Tables 12.5 - 12.15)
Total	112	

Table 12.4
Environmental Message Sensor Report Types

Value	Description
0	Site Location
1	Station ID
2	Wind
3	Water level
4	Current Flow (2D)
5	Current Flow (3D)
6	Horizontal Current Flow
7	Sea State
8	Salinity
9	Weather
10	Air gap/Air draft
11-15	(reserved for future use)

Table 12.5
Site location report

Parameter	No. of bits	Description
Longitude	28	Longitude in 1/10,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
Latitude	27	Latitude in 1/10,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default
Altitude	11	Altitude of the sensor relative to MSL, in 0.1 metre steps. 0.0 - 200.0 metres 2,001 = altitude 200.1 metres or greater 2,002 = not available = default 2,003 - 2,046 (reserved for future use)
Sensor Owner	4	Owner of the sensor/responsible for the sensor data. 0 = unknown = default 1 = hydrographic office 2 = inland waterway authority 3 = coastal directorate 4 = meteorological service 5 = port authority 6 = coast guard 7 - 13 (reserved for future use) 14 (reserved for regional use)
Data Timeout	3	Length of time that data is valid (i.e. should not be used after time-out period). 0 = no time-out period = default 1 = 10 min 2 = 1 hr 3 = 6 hrs 4 = 12 hrs 5 = 24 hrs 6 - 7 (reserved for future use)
Spare	12	Not used. Set to zero
Total	85	

Table 12.6
Station ID Report

Parameter	No. of bits	Description
Name	84	Agency reference number. Fourteen characters 6-bits ASCII as defined in ITU-R M.1371-3, Table 44.
Spare	1	Not used. Set to zero.
Total	85	

Table 12.7
Wind Report

Parameter	No. of bits	Description
Average Wind Speed	7	Average of wind speed values over the last 10 minutes, in 1 knot steps. 0 - 120 knots 121 = wind 121 knots greater 122 = not available = default 123 - 126 (reserved for future use)
Wind Gust	7	Max wind speed reading during the last 10 minutes, in 1 knot steps. 0 - 120 knots 121 = wind 121 knots or greater 122 = not available = default 123 - 126 (reserved for future use)
Wind Direction	9	Direction of the average wind over the last 10 minutes, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (not for use)
Wind Gust Direction	9	Direction of the maximum wind over the last 10 minutes, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (not for use)
Sensor Data Description	3	Type of data from Wind sensor, as defined in Table 12.16.
Forecast Wind Speed	7	Predicted average wind speed, in 1 knot steps. 0 - 120 knots 121 = wind 121 knots or greater 122 = not available = default 123 - 126 (reserved for future use)
Forecast Wind Gust	7	Predicted maximum wind speed, in 1 knot steps. 0 - 120 knots 121 = wind 121 knots or greater 122 = not available = default 123 - 126 (reserved for future use)

Parameter	No. of bits	Description
Forecast Wind Direction	9	Predicted direction of the average wind, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (not for use)
Valid Time of Forecast		Valid UTC date and time of forecast.
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default
Duration	8	Duration of the validity of the forecast from the time of the forecast, in 1 minute steps. 1 - 255 minutes 0 = cancel forecast = default
Spare	3	Not used. Set to zero.
Total	85	

Table 12.8
Water level report

Parameter	No. of bits	Description
Water Level Type	1	Type of water level. 0 = relative to reference datum 1 = water depth
Water Level	16	Water level, in 0.1 metre steps (as per 2's complement). -327.67 to +327.67 metres -32767 = -327.67 metres or less +32767 = +327.67 metres or greater -32768 = not available = default
Water Level Trend	2	0 = increasing 1 = decreasing 2 = steady 3 = not available = default

