ANNEX 1

GUIDANCE ON THE USE OF AIS APPLICATION SPECIFIC MESSAGES

1. This document provides an overview of the purpose and scope of AIS Application Specific Messages, and provides guidance on their use. Messages that are recommended for international use are described in detail.

System requirements

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

3. The display capability of AIS Application Specific Messages is not part of the mandatory functions of the MKD (Minimum Keyboard and Display). The display of the information content of Application Specific Messages requires additional hardware and dedicated software in addition to the AIS equipment.

4. The generation and transmission of Application Specific Messages also requires a dedicated software and suitable equipment for entering the information.

Purpose and scope of AIS Application Specific Messages

5. Automatic Identification System (AIS) was originally developed as a means for positive identification and tracking of vessels. 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 is 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. Various types of messages were developed for specific applications.

6. Binary Messages may be either "Addressed" or "Broadcast." Recommendation ITU-R M.1371 specifies the technical characteristic and the structure of the Binary Messages. The content is tailored to different applications. IMO defines the content and format of messages for an international use.

7. To avoid system overload, the number of binary messages and the frequency of transmission should be limited. Therefore, Application Specific Messages should be approved only if there is a high 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.

8. To obtain a high probability for reception, message transmissions should be made with access method FATDMA in reserved time slots. IALA Recommendation A124 Ed. 1.3 (Automatic Identification System (AIS) Shore Station and Networking Aspect relating to the AIS Service) recommends FATDMA allocations not exceeding three

(3) consecutive slots. As a general rule should therefore messages occupying more than three (3) slots be avoided, unless there only is a low load on the VHF Data Link.

9. Application Specific Messages may provide a variety of capabilities for pre-defined information packages. For example, they may permit:
    - ships to report information to other ships and shore stations
    - shore stations to report navigation information, conditions, and warnings
    - ship reporting to be simplified

    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, binary messages may reduce verbal communications and enhance reliable information exchange and reduce operator's workload. Binary Messages are not intended to replace standard services such as GMDSS and SAR.

Use of AIS Binary Messages

10 The use of Binary Messages is optional. Binary Messages may be generated manually or automatically. Pre-defined forms for each binary message type may be used to generate the message.

    Since the use of binary messages places an additional load on the VHF data link, care must be taken not to impair the main functions of AIS for ship identification and tracking. In this regard, longer binary messages may adversely impact the VHF data link and should be avoided.

10 To ensure the safe use of the VHF-data link, it may be beneficial that Contracting Governments appoint one national administration with a task to monitor and coordinate the use of the VHF-data link within its area of responsibility.

    To determine if there is a risk for over-load of the VHF data-link, the operational requirements on coverage and received reporting rates for the main function of AIS must be compared with the actual performance. If the actual received reporting rate from ships within the required reporting area falls below the required reporting rate and the basic technical prerequisites are at hand, it may indicate that there is an over-loading of the VHF-data-link.

11 Since the use of Application Specific Messages requires the use of non-mandatory shipborne equipment and software, it should not be expected that the information content in Application Specific Messages is capable of being received and displayed onboard all ships.

Messages Recommended for International Use

1) *Meteorological and hydrographic data*

Purpose

This message allows the distribution of meteorological and hydrological information. Should there be no positional information or time of measurement, this message should not be transmitted. If there is no data available, default value to be transmitted is the highest available binary value for that particular data field. It is to be displayed as .not available (not 9999 or zero or similar). This message takes 2 slots. Not all the information specified in the tables will be available at all stations. The interval between the broadcasting of this message should not exceed 12 minutes. Attribute of message: broadcast, shore station transmitting, no acknowledgement required.

Table 1 – Meteorological and Hydrographic data

Parameter	No. 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.
Source ID	30	MMSI number of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; **FI = 11**
Latitude	24	Measuring position, 0 to + /- 90 degrees, 1/1000th minute
Longitude	25	Measuring position, 0 to + /- 180 degrees, 1/1000th minute
Date and time	16	Time of transmission, Day, hour, minute, (ddhhmm in UTC) Bits 15-11: day; 1-31; 0=not available=default Bits 10-6: hour; 0-23; 24=not available=default Bits 5-0: minute; 0-59; 60=not available=default
Average wind speed	7	Average of wind speed values for the last 10 minutes.0-120 kts, 1 kt
Wind gust	7	Wind gust is the maximum wind speed value reading during the last 10 minutes, 0 - 120 kts, 1 kt
Wind direction	9	0 - 359 degrees ,1 degree
Wind gust direction	9	0 . 359 degrees, 1 degree
Air temperature	11	Dry bulb temperature - 60.0 to + 60.0 degrees Celsius0.1 of a degree
Relative humidity	7	0 . 100%, 1%
Dew point	10	- 20.0 - + 50.0 degrees, 0.1 degree
Air pressure	9	800 . 1200 hPa, 1 hPa
Air pressure tendency	2	0 = steady, 1 = decreasing, 2 = increasing
Horizontal visibility	8	0.0 . 25.0 NM, 0.1 NM
Water level (incl. tide)	9	Deviation from local chart datum, . .10.0 to + 30.0 m 0.1 m
Water level trend	2	0 = steady, 1 = decreasing, 2 = increasing
Surface current speed (incl. tide)	8	0.0 . 25.0 kts 0.1 kt
Surface current direction	9	0 . 359 degrees, 1 degree
Current speed, #2	8	Current measured at a chosen level below the sea surface, 0.0, 25.0 kts, 0.1kt.
Current direction, #2	9	0 . 359 degrees, 1 degree
Current measuring level, #2	5	Measuring level in m below sea surface , . 0 .30 m 1 m
Current speed, #3	8	0.0 . 25.0 knots, 0.1 knot
Current direction, #3	9	0 . 359 degrees, 1 degree
Current measuring level, #3	5	Measuring level in m below sea surface, 0 . 30 m, 1 m
Significant wave height	8	0.0 . 25.0 m, 0.1 m
Wave period	6	Period in seconds, 0 . 60 s, 1 s
Wave direction	9	0 . 359 degrees, 1 degree
Swell height	8	0.0 . 25.0 m, 0.1 m
Swell period	6	Period in seconds, 0 . 60 s, 1 s
Swell direction	9	0 . 359 degrees, 1 degree
Sea state	4	According to Beaufort scale (manual input?), 0 to 12, 1
Water temperature	10	-10.0 - + 50.0 degrees, 0.1 degree
Precipitation (type)	3	According to WMO
Salinity	9	0.0 . 50.0 ., 0.1.
Ice	2	Yes/No 0= No, 1= Yes
Spare	6	
Total	**352**	**Occupies 2 slots**

2) *Dangerous Cargo Indication*

<u>Purpose</u>

This message should be used in response to a request for a summary of the Dangerous Cargo Information from a competent authority. 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. The data is 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 (MRS and VTS) and for SAR, pollution or fire fighting or other shore-based authorities 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.

This message replaces Application 2 - "Dangerous Cargo Indication" (SN/Circ.236).

<u>Comments</u>

- The objective is to provide relevant information on the MARPOL and IMO code classification, and any divisions and categories of all carried dangerous cargoes.
- The objective is also to report the total quantity of dangerous cargo.
- In the message design, it is assumed that a vessel may carry cargo under several codes at the same time.
- The original Dangerous Cargo Indication binary message (SN/Circ.236) enables only the reporting of information on the "Main Dangerous Good". In many cases this is insufficient and the definition of "Main Dangerous Goods" is ambiguous.
- Due to security issues, it is proposed that INF Code is not considered in the message.
- This message should be variable in length, based on the number of reported of categories and divisions etc. of cargoes, occupying 1 - 3 slots (in similar manner as message application 7 in SN/Circ.236)
- In the message design, all reported cargoes are set to occupy the same amount of bits (4 + 13 bits) although, depending on code, some cargoes require only a smaller amount of bits.
- The BC code will be mandatory from 1 January 2011 and will be renamed International Maritime Solid Bulk Cargoes Code (IMSBC) (submitted for the approval of MSC 85 in 26 Nov - 5 Dec 2008).
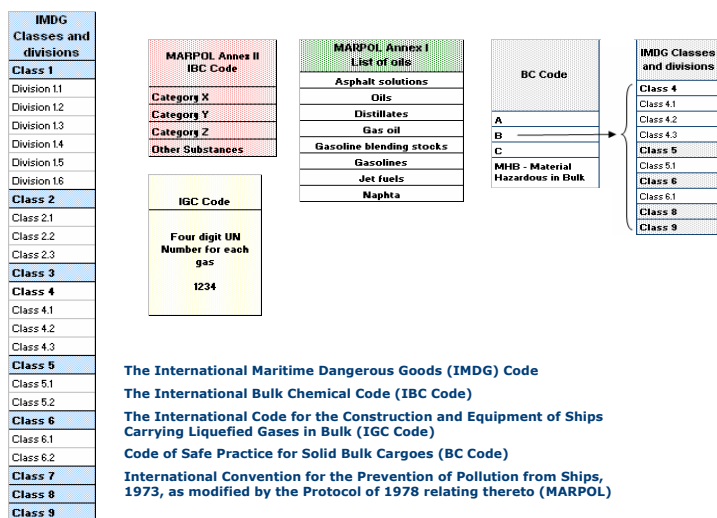
Figure 2.1 - Classification of dangerous cargo in MARPOL and IMO Codes

