European Committee
for drawing up Standards in
the field of Inland Navigation
(CESNI)

European Standard for River Information Services

(ES-RIS)

EDITION 2023/1

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PART I
ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEM FOR INLAND NAVIGATION (INLAND ECDIS)

CHAPTER 1
GENERAL PROVISIONS AND REFERENCES

Article 1.01
General provisions

1. Electronic Chart Display and Information System for inland navigation (Inland ECDIS) is composed of hardware, software for the operating system and application software.

2. Inland ECDIS aims to contribute to the safety and efficiency of inland shipping.

3. Inland ECDIS can be designed for different modes:
   a) Information mode

      The minimum requirements for Inland ECDIS designed for **information mode**, specified in Part I, Chapter 2, are mandatory on waterways where carriage requirements are enacted by the responsible legislative organs. In other regions they are recommended. This mode can be the fall-back mode for Inland ECDIS in navigation mode. Inland ECDIS in information mode can also be used as a standalone system.

   b) Navigation mode

      Inland ECDIS in **navigation mode** means the use of the Inland ECDIS for conning the vessel with overlaid radar image. The fall-back mode for navigation mode is information mode.

      Software used in **navigation mode** is a safety-relevant part of a navigation system. Manufacturers of navigation systems shall make sure that all software components used in **navigation mode** allow safe navigation in every situation.

      Third party components shall be chosen according to the general safety requirements. The navigation system provider shall prove that third party components meet the high standards necessary for safe navigation either by providing acceptable quality certificates or by extensive and provable testing of the components.

      Navigation systems may support additional services in **navigation mode** if they are useful. These services shall not interfere with other requirements in navigation mode.

4. System configurations
   a) System configuration 1: Inland ECDIS, stand-alone-system without connection to radar

      In this system configuration, it is only operational in **information mode** (see Chapter 3, **Erreur ! Source du renvoi introuvable.**).

b) System configuration 2: Inland ECDIS, parallel installation and connection to radar

This system configuration allows operation in **information mode** as well as in **navigation mode** (see Chapter 3, **Erreur ! Source du renvoi introuvable.**).

c) System configuration 3: Inland ECDIS with connection to radar and shared monitor

In this system configuration, the monitor of the radar equipment is shared with the Inland ECDIS. Prerequisites for this mode are matching graphic parameters for both video signals and a video switch, which allows a fast switchover of the video sources (see Chapter 3, Figure I-3).

This system configuration allows operation in **information mode** as well as in **navigation mode**.

d) System configuration 4: Radar equipment with integrated Inland ECDIS functionality

This system configuration is a radar installation with integrated Inland ECDIS functionality that can be operated in **information mode** as well as in **navigation mode** (see Chapter 3, Figure I-4).

5. Inland ECDIS in **navigation mode** (operating system, application software, hardware and connected equipment) shall have a high level of reliability and availability; at least at the same level as other means of navigation (e.g. navigational radar installation).

6. Inland ECDIS shall use chart information as specified in Part I, Chapters 4 and 6.

7. National authorities and international bodies are recommended to consider transitional provisions when they are introducing carriage requirements for Inland ECDIS.

8. Inland ECDIS shall meet all the requirements of the Inland ECDIS performance standard set out in this Part I.

9. The terms “skipper“ and “boatmaster” used in this Part I shall be deemed to be equivalent to the term “ship master” used in the RIS Guidelines as published in the website https://www.risdefinitions.org.

10. AIS is an automatic identification system for maritime vessels that complies with the technical and performance standards laid down in Chapter V of the SOLAS Convention (Safety of Life at Sea), as defined in the document referred to in Chapter 1, Article 1.02(12). Inland AIS refers to the automatic identification system for inland waterway vessels as set out in Part II. In this Part I, all references to AIS refer to both maritime AIS and Inland AIS, unless specified otherwise.

11. General requirements describe general aims and conditions of the individual environments in the wheelhouse where Inland ECDIS will be used (e.g. “The latest edition of the IENC must be used”). These general requirements shall be carefully observed during the installation and operation but cannot be part of the type-approval process of the Inland ECDIS. For this reason, these requirements are not subject to Inland ECDIS operational and performance requirements, methods of test and required test results (Part V of this Standard).

12. Specifications are concrete definitions of characteristics regarding the system, its hardware parts, the properties and the behaviour of the software. All of these requirements shall be tested within the type-approval process and are part of Part V of this Standard (Test Part of Inland ECDIS).

Article 1.02
References

1. IHO Special Publication No S-57 ‘IHO Transfer Standard for Digital Hydrographic Data’, Edition 3.1, Supplement No 3, June 2014 with all Appendices and Annexes

2. IHO Special Publication No S-62 ‘ENC Producer Codes’

3. IHO Special Publication No S-52 ‘Specifications for Chart Content and Display Aspects of ECDIS’, Edition 6.1.1, October 2014 with clarifications up to June 2015, with all Appendices and Annexes, including:
   - Annex A to former S-52, Appendix 2, “Presentation Library”, Edition 4.0.2 (October 2014 with clarifications up to 2017)

4. IMO Resolution MSC.232(82) ‘Revised Performance Standards for Electronic Chart Display and Information Systems (ECDIS)’, December 2006— Appendix 3 NAVIGATIONAL ELEMENTS AND PARAMETERS

5. IEC-Guideline 61174, edition 4.0 ‘ECDIS — Operational and performance requirements, methods of testing and required test results’, 2008-9

6. Annex 5, Section I (Minimum requirements and test conditions for navigational radar installations in inland navigation), Section II (Minimum requirements and test conditions for rate of turn indicators in inland navigation) and Section III (Requirements for installation and performance tests for navigational radar installations and rate of turn indicators in inland navigation) of ES-TRIN 2021

7. IHO Special Publication No S-32 Appendix 1 ‘Glossary of ECDIS-related Terms’

8. EN 60945 (2002) + corr1 (2010): Marine navigational equipment; General requirements - Methods of testing and required test results

9. IEC 61162 is a collection of standards for ‘Digital interfaces for navigational equipment within a ship’. The 61162 standards are developed in Working Group 6 (WG6) of Technical Committee 80 (TC80) of the IEC

10. Inland domain in the S-100 Registry (IHO)

11. Part II of this Standard (Vessel Tracking and Tracing for Inland Navigation)

12. Directive 2002/59 establishing a Community vessel traffic monitoring and information system

13. ETSI EN 302 194-1 (2006): Electromagnetic compatibility and Radio spectrum Matters (ERM); Navigation radar used on inland waterways: Part 1: Technical characteristics and methods of measurement

14. IEC 62388 (2013): Maritime navigation and radiocommunication equipment and systems - Shipborne radar - Performance requirements, methods of testing and required test results

CHAPTER 2
GENERAL REQUIREMENTS AND SPECIFICATIONS OF INLAND ECDIS

Article 2.01
Contents and provision of chart information

1. Content of ENC

a) General requirements

All modes:

i) The latest edition of the IENC shall be used.

ii) Provisions shall be made to prevent the user from altering the content of original Inland ENC (IENC) and bathymetric IENC editions.

iii) If the chart producer is using overlay cells or bathymetric IENCs, the features may be included in different chart cells, but the whole package shall fulfil the minimum requirements listed in the indents below in this Article 2.01.

iv) The System Electronic Navigational Chart (SENC) shall be stored in the Inland ECDIS.

b) Specifications

All modes:

i) At least the following features shall be included in the IENC:

- bank of waterway (at mean water level);
- construction (e.g. groin, longitudinal control dam, training wall – any facility that is considered a hazard to navigation);
- contours of locks and dams;
- boundaries of the fairway/navigation channel (if defined);
- isolated dangers in the fairway/navigation channel under water;
- isolated dangers in the fairway/navigation channel above water level, such as bridges, overhead cables, etc.;
- official Sign and Marking information (AtoN “aids to navigation”) (e.g. buoys, beacons, lights, notice marks);
- waterway axis with kilometres indication where it is defined;
- location of ports and transshipment sites;
- reference data for water level gauges relevant to navigation;
- links to the external xml-files with operation times of restricting structures, in particular locks and bridges.

Article 2.02
Updating of chart information

1. Updates
   a) General requirements

      All modes:

      i) Inland ECDIS shall be capable of accepting incremental updates and overlay cells to the IENC data provided in conformity with the Product Specification for IENCs and incremental updates of the depth information provided in conformity with the Product Specification for bathymetric IENCs.

      ii) The incremental updates have to be applied consecutively to the specified edition.

      iii) The IENC, all its incremental updates and overlay cells shall be displayed without any degradation of their information content.

      iv) The official IENC data, their incremental updates and overlay cells shall be clearly distinguishable from other, unofficial information, e.g. provided by third parties.

      v) The content of the SENC to be used shall be adequate and up to date for the intended voyage.

   b) Specifications

      All modes:

      i) IENC chart updates shall be applied to the SENC automatically. The implementation procedure of the update shall not interfere with the display in use.

      ii) Inland ECDIS shall ensure that the IENC and all its updates have been correctly loaded into the SENC.

      iii) Inland ECDIS shall keep a record of loaded editions, updates and overlay cells, including the time of application.

      Navigation mode:

      iv) All **manual** activities concerning loading or updating of charts shall be possible only outside the navigation modes.

      v) **Automatic** updating shall not downgrade the performance of the navigation display.

Article 2.03
Presentation of information

1. Image positioning and orientation
   a) General requirements

      Information mode:

      i) All kinds of chart orientations are permitted.

   b) Specifications

      Navigation mode:

      i) The chart shall be automatically positioned and oriented in the relative motion, in ‘head-up’ display mode. The own vessel’s position on the screen may be displayed ‘centred’ or ‘off-centred’.

ii) Orientations other than head-up orientations are permitted in systems with an additional maritime ECDIS type approval. If such a system is used in ‘true motion’ and/or ‘north-up’ mode on European inland waterways, it is considered to be working in **information mode**.

2. Screen orientation, chart orientation, positioning and shifting

a) General requirements

Information mode:

i) Because of the limited space available in the typical wheelhouse of an inland vessel and the fact that a vessel usually follows the fairway-axis, it is recommended to install the monitor in portrait orientation.

ii) While sailing, the chart orientations "head up" as well as "positioning" are recommended, the displayed part of the chart shall automatically follow the own vessel’s position.

b) Specifications

All modes:

i) It shall be possible to display the skipper’s own vessel’s position on the screen.