Parameter	No. of bits	Description
Vertical Reference Datum	5	Type of datum used. 0 = Mean Lower Low Water (MLLW) 1 = International Great Lakes Datum (IGLD-85) 2 = Local river datum 3 = Station Datum (STND) 4 = Mean Higher High Water (MHHW) 5 = Mean High Water (MHW) 6 = Mean Sea Level (MSL) 7 = Mean Low Water (MLW) 8 = National Geodetic Vertical Datum (NGVD-29) 9 = North American Vertical Datum (NAVD-88) 10 = World Geodetic System (WGS-84) 11 = Lowest Astronomical Tide (LAT) 12 = pool 13 = gauge 14 = unknown/not available = default 15 - 30 (reserved for future use)
Sensor Data Description	3	Type of data from Water Level sensor, as defined in Table 12.16.
Forecast Water Level Type	1	Type of water level for forecast 0 = relative to reference datum 1 = water depth
Forecast Water Level	16	Forecast water level, in 0.1 metre steps (as per 2's complement). -327.67 to +327.67 metres -32767 = -327.67 metres or less +32767 = +327.67 metres or greater -32768 = not available = default
Valid Time of Forecast		Valid UTC date and time of Forecast.
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default
Duration	8	Duration of the validity of the forecast from the time of the forecast, in 1 minute steps. 1 - 255 minutes 0 = cancel forecast = default
Spare	17	Not used. Set to zero.
Total	85	

Table 12.9
Current Flow Report: two-dimensions (x & y)

Parameter	No. of bits	Description
Current Speed 1	8	Speed of Current 1 measured at a chosen level below the sea surface, in 0.1 knot steps. 0.0 - 24.5 knots 246 = speed 24.6 knots or greater 247 = data not available = default 248 - 255 (reserved for future use)
Current Direction 1	9	Direction of Current 1, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Current Measuring level 1	9	Measurement level of Current 1 below sea surface, in 1 metre steps. 0 – 360 metres 361 = 361 m or greater 362 = not available = default 363 - 511 (reserved for future use)
Current Speed 2	8	Speed of Current 2 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as Current Speed 1)
Current Direction 2	9	Direction of Current 2, in 1 degree steps. (Same as Current Direction 1)
Current Measuring level 2	9	Measurement level of Current 2 below sea surface, in 1 metre steps. (Same as Current Measuring level 1)
Current Speed 3	8	Speed of Current 3 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as Current Speed 1)
Current Direction 3	9	Direction of Current 3, in 1 degree steps. (Same as Current Direction 1)
Current Measuring level 3	9	Measurement level of Current 3 below sea surface, in 1 metre steps. (Same as Current Measuring level 1)
Sensor Data Description	3	Type of data from current sensor, as defined in Table 12.16.
Spare	4	Not used. Set to zero.
Total	85	

Table 12.10
Current flow Report: 3-dimensions (x, y & z)

Parameter	No. of bits	Description
Current Vector Component North (u) 1	8	Speed of North component of Current 1 measured at a chosen level below the sea surface, in 0.1 knot steps. 0.0 - 24.5 knots 246 = speed 24.6 knots or greater 247 = not available = default 248 - 254 (reserved for future use)
Current Vector Component East (v) 1	8	Speed of East component of Current 1 measured at a chosen level below the sea surface, in 0.1 knot steps. 0.0 - 24.5 knots 246 = speed 24.6 knots or greater 247 = not available = default 248 - 254 (reserved for future use)
Current Vector Component Up (z) 1	8	Speed of Up component of Current 1 measured at a chosen level below the sea surface, in 0.1 knot steps. 0.0 - 24.5 knots 246 = speed 24.6 knots or greater 247 = not available = default 248 - 254 (reserved for future use)
Current Measuring level 1	9	Measurement level of Current 1 below sea surface, in 1 metre steps. 0 - 360 metres 361 = not available = default 362 - 511 (reserved for future use)
Current Vector Component North (u) 2	8	Speed of North component of Current 2 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as for Current 1)
Current Vector Component East (v) 2	8	Speed of East component of Current 2 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as for Current 1)
Current Vector Component Up (z) 2	8	Speed of Up component of Current 2 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as for Current 1)
Current Measuring level 2	9	Measurement level of Current 2 below sea surface, in 1 metre steps. (Same as for Current 1)
Sensor Data Description	3	Type of data from Current sensor, as defined in Table 12.16.
Spare	16	Not used. Set to zero.
Total	85	