Table 2. 1 - Dangerous Cargo Indication - Addressed

Parameter	No. 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.
Destination ID	30	MMSI number of destination station
Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	Not used. Should be zero.
IAI	16	DAC = 001; **FI = 25** (See Rec. ITU-R M.1371-3 § 2.1, Annex 5)
Value of quantity of total amount of dangerous cargo	10	0 = Not available = default; 1 - 1023 = value of quantity
Unit of quantity of total amount of dangerous cargo	2	0 = Not available = default 1 = in kg 2 = in tonnes (10E3 kg) 3 = in 1.000 tonnes (10 E 6 kg)
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 to 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; 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 to 15 reserved for future use
Cargo 2	13	Optional; Content depends on code selected. Refer to tables below
Code under which cargo 28	4	Optional;

is carried		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 to 15 reserved for future use
Cargo 28	13	Optional; Content depends on code selected. Refer to tables below
Total	**Max 576**	1 – 2 cargoes: occupies 1 slot 3 – 15 cargoes: occupies 2 slots 16 – 28 cargoes: occupies 3 slots

Note: Each cargo should be structured as in Tables 1.3 – 1.6 depending on code used:

Table 2. 1 - IMDG Code

Parameter	No. bits	Description
IMDG class or division	7	0 = Not available (default) 1 to 9 Should not be used 10 to 99 First digit = main class, second digit = subclass or division (undefined subclasses and divisions should not be used) 100 to 127 Should not be used
Spare	6	Not used. Should be set to zero.
Total	**13**	

Table 2. 2 - IGC Code

Parameter	No. bits	Description
UN number	13	0 = Not available (default) 1 to 3363 Four digit UN number 3364 to 8191 Reserved for future use
Total Number of bits	**13**	

Table 2. 3 - BC Code (from 1.1.2011 IMSBC)

Parameter	No. bits	Description
BC class (from 1.1.2011 IMSBC)	3	0 = Not available (default) 1 = A 2 = B 3 = C 4 = MHB - Material Hazardous in Bulk 5 to 7 Reserved for future use
IMDG class	7	Only specified for class B 0 = Not available (default) 1 to 9 Should not be used 10 to 99 First digit = main class, second digit = subclass (undefined subclasses should not be used) 100 to 127 Should not be used
Spare	3	Not used. Should be set to zero.
Total	**13**	

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Table 2. 4 - MARPOL Annex I List of oils (Appendix 1)

Parameter	No. 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 to 15 Reserved for future use
Spare	9	Not used. Should be set to zero.
Total	**13**	

Table 2. 5 - MARPOL (Annex II IBC Code)

Parameter	No. bits	Description
#1 Category	3	0 = Not available (default) 1 = Category X 2 = Category Y 3 = Category Z 4 = Other Substances 5 to 7 Reserved for future use
Spare	10	Not used. Should be set to zero.
Total	**13**	

3) *Tidal window*

<u>Purpose</u>

This message should be used to inform vessels about tidal windows which allow a vessel the safe passage of a fairway. The message includes predictions of current speed and current direction. In this example, three points of tidal information are given. Attributes of message: addressed, shore station transmitting, acknowledgement required.

Table 3 – Tidal Window

Parameter	No. 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
Sequence Number	2	0 - 3; refer to § 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. Should be zero
IAI	16	DAC = 001; **FI =14**
UTC month	4	1-12; 0 = UTC month not available = default; 13-15 not used
UTC day	5	1-31; 0 = UTC day not available = default
Position #1 Lat	27	1/10 000 min (±90 degrees, North = positive, South = negative; 91 degrees = not available = default).
Position #1 Lon	28	1/10 000 min (±180 degrees, East = positive, West = negative; 181 degrees = not available = default).
From UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31not used
From UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
To UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31not used
To UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
Current direction predicted #1	9	Current direction in degrees. (valid range 0-359, 360 = not available = default).
Current speed predicted #1	7	Current speed in 0,1 knots. (valid range 0-126; 127 = not available = default).
Position #2 Lat	27	1/10 000 min (±90 degrees, North = positive, South = negative; 9 degrees = not available = default).
Position #2 Lon	28	1/10 000 min (±180 degrees, East = positive, West = negative; 181 degrees = not available = default).
From UTC hour From UTC minute	5 6	0-23; 24 = UTC hour not available = default; 25-31not used 0-59; 60 = UTC minute not available = default; 61-63 unused
Current direction predicted #2	9	Current direction in degrees. (valid range 0-359, 360 = not available = default)
Current speed predicted #2	7	Current speed in 0,1 knots. (valid range 0-126; 127 = not available = default).
Position #3 Latitude	27	1/10 000 min (±90 degrees, North = positive, South = negative; 91 degrees = not available = default).
Position #3 Longitude	28	1/10 000 min (±180 degrees, East = positive, West = negative; 181 degrees = not available = default).
From UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31not used
From UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
To UTC hour	5	0-23; 24 = UTC hour not available = default; 25-31not used
To UTC minute	6	0-59; 60 = UTC minute not available = default; 61-63 unused
Current direction predicted #3	9	Current direction in degrees. (valid range 0-359, 360 = not available = default).
Current speed predicted #3	7	Current speed in 0,1 knots. (valid range 0-126; 127 = not available = default).
Total	**376**	**occupies 3 slots**

4) *Extended Ship Static and Voyage Related Data*

<u>Purpose</u>
This message should be used by a ship to report extended static and voyage related data.

<u>Comments and motivation</u>
Air Draught - As in the current bin message Application 5 (SN/Circ.236)
Last port of call:
   - This important information is not available in other AIS messages.
   - To avoid ambiguity and enable automatic processing only LOCODE is accepted
Second port of call
   - The port after the next port of call
   - To avoid ambiguity and enable automatic processing only LOCODE is accepted
VHF working channel
   - For use by different working vessels (survey vessels, pipe laying vessels, guard vessels, icebreakers, etc.)
Ship type
   - The current ship type definition in AIS message 5 Static and Voyage Related Data is inadequate
   - Lloyd's Register's STATCODE 5 is comprehensive, flexible and adaptable (See http://www.lrfairplay.com/About/IMO_standards/imo_standards.html)
   - Although comprehensive, occupies only 35 bits
   - Due to the hierarchical design, compatible equipment could display the info on desired level of detail
   - The ideal thing would be to amend the ship type definition in message 5 (Static and voyage related data), but seems to be unrealistic in near future
Type of bunker oil - Important information (e.g. in case of an accident)
Total amount of bunker oil in tonnes - Important information (e.g. in case of an accident)

Table 4 - Extended Ship Static and Voyage-related Data (Broadcast)

Parameter	No. 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 zero.
IAI	16	DAC = 001; **FI = 24** (See Rec. ITU-R M.1371-3 § 2.1, Annex 5)
Air Draught	11	in 1/10 m, 2047 = height over keel 204.7 m or greater, 0 = not available = default
Last port of call	30	UN Locode; 5 characters 6 bit ASCII ; "@@@@@" = not available = default
Second port of call	30	UN Locode; 5 characters 6 bit ASCII; "@@@@@" = not available = default
Deficiencies or miscellaneous information	162	Free text 27 characters 6 bit ASCII, e.g. radar failure, gyro malfunction, engine problems, ice class, engine power
VHF working channel	7	2 digits (for working vessels) 00 = Not available (default)
Ship type	42	Lloyd's Register STATCODE 5 (e.g. A11A1AA); 7 characters 6 bit ASCII; "@@@@@@@" = not available = default See http://www.lrfairplay.com/About/IMO_standards/imo_standards.html
Laden or ballast	2	0 = Not available = default ,1 = Laden, 2 = Ballast, (3 not in use)
Type of bunker oil		
Heavy fuel oil	1	0 = No = default, 1 = Yes
Light fuel oil	1	0 = No = default, 1 = Yes
Diesel	1	0 = No = default, 1 = Yes
Total amount of bunker oil in tonnes	14	0 – 16382; 16382 = 16382 tonnes or more, (16383 indicates not available = default)
Sub-total	357	
Spare	3	Not used. Should be set to zero
Total	**360**	**Occupies 2 slots**

5) *Number of persons Onboard*

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

Attributes: addressed, acknowledgement required.