Navigation mode:

ii) Only the chart orientation ‘relative motion, head up’ and the ‘centred’ or ‘off centred' presentations, as required for the radar picture, are permitted.

iii) The skipper’s own vessel’s position shall always be visible in the display area, whether ‘centred’ or ‘off centred’ as specified in Part II of this Standard.

iv) The chart and the radar image shall match in size, position and orientation within the limits as specified in Chapter 2, Articles 2.03 and 2.06.

3. Position and heading of the own vessel

a) Specifications

Navigation mode:

i) The heading line, which runs from the display centre to the top and which shall always be visible, shall represent the heading of the own vessel.

ii) It shall be possible to correct an offset error (distance between the positions of the position sensor antenna and the radar antenna).

4. Display of SENC information

a) Specifications

All modes:

i) The display of SENC information shall be divided into the following three display categories:

- Display Base,
- Standard Display (Standard Information Density),
- All Display (including other information);

ii) The allocation of the feature classes to the display categories is given in detail in the Look-up Tables of Annex 2.

iii) When first (factory default) starting the Inland ECDIS, it shall come up with the Standard Information Density as defined in the document referred to in Part I, Chapter 1, Article 1.02(3) and Chapter 7, Glossary of Terms.

iv) Inland ECDIS shall be switchable to the Standard Information Density at any time by a single user action.

v) Inland ECDIS shall clearly indicate, at all times, the information density in use.

vi) Time variable depth information in the ENC shall be displayed independently of the three display categories referred to in Article 2.03(4)(a)(i).

vii) It shall be possible for the skipper to select safety depth limits.

viii) Inland ECDIS shall be capable of indicating if the water level is below the safety depth limits.

Navigation mode:

ix) The radar picture shall be clearly distinguishable from the chart independent of the chosen colour table.

x) The presentation of chart information shall not mask or degrade important parts of the radar picture. This shall be ensured by appropriate entries in the look-up tables (refer also to 'radar code', Part I, Chapter 6, Article 6.02(4)).

xi) The chart and radar picture presentation shall have the same scale.

xii) The heading line shall be always visible.

xiii) Additionally, the own vessel's contour and the safety contours may be inserted.

xiv) The data referred to in Chapter 2, Article 2.01(1)(b)(i), 1st to 7th indent and the following elements, shall always be visible and shall not be obscured by other objects:

- Heading line (as required by document referred to in Part I, Chapter 1, Article 1.02(6);
- Bearing line (as required by document referred to in Part I, Chapter 1, Article 1.02(6);
- Range rings (as required by document referred to in Part I, Chapter 1, Article 1.02(6);
- Navigation lines (as required by document referred to in Part I, Chapter 1, Article 1.02(6);
- P-Lines (Parallel lines for personal use);
- Buoys;
- Inland AIS symbols;
- Inland AIS labels (if displayed);
- Sign and Marking information (AtoN).

5. Colours and symbols

a) General requirements

All modes:

i) To present navigational elements and parameters as listed in the document referred to in Part I, Chapter 1, Article 1.02(4), other colours and symbols than those mentioned in Chapter 2, Article 2.03(8)(b)(i) shall be used.

ii) If symbols that deviate from Annex 2 are used for the presentation of any chart information, then they shall be definite and unambiguous in their meaning.

b) Specifications

All modes:

i) The display of colours and symbols to represent SENC information shall at least comply with the regulations of Part I, Chapter 6. Additional other user-selectable symbol sets are permitted.

ii) At least the colour combinations included in the IHO-S-52 Presentation Library, 6.0 (colour tables) for day, dusk and night shall be supported.

iii) The system shall be capable of displaying all features included in a test SENC according to the Presentation Standard for Inland ECDIS (Part I, Chapter 6) correctly when the information density is switched to ‘all display’. Additionally, other user-selectable symbol sets are permitted.

iv) If symbols that deviate from Annex 2 are used for the presentation of any chart information, then they shall:

- be legible,
- be of sufficient size to support the nominal viewing distance.

v) Symbols added to the Inland ECDIS Presentation Library (Annex 2) by the manufacturer shall be clearly distinguishable from Presentation Library symbols as defined in Annex 2.

6. Scale dependent information density (SCAMIN)

a) Specifications

All modes:

i) Inland ECDIS shall implement the SCAMIN functionality (the minimum scale at which the feature may be used for ECDIS presentation).

7. Displayed features in more than one cell for the same area

a) Specifications

All modes:

i) All features included in the SENC and in the additional overlay cell shall be visible and correctly displayed.

ii) Bathymetric IENC shall be displayed correctly together with the base SENC in accordance with (6) of Annex 3.

8. Display of radar information

a) Specifications

Navigation mode:

i) The radar image shall have the highest display priority and can only be presented in the relative motion, "head-up" mode.

ii) The underlaid SENC (Inland ECDIS Chart) shall match in position, range and orientation. Both the radar image and the position from the position sensor shall be adjustable for the antenna offset to a common reference position e.g. conning position.

iii) The overlaid radar image shall conform to the minimum requirements as specified in Chapter 2, Article 2.03(8)(a)(v) to (ix).

iv) The overlaid radar image may contain additional navigational information. However, any additional navigational information and tracking and tracing symbols shall in no way degrade the display of the original radar content.

v) The radar image representation is mandatory for operation. When the radar image is switched off, the system falls back to information mode.

vi) The dimensions, resolution and attributes of the radar presentation shall fulfil the relevant radar requirements (as specified in Chapter 1, Article 1.02(13)).

vii) The radar picture shall not be degraded by other contents of the displayed information.

viii) It shall be possible to switch off the chart or any other information layer and to display only the radar picture by one easily accessible control element or menu area.

ix) If the quality and plausibility monitoring of the Inland ECDIS detect that the chart cannot be oriented and/or positioned with the accuracy required by this Part, an alarm shall be presented on the display, and the chart shall be switched off automatically. If there is no radar signal, the information mode shall be displayed. In this case too, an alarm shall be given. The switching shall always be possible by manual action.

x) Only a monochrome presentation with different intensities of the current radar picture is permitted.

xi) Trails are tracks displayed by the radar echoes of targets in the form of an afterglow. Trails may be true or relative. Relative trails are as they would be presented in relative motion. True trails are as they would be presented in true motion (as specified in Chapter 1, Article 1.02(14)).

Trails for radar echoes should have the same colour as the radar echoes. It is also possible to show the trails in a different colour from the colour of the radar echoes, but the colour of the trails should not dominate the radar echoes. The brightness of the trails should always be lower than the radar echoes, no matter which colour or colour combination is used.

xii) If the Inland ECDIS displays the radar picture, but the radar operation control remains at the radar equipment (see Chapter 3, **Erreur ! Source du renvoi introuvable.**), the radar picture of the inland ECDIS shall be considered as the "daughter display" of a radar equipment. In that case, the radar picture shall fulfil the requirements relative to the display and the pictures for radar and Rate of Turn indicators as defined in the document referred to in Chapter 1, Article 1.02(6).

xiii) If the Inland ECDIS and the radar device share the same screen (see Chapter 3, Figure I-3), or if the Equipment Under Test (EUT) is a radar installation with integrated Inland ECDIS functionality (see Chapter 3, Figure I-4), all requirements of the standards for radar equipment and rate of turn indicators as defined in the document, referred to in Chapter 1, Article 1.02(6), shall be fulfilled.

9. Display of tracking and tracing information

a) Specifications

All modes:

i) The overlay of information regarding the position and orientation of other vessels gathered by communication links, such as AIS, is only permitted when:

- the information is up to date (real-time), and
- the age of information does not exceed the maximum time-out values provided in the first table in Chapter 2, Article 2.04(1)(b)(iii). The symbols shall be marked as outdated if the time of the information exceeds 30 seconds for moving vessels. The position information of the own vessel shall only be displayed when the position is detected by an on-board system and not if the position is received from a repeater station.

ii) Only if the heading of other vessels is available, the position and the orientation of those other vessels may be presented by:

- a directed triangle, or
- a true outline (to scale).

iii) If an AIS is connected, information regarding the position of AIS base stations, AIS Sign and Marking information (AtoN) and AIS Search and Rescue Transmitters (SART) shall be displayed, if the symbols can be distinguished from other symbols (e.g. symbols 2.10 and 2.11 of IEC 62288 Ed. 2, Table A.1 and Table A.2).

iv) It shall be possible to display all information transmitted by an AIS on user request.

v) The number of the blue cones/lights shall only be displayed in the pick report.

10. Display of other navigational information

a) General requirements

All modes:

i) Inland ECDIS and additional navigational information (e.g. Inland AIS) shall use a common conventional geodetic coordinate reference system.

11. Data and display accuracy

a) General requirements

All modes:

i) The accuracy of the calculated data (e.g. measured distance or bearing) that is presented shall be independent of the display characteristics and shall be consistent with the SENC accuracy.

ii) The accuracy of all calculations performed by Inland ECDIS shall be independent of the characteristics of the output device and shall be consistent with the SENC accuracy.

iii) The accuracy of bearings and distances drawn on the display or those measured between features already drawn on the display, shall be no less than that required by the resolution of the display.

b) Specifications

Navigation mode:

i) The Inland ECDIS shall provide an indication as to whether the display uses a smaller display range (higher zoom factor) than the accuracy that the IENC data offers (over-scale indication).

ii) The static offset, i.e. the error between the whole radar picture and chart image, shall be less than ± 5 m in all ranges up to 2000 m.

iii) The chart position shall match the radar image. Assuming an absolute position input, the permissible static difference between actual radar position and displayed radar centre shall not exceed 5 m.

iv) It shall be possible for the system administrator to adjust the offset values between the physical positions of the position sensor antenna and the radar antenna of the vessel so that the SENC display matches the radar image. It is recommended to provide this function in a system administration menu.

v) Resolution and accuracy shall at least be the same as those of the display but may not suggest better values than those of the chart data.

12. Position accuracy

a) General requirements

All modes:

i) The positioning system and the SENC shall be based on the same geodetic datum.