Table 12.11
Horizontal current flow report

Parameter	No. of bits	Description
Current Reading 1 Bearing	9	Bearing of Current 1 reading from sensor position, in 1 degree steps. 0 - 359 degrees 360 = data not available = default 361 = sensor not available 362 - 511 (reserved for future use)
Current Reading 1 Distance	7	Distance of Current 1 reading from sensor position, in 1 metre steps. 0 - 120 metres 121 = 121 m or greater 122 = not available = default 123 - 127 (reserved for future use)
Current 1 Speed	8	Speed of Current 1 measured at a chosen level below the sea surface, in 0.1 knot steps. 0.0 - 24.5 knots 246 = speed 24.6 knots or greater 247 = not available = default 248 - 255 (reserved for future use)
Current 1 Direction	9	Direction of Current 1, in 1 degree steps. 0 - 359 degrees 360 = data not available = default 361 - 511 (not for use)
Current 1 Measuring level	9	Measurement level of Current 1 below sea surface, in 1 metre steps. 0 - 360 metres 361 = level 361 metres or greater 362 = data not available = default 363 - 511 (reserved for future use)
Current Reading 2 Bearing	9	Bearing of Current 2 reading from sensor position, 1 degree steps. (Same as for Current 1 bearing)
Current Reading 2 Distance	7	Distance of Current 2 reading from sensor position, 1 metre steps. (Same as for Current 1 Distance)
Current 2 Speed	8	Speed of Current 2 measured at a chosen level below the sea surface, in 0.1 knot steps. (Same as for Current 1 Speed)
Current 2 Direction	9	Direction of Current 2, in 1 degree steps. (Same as for Current 1 Direction)
Current 2 Measuring level	9	Measurement level of Current 1 below sea surface, in 1 metre steps. (Same as for Current 1 level)
Spare	1	Not used. Set to zero.
Total	85	

Table 12.12
Sea state report

Parameter	No. of bits	Description
Swell Height	8	Height of the swell, in 0.1 metre steps. 0.0 – 24.5 metres 246 = height 24.6 metres or greater 247 = not available = default 248 - 255 (reserved for future use)
Swell Period	6	Swell period in seconds, in 1 second steps. 0 - 60 seconds 61 = not available = default 62 - 63 (reserved for future use)
Swell Direction	9	Direction of swells, in 1 degree steps. 0 – 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Sea State	4	Beaufort Scale, as defined in Table 1.2
Sensor Data Description	3	Type of data from Swell sensor, as defined in Table 12.16
Water Temperature	10	Temperature of the water in degrees Celsius (as per 2's complement), in 0.1 degree steps. -10.0 to + 50.0 degrees Celsius temp = decimal value/10 - 10 for decimal = 0 - 600 601 = not available = default 602 - 1,023 (reserved for future use)
Water Temperature Depth	7	Depth of water temperature sensor, in 0.1 metre steps. 0 - 12.0 metres 121 = depth 12.1 metres or greater 122 = not available = default 123 - 126 (reserved for future use)
Sensor Data Description	3	Type of data from Water Temperature sensor, as defined in Table 12.16.
Significant Wave Height	8	Height of the waves, in 0.1 metre steps. 0.0 - 24.5 metres 246 = height 24.6 m or greater 247 = not available = default 248 - 255 (reserved for future use)
Wave Period	6	Wave period, in 1 second steps. 0 - 60 seconds 61 = not available = default 62- 63 (reserved for future use)
Wave Direction	9	Direction of waves, in 1 degree steps. 0 - 359 degrees 360 = not available = default 361 - 511 (reserved for future use)
Sensor Data Description	3	Type of data from Wave sensor, as defined in Table 12.16.