Table 5 – Number of Persons Onboard

Parameter	No. bits	Description
Message ID	6	Identifier for Message 86; always 86
Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated.
Source ID	30	Name of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; **FI =16**
Number of Persons	13	Current number of persons on-board, including crew members: 0 . 8191; default = 0 = not available; 8191 = 8191 or more
Spare	3	Not used. Should be set to zero.
Total	**72**	**Occupies one slot**

6) *VTS-Generated targets*

Purpose
This message should be used to transmit VTS targets. This message should be variable in length, based on the amount of VTS targets. The maximum of VTS Targets transmitted in one International FM 17 should be four (4). Because of the resulting effects of VDL channel loading, the transmission of International FM 17 should be no more than necessary to provide the necessary level of safety.

Attributes: broadcast, VTS transmitting, no acknowledgement**.**

Table 6. 1 - VTS-Generated Targets

Parameter	No. 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.
Source ID	30	Name of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; **FI =17**
VTS Target 1	120	Refer to table below; occupies 2 slots
VTS Target 2	120	Optional; refer to table below; occupies 2 slots
VTS Target 3	120	Optional; refer to table below; occupies 3 slots
VTS Target 4	120	Optional; refer to table below; occupies 3 slots
Total	**Max 536**	**Occupies 2-3 slots**

Table 6. 2 - Each VTS Target should be structured as follows:

Parameter	No. Bits	Description
Type of Target Identifier	2	Identifier Type: 0 = The target identifier should be the MMSI number. 1 = The target identifier should be the IMO number. 2 = The target identifier should be the call s 3 = Other (default).
3 = Other (default).	42	Target Identifier. The Target ID should depend on Type of Target Identifier above. When call sign is used, it should be inserted using 6-bit ASCII. If Target Identifier is unknown, this field should be set to zero. When MMSI or IMO number is used, the least significant bit should equal bit zero of the Target ID.
Spare	4	Spare. Should be set to zero.
Latitude	24	Latitude in 1/1000 of a minute.
Longitude	25	Longitude in 1/1000 of a minute.
COG	9	Course over ground in degrees (0-359); 360 = not available = default.
Time Stamp	6	UTC second when the report was generated (0-59, or 60 if time stamp is not available, which should also be the default value)
SOG	8	Speed over ground in knots; 0-254; 255 = not available = default.
Total	**120**	

A VTS target should only be used, when the position of the target is known. However, the target identity and/or course and/or time stamp and/or speed over ground may be unknown.

7) *Clearance Time to Enter Port*

Purpose
This message is intended to provide specified ships with information on the granted port to call and time to enter. This message is transmitted by a competent authority responsible for control of ships to enter/leave port.

Table 7 – Clearance Time to Enter Port

Parameter	No. 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.
Source ID	30	MMSI number of source station
Sequence number	2	0 - 3
Destination ID	30	MMSI number of destination station
Retransmit flag	1	Retransmit flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted
Spare	1	Not used. Should be set to zero.
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 source MMSI uniquely identifies the sent message. 1 – 1023 0 = Not available = default
Clearance time to enter port, (UTC)	20	** day ** month ** hour ** minute
Place	120	(Name of the port and berth, 20 characters) (6 bit ASCII as per table 44 in ITU 1371).
Position, Lon	25	Longitude in 1/1000 of a minute.
Position, Lat	24	Latitude in 1/1000 of a minute.
Sub-total	277	
Spare	73	Not used. Should be set to zero.
Total	**360**	**Occupies 2 slots**

8) *Marine Traffic Signal*

Purpose
This message is intended to provide information on a signal station, status of the control signal now, etc., at the entrance of a harbour or channel where the shipping direction controlled so that the traffic flow be kept in order. This message is transmitted by a competent authority.

Parameter	No. 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.
Source ID	30	MMSI number of source station
Spare	2	Not used. Should be 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 and source MMSI uniquely identifies the sent message. 1 – 1023 0 = Not available = default
Name of Signal Station	120	(20 characters) (6 bit ASCII as per table 44 in ITU 1371).
Position of Station, Longitude	25	Longitude in 1/1000 of a minute
Position of Station, Latitude	24	Latitude in 1/1000 of a minute.
Status of Signal	1	In regular or irregular service
Signal in Service	5	Flashing letter of I, O or F, or alternating letters of XI, XO or XF, etc., (see Note)
Time of next Signal Shift (UTC)	11	** hour ** minute
Expected Next Signal	5	Letter I, O, F, etc.
Sub-total	247	
Spare	103	Not used. Should be se set to zero
Total	**360**	**Occupies 2 slots**

Note:
These are coded signals being adopted in Japan to provide ships with the timing of entering or leaving port. The codes stand for:
    I = "in-bound" only acceptable,
    O = "out-bound" only acceptable,
    F = both "in- and out-bound" acceptable,
    XI = Code will shift to "I" in due time,
    XO = Code will shift to "O" in due time, etc.

9) *Berthing Data*

Purpose

This message is intended to prevent ships from moving in an indecisive behaviour and/or at unnecessary slow speed in port, and subsequently contribute to efficiency of overall marine traffic, by providing information on the arranged berth to the ships of no pilot onboard or unfamiliar with the area. This message is transmitted by a competent authority in charge of controlling ships to enter or leave port.

Table 9 – Berthing Data

Parameter	No. 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.
Source ID	30	MMSI number of source station
Sequence number	2	0 - 3
Destination ID	30	MMSI number of destination station
Retransmit flag	1	Retransmit flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted
Spare	1	Not used, Should be set to zero
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 source MMSI uniquely identifies the sent message. 1 – 1023 0 = Not available = default
Name of Berth	120	20 characters (6 bit ASCII as per table 44 in ITU 1371).
Position of Berth, Longitude	25	Longitude in 1/1000 of a minute
Position of Berth, Latitude	24	Latitude in 1/1000 of a minute.
Sub-total	(257)	
Spare	93	Not used. Should be set to zero.
Total	**360**	**Occupies 2 slots**

10) *Weather Report from Ships*

Purpose
This message is intended to provide ships and/or shore-based installations with weather information observed on a ship in navigation.