Navigation mode:

ii) The navigation system shall make reliable estimations of position. Position and heading information shall be calculated and displayed for the same reference position. This shall normally be the centre of the radar antenna.

b) Specifications

Navigation mode:

i) The navigation system shall estimate and the Inland ECDIS shall display the position of the vessel. The following minimal requirements shall be fulfilled under normal operation conditions:

- The estimations of position and heading shall be checked by the Inland ECDIS for conformity with the required accuracy. A new position estimate shall at least be available with every revolution of the radar antenna.
- The average position estimation shall not deviate more than 5 metres from the true position and shall cover all systematic errors.
- The standard deviation σ shall be less than 5 metres and based on random errors only.
- The Inland ECDIS shall be capable of detecting positional failures.

ii) The Inland ECDIS shall monitor the position quality indicators provided by the connected Inland AIS device and/or (D)GNSS receiver. Inland ECDIS shall indicate a warning in case of low quality position information. An alarm shall sound (optical and acoustic signal) when no position information is available.

13. Heading accuracy

a) General requirements

Navigation mode:

i) The navigation system shall make reliable estimations of the heading. Position and heading information shall be calculated for the same reference position. This shall typically be the centre of the radar antenna.

b) Specifications

Navigation mode:

i) The navigation system shall estimate and the Inland ECDIS shall display the heading of the vessel. The following minimal requirements shall be fulfilled:

- A new heading estimate shall at least be available with every revolution of the radar Antenna.
- The average heading angle estimation shall not deviate more than 1 degree from the radar heading direction and shall cover all systematic errors.
- The offset between vessel heading direction and radar heading shall be less than 1 degree.
- Chart and radar image shall have the same orientation. The static directional error between heading line and chart orientation shall be less than ± 0.5 degree.

Article 2.04
Operation

1. Operation

a) General requirements

Information mode:

i) All kinds of chart orientation, rotation, zooming and panning are allowed. However, it is recommended to use the same fixed ranges as in the **navigation mode** and the chart orientation either:

- to the north,
- to the fairway axis at the actual position, or
- to the actual vessel's heading.

ii) Additional information such as the blue sign, or the number of blue cones of other vessels, the status of signals, NtS, weather warnings, and the water level received via Inland AIS, may be displayed.

iii) Vessels' positions received by an AIS device and required by applicable police regulations shall be displayed. Textual information received by an AIS device and required by applicable police regulations shall be displayed on demand in an appropriate manner (e.g. permanent or in pick report).

Navigation mode:

iv) Information that another vessel is carrying blue cones or lights may be displayed by a different colour of the vessel symbol.

b) Specifications

All modes:

i) If the heading of other vessels is available, the position and the orientation of those other vessels may be presented by a directed triangle, aligned with vessel's longitudinal axis or a true outline (to scale).

ii) In all other cases a generic symbol shall be used (an octagon is recommended, a circle shall not be used for applications that are certified according to maritime standards).

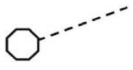
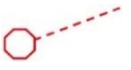
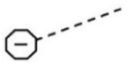
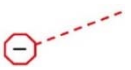
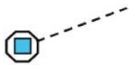
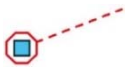
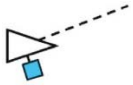
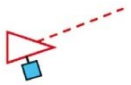
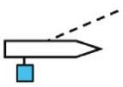
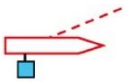
iii) The following time out values are recommended according to Chapter 1, Article 1.02(14).

Category of vessel	Nominal reporting interval class A	Maximum time out value class A	Nominal reporting interval class B	Maximum time out value class B
Vessel at anchor or moored and not moving faster than 3 knots (class B not moving faster than 2 knots)	3 min	18 min	3 min	18 min
Vessel at anchor or moored and moving at more than 3 knots	10 s	60 s	3 min	18 min
Vessel operating in SOLAS mode, moving at 0 to 14 knots	10 s	60 s	30 s	180 s
Vessel operating in SOLAS mode, moving at 0 to 14 knots and changing course	3 1/3 s	60 s	30 s	180 s
Vessel operating in SOLAS mode, moving at 14 to 23 knots	6 s	36 s	30 s	180 s
Vessel operating in SOLAS mode, moving at 14 to 23 knots and changing course	2 s	36 s	30 s	180 s
Vessel operating in SOLAS mode, moving faster than 23 knots	2 s	30 s	30 s	180 s
Vessel operating in SOLAS mode, moving faster than 23 knots and changing course	2 s	30 s	30 s	180 s
Vessel operating in inland waterway mode	2 – 10 s	60 s	—	—

iv) The AIS targets should be marked as outdated if the position information is older than half of the timeout value. The information on the intention (blue sign) shall only be displayed on the right-hand side of the symbol, if the heading of the vessel is available. If no heading information is available, the information shall only be displayed in a direction independent form.

v) Information on the blue sign shall only be displayed if all three values can be clearly distinguished:
   - the blue sign is not connected, or the status of the connection is not available;
   - the blue sign is set;
   - the blue sign is not set.

   The following table provides an example for the display:

Display of Blue Sign status 0 to 2 and dangerous goods							
Blue sign			Not connected or not available		Not Set		Set	
Blue cones			No	1 to 3	No	1 to 3	No	1 to 3
Heading	No	Symbol						
	Yes	Symbol						
		True shape						

Information mode:

vi) Inland ECDIS may be connected to a positioning sensor to move the chart picture automatically and to display the section of the chart matching the actual surrounding, namely in the user-selected range.

Navigation mode:

vii) Manual switching between **navigation mode** and **information mode** shall be possible.

viii) The operation mode in use shall be displayed.

ix) In **navigation mode**, the Inland ECDIS display shall be integrated into the own vessel's radar information. The radar information shall be clearly distinguishable from the SENC information.

x) It shall be possible to temporarily remove either the ECDIS or the radar information by a single user action.

xi) It shall be possible to switch off Inland AIS labels, either manually or on the base of a configured timeout value.

xii) Information regarding the position and orientation of other vessels, gathered by communication links other than their own radar, may be displayed only if they are up to date (nearly real-time) and meet the accuracy that is required for the support of tactical and operational navigation. Position information of the own vessel that is received from a repeater station shall not be displayed.

2. Ergonomics of control elements

a) General requirements

Navigation mode:

i) The symbols of the control elements shall be readable under all conditions that may exist in a wheelhouse.

ii) Wireless remote controls are not permitted.

b) Specifications

All modes:

i) The operation of the system shall be simple, appropriate and conform to common human interface standards. The operational state of the system and the connected peripherals shall be clearly indicated.

ii) The symbols of the control elements shall have a minimum character height of 4 mm.

Navigation mode:

iii) The brightness and the illumination of the control elements shall be adjustable to the required value.

iv) The number of control elements shall be as low as possible and restricted to the required number.

v) The ON/OFF switch shall perform and be arranged in such a way that an inadvertent action is not possible.

3. Characteristics of control elements

a) Specifications

All modes:

i) All control elements shall be checked regarding the ergonomic and functional mode of operation and shall fulfil the appropriate requirements of this Part I.

ii) Additional national language versions may be introduced by the manufacturer under the manufacturer’s own responsibility.

4. Pick report

a) Specifications

All modes:

i) It shall be possible to obtain all underlying textual and/or graphical information concerning user selections of the features that are displayed in the chart.

ii) This additional textual and/or graphical information shall not hamper the view of the waterway in the navigational chart.

5. Measuring features

a) Specifications

All modes:

i) Measuring features for distances and bearings are required.

6. Input and editing of skippers' own chart entries

a) Specifications

All modes:

i) Inland ECDIS shall allow input, storing, modification and deletion of additional chart information by the skipper (skipper's own features).

Navigation mode:

ii) These own chart entries shall be distinguishable from the SENC data. The skipper shall be able to add only his/her own single point-shaped objects in navigation mode without switching to information mode.

7. Scales, Ranges/Range rings

a) General requirements

Information mode:

i) All scales and ranges are permitted.

b) Specifications

Navigation mode:

i) The following fixed ranges and range rings are prescribed according to the radar regulations:

Range	Range rings
500 m	100 m
800 m	200 m
1 200 m	200 m
1 600 m	400 m
2 000 m	400 m
4 000 m	1 000 m

ii) Smaller and larger ranges with a minimum of four and a maximum of six range rings are permitted.

iii) Only the successive switchable ranges (scales) are permitted.

iv) Inland ECDIS shall have fixed range rings with the intervals set out in Chapter 2, Article 2.04(7)(b)(i) and (ii) and at least one variable range marker (VRM).

v) Switching on/off of fixed and variable range ring markers shall be independent of each other and their display shall be clearly distinguishable.

vi) The position of the VRM and the corresponding displayed distance shall use the same increments and resolution.

vii) The functions of the VRM and the electronic bearing line (EBL) may also be realised by a cursor and by a corresponding numerical display, showing range and bearing of the cursor position.

viii) All numeric displayed values of the electronic bearing line (EBL) and the variable range marker (VRM) shall match exactly with the analogue positions of the EBL and the VRM (or correspond to the cursor coordinates).

ix) The resolution and increments of the numerical display shall be identical to the analogue values of EBL and VRM.

8. Inland ECDIS pre-sets (store/recall)

a) General requirements

Navigation mode:

i) Other parameters than brightness may come up with values from stored settings.

b) Specifications

Navigation mode:

i) After starting, the Inland ECDIS shall come up with a moderate brightness pre-set which neither blinds in a dark environment nor makes the picture indecipherable in a bright environment.

9. Control elements

a) General requirements

All modes:

i) Control elements, and indicators for connected sensors, may be integrated into Inland ECDIS.

b) Specifications

All modes:

i) Inland ECDIS shall be designed in accordance with ergonomic principles for user-friendly operation.

ii) The Inland ECDIS shall have a minimum of control elements (see Part V).

iii) Standard settings and user-defined settings shall be easy to find and recover.

iv) The following operational functions require direct access:

- ”range”,
- ”brightness”,
- ”colours”,
- ”information density”.

v) These functions shall have either their own control elements or own menu areas, which are arranged in the highest menu level and are permanently visible.

vi) The following function parameters shall always be visible:
- range (actual range);
- status (sensor status: alarms, and - if connected - GNSS receiver, AIS and heading device);
- water level (selected water level, if available);
- safety depth (selected safety depth, if available);
- information density (selected information density).

Navigation mode:

vii) The following function parameters shall always be visible:
- sensor status (radar tuning, position quality).