Parameter	No. of bits	Description
Salinity	9	Salinity in 0.1‰ (ppt) steps. 0.0 - 50.0‰ 501 = salinity 50.1‰ or greater 502 = data not available = default 503 = sensor not available 504 - 511 (reserved for future use)
Total	85	

Table 12.13
Salinity report

Parameter	No. of bits	Description
Water Temperature	10	Temperature of water in degrees Celsius, in 0.1 degree steps. -10.0 to + 50.0 degrees temp = decimal value/10 - 10 for decimal = 0 - 600 601 = data not available 602 = sensor not available = default 603 - 1,023 (reserved for future use)
Conductivity	10	Water conductivity in Siemens/metre, in 0.01 S/m steps. 0.0 - 7.00 Siemens/metre 7.01 = conductivity 7.01 or greater 702 = data not available 703 = sensor not available = default, 704 - 1,023 (reserved for future use)
Water Pressure	16	Pressure of water in decibars, in 0.1 decibars steps. 0.0 to 6000.0 decibars 6000.1 = pressure 6000.1 or greater 60002 = data not available 60003 = sensor not available = default 60004 - 65535 (reserved for future use)
Salinity	9	Salinity in 0.1‰ (ppt) steps. 0.0 - 50.0 ‰ 50.1 = salinity 50.1 or greater 502 = data not available = default 503 = sensor not available 504 - 511 (reserved for future use)
Salinity Type	2	Type of salinity. 0 = measured 1 = calculated using PSS-78 2 = calculated using other method 3 (reserved for future use)
Sensor Data Description	3	Type of data from Salinity sensor, as defined in Table 12.16.
Spare	35	Not used. Set to zero.
Total	85	

Table 12.14
Weather report

Parameter	No. of bits	Description
Air Temperature	11	Dry bulb temperature in degrees Celsius (as per 2's complement), in 0.1 degree steps. -60.0 to +60.0 degrees Celsius -1,024 = data unavailable = default -1,023 to -601 (reserved for future use) 601 - 1,023 (reserved for future use)
Sensor Data Description	3	Type of data from Air Temperature sensor, as defined in Table 12.16.
Precipitation (type)	2	According to WMO 0 = rain 1 = snow 2 = rain and snow 3 = other
Horizontal Visibility	8	Visibility in Nautical Miles, in 0.1 NM steps. 0.0 – 24.0 NM 241 = visibility 24.1 NM or greater 242 = data not available 243 = sensor not available = default 244 - 255 (reserved for future use)
Dew Point	10	Dew point temperature in degrees Celsius (as per 2's complement), in 0.1 degree steps. -20.0 to +50.0 degrees Celsius 501 = not available = default 502 - 511 (reserved for future use) -511 to -201 (reserved for future use)
Sensor Data Description	3	Type of data from Dew Point sensor, as defined in Table 12.16.
Air Pressure	9	Air pressure, defined as pressure reduced to sea level, in 1 hPa steps. 0 = pressure 800 hPa or less 1 - 401 = 800 - 1200 hPa 402 = pressure 1201 hPa or greater 403 = data not available = default 404 - 511 (reserved for future use)
Air Pressure Trend	2	Air pressure trend 0 = steady 1 = decreasing 2 = increasing 3 = undefined = default
Sensor Data Description	3	Type of data from air pressure sensor, as defined in Table 12.16.
Salinity	9	Salinity in 0.1‰ (ppt) steps. 0.0 - 50.0 ‰ 501 = salinity 50.1 or greater 511 = data not available = default 512 = sensor not available 503 - 511 (reserved for future use)
Spare	25	Not used. Set to zero.
Total	85	