Table 10 – Weather Report from Ships

Parameter	No. 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.
Source ID	30	MMSI number of source station
Spare	2	Not used. Should be set to zero.
IAI	16	DAC = 001; **FI =21**
Place of Observation	120	20 characters (6 bit ASCII as per table 44 in ITU 1371).
Position of Observation, Lon	25	Longitude in 1/1000 of a minute
Position of Observation, Lat	24	Latitude in 1/1000 of a minute.
Date and Time of Observation (UTC)	11	hour ** minute Bits 10 -6: hour; 0-23, 24 =not available=default Bits 5-0: minute; 0-59, 60= not available=default
Weather	4	Fine/Cloudy/Rain/Fog/Snow/Typhoon (Hurricane, Monsoon)
Visibility (View)	8	**.* nm
Relative Humidity	7	0-100%, 1%
Average Wind speed	7	*** knots
Wind direction	9	*** degrees
Air pressure	4	***** pressure to tenths of hPa (in range 850 – 1054 hPa)
Air pressure tendency	4	Use WMO FM13 Codes for pressure characteristic over last three hours, Codes 0-8
Air Temperature	10	Dry Bulb temperature -30 to + 45 degrees Celcius, 0.1 degree
Sea Temperature	9	Sea temperature -5 to +40° degrees Celcius, 0.1 degree
Wave period	6	Period of sea waves in seconds, 0-60s, 1s
Wave height	8	Height of sea waves 0 to 25 metres, 0.1m
Wave Direction	9	*** degrees (0-359 degrees TRUE, 1 degree)
Swell Height	8	Height of first swell waves 0 to 25 metres, 0.1m
Swell Direction	9	*** degrees Direction from which first swell waves are coming (0-359 degrees true, 1 degree)
Swell Period	6	Period of swell in seconds, 0-60s, 1s
Sub-total	360	
Spare	0	Not used. Should be set to zero.
Total	**360**	

11) *Area Notice*

Introduction
This message can be used to communicate 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. 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.

This message replaces Application 3 "Fairway closed" as listed in SN/Circ.236.

Usage notes**:**
1) The information is time-dependent (i.e., has start date/time and duration).
2) The message may be transmitted prior to the start time/date to allow for advance notice. To avoid confusion, it should not be transmitted more than one day in advance.
3) The message should not be transmitted beyond the designated end date/time except for a cancellation message. A cancel message can be transmitted before the designated end date/time using the same Message Linkage ID with an Area Type of 126 (cancellation), a Duration = 0, and start time fields all set to not available.
4) ECDIS/ECS software should automatically remove the area notice from the display after the end date/time or receiving of a cancel message.
5) Up to 5-slot messages can be created, but messages with more than 3 slots should be avoided. Messages with more slots are less likely to be received due to RF noise or packet collision.
6) Waypoints can be specified using the polyline/waypoint sub-area. If more precision is needed then multiple circle/point sub-areas can be used (e.g., one for each waypoint).
7) When waypoints are specified using polyline or circle/point sub-areas, they should be numbered/used in the order that they appear in the message.
8) 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 are needed for a polyline/polygon, then additional polyline/polygon sub-areas can be used. However, they must follow immediately after the first polyline/polygon sub-area.
9) The Message Linkage ID can be used to link additional text (e.g., a separate text message). However, the same source MMSI needs to send both the Area Notice and additional Text Description message. (See Text Description Document)
10) 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) If the same Message Linkage ID is retransmitted with different sub-areas and/or times the ECDIS/ECS should replace the old Area with the new.
12) 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*

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 § 4.6.1, Annex 2; 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	**Application Data**	Designated Area Code	10	DAC = 001;
		Function Identifier	6	**FI = 22**
		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 source MMSI uniquely identifies the sent message. 1 – 1023 0 = Not available = default
		Area Type	7	Area Type as per Type Table (Table 10). Set to 0-127 according to type.
		Start time of Area — UTC month	4	UTC month of the Area start: 1-12; 0 = UTC month not available = default; (13-15 = Reserved for future use).
		UTC day	5	UTC day of the Area start: 1-31; 0 = UTC day not available = default.
		UTC hour	5	UTC hour of the Area start 0-23; 24 = UTC hour not available = default; (25-31 = Reserved for future use).
		UTC minute	6	UTC minute of the Area start: 0-59; 60 = UTC minute not available = default; (61-63 = Reserved for future use).
		Duration	18	Minutes until end of Area Notice. Measured from start time of Area Notice. 0 = cancel Area Notice; 262,143 = undefined = default. Maximum duration is 262,142 minutes (182.04 days).

		Sub-areas	max 900	From 1 to 10 sub-areas, each structured as in Tables 4 - 9. A short text description may be associated with the areas using Sub-area 5: Free text. Total number of sub-areas is determined by the receiver based on the length of data. Each sub-area is 90 bits.
				
				`# sub-areas  # bits  est. # slots`
				`    1          201      2`
				`    2          291      2`
				`    3          381      3`
				`    4          471      3`
				`    5          561      3`
				`    6          651      4`
				`    7          741      4`
				`    8          831      5`
				`    9          921      5`
				`   10         1011      5`

Table 11.2 - *Area Notice - Addressed*

Standard Message Header		Message ID	6	Set to 6 addressed, acknowledgement needed)
		Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. See § 4.6.1, Annex 2; 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.
		Sequence number	2	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 0-1023 by message originator.
		Area Type	7	Area Type as per Type Table (Table 10). Set to 0-127 according to type.
		Start time of Area — UTC mos	4	UTC month of the Area start: 1-12; 0 = UTC month not available = default; (13-15 = Reserved for future use).
		Start time of Area — UTC day	5	UTC day of the Area start: 1-31; 0 = UTC day not available = default.
		Start time of Area — UTC hour	5	UTC hour of the TAN start 0-23; 24 = UTC hour not available = default; (25-31 = Reserved for future use).
		Start time of Area — UTC Minute	6	UTC minute of the TAN start 0-59; 60 = UTC minute not available = default; (61-63 = Reserved for future use).
		Duration	18	Minutes until end of Area Notice. Measured from start time of Area Notice. 0 = cancel Area Notice; 262,143 = undefined = default. Maximum duration is 262,142 minutes (182.04 days).
		Sub-areas	max 900	From 1 to 9 sub-areas, each structured as in Tables 4 - 9. A short text description may be associated with the areas using Sub-area 5: Free text. Total number of sub-areas is determined by the receiver based on the length of data. Each sub-area is 90 bits. # sub-areas # bits est. # slots 1 233 2 2 323 2 3 413 3 4 503 3 5 593 4 6 683 4 7 773 4 8 863 5 9 953 5

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Table11. 3 - Sub-Area Table

Number	Area Shape	Table for Definition
0	Circle or point	4
1	Rectangle	5
2	Sector	6
3	Polyline	7
4	Polygon	8
5	Free Text	9
6-7	Reserved	--

Table 11.4 - Circle or point

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, & 1000 (scale factor = 10^n where n=decimal value of scale factor)
	Longitude	28	Longitude of the centre. Longitude in 1/10 000 minute. (±180°, East = positive (as per 2's complement), West = negative (as per 2's complement); 181° (6791AC0h) = not available = default)
	Latitude	27	Latitude of the centre. Latitude in 1/10 000 minute. (±90°, North = positive (as per 2's complement), South = negative (as per 2's complement); 91° (3412140h) = not available = default)
	Radius	12	Defines the size of the circular area. This is the radius of the circle in meter increments. 0=point (default). 1 - 4095m. This is combined with the scale factor to give a maximum size of 409,500m (409km).
	Spare	18	Spare. Do not use. Reserved for future use. Set to 0.

Table 11.5 - Rectangle

|			
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, & 1000 (scale factor = 10^n where n=decimal value of scale factor)
	Longitude	28	Longitude of the SW corner. Longitude in 1/10 000 minute. (±180°, East = positive (as per 2's complement), West = negative (as per 2's complement); 181° (6791AC0h) = not available = default)
	Latitude	27	Latitude of the SW corner. (±90°, North = positive (as per 2's complement), South = negative (as per 2's complement); 91° (3412140h) = not available = default)
	E dimension	8	Box dimension East from the corner point in m increments. 0=line North-South (default); 1-255m = 100-255m. This is combined with the scale factor to give a maximum dimension of 25,500m (25.5km).
	N dimension	8	Box dimension North from the corner point in m increments. 0=line East-West (default); 1-255m = 100-255m. This is combined with the scale factor to give a maximum dimension of 25,500m (25.5km).
	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	Spare. Do not use. Reserved for future use. Set to 0.
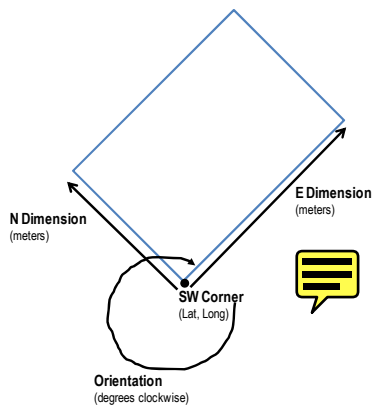
Figure 11-1 – Graphic description of the process required to define a "rectangle" area.