Article 2.05
Service functions

1. Service functions

a) Specifications

All modes:

i) Service functions shall be protected by password or other suitable measures against unauthorised access.

Information mode:

ii) The following service functions shall not be selectable in **navigation mode** although these functions have an impact on navigation mode:
- static correction of the chart position,
- static correction of the chart orientation,
- configuration of interfaces.

These functions should only be performed in information mode.

Article 2.06
Hardware requirements

1. Hardware

a) General requirements

Navigation mode:

i) Inland ECDIS in navigation mode shall be designed and manufactured to withstand typical environmental conditions prevailing on board of a vessel without any degradation in quality and reliability. Furthermore, it shall not disturb other communication and navigation equipment.

b) Specifications

Navigation mode:

i) In the system configuration 4, as described in Part I, Chapter 3, Figure I-4, all components of Inland ECDIS installed inside the wheelhouse shall fulfil the requirements of equipment categorized as ‘b) protected from weather’ as specified in the standard EN 60945, with the exception that the test temperature range is limited to 0 °C to + 40 °C (whereas the test temperature range in EN 60945 is specified from – 15 °C to + 55 °C). For the system configuration 2 and system configuration 3, described in Part I, Chapter 3, **Erreur ! Source du renvoi introuvable.** and Figure I-3, CE conformity is sufficient.

ii) The last sentence of i) does not apply to monitors operated in navigation mode in system configuration 3 (Part I, Chapter 3, Figure I-3) nor to hardware components used for providing radar information from the radar processor for display on the Inland ECDIS screen.

iii) Inland ECDIS in system configuration 4, as described in Part I, Chapter 3, Figure I-4, and visual display units operated in navigation mode in system configuration 3, and hardware components used for providing radar information from the radar processor for displaying this on the Inland ECDIS screen, shall fulfil the requirements of the document referred to Chapter 1, Article 1.02(8) concerning the resistance to environmental conditions (humidity, vibration and temperature; the temperature reduced according to Chapter 2, Article 2.06(1)) and concerning electromagnetic compatibility.

iv) The provider or his/her representative shall submit a relevant conformity declaration of an accredited laboratory.

2. Display

a) General Requirements

All modes:

i) The display method shall ensure that the displayed information is clearly visible to more than one observer in the typical conditions of light exposed in the wheelhouse of a vessel by day and night.

b) Specifications

All modes:

i) The following requirements shall be fulfilled:

- Alphanumeric data and text shall be presented using a clearly legible non-italic sans-serif font.
- The font size shall be appropriate for the viewing distance from user positions (i.e. with respect to reading distance and viewing angles) likely to be experienced in the wheelhouse of a vessel.
- The character height and the size of AIS symbols in millimetres shall not be less than 3.5 times the nominal viewing distance in metres.
- The minimum size of AIS symbols and the minimum character height of AIS information shall be 3,5 mm.

ii) The display shall fulfil the requirements in landscape and in portrait format.

Navigation mode:

iii) The integrated display shall be in accordance with the requirements for radar on inland waterways as specified in Chapter 2, Article 2.03(8).

3. Screen dimensions

a) General requirements

Information mode:

i) It is recommended to use the size of the screen as specified for navigation mode (see Chapter 2, Article 2.06(3)(b)(iii)). In the event that space for the installation of the monitor is a problem, the screen size might be reduced taking into account the nominal viewing distance for the screen.

ii) Ergonomic aspects shall determine the size. The information displayed must be readily visible from the conning position.

b) Specifications

Information mode:

i) The screen diagonal shall be equal to or larger than 199 mm (7.85 inches). A length of at least 15 inches is recommended. Under all conditions the boatmaster must be capable of perceiving the displayed information sufficiently in accordance with Human Machine Interface guidelines.

Navigation mode:

ii) The minimum chart display area on the screen shall be at least 270 mm by 270 mm. The effective diameter of the visible radar picture on the screen shall not be less than 270 mm.

4. Screen resolution

a) Specifications

Information mode:

i) A display resolution of 5 m in the 1 200 m range is recommended. This leads to a maximum pixel dimension of 2,5 m × 2,5 m, i.e. about 1 000 pixels at the short edge of the screen.

Navigation mode:

ii) A display resolution of 5 m in the 1 200 m range is required. This leads to a maximum pixel dimension of 2,5 m × 2,5 m, i.e. about 1 000 pixels at the short edge of the screen.

5. Display colours

a) Specifications

All modes:

i) The system shall be able to display the chart in ergonomically proven colour combinations for day, dusk and night.

6. Display and screen brightness

a) Specifications

All modes:

i) The brightness of the display shall be adjustable to every operational required value. This is especially valid for the lowest value during operation at night.

Navigation mode:

ii) The brightness of the features and radar echoes shall not exceed a value of 5 cd/m^2, and the background a value of 0,1 cd/m^2.

iii) Chart and radar pictures shall have separate brightness controls.

iv) Because of substantial differences of environmental brightness between a bright day and a dark night, another control for the basic brightness of the display shall be available in addition to the colour tables in the menu.

7. Picture refresh rate

a) Specifications

Navigation mode:

i) The picture refresh rate shall not be shorter than that of the radar picture (≥ 24 pictures per minute).

ii) Between two consecutive refreshes no fluctuations of brightness shall occur.

iii) On raster scan monitors, the frame repetition rate shall not be lower than 60 Hz and the switching time shall not exceed 50 ms.

Article 2.07
Connection of other equipment

1. Connection of other equipment

a) General requirements

All modes:

i) It is permitted for Inland ECDIS to generate information to other systems, e.g. for the purpose of electronic reporting.

ii) The relevant requirements of controls and indicators to connected equipment shall be fulfilled.

b) Specifications

All modes:

i) Inland ECDIS shall consider that there might be more than one position source of different quality.

Navigation mode:

ii) Inland ECDIS shall not affect the performance of any connected sensors adversely. Similarly, the connection of optional sensors shall not degrade the performance of Inland ECDIS.

iii) Electronic circuits shall be designed to be failsafe, mechanically as well as electronically, and shall not have degrading repercussions on connected sensors.

2. Configuration of interfaces

a) Specifications

All modes:

i) It shall be possible to configure interfaces for connected sensors, actors and signals.

ii) Interfaces shall comply with existing interface specifications as defined in the document referred to in Part I, Chapter 1, Article 1.02(9), and the interface specifications for rate of turn indicators (20 mV/deg/min) as defined in the document referred to in Part I, Chapter 1, Article 1.02(6).

3. Accuracy of rate of turn indicators

a) Specifications

Navigation mode:

i) When the ROT is less than ± 60 deg/min, the dynamic deviation between the chart orientation and the radar picture shall be less than ± 3 degrees.

ii) The deviation between the displayed ROT and the ROT provided by the connected ROT indicator shall be less than ± 3 deg/min.

Article 2.08
Warning and alarm indicators

1. Built-in Test Equipment (BITE)

a) Specifications

Navigation mode:

i) Inland ECDIS in navigation mode shall be provided and have the means to carry out on-board tests of major functions, either automatically or manually. In case of a failure, the module at fault shall be shown.

2. Malfunctions

a) Specifications

Information mode:

i) Inland ECDIS shall provide an appropriate alarm or warning indicator of missing input from – if connected – GNSS receiver, AIS and heading device.

Navigation mode:

ii) Inland ECDIS shall provide an appropriate alarm or warning indicator of system malfunctions (refers to iv below).

iii) Inland ECDIS shall provide appropriate alarms of malfunction of the essential connected peripherals and sensors (e.g. Inland AIS, radar, heading device etc.) with respect to the displayed information (e.g. map matching, wrong chart orientation, wrong own position).

iv) Inland ECDIS shall provide appropriate warnings of malfunction of non-essential connected peripheral or sensor (e.g wind sensor) with respect to the displayed information.

v) As a requirement, at least the following situations shall be covered:
- any error in the Inland ECDIS (built-in test equipment — BITE),
- missing positioning signal,
- missing radar signal,
- missing rate of turn signal,
- missing heading signal,
- radar image and map impossible to superimpose properly,
- missing AIS signal.

vi) The navigation system shall check proper operation of the position and heading estimation in real-time. Problems shall be detected within 30 seconds. In case of malfunction, the navigation system shall inform the user about the problem and its consequences for navigation.

vii) If a critical sensor alarm signals that the position or the heading does not meet the required accuracy criteria, the navigation chart shall be switched off.

viii) Inland ECDIS shall provide an alarm if the input from the position-fixing system is lost.

ix) Inland ECDIS shall also repeat, but only as a warning, any alarm or other warning passed to it from a position fixing system.

Article 2.09
Fall-back arrangements

1. Insufficient accuracy of the SENC-positioning

a) Specifications

Navigation mode:

i) The SENC shall be automatically switched off if the SENC positioning does not match the radar picture within the limits set out in Part I, Chapter 2, Article 2.03(11)(b)(iii) and Article 2.03(13)(a)(i).

2. Defects

a) General requirements

Navigation mode:

i) Facilities enabling a safe take-over of the functions of Inland ECDIS shall be provided in order to ensure that an Inland ECDIS failure does not result in a critical situation.

b) Specifications

Navigation mode:

i) If the Inland ECDIS has a defect, it shall provide a suitable alarm (refers to Part I, Chapter 2, Article 2.08(2)(a)(iv)).

Article 2.10
Quality requirements

1. Endurance Test

a) General requirements

Navigation mode:

i) The Inland ECDIS shall run for at least 48 hours of uninterrupted operation under normal operation conditions. The system shall provide standard interfaces for performance and resource monitoring during operation. Monitoring the system shall show no indication of system instability, memory leaking or any kind of performance loss over time. Inland ECDIS supporting additional services shall provide the necessary test equipment including all documents mentioned under Chapter 2, Article 2.10(2)(b)(i).

2. Documentation

a) General requirements

All modes:

i) A user's manual shall be delivered with every Inland ECDIS installed on a vessel.

ii) The technical documentation shall be complete, appropriate, and understandable, and that it is sufficient for unproblematic installation, configuration and operation of the Inland ECDIS.

iii) In addition, the operating manual shall describe the measures required by the user in an adequate and appropriate way.

b) Specifications

All modes:

i) The documentation (manuals) shall contain comprehensive information on the installation, operation and service of the Inland ECDIS. The presentation of user-relevant information shall be clear, understandable and without unnecessary technical terms. The user manual should be available, preferably in all supported languages of the user interface, but shall be available at least in English. The technical system description may be made available in English only.

ii) The manufacturer's documentation shall identify the nominal viewing distance for the screen.