Table 12.15
Air gap/Air draught

Parameter	No. of bits	Description
Air Draught	13	Vertical distance measured from the ship's waterline to the highest point on the ship, in 0.1 metre steps. 1 - 81.90 metres 8,191 = distance 81.91 metres or greater 0 = data not available = default
Air Gap	13	Vertical distance measured from the surface of the water to the sensor, in 0.1 metre steps. 1 - 81.9 metres 8,191 = distance 81.91 metres or greater 0 = data not available = default
Air Gap Trend	2	Trend of the air gap measurement. 0 = steady 1 = rising 2 = falling 3 = no data = default
Forecast Air Gap	13	The forecast vertical distance measured from the surface of the water to the sensor, in 0.01 metre steps. This is the measurement for the time of the forecast. 1 - 81.90 metres 8,191 = distance 81.91 metres or greater 0 = data not available = default
Valid Time of the Forecast		Valid UTC date and time of the forecast.
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default 25 - 31 (reserved for future use)
UTC Minute	6	0 - 59 60 = not available = default 61 - 63 (reserved for future use)
Spare	28	Not used. Set to zero.
Total	85	

Table 12.16
Type of data from sensor

Value	Description
0	no data = default
1	raw real time
2	real time with Quality Control
3	predicted (based historical statistics)
4	forecast (predicted, refined with real-time information)
5	Nowcast (a continuous forecast)
6	(reserved for future use)
7	sensor not available

13 Route information

13.1 This message allows the communication of pertinent vessel routing information. It should only be used in when important route information (e.g., mandatory or recommended route(s)) – not already provided by current official nautical charts or publications – needs to be relayed by authorities or vessels.

13.2 This message can be broadcast or addressed, depending on which alternative is more appropriate.

13.3 The information is time-dependent (i.e. has start date and time and duration).

13.4 In order to allow advance notice, this message should be transmitted prior to the start date and time specified for the routing information. It should not be transmitted more than one day in advance.

13.5 This message should not be transmitted beyond the designated date and time except for a cancellation message. A cancellation message can be transmitted using the same Message Linkage ID with Route Type of 31 (cancellation), a Duration of 0 and start date and time fields all set to not available.

13.6 ECDIS/ECS software should automatically remove the contents of the Route Information binary message from the display after the end date and time or after receiving a cancellation message.

13.7 Up to 5-slot messages can be created, however messages with more than 3 slots should be avoided.

13.8 The Message Linkage ID can be used to link additional text (e.g., a separate text message). However, the same source MMSI needs to be included in both the Route Information and additional Text Description message.

Table 13.1
Route information – (broadcast)

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Spare	2	Not used. Set to zero.
IAI	16	DAC = 001; FI = 27.

Parameter	No. of bits	Description
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 first six digits of the source MMSI uniquely identify the sent message. 1 - 1,023 0 = not available = default
Sender Classification	3	0 = ship = default 1 = authority 2 - 7 (reserved for future use)
Route Type	5	0 = not available = default 1 = mandatory route 2 = recommended route 3 = alternative route 4 = recommended route through ice 5 = ship route plan 6 - 30 (reserved for future use) 31 = cancellation (cancel route as identified by Message Linkage ID)
Start Date and Time		Start UTC date and time.
UTC Month	4	1 - 12 0 = not available = default
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default
Duration	18	Minutes until end of validity of the route. Measured from start time of Route Information. 0 = cancel route 262,143 = not available = default
Number of Waypoints	5	Number of Waypoints 1 - 16 0 = no waypoint = default 17 - 31 (not used)
Waypoints	n x 55	Variable number of waypoints 1 - 16 (55 bit each), refer to Table 13.3. The number of waypoints is determined by the length of the message.
Spare	0	Not used. Set to zero.
Total	172 - 997	Occupies 2 - 5 slots (see Table 13.4)

Table 13.2
Route information – (addressed)

Parameter	No. of bits	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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Sequence Number	2	0 - 3; refer to ITU-R M.1371-3, Annex 2, § 5.3.1.
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. Set to zero.
IAI	16	DAC = 001; FI = 28 (See Rec. ITU-R M.1371-3, Annex 5, § 2.1)
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 first six digits of the source MMSI uniquely identify the sent message. 1 - 1,023 0 = not available = default
Sender Classification	3	0 = ship = default 1 = authority 2 - 7 (reserved for future use)
Route Type	5	0 = not available = default 1 = mandatory route 2 = recommended route 3 = alternative route 4 = recommended route through ice 5 = ship route plan 6 - 30 (reserved for future use) 31 = cancellation (cancel route as identified by Message Linkage ID)
Start Date and Time		Start UTC date and time.
UTC Month	4	1 - 12 0 = not available = default
UTC Day	5	1 - 31 0 = not available = default
UTC Hour	5	0 - 23 24 = not available = default
UTC Minute	6	0 - 59 60 = not available = default