Table 11.6 – Sector

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, & 1000 (scale factor = 10^n where n=decimal value of scale factor)
	Longitude	28	Longitude of the centre. Longitude in 1/10 000 minute. ($\pm 180°$, East = positive (as per 2's complement), West = negative (as per 2's complement); 181° (6791AC0h) = not available = default)
	Latitude	27	Latitude of the centre. Latitude in 1/10 000 minute. ($\pm 90°$, North = positive (as per 2's complement), South = negative (as per 2's complement); 91° (3412140h) = not available = default)
	Radius	12	Defines the size of the sector. This is the radius of the sector in meter increments. 0=point (default). 1 - 4095m. This is combined with the scale factor to give a maximum size of 409,500m (409km).
	Left Boundary	9	Orientation of the left boundary edge of the sector. This is in degree steps measured clockwise from true North about the centre point. 0 = no rotation; 1-359 = rotation in degrees; 360 = not available = default; 361-511 = Reserved for future use.
	Right Boundary	9	Orientation of the right boundary edge of the sector. This is in degree steps measured clockwise from true North about the centre point. Total sector area is the area measured from the left boundary clockwise to the right boundary. 0 = no rotation; 1-359 = rotation in degrees; 360 = not available = default; 361-511 = Reserved for future use.

Figure 11-2
    a) Center point
    b) Sector radius
    c) Sector bearings from centre point, left boundary
    d) Sector bearings from centre point, right boundary
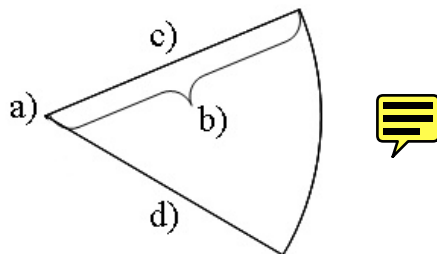
Table 11.7 - Waypoint / polyline points

Area Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set to 3 for Polyline (open area or line)
	Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1000 (scale factor = 10^n where n=decimal value of scale factor)
	Point 1 Angle	10	This is the true bearing (in half-degree increments) 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; 721-1023 (Reserved for future use.)
	Point 1 Distance	11	This is the distance (in m) from Point 0 to Point 1 or from the last Point in a Polyline directly preceding this Polyline. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km).
	Point 2 Angle	10	This is the true bearing (in half-degree increments) from Point 1 to Point 2. Degrees bearing = decimal value (0-719)*.5; 720 = not available (no point) = default; 721-1023 (Reserved for future use.)
	Point 2 Distance	11	This is the distance (in m) from Point 1 to Point 2. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km). 0 = default (no point).
	Point 3 Angle	10	This is the true bearing (in half-degree increments) 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.)
	Point 3 Distance	11	This is the distance (in m) from Point 2 to Point 3. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km). 0 = default (no point).
	Point 4 Angle	10	This is the true bearing (in half-degree increments) from Point 3 to Point 4. Degrees bearing = decimal value (0-719)*.5; 720 = not available (no point) = default; 721-1023 (Reserved for future use.)
	Point 4 Distance	11	This is the distance (in m) from Point 3 to Point 4. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km). 0 = default (no point).
	Spare	1	Do not use. Reserved for future use. Set to 0.
		90	**Total Bits**

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).

Figure 11-4 – A graphic depiction of 1) ice boundary between sea ice and open water, and 2) recommended route through the sea ice area.

Figure 4 – A graphic depiction of a storm front message.

Table 11.8 - Polygon

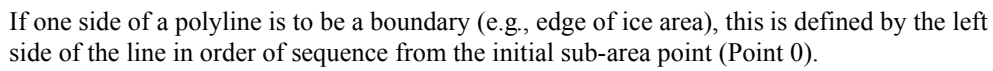|			
Area Notice: Sub-area	Area Shape	3	Defines the shape of the area. Set to 4 for Polygon (closed area) The polygon shape is closed by connecting the last defined point back to the initial point (Point 0).
	Scale Factor	2	Scale factor. This is a multiplier for the dimensions of the shape. 1 (default), 10, 100, & 1000 (scale factor = 10^n where n=decimal value of scale factor)
	Point 1 Angle	10	This is the true bearing (in half-degree increments) 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; 721-1023 (Reserved for future use.)
	Point 1 Distance	11	This is the distance (in m) from Point 0 to Point 1 or from the last Point in a Polygon directly preceding this Polygon. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km).
	Point 2 Angle	10	This is the true bearing (in half-degree increments) from Point 1 to Point 2. Degrees bearing = decimal value (0-719)*.5; 720 = not available (no point) = default; 721-1023 (Reserved for future use.)
	Point 2 Distance	11	This is the distance (in m) from Point 1 to Point 2. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km). 0 = default (no point).
	Point 3 Angle	10	This is the true bearing (in half-degree increments) 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.)
	Point 3 Distance	11	This is the distance (in m) from Point 2 to Point 3. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km). 0 = default (no point).
	Point 4 Angle	10	This is the true bearing (in half-degree increments) from Point 3 to Point 4. Degrees bearing = decimal value (0-719)*.5; 720 = not available (no point) = default; 721-1023 (Reserved for future use.)
	Point 4 Distance	11	This is the distance (in m) from Point 3 to Point 4. This number (0-2047) is combined with the scale factor to give a maximum of 204,700m (204.7km). 0 = default (no point).
	Spare	1	Do not use. Reserved for future use. Set to 0.
		90	**Total Bits**

Table 11.9 - Free Text

Area Notice Sub-area	Area Shape	3	Defines the shape of the area. Set 5 for Free text. This text is associated with the area defined in this binary message. Multiple free text sub-areas are glued together in the order they appear in the message.
	Text	84	Fourteen 6-bit ASCII characters, 6 bit ASCII characters as per Table 44 in ITU 1371-3.
	Spare	3	Do not use. Reserved for future use. Set to 0.

Table 11.10 - Notice Description *

#	Description	#	Description	#	Description	#	Description
0	Caution Area: Marine mammals NOT observed	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		70	Distress Area: Vessel grounding	102	Chart Feature: Shoal area due South
7		39		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		109	
14	Caution Area: Underwater operation	46		78		110	
15	Caution Area: Seaplane operations	47		79		111	
16	Caution Area: Fishery - nets in water	48		80	Instruction: Contact VTS at this point/juncture	112	Report from ship: Icing info
17	Caution Area: Cluster of fishing vessels	49		81	Instruction: Contact Port Administration at this point/juncture	113	
18	Caution Area: Fairway closed	50		82	Instruction: Do not proceed beyond this point/juncture	114	Report from ship: Miscellaneous information – define in free text field
19	Caution Area: Harbor closed	51		83	Instruction: Await instructions prior to proceeding beyond this point/juncture	115	
20	Caution Area: Risk – define in free text field	52		84		116	
21	Caution Area: Underwater vehicle operation	53		85		117	
22		54		86		118	
23	Storm front (line squall)	55		87		119	
24	Env. Caution Area: Hazardous sea ice	56	Security Alert - Level 1	88	Information: Pilot boarding position	120	
25	Env. Caution Area: Storm warning (storm cell or line of storms)	57	Security Alert - Level 2	89	Information: Icebreaker waiting area	121	
26	Env. Caution Area: High wind	58	Security Alert - Level 3	90	Information: Places of refuge	122	
27	Env. Caution Area: High waves	59		91	Information: Position of icebreakers	123	
28	Env. Caution Area: Restricted visibility (fog, rain, etc)	60		92	Information: Location of response units	124	
29	Env. Caution Area: Strong currents	61		93		125	Other – Define in free text field
30	Env. Caution Area: Heavy icing	62		94		126	Cancellation - cancel area as identified by Message Linkage ID
31		63		95		127	Undefined (default)

* Note: This table will likely change in the future as more experience is gained.

12) *Environmental*

<u>Purpose</u>
A new binary message for transmitting environmental information has been developed. In order to maximize flexibility, the message has been designed to carry from 1 to 8 sensor reports (a message with 1 sensor report can be sent in 2 slot, a message with 8 sensor reports takes 5 slots). Each sensor report carries the dynamic or static information relating to a specific sensor.