Information mode:

iii) If the software is sold as a standalone product, without hardware, the manufacturer's documentation shall include the information that it may only be used as Inland ECDIS if the hardware fulfils the display requirements of this Part.

Navigation mode:

iv) The following documents shall be provided for admittance and shall be delivered with every Inland ECDIS used in navigation mode:

- user's manual,
- installation manual,
- service manual.

v) The following documents and files shall be provided during the admittance procedure and are not required for end users:
   - design specifications.

vi) The documents and files provided shall allow for a complete verification of compliance with the Inland ECDIS technical specifications.

3. Interfaces

a) Specifications

All modes:

i) All interfaces shall be documented correctly and completely.

Information mode:

ii) The Inland ECDIS manufacturers must confirm in their system documentation that the system includes those test procedures and signal indicators, according to Chapter 2, Article 2.08.

Article 2.11
Changes to certified navigation systems

1. Manufacturer's declaration

a) General requirements

Navigation mode:

i) Inland ECDIS installed on board shall be functionally equivalent to a system certified by the authorities. For every system, the Inland ECDIS provider shall send a statement of compliance with the Inland ECDIS technical specifications and its functional equivalence to the certified system.

2. Hardware and software changes

a) General requirements

Navigation mode:

i) The Inland ECDIS provider may change software or hardware as long as compliance with this standard is maintained. Changes shall be fully documented and submitted to the competent authority, together with an explanation of how the navigation system is affected by those changes. The competent authority may require a partial or complete renewal of certification if considered necessary. This also applies to the use of an approved Inland ECDIS with another national version of the operating system.

ii) The following changes do not affect certification of the system and require only a notice to the competent authority:
   - minor changes on third party components (e.g. operation system or library updates),
   - use of equivalent or better hardware components (e.g. faster microprocessor, newer chip revisions, equivalent graphic card, etc.),
   - minor changes in source code or documentation.

CHAPTER 3
SYSTEM CONFIGURATIONS (FIGURES)

Figure I-1
Inland ECDIS, self-sufficient system without connection to radar
(system configuration 1)

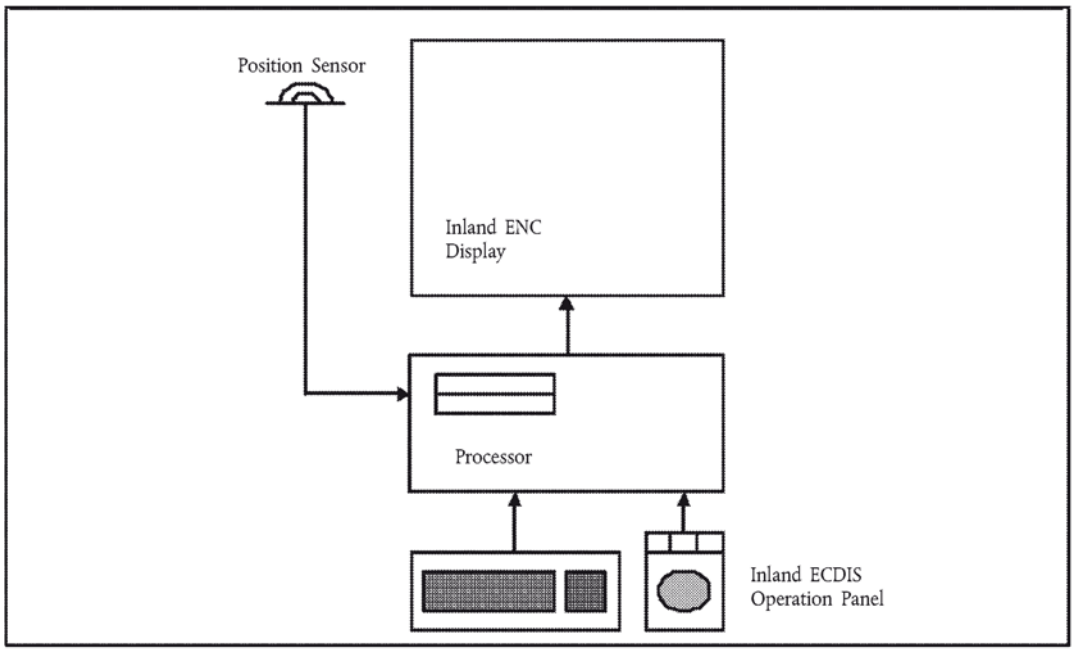


Figure I-2
Inland ECDIS, parallel installation with connection to radar
(system configuration 2)

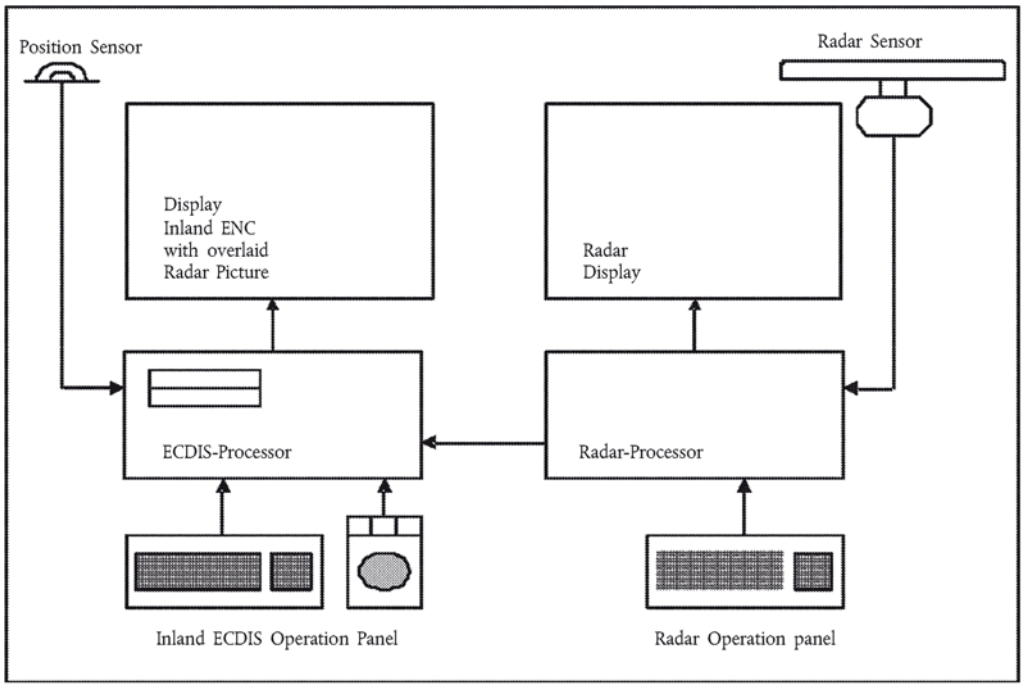


Figure I-3
Inland ECDIS with connection to radar and shared monitor
(system configuration 3)

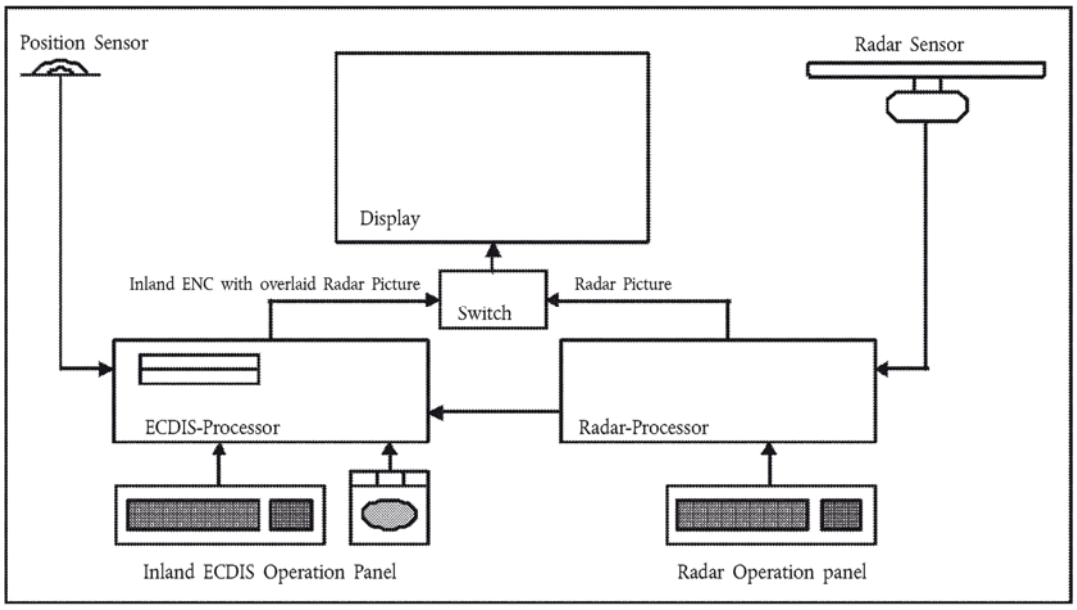
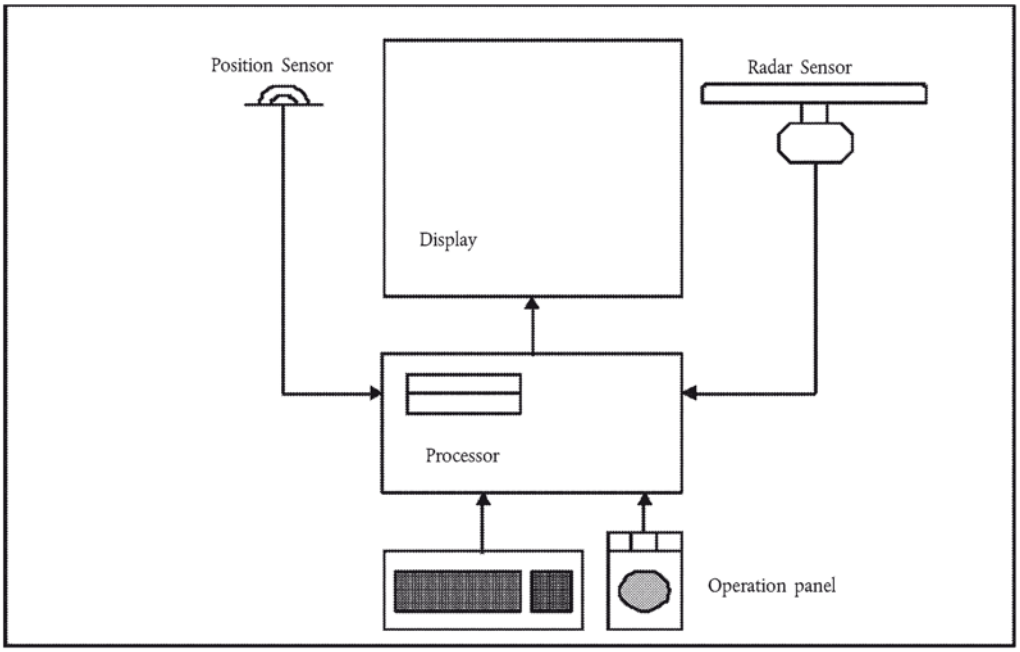


Figure I-4
Navigational radar equipment with integrated Inland ECDIS functionality
(system configuration 4)



CHAPTER 4
DATA STANDARD FOR IENCS

Article 4.01
Introduction

1. The Data Standard for IENCs describes the technical specifications to be used
   a) for the exchange of digital hydrographic data between national inland waterway authorities, and
   b) for its distribution to manufacturers, skippers and other users.