Parameter	No. of bits	Description
Duration	18	Minutes until end of validity of the route. Measured from start date and time of Route Information. 0 = cancel route 262,143 = not available = default
Number of Waypoints	5	Number of waypoints. 1 - 16 0 = no waypoint = default 17 - 31 (not used)
Waypoints	n x 55	Variable number of waypoints 1 - 16 (55 bit each), refer to Table 13.3. The number of waypoints is determined by the length of the message.
Spare		Not used. Set to zero.
Total	204 – 1,029	Occupies 2 - 5 slots (see Table 13.4)

Table 13.3
Waypoints

Parameter	No. of bits	Description
WP i. Longitude	28	Longitude in 1/10,000 min, ± 180 degrees as per 2's complement (East = positive, West = negative). 181 = not available = default
WP i. Latitude	27	Latitude in 1/10,000 min, ± 90 degrees as per 2's complement (North = positive, South = negative). 91 degrees = not available = default

Table 13.4
Number of slots

Number or waypoints transmitted	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Number of slots used for a broadcast message	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
Number of slots used for an addressed message	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	5

14 Text description

14.1 This message provides a text description in combination with other AIS Application-Specific Message.

14.2 This message can be broadcast or addressed, but must be the same as the main message that it is linked to.

14.3 The Message Linkage ID is used to link the Text Description message to another AIS Application-Specific Message (e.g., Area Notice or Route Information). The same source MMSI must be used to send both the main message and Text Description message.

14.4 Up to 5-slot messages can be created, however messages greater than 3 slots should be avoided.

Table 14.1
Text description – (broadcast)

Parameter	No. of 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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Spare	2	Not used. Set to zero.
IAI	16	DAC = 001; FI = 29
Message Linkage ID	10	Used to link the Text Description message with a main message. The Connection ID and source MMSI MID uniquely identifies the main message. 1 - 1,023 0 = not available = default
Text String	6 - 966	Free text 1 - 161 characters 6-bits ASCII. If applicable, recommended to use IMO Standard Marine Communication Phrases (SMCP) (resolution A.918(22)). Number of slots used should be minimized, refer to Table 14.2.
Spare	0	Not used. Set to zero.
Total	72 – 1,032	Occupies 1 - 5 slots (see Table 14.2)

Table 14.2
Number of slots if sent as a broadcast message

Number of characters in the message	1-11	12-49	50-86	87-123	124-161
Number of slots used	1	2	3	4	5

Table 14.3
Text description – (addressed)

Parameter	No. of bits	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. 0 - 3 0 = default 3 = do not repeat anymore
Source ID	30	MMSI number of source station.
Sequence Number	2	0 - 3; refer to § 5.3.1, Annex 2 of ITU-R M.1371-3.
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. Set to zero.
IAI	16	DAC = 001; FI = 30 (See Rec. ITU-R M.1371-3, Annex 5, § 2.1.
Message Linkage ID	10	Used to link the Text Description message with a main message. The Connection ID and source MMSI MID uniquely identifies the main message. 1 - 1,023 0 = not available = default
Text String	6 - 930	Free text 1 - 155 characters 6-bits ASCII). If applicable, recommended to use IMO Standard Marine Communication Phrases (SMCP) (resolution A.918(22)). Number of slots used should be minimized, refer to Table 14.4.
Spare	0	Not used. Set to zero.
Total	104 - 1,028	Occupies 1 - 5 slots (see Table 14.4).

Table 14.4
Number of slots if sent as an addressed message

Number of characters in the message	1-6	7-43	44-81	82-118	119-155
Number of slots used	1	2	3	4	5