Table 12.1 - Environmental

Parameter		No. 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 § 4.6.1, Annex 2; 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 Section 1.1. Total number of reports is determined by the receiver based on the length of data.
	Total	**Max 1008**	= 56 + N*112 N Total Bits Slots Required (168 bits in first 210 in 2-5) 1 168 bits 1 2 280 bits 2 (max 378) 3 392 bits 3 (max 588) 4 504 bits 3 5 616 bits 4 (max 798) 6 728 bits 4 7 840 bits 5 (max 1008) 8 952 bits 5

Common to all Report Types

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. The framework for the sensor report is in Table 12.2

Table 12.2 - Environmental Message Sensor Report Framework.

Parameter	No. Bits	Description
Report Type	4	Environmental Report Type as per Section 1.1.1
Timestamp	16	This is the date and time of the data. Just Day, hours, and minutes into the day – minute resolution – UTC. UTC day (5 bits):1-31; 0 = UTC day not available = default. UTC hour (5 bits): 0-23; 24 = UTC hour not available = default; (25-31 = Reserved for future use). UTC minute (6 bits): 0-59; 60 = UTC minute not available = default; (61-63 = Reserved for future use).
Site ID	7	Binary identifier of sensor site– combined with transmitter MMSI to fully ID sensor site (there could be one or more physical sensors, each reporting different data types, at a sensor site).
Sensor Data	Max of 85	Remaining 85 bits are according to the sensor type – see Sections 1.2.1 through 1.2.x.
Total	**Max of 112**	

Environmental Message Sensor Report Type (4 bits)

There are a variety of sensor types that can be transmitted using this message. 4 bits gives 16 possible values, the number is the item from Table 12.3.

Table 12.3 - Environmental Message Sensor Report Types

Value	Description
0	Site Location
1	Station ID
2	Wind
3	Water level
4	Current Flow Report v1
5	Current Flow Report v2
6	Horizontal Current Flow Current
7	Sea state
8	Salinity
9	Weather
10	Air gap / Air draft
11	Reserved for future use
12	Reserved for future use
13	Reserved for future use
14	Reserved for future use
15	Reserved for future use

Sensor Data

Details for the 85 bits of information for each sensor report type are detailed in these sections. All possibilities for each data field are described. In each case Sensor Unavailable means that the specific reading is not ever possible from that sensor location. Data Unavailable means that the reading is possible but is not available for the current report (sensor could be malfunctioning).

Table 12.4 - Sensor Site Location

Parameter	No. bits	Description
Longitude	28	Longitude in 1/10 000 minute. (±180°, East = positive (as per 2's complement), West = negative (as per 2's complement); 181° (6791AC0h) = not available = default)
Latitude	27	Latitude in 1/10 000 minute. (±90°, North = positive (as per 2's complement), South = negative (as per 2's complement); 91° (3412140h) = not available = default)
Altitude	11	Altitude of the sensor relative to MSL in 0.1m resolution. 0.0 – 204.5m, 204.6 = altitude>204.5m, 204.7 = Data unavailable = default.
Sensor Owner	4	Owner of the sensor / responsible for the sensor data 0 = Coastal Directorate 1 = Hydrographic Office 2 = Inland Waterway Authority 3 = Port Authority 4 = Meteorological Service 15 = unknown (5 – 14 = Reserved for future use)
Data Timeout	3	Length of time that data is valid – do not use data after this timeout period. 0 = never = default, 1 = 10 min, 2 = 1 hr, 3 = 6 hrs, 4 = 12 hrs, 5 = 24 hrs, (6 – 7 = Reserved for future use).
Spare	12	Set to zero. Reserved for future use.
Total	**85**	

Kommentar [GWJ1]: This needs to be generalized to support International usage.

Table 12.5 - Station ID

Parameter	No. bits	Description
Name	84	Fourteen 6-bit ASCII characters = Agency reference number. 6 bit ASCII characters as per Table 44 in ITU 1371-3.
Spare	1	Set to zero. Reserved for future use.
Total	**85**	

Table 12.6 - Wind Report

Parameter	No. bits	Description
Wind Speed	7	Average of wind speed values over the last 10 min. in 1 knot increments. 0-125 kts, 126 = wind>125kts, 127 = Data unavailable = default.
Wind Gust	7	Max wind speed reading during the last 10 min. in 1 knot increments. 0-125 kts, 126 = wind>125kts, 127 = Data unavailable = default.
Wind Direction	9	Direction of the average wind over the last 10 minutes in 1 degree increment. 0 – 359 degrees, 360 = Data unavailable = default, (361-511 = reserved for future use).
Wind Gust Direction	9	Direction of the max wind over the last 10 minutes in 1 degree increment. 0 – 359 degrees, 360 = Data unavailable = default, (361-511 = reserved for future use).
Sensor Data Description	3	Indication of data. 0 = no data = default, 1 = real time with quality control, 2 = raw real time, 3 = predicted, 4= Nowcast, 7 = sensor unavailable. (5-6 = reserved for future use).
Forecast Wind Speed	7	Predicted average wind speed in 1 knot increment. 0-125 kts, 126 = wind>125kts, 127 = Forecast unavailable =default.
Forecast Wind Gust	7	Predicted maximum wind speed in 1 knot increment. 0-125 kts, 126 = wind>125kts, 127 = Forecast unavailable =default.
Forecast Wind Forecast Direction	9	Predicted direction of the average wind in 1 degree increment. 0 – 359 degrees, 360 = Forecast unavailable = default, (361-511 = reserved for future use).
Valid Time of Forecast	16	This is the date and time for the forecast. Minute resolution. UTC day: 1-31; 0 = UTC day not available = default (5 bits). UTC hour: 0-23; 24 = UTC hour not available = default, (25-31 = reserved for future use) (5 bits). UTC minute: 0-59; 60 = UTC minute not available = default, (61-63 = reserved for future use) (6 bits).
Duration	8	Duration of validity of the forecast from the time of the forecast, minute resolution. 1-255 minutes, 0 = cancel forecast.
Spare	3	Set to 0. Reserved for future use.
Total	**85**	

Table 12.7 - Water level Report

Parameter	No. bits	Description
Water Level Type	1	Type of water level; 0 or 1. 0 = Relative to reference datum, 1 = Water depth.
Water Level	16	Water level in centimetres; range of -327.67 to +327.67 meters. -32767 = -327.67 m or less, +32767 = +327.67 m or greater, -32768 = data unavailable = default.
Trend	2	0 = increasing 1 = decreasing 2 = steady 3= unknown VERIFY NUMBERS WITH DARREN WRIGHT
Vertical Reference Datum	5	Defines datum used. 0: MLLW — 9: NAVD 1: IGLD-85 — 10: WGS-84 2: Water Depth — 11: LAT 3: STND — 12: Pool 4: MHHW — 13: Gauge 5: MHW — 14: Local river datum 6: MSL — 31: Unknown/Unavailable = default. 7: MLW — (15-30 = Reserved for future use) 8: NGVD
Sensor Data Description	3	Indication of data. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Forecast Water Level Type	1	Type of water level for forecast; 0 or 1. 0 = Relative to reference datum, 1 = Water depth.
Forecast Water Level	16	Forecast water level in centimetres; range of -327.67 to +327.67 meters. -32767 = -327.67 m or less, +32767 = +327.67 m or greater,-32768 = Forecast unavailable = default.
Valid Time of Forecast	16	This is the date and time for the forecast. Minute resolution. UTC day: 1-31; 0 = UTC day not available = default (5 bits). UTC hour: 0-23; 24 = UTC hour not available = default, (25-31 = reserved for future use) (5 bits). UTC minute: 0-59; 60 = UTC minute not available = default, (61-63 = reserved for future use) (6 bits).
Duration	8	Duration of validity of the forecast from the time of the forecast. Minutes, 1-255 minutes, 0 = cancel forecast.
Spare	17	Set to 0, reserved for future use.
Total no. bits	**85**	

Table 12.8 - Current Flow Report: Two-dimensions (x & y)