2. This Data Standard shall be used for the production of IENCs and bathymetric IENCs. The transfer and distribution of IENCs and bathymetric IENCs shall be done in such a way that data integrity is ensured.

3. This Data Standard is based on the document referred to in Chapter 1, Article 1.02(1) ('S-57').

4. This Data Standard describes the necessary additions and clarifications to S-57 and the application of S-57 for the purpose of use in Inland ECDIS.

5. This Data Standard shall be compliant to standards and regulations indicated in Annex 1 and Annex 3.

Article 4.02
Theoretical data model

The description of the theoretical data model in Part 2 of S-57 shall apply to the theoretical data model of IENCs and bathymetric IENCs.

Article 4.03
Data structure

The description of the data structure in Part 3 of S-57 shall apply to the data structure of IENCs and bathymetric IENCs.

Article 4.04
Product specifications for IENCs and bathymetric IENCs

1. The Product Specifications for IENCs and for bathymetric IENCs enable chart producers to produce a consistent IENC or bathymetric IENC, and manufacturers to use that data efficiently in an Inland ECDIS that satisfies the Performance Standard for Inland ECDIS set out in Chapter 1.

2. Data for ENCs shall be made available to all manufacturers of applications. An IENC shall be produced in accordance with the rules laid down in Annex 1 and shall be encoded using the following documents referred to therein:
   a) the IENC Feature Catalogue, and
   b) the rules described in the IENC Encoding Guide.

3. A bathymetric IENC shall be produced in accordance with the rules laid down in Annex 3 and shall be encoded using:
   a) the bathymetric IENC Feature Catalogue (Annex 3) and
   b) the rules described in the IENC Encoding Guide (Annex 1).

4. IENCs and bathymetric IENCs approved for navigation mode shall be produced in accordance with the ‘Data Standard’ and the ‘Product Specification’ referred to in this Chapter.

CHAPTER 5
CODES FOR PRODUCERS AND WATERWAYS (IN ADDITION TO IHO–S-62 ENC PRODUCER CODES)

1. Codes for producers of IENCs, as well as the registration procedure, are those mentioned in the document referred to in Part I, Chapter 1, Article 1.02(2) ('IHO S-62').

2. Administrations or private companies which produce IENCs and are not mentioned in IHO-S-62 and administrations or private companies that decide to produce IENCs, shall register a producer code at the S-100 registry of IHO at http://registry.iho.int

3. When competent authorities are designated by Member States for the provision of river information services through dedicated systems and for the international exchange of data, the following applies:
   a) Since a producer code alone is not sufficient to establish whether an IENC is appropriate to be used in navigation mode, the competent authorities shall maintain and provide via their official website an up-to-date list of IENCs approved for navigation mode within their geographical area of responsibility.
   b) The list mentioned in (a) shall include the file name of the IENC cell, the stretch of the inland waterway that is covered, the edition number, the issue date and a list of available update files to the currently valid edition also with their issue dates.
   c) The list mentioned in (a) shall include all IENCs for which the cell complies with the requirements regarding the minimum content and is approved for navigation mode.

4. When a Member State has the obligation to notify the competent authorities to a regulatory body, then the following applies:
   a) The notification shall include information on the geographical area of responsibility and the official website of the competent authorities.
   b) The Member State shall notify immediately of any changes relative to the elements mentioned in (a).

5. The waterway codes in the file name of IENC should be defined by the competent waterway authorities.

CHAPTER 6
PRESENTATION STANDARD FOR INLAND ECDIS

Article 6.01
Introduction

1. This Presentation Standard for Inland ECDIS describes the technical specifications to be used for the presentation of Inland ECDIS data. The presentation shall be produced in such a way that no information is lost.

2. This Presentation Standard is based on the document referred to in Chapter 1, Article 1.02(3) ('S-52').

3. This Presentation Standard describes the necessary additions and clarifications to S-52 and the application of S-52 for the purpose of use in Inland ECDIS.

4. The presentation of Inland ECDIS data shall meet the requirements of the Presentation Standard described in Chapter 6 and Annex 2.

5. Definitions of terms may be found in:
   a) Part 1, clause 5 of IHO-S-57,
   b) the document referred to in Part I, Chapter 1, Article 1.02(7),
   c) the 'Glossary for Inland ECDIS' in Part I, Chapter 7.

Article 6.02
The presentation library for Inland ECDIS

1. S-57 data sets describe the data standard for IENCs, but they do not contain any information about how the data will be presented. The chart presentation is generated online in the Inland ECDIS. For that purpose, the Inland ECDIS uses machine-readable symbolization instructions for each feature that is represented on the screen. For the presentation of ENCs, the IHO S-52 standard is mandatory. The S-52 standard contains all the rules necessary for the symbolization and presentation of ENCs on the screen.

2. Since the features, attributes and attribute values for ENCs were extended for IENCs and bathymetric IENCs, an extension of the S-52 standard is necessary in order to be able to display also the Inland specific features. All extensions apply to the document referred to in Part I, Chapter 1, Article 1.02(3).

3. Components of S-52 and Inland ECDIS Presentation Library
   a) The major components of the S-52 presentation library are:
      i) A library of symbols, line styles and fill styles;
      ii) A colour coding scheme which includes the IHO colour tables for day, dusk and night-time;

iii) A set of symbology command words from which machine-readable instructions can be assembled. The result is a symbology instruction, which is processed to symbolize ENC features in turn;

iv) A set of conditional symbology procedures to decide on the appropriate symbolization in cases determined by the boatmaster's selection (e.g. safety contour) or for complex symbols (e. g. top marks on buoys and beacons);

v) A set of look-up tables that link feature descriptions from the ENC to the appropriate symbology instructions depending on whether:

- the link is straight forward, i.e. a direct relationship between a feature's description and its presentation such as a buoy or a land area. In this case, the look-up table provides the symbology instruction to show a symbol, an area fill or a line style,
- the link is conditional, i.e. depending on circumstances, for example a depth area, where the colour fill depends on the choice of the safety contour. In this case the look-up table refers the decision to a conditional symbology procedure that later selects the appropriate symbology instructions.

b) Inland ECDIS shall use all S-52 components, plus extensions, in:

i) look-up tables,

ii) symbol library,

iii) conditional symbology procedures.

The extensions are described in Annex 2.

4. Look-up tables

a) The major components of the S-52 presentation library are:

i) 6-character code of the feature class (acronym);

ii) Attribute combination;

iii) Symbolization instructions;

iv) Display priority, 0-9 (comparable with drawing layers);

v) Radar code;

vi) Display category (display base, standard, all others);

vii) 'Viewing group', more refined grouping of features than the display categories.

Figure I-5
Example entry of a look-up table

"LNDMRK","CATLMK17|","SY(TOWERS01)","7","O","OTHER","32250"

In this case the feature LNDMRK is shown by the symbol TOWERS01 with priority 7, if the attribute CATLMK equals 17. The feature lies over the radar.

The presentation of features in a specific area that are contained in different cells of the same usage follows the entries in the look-up tables.

b) The Presentation Library provides five look-up tables:
   i) paper chart point symbols,
   ii) simplified point symbols,
   iii) line symbols,
   iv) plain area boundary symbols,
   v) symbolized area boundary symbols.

5. Conditional symbology procedures (CS)
   a) CS procedures shall be generated for features of which the symbolisation
      i) depends on application settings, e.g. safety contour,
      ii) depends on other features, e.g. top marks and their structure,
      iii) is too complex to be defined in a direct look-up table entry.
   b) CS procedures, which shall be modified or implemented in an Inland ECDIS, additional to the CS procedures of S-52, are described in Annex 2.

6. Colours
   a) Colours used in an ECDIS are defined in an absolute manner, independently from the monitor used (using CIE coordinates). This ensures that ECDIS charts look similar on monitors from different suppliers. CIE values are converted into RGB values by means of colour calibration software which must be used by the manufacturer.
   b) Commercial displays usual in the trade are seen as matching those requirements.
   c) Due to the fact that various light conditions might occur on the bridge of a vessel, it is necessary to offer presentations with different brightness levels. For each level, a separate colour table exists.
   d) The represented colour scheme shall be chosen on the basis of ergonomic and physiological factors and the representation of indications in different colours shall not result in mixed colours by superimposing them.

7. Presentation of notice marks
   a) Notice marks which are located at the river-bank are presented in the chart displayed by generic symbols (notmrk01, notmrk02 and notmrk03). This does not apply to the notice marks on bridges.
   b) Additionally, applications are required so the detailed symbol can be displayed, which is similar to the real-world indication, and the full set of object information of a user-selected notice mark.
   c) Notice marks that are located on bridges shall be symbolized according to the orientation of the bridge.
   d) Notice marks which specify distances, or a velocity, shall not be symbolized with the number itself, but only with the symbol that gives the general regulation or information.