Parameter	No. bits	Description
Current speed 1	8	Speed of current 1 measured at a chosen level below the sea surface in 0.1 knot increments. 0.0 – 25.0 knots, 25.1 = speed > 25 knots, 25.5 = Data unavailable = default. (25.2-25.4 = Reserved for future use).
Current direction 1	9	Direction of current 1 in 1 degree increment. 0 – 359 degrees, 360 = Data unavailable = default, (361-511 = Reserved for future use).
Current measuring level 1	9	Measurement level of current 1 below sea surface in 1 m increments. 0 – 360 m,511 = Data unavailable = default. NOTE – check on 360m requirement with NDBC. If don't need can go to 60m depth and drop to 6 bits. (361-510 = 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 increments. Same as current speed 1.
Current direction 2	9	Direction of current 2 in 1 degree increment. Same as current direction 1.
Current measuring level 2	9	Measurement level of current 2 in meters below sea surface in 1 m increments. 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 increments. Same as current speed 1.
Current direction 3	9	Direction of current 3 in 1 degree increment. Same as current direction 1.
Current measuring level 3	9	Measurement level of current 3 in meters below sea surface in 1 m increments. Same as current measuring level 1.
Sensor Data Description	3	Indication of data. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Spare	4	Set to 0, reserved for future use.
Total	**85**	

Table 12.9 - Current Flow Report: 3-dimensions (x, y, & z)

Parameter	No. 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 increments. 0.0 – 25.0 knots, 25.1 = speed > 25 knots, 25.5 = data unavailable = default. (25.2-25.4 = 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 increments. 0.0 – 25.0 knots, 25.1 = speed > 25 knots, 25.5 = data unavailable = default. (25.2-25.4 = Reserved for future use).
Current vector component Up (z) 1	9	Speed of Up component of current 1 measured at a chosen level below the sea surface in 0.1 knot increments. 0.0 – 25.0 knots, 25.1 = speed > 25 knots, 25.5 = data unavailable = default. (25.2-25.4 = Reserved for future use).
Current measuring level 1	9	Measurement level of current 1 in meters below sea surface in 1 m increments. 0 – 360m, 511 = data unavailable = default. (361-510 = 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 increments. 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 increments. Same as for current 1.
Current vector component Up (z) 2	9	Speed of Up component of current 2 measured at a chosen level below the sea surface in 0.1 knot increments. Same as for current1.
Current measuring level 2	9	Measurement level of current 2 in meters below sea surface in 1 m increments. Same as for current 1.
Sensor Data Description	3	Indication of data. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Spare	14	Set to 0, reserved for future use.
Total	**85**	

Kommentar [GWJ2]: Maybe only keep the deep depth here not in version 1

Table 12.10 - Horizontal Current Flow Report

Parameter	No. bits	Description
Current Reading 1 Bearing	9	Bearing of current 1 reading from sensor position, 1 degree resolution. 0 – 359 degrees, 360 = Data unavailable = default, 511 = Sensor unavailable. (361-510 = Reserved for future use).
Current Reading 1 Distance	7	Distance of current 1 reading from sensor position, 1m resolution. 0 – 125m, 127 = data unavailable = default, (126 = 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 increments. 0.0 – 25.0 knots, 251 = speed > 25 knots, 255 = data unavailable = default. (252-254 = Reserved for future use).
Current 1 direction	9	Direction of current 1 in 1 degree increment. 0 – 359 degrees, 360 = data unavailable = default, (361-511 = Reserved for future use).
Current 1 measuring level	9	Measurement level of current 1 in meters below sea surface in 1 m increments. 0 – 360m, 511 = data unavailable = default, (361-510 = Reserved for future use).
Current Reading 2 Bearing	9	Bearing of current 2 reading from sensor position, 1 degree resolution. Same as for current 1 bearing.
Current Reading 2 Distance	7	Distance of current 2 reading from sensor position, 1m resolution. 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 increments. Same as for current 1 speed.
Current 2 direction	9	Direction of current 2 in 1 degree increment. Same as for current 1 direction.
Current 2 measuring level	9	Measurement level of current 1 in meters below sea surface in 1 m increments. Same as for current 1 level.
Spare	1	Set to 0, reserved for future use.
Total	**85**	

Kommentar [GWJ3]: Check with ACE if this is sufficient distance and resolution.

Kommentar [GWJ4]: Check with ACE if this is sufficient distance and resolution.

Table 12.11 - Sea State Report

Parameter	No. bits	Description
Swell height	8	Height of the swell, 0.1 m resolution; 0.0 – 25.0m, 25.1 = height > 25m, 255 = data unavailable = default; (252 - 254 = Reserve for future use).
Swell period	6	Swell period in seconds, 1sec resolution. 0 – 60 s, 63 = data unavailable = default; (61 - 62 = Reserved for future use).
Swell direction	9	Direction of swells, 1 deg resolution. 0 – 359 degrees, 360 = data unavailable = default, (361-511 = Reserved for future use).
Sea state	4	**Beaufort** **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. (13-14) Reserved for future use). 15 data unavailable = default
Sensor Data Description	3	Indication of data for swells. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Water temperature	10	Temperature of the water in degrees C, 0.1 degree resolution. -10.0 to + 50.0 degrees; Temp = Decimal value /10 – 10 for Decimal = 0-600 601 = data unavailable = default; (602 – 1023 = Reserved for future use).
Water temp depth	7	Depth of water temperature sensor, 0.1m resolution. 0-12m, 12.7 = data unavailable = default; (121 -126 = Reserved for future use).
Sensor Data Description	3	Indication of data for temperature. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Significant wave height	8	Height of the waves, 0.1 m resolution. 0.0 – 25.0 m, 25.1 = height > 25 m 255 = data unavailable = default; (252 - 254 = Reserved for future use).
Wave period	6	Wave period, 1 s resolution. 0 – 60 s, 63 = data unavailable = default; (61-62 = Reserved for future use).
Wave direction	9	Direction of waves, 1 degree resolution. 0 – 359 degrees, 360 = data unavailable = default; (361-511 = Reserved for future use).
Sensor Data Description	3	Indication of data for waves. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable; (5-6 = reserved for future use).
Salinity	9	Salinity in 0.1‰ (ppt) increments. 0.0 – 50.0 ‰, 50.1 = salinity greater than 50.0,; 510 = data unavailable = default; 511 = sensor unavailable; (502 - 509 = Reserved for future use).
Total	**85**	

Table 12.12 - Salinity Report

Parameter	No. bits	Description
Water temperature	10	Temperature of water in degrees Celsius, 0.1 degree resolution.-10.0 to + 50.0 degrees Temp = Decimal value /10 – 10 for Decimal = 0-600, 1022 = data unavailable, 1023 = sensor unavailable = default, (601 – 1021 = Reserved for future use).
Conductivity	10	Water conductivity in Siemens/meter, resolution of 0.01 S/m. 0.0 - 7.00 Siemens/meter, 7.01 = conductivity > 7.00 1022 = data unavailable, 1023 = sensor unavailable = default, (702 - 1021 = Reserved for future use).
Water pressure	16	Pressure of water in decibars, resolution of 0.1 decibars. 0.0 to 6000.0, 6000.1 = pressure > 6000.1, 65534 = data unavailable, 65535 = sensor unavailable = default, (60002 – 65533 = Reserved for future use).
Salinity	9	Salinity in 0.1‰ (ppt) increments. 0.0 – 50.0 ‰, 50.1 = salinity greater than 50.0, 510 = data unavailable = default, 511 = sensor unavailable; (502 - 509 = Reserved for future use).
Salinity type	2	0 = measured 1 = calculated using PSS-78 2 = calculated using other method 3 = Reserved for future use
Sensor Data Description	3	Indication of data for salinity. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Spare	17	Set to 0, reserved for future use.
Total	**67**	