CHAPTER 7
GLOSSARY OF TERMS

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Acronym	Acronyme Akronym Acroniem	6-character-code of the feature/of the attribute.	Document referred to in Chapter 1, Article 1.02(1)
Actor	Acteur Aktor Actor	An actor transforms an electrical quantity into another physical quantity (e.g. optical). An actor is the opposite of a sensor.	
AIS	AIS	On-board equipment allowing automatic identification of ships for enhanced ship monitoring as well as voyage data recording and other functions. The automatic identification system shall comply with the technical and performance standards laid down in Chapter V of the SOLAS Convention (Safety of Life at Sea).	Document referred to in Chapter 1, Article 1.02(12)
Alarm		An alarm is a high-priority alert. Condition requiring immediate attention and action by the bridge team, to maintain the safe navigation of the vessel.	
All information density	Densité maximale d'information Höchstinformationsdichte Maximale informatiedichtheid	All information density (all display) means the maximum amount of SENC information. Here, in addition to the standard display (Standard Information Density), all other objects are also displayed, individually on demand.	Part I, Chapter 1
Attribute	Attribut Attribut Attribuut	A defined characteristic of an entity (e.g. the category of a light, the sector limits, the light characteristics, etc.) Definitions for diverse attributes may be derived from the Feature Catalogue for IENCs (Annex 1).	Document referred to in Chapter 1, Article 1.02(1)
bathymetric IENC	CEN intérieure bathymétrique Bathymetrische IENC bathymetrische IENC	The bathymetric Inland ENC is a S-57 based product in addition to the already existing products (ENC, Inland ENC). The content of bathymetric ENCs is limited to the bathymetry data only.	Product Specification for bathymetric Inland ENCs

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Cell (chart cell)	Cellule (cellule cartographique) Zelle (Kartenzelle) Cel (chart cell)	A cell is a geographical area containing IENC or bathymetric IENC data.	Document referred to in Chapter 1, Article 1.02(1)
CIE colour calibration	Calibrage des couleurs de la CIE CIE-Farben-kalibrierung CIE-kleuren-kalibratie	Procedure to confirm that the colour specified in IHO S-52 is correctly reproduced on the ECDIS display.	Document referred to in Chapter 1, Article 1.02(3)
Data	Données Daten Gegevens	Collection of values (e.g. output from a sensor) that can be processed.	
Datum	Référentiel géodésique Datum Data	A set of parameters specifying the reference surface, or the reference coordinate system, used for geodetic control in the calculation of coordinates of points on the earth. Commonly datums are defined as horizontal and vertical datum separately. For the practical use of the datum it is necessary to have one or more well distinctive points with coordinates given in that datum. The horizontal datum is a set of parameters specifying the reference for horizontal geodetic control, commonly the dimensions and the location of a reference ellipsoid. (The horizontal datum must be compliant with WGS 84.) The vertical datum is a surface to which elevations and/or depths (soundings and tide heights) are referred. For elevations, commonly a level (equipotential) surface, e.g. the “mean sea level” is used as reference or for depths in many cases “low water”.	Document referred to in Chapter 1, Article 1.02(3) and Annex 1
Display	Affichage Anzeige Weergave	Visualized information on a screen	Document referred to in Chapter 2, Article 2.03(11)

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Display base	Affichage de base Basisanzeige Basisweergave	Minimum information density; means the minimum amount of SENC information that is presented and which cannot be reduced by the user, consisting of information that is required at all times in all geographic areas and under all circumstances.	Document referred to in Chapter 1, Article 1.02(4)
Display scale	Échelle d'affichage Anzeige-maßstab Schaal van het beeld	The ratio between a distance on the display and a distance on the ground, normalised and expressed as a ratio, e.g. 1:10 000.	Document referred to in Chapter 1, Article 1.02(3)
EBL	LRE EBL EBL	Electronic Bearing Line	Part V
ECDIS	ECDIS	Electronic Chart Display and Information System (ECDIS) signifies a navigation information system which, with adequate back-up arrangements, can be accepted as complying with the up-to-date chart required by regulations V/19 and V/27 of the 1974 SOLAS Convention, as amended, by displaying selected information from a system electronic navigational chart (SENC) with positional information from navigation sensors to assist the boatmaster in route planning and route monitoring, and if required display additional navigation-related information.	Document referred to in Chapter 1, Article 1.02(4)
Edge	Arc Kante Rand	A one-dimensional spatial object, located by two or more coordinate pairs (or two connected nodes) and optional interpolation parameters.	Document referred to in Chapter 1, Article 1.02(1)
Electronic chart	Carte électronique Elektronische Karte Elektronische kaart	A very broad term to describe the data, software, and electronic system, capable of displaying chart information. An electronic chart may or may not be equivalent to the paper chart required by the SOLAS Convention.	Document referred to in Chapter 1, Article 1.02(3)

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
ENC	CEN ENC ENC	Electronic Navigational Chart is the data base, standardised as to content, structure and format, issued for use with ECDIS on the authority of government authorised hydrographic offices. The ENC contains all the chart information necessary for safe navigation and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions) which may be considered necessary for safe navigation.	Document referred to in Chapter 1, Article 1.02(4)
ENC cell	Cellule de la CEN ENC-Zelle ENC-cel	The geographic division of ENC data for distributing purposes.	Document referred to in Chapter 1, Article 1.02(5)
ETSI	ETSI	European Telecommunications Standards Institute	
EUT	ASE EUT EUT	Equipment Under Test	Document referred to in Chapter 2, Article 2.03(8)(a)(xiii)
Enumeration	Énumération Enumeration Enumeratie	A specific quality or quantity assigned to an attribute (e.g. 'leading light', the limiting angles, the code specifying the light's colour – see attribute).	Annex 1
Feature	Objet Feature Feature	An identifiable set of information. A feature may have attributes and may be related to other features. A digital representation of all or a part of an entity by its characteristics (attributes), geometry, and (optionally) relationships to other features (e.g. the digital description of a light sector specifying, amongst others, sector limits, colour of the light, visibility range, etc., and a link to a light tower, if any). Definitions for diverse features may be derived from the Feature Catalogue for IENCs (Annex 1).	Document referred to in Chapter 1, Article 1.02(3)
Feature catalogue	Catalogue d'objets Feature-Katalog	The comprehensive list of currently identified features, attributes and enumerations which are allowed for use in IENCs.	Annex 1

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
File	Fichier Datei Bestand	An identified set of S-57 records gathered together for a specific purpose. The file content and structure must be defined by a product specification.	Document referred to in Chapter 1, Article 1.02(3)
GNSS	GNSS	Global Navigation Satellite System (GNSS) is a system that uses satellites to provide autonomous geo-spatial positioning.	
Heading	Cap Vorausrichtung (heading) Koers	The direction in which the longitudinal axis of a craft is pointed, usually expressed as an angular distance from north clockwise through 360 degrees. The technical term “heading” is understood to be heading information provided by a Transmitting Heading Device (THD).	Document referred to in Chapter 1, Article 1.02(3)
Head-up display	Affichage cap en haut Voraus-orientierte Anzeige Vooruit georiënteerde weergave	The information shown on the display (radar or ECDIS) is directed so that the vessel’s heading is always pointing upward. This orientation corresponds to the visual view from the bridge in direction of the vessel’s heading. This orientation may require frequent rotations of the display content. Changing the vessel’s course or yawing of the vessel may render this unstable orientation mode illegible.	Document referred to in Chapter 1, Article 1.02(3)
Human Machine Interface (HMI)	Interface homme-machine Mensch-Maschine-Schnittstelle Mens/machine-interface	The user interface or human–machine interface is the part of the machine that handles the human–machine interaction. The engineering of the human–machine interfaces is enhanced by considering ergonomics (human factors). There are many ways to develop human-machine interface (HMI) screens for machine and process automation applications. Guidelines, standards, and handbooks covering HMI design include those published by ISA, ASM, ISO, and NUREG.	
IEC	CEI IEC IEC	International Electrotechnical Commission: an international (non-governmental) organisation which produces world standards for electrical and electronical engineering with the objective of facilitating international trade.	Document referred to in Chapter 1, Article 1.02(3)

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
IHO	OHI IHO IHO	International Hydrographic Organization: coordinates the activities of national hydrographic offices; promotes standards and provides advice to developing countries in the fields of hydrographic surveying and production of nautical charts and publications.	Document referenced in Chapter 1, Article 1.02(3)
IHO GI registry	Base de registres de l'OHI IHO-Registratur IHO register	IHO Geospatial Information Registry. A registry is the information system on which a register is maintained. In the case of S-100, IHO hosts a registry that provides a facility to store various registers of hydrographic-related information.	Document referenced in Chapter 1, Article 1.02(10)
IMO	OMI IMO IMO	International Maritime Organization: formerly called IMCO, IMO is the specialised agency of the United Nations responsible for maritime safety, efficiency of navigation and prevention of marine pollution from vessels.	Document referenced in Chapter 1, Article 1.02(3)
Information	Information Informationen Informatie	Processed data	
Information Mode	Mode information Informations-modus Informatie-modus	Signifies the use of the Inland ECDIS for information purposes only without overlaid radar image.	Part I, Chapter 1
Inland AIS	AIS Intérieur Inland AIS Inland AIS	Automatic identification system for inland waterway vessels as set out in Part II.	Document referenced in Chapter 1, Article 1.02(12)
Inland ECDIS	ECDIS Intérieur Inland ECDIS Inland ECDIS	An Electronic Chart Display and Information System for inland navigation, displaying selected information from an Inland System Electronic Navigational Chart (Inland SENC) and optionally, information from other navigation sensors.	Part I, Chapter 1

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Inland ENC (IENC)	CEN Intérieure (CENI) Inland ENC (IENC) Inland ENC (IENC)	Inland Electronic Navigational Chart (IENC) signifies the database, standardised as to content, structure and format, for use with inland electronic chart display and information systems operated on-board of vessels transiting inland waterways. An IENC is issued by, or on the authority of, a competent government agency, and conforms to standards initially developed by the International Hydrographic Organization (IHO) and refined by the IENC Harmonization Group. An IENC contains all the chart information necessary for safe navigation on inland waterways and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions, machine-readable operating schedules, etc.) which may be considered necessary for safe navigation and voyage planning.	Part I, Chapter 1
Inland ENC domain	Domaine des CENI Inland ENC Domain Inland ENC-domein	Domain within the IHO Geospatial Information Registry dedicated for IENC – related entries.	Document referenced in Chapter 1, Article 1.02(10)
Inland SENC	CENIS Inland SENC Inland SENC	Inland System Electronic Navigational Chart: a database resulting from the conversion of the IENC by Inland ECDIS for appropriate use, updates to the IENC by appropriate means and other data added by the boatmaster. It is this database that is actually accessed by the Inland ECDIS for the display generation and other navigational functions. The Inland SENC may also contain information from other sources.	Part I, Chapter 1