Table 12.13 - Weather Report

Parameter	No. bits	Description
Air temperature	11	Dry bulb temperature in degrees Celsius, 0.1 degree resolution, -60.0 to +60.0 degrees Celsius, -1024 = Data unavailable = default. (-1023 thru -601 = Reserved for future use), (601 – 1023 = Reserved for future use).
Sensor Data Description	3	Indication of data for air temperature. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Precipitation (type)	2	According to WMO 0=Rain, 1=Snow, 2=Rain and snow, 3=other
Horizontal visibility	8	Visibility in Nautical Miles, 0.1 NM resolution. 0.0 – 25.0 NM, 25.1 = visibility > 25NM, 254 = data unavailable, 255 = sensor unavailable = default, (252 - 253 = Reserved for future use).
Dew point	10	Dew point temperature in degrees Celsius, 0.1 degree resolution, -20.0 - +50.0 degrees. Temp = Decimal value /10 – 20 for Decimal = 0-700, 1023 = data unavailable, (701 – 1022 = Reserved for future use).
Sensor Data Description	3	Indication of data for dewpoint. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Air pressure	9	Air pressure, defined as pressure reduced to sea level, 1 hPa resolution. 0 = pressure <800 hPa, 1-401 = 800 – 1200 hPa, 402 = pressure>1200 hPa, 511 = data unavailable = default, (403-510 = Reserved for future use).
Air pressure tendency	2	Air pressure tendency 0 = steady, 1 = decreasing, 2 = increasing, 3=undefined
Sensor Data Description	3	Indication of data for air pressure. 0 = no data = default, 1 = real time with Quality Control, 2 = raw real time, 3 = predicted, 4= nowcast,7 = Sensor unavailable. (5-6 = reserved for future use).
Salinity	9	Salinity in 0.1‰ (ppt) increments. 0.0 – 50.0 ‰, 50.1 = salinity greater than 50.0, 510 = data unavailable = default, 511 = sensor unavailable; (502 - 509 = Reserved for future use).
Spare	25	Set to 0, reserved for future use.
Total	**85**	

Table 12.14 - Air Gap / Air Draught

Parameter	No. bits	Description
Air Draught	13	The vertical distance measured from the ship's waterline to the highest point on the ship in 1cm increments. 1-8,190cm (81.9m); 8191 = distance>81.9m; 0 = Data unavailable = default.
Air gap	13	The vertical distance measured from the surface of the water to the sensor in 1cm increments. 1-8,190cm (81.9m); 8191 = distance>81.92m; 0 = Data unavailable = default.
Air gap trend	2	Trend of the air gap measurement. 0 = steady 1 = rising 2 = falling 3 = no data
Forecast Air Gap	13	The forecast vertical distance measured from the surface of the water to the sensor in 1cm increments. This is the measurement for the time of the forecast 1-8,190cm (81.9m); 8191 = distance>81.92m; 0 = Data unavailable = default.
Valid Time of the Forecast		This is the date and time for the forecast. Minute resolution.
	5	UTC Day of the forecast: 1-31; 0 = UTC day not available = default.
	5	UTC hour of the forecast: 0-23; 24 = UTC hour not available = default; (25-31 = Reserved for future use).
	6	UTC minute of the forecast: 0-59; 60 = UTC minute not available = default; (61-63 = Reserved for future use).
Spare	28	Set to zero. Reserved for future use.
Total	**44~~85~~**	

13) *Route Information*

Introduction
This message can be used to communicate 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.

Usage notes**:**
1) The message can be broadcast or addressed, depending on which alternative is more appropriate.
2) The information is time-dependent (i.e., has start date/time and duration).
3) The message may be transmitted prior to the start time/date to allow for advance notice. To avoid confusion, it should not be transmitted more than one day in advance.
4) The message should not be transmitted beyond the designated date/time except for a cancellation message. A cancel message can be transmitted using the same Message Linkage ID with Route Type of 31 (cancellation), a Duration of 0 and start time fields all set to not available.
5) ECDIS/ECS software should automatically remove the contents of the Route Information binary message from the display after the end date/time or receiving of a cancel message.
6) Up to 5-slot messages can be created, but messages with more than 3 slots should be avoided.
7) The Message Linkage ID can be used to link additional text (e.g., a separate text message). However, the same source MMSI needs to send both the Route Information and additional Test Description message.

Table 13.1 - Route Information - Broadcast

Parameter	No. 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 zero.
IAI	16	DAC = 001; **FI = 27**
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 source MMSI uniquely identifies the sent message. 1 – 1023 0 = Not available = default
Sender Classification	3	0 = Ship = default 1 = Authority 2 – 7 Not used, 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 Not used, Reserved for future use 31 = Cancellation – cancel route as identified by Message Linkage ID
Start Time: UTC month	4	UTC month of coming into force: 1-12; 0 = UTC month not available = default; (13-15 = Reserved for future use).
Start Time: UTC day	5	UTC day of coming into force: 1-31; 0 = UTC day not available = default.
Start Time: UTC hour	5	UTC hour of coming into force: 0-23; 24 = UTC hour not available = default; (25-31 = Reserved for future use).
Start Time: UTC minute	6	UTC minute of coming into force: 0-59; 60 = UTC minute not available = default; (61-63 = Reserved for future use).
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 toTable 13.3. The number of waypoints is determined by the length of the message.
Spare	0	Not used. Should be set to zero
Total	**172 – 997**	**Occupies 2 - 5 slots** (see Table 13.4)

Table 13. 2 - Route Information - Addressed

Parameter	No. 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.
Destination ID	30	MMSI number of destination station
Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	Not used. Should be zero.
IAI	16	DAC = 001; **FI = 27** (See Rec. ITU-R M.1371-3 § 2.1, Annex 5)
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 source MMSI uniquely identifies the sent message. 1 – 1023 0 = Not available = default
Sender Classification	3	0 = Ship = default 1 = Authority 2 – 7 Not used, 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 Not used, Reserved for future use 31 = Cancellation – cancel route as identified by Message Linkage ID
Start Time: UTC month	4	UTC month of coming into force: 1-12; 0 = UTC month not available = default; (13-15 = Reserved for future use).
Start Time: UTC day	5	UTC day of coming into force: 1-31; 0 = UTC day not available = default.
Start Time: UTC hour	5	UTC hour of coming into force: 0-23; 24 = UTC hour not available = default; (25-31 = Reserved for future use).
Start Time: UTC minute	6	UTC minute of coming into force: 0-59; 60 = UTC minute not available = default; (61-63 = Reserved for future use).
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		Not used. Should be set to zero
Total	**204 - 1029**	**Occupies 2 - 5 slots** (see Table 13.4)

Table 13.3 – Waypoints

Parameter	No. bits	Description
WP i.Lon	28	Longitude of next waypoint in 1/10 000 min (±180°, East = positive (as per 2's complement), West = negative (as per 2's complement); 181° (6791AC0h) = not available = default)
WP i.Lat	27	Latitude of next waypoint in 1/10 000 min (±90°, North = positive (as per 2's complement), South = negative (as per 2's complement); 91° (3412140h) = 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*

Introduction
This message can be used to provide a text description in conjunction with another binary message.

Usage notes**:**
1) The message can be broadcast or addressed, but must be the same as the main message that it is linked to.
2) The Message Linkage ID is used to link the Text Description message to another 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.
3) Although up to 5-slot messages can be created, it is recommended that messages not more than 3-slots be used.

Table 64.1 - Text Description - Broadcast

Parameter	No. 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 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 uniquely identifies the main message. 1 – 1023 0 = Not available = default
Text String	6 - 966	Free text 1 – 161 characters (6 bit ASCII). If applicable, recommended to use IMO Standard Marine Communication Phrase (SMCP) (see IMO A918(22). Number of slots used should be minimized, refer to Table 14.2.
Spare	0	Not used. Should be set to zero
		Occupies 1 - 5 slots (see Table 14.7 Table 14.7 Table 14.7.7)
Total	**72 - 1032**	

Table 14.7 - 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 14.8 - Text Description - Addressed

Parameter	No. 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.
Destination ID	30	MMSI number of destination station
Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	Not used. Should be zero.
IAI	16	DAC = 001; **FI = 30** (See Rec. ITU-R M.1371-3 § 2.1, Annex 5)
Message Linkage ID	10	Used to link the Text Description message with a main message. The Connection ID and source MMSI uniquely identifies the main message. 1 – 1023 0 = Not available = default
Text String	6 - 930	Free text 1 – 155 characters (6 bit ASCII). If applicable, recommended to use IMO Standard Marine Communication Phrase (SMCP) (see IMO A918(22).Number of slots used should be minimized, refer to Table 14.4.
Spare	0	Not used. Should be set to zero
Total	104 – 1028	**Occupies 1 - 5 slots** (see Table 14.9 ~~Table 14.9~~ ~~Table 14.9~~).

Table 14.9 - 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

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