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Integrated display	Affichage intégré Integrierte Darstellung Geïntegreerde weergave	Signifies a head-up, relative-motion picture consisting of the Inland SENC overlaid with the radar-image with matching scale, offset and orientation.	Part I, Chapter 1
Look-up table	Table de recherche Nachschlage-tafel Naslagtabel	A table giving symbology instructions to link SENC objects to point, line or area symbolization and providing display priority, radar priority, IMO category and optional viewing group.	Document referred to in Chapter 1, Article 1.02(3)
Monitor	Moniteur Monitor Monitor	Physical device for display of information, including screen, power supply, connectors (physical interfaces)	Document referred to in Chapter 2, Article 2.03(2)(a)
Navigation mode	Mode navigation Navigations-modus Navigatie-modus	Signifies the use of the Inland ECDIS for conning the vessel with overlaid radar image.	Part I, Chapter 1
North-up display	Affichage nord en haut Nordorientierte Anzeige Weergave met noorden boven	Information shown on the display (radar or ECDIS) with the north direction upward.	Document referred to in Chapter 1, Article 1.02(3)
Other navigational information	Autres informations de navigation Andere nautische Informationen Overige navigatie-informatie	Navigational Information not contained in the SENC, that may be displayed by an ECDIS, such as radar or AIS information.	Document referred to in Chapter 1, Article 1.02(3)
Own vessel	Bateau porteur Eigenes Schiff Eigen vaartuig	The term which identifies the vessel upon which an ECDIS is operating.	Document referred to in Chapter 1, Article 1.02(3)

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Own vessel's safety contour	Isobathe de sécurité du bateau porteur Schiffseigene Sicherheits-kontur Veiligheids-contour van het eigen vaartuig	The contour related to the own vessel selected by the boatmaster from the contours provided for in the SENC, to be used by ECDIS to distinguish on the display between the safe and the unsafe water, and for generating anti-grounding alarms.	Document referred to in Chapter 1, Article 1.02(3)
Performance standard for ECDIS	Standard de performance pour l'ECDIS Leistungs-standard für ECDIS Prestatienorm voor ECDIS	Standard developed under the authority of IMO to describe the minimum performance requirements for navigational devices and other fittings required by the SOLAS Convention, included in MSC.232(82), as adopted by IMO on 5 December 2006.	Document referred to in Chapter 1, Article 1.02(3)
Pick report (feature report)	Rapport d'objet (fenêtre objet) Featurebericht	The result of querying a displayed point-symbol, line or area for further information from the data base which is not represented by the symbol.	Document referred to in Chapter 1, Article 1.02(3)
Presentation library for ECDIS	Bibliothèque de présentation pour l'ECDIS Darstellungs-bibliothek für ECDIS Weergave-bibliotheek voor ECDIS	A set of mostly digital specifications, composed of symbol libraries, colour schemes, look-up tables and rules, linking every feature and attribute of the SENC to the appropriate presentation of the ECDIS display. Published by IHO as Annex A, Special Publication No 52 (S-52).	Document referred to in Chapter 1, Article 1.02(3)
Product specification	Spécification de produit Produkt-beschreibung Product-specificatie	A defined subset of the entire specification combined with rules, tailored to the intended usage of the transfer data. (The ENC Product specification specifies the content, structure and other mandatory aspects of an ENC.)	Document referred to in Chapter 1, Article 1.02(3)
(Radar) range	Portée (radar) (Radar-) Entfernungs-bereich (Radar-)bereik	Size of radar image in heading direction. For inland navigation, the radar range must be sequential switchable according to the Radar Regulations.	Document referred to in Chapter 1, Article 1.02(14)

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Rate of turn (ROT)	Vitesse de giration Wende-geschwindigkeit Draaisnelheid	The rate of turn is a measure of how quickly a craft is turning. This is displayed in the rate of turn indicator. The unit of measure is degrees / min.	Document referred to in Chapter 1, Article 6
Relative motion display	Affichage en mouvement relatif Anzeige der relativen Bewegung Relatief tot het vaartuig bewegende weergave	A relative motion display shows the chart information and radar targets moving relative to the vessel position fixed on the screen.	Document referred to in Chapter 1, Article 1.02(3)
Route planning	Planification de l'itinéraire Fahrtrouten-planung	An ECDIS function in which the area needed to study the intended route is displayed, to select the intended track, and to mark the track, its way points and navigational notes.	Document referred to in Chapter 1, Article 1.02(4)
SCAMIN	SCAMIN	The minimum scale at which the feature may be used e.g. for ECDIS presentation.	Document referred to in Chapter 1, Article 1.02(1)
Screen	Ecran Screen Screen	Physical component of a monitor for displaying information	Document referred to in Chapter 2, Article 2.03(2)
SENC	CENS SENC SENC	System Electronic Navigational Chart: An internal data base in an Inland ECDIS which results from the transformation of ENCs and their update files and other data added by the boatmaster. It is this data base that is actually accessed by the ECDIS for the display generation and other navigational functions. The SENC may also contain information from other sources.	Document referred to in Chapter 1, Article 1.02(3)
Spatial object	Objet spatial Räumliches Objekt Ruimtelijk object	An object which contains the position and location-related information about real world entities.	Document referred to in Chapter 1, Article 1.02(3)

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Standard Information Density	Densité d'information standard Standard-informations-dichte Standaard-informatie-dichtheid	The default amount of SENC information that shall be visible when the chart is displayed when ECDIS is switched on. A screen with Standard Information Density (standard display) is the default state of the Inland ECDIS.	Part I, Chapter 1
[Vessel] Tracking and Tracing	Suivi et localisation [des bateaux] (Schiffs-) Verfolgung und Aufspürung Tracking en tracing [van schepen]	Tracking: function of maintaining status information on the vessel, possibly combined with information on cargo and consignments. Tracing: the retrieval of information concerning the whereabouts of the vessel, possibly combined with information on cargo, consignments and equipment, as set out in Part II.	Document referred to in Chapter 1, Article 1.02(13)
True motion display	Affichage en mouvement réel Anzeige der absoluten Bewegung Weergave van de ware beweging	A display in which the own vessel and each radar target moves with its own true motion, while the position of all charted information remains fixed.	Document referred to in Chapter 1, Article 1.02(3)
User-defined settings	Configuration utilisateur Benutzer-definierte Einstellungen Gebruikers-instellingen	Means the possibility to use and store a profile of display and control elements settings.	Part I, Chapter 1
Variable Range Marker (VRM)	Repère de distance variable (RDV) Variabler Entfernungs-messring VRM	A Variable Range Marker is a circle of adjustable diameter and centre in the vessel's own position for measuring distances to other vessels and objects.	Part V

Term or abbreviation	Terme ou abréviation / Begriff oder Abkürzung / Term of afkorting	Definition	Source
Warning	Avertissement Warnung Waarschuwing	A warning is an alert for a condition requiring immediate attention, but no immediate action by the bridge team. Warnings are presented for precautionary reasons to make the bridge team aware of changed conditions which are not immediately hazardous but may become so if no action is taken.	
WGS 84	WGS 84	World Geodetic System: The geodetic basis for the 'Navigational Satellite Timing and Ranging - Global Positioning System', which enables the surveying of the earth and its entities, developed by the United States Department of Defence. This global geodetic reference system is recommended by IHO for hydrographic and cartographic use.	Annex 1

PART II
VESSEL TRACKING AND TRACING FOR INLAND NAVIGATION

CHAPTER 1
GENERAL PROVISIONS

Article 1.01
Introduction

The technical specifications for Vessel Tracking and Tracing (VTT) systems is based on the work carried out in this field by relevant international organizations, namely already existing standards and technical specifications in inland navigation, maritime or other relevant areas.

Due to the application of VTT systems in mixed traffic areas including both inland and maritime navigation environments, like sea ports and coastal areas VTT systems shall be compatible with the AIS Class A mobile stations as referred to in Chapter V of the SOLAS convention.

Article 1.02
References

The following international agreements, recommendations, standards and guidelines are referred to in this Part:

Document title	Organisation	Publication date
The World Association for Waterborne Transport Infrastructure (PIANC) Guidelines and Recommendations for River Information Services	PIANC	2011
International Convention of Safety Of Life At Sea (SOLAS) by the International Maritime Organisation (IMO), Chapter V Safety of navigation, 1974, as amended	IMO	1974
International Maritime Organisation (IMO) MSC.74(69) Annex 3, 'Recommendation on Performance Standards for a Ship-borne Automatic Identification System (AIS)', 1998	IMO	1998
IMO Resolution A.915(22), 'Revised Maritime Policy and Requirements for a future Global Navigation Satellite System (GNSS)', 2002	IMO	2002
IMO Resolution A.1106(29) Revised Guidelines for the Onboard Operational Use of Shipborne Automatic Identification System (AIS), 2015	IMO	2015
IMO Circular SN.1/Circ.289, Guidance on the use of AIS application-specific messages	IMO	2010
Recommendation by the International Telecommunication Union ITU-R M.585 'Assignment and use of identities in the maritime mobile service', 2015	ITU	2015

Document title	Organisation	Publication date
Recommendation by the International Telecommunication Union ITU-R M.1371 ‘Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band’	ITU	2014
International Standard by International Electrotechnical Commission (IEC) 61993-2, ‘Maritime navigation and radio communication equipment and systems — Automatic Identification systems — Part 2: Class A shipborne equipment of the universal automatic identification system (AIS)’	IEC	2018
International Standard IEC 61162-Serie, ‘Maritime navigation and radio communication equipment and systems - Digital interfaces’: Part 1: Single talker and multiple listeners; Part 2: Single talker and multiple listeners, high speed transmission	IEC	Part 1: 2016 Part 2: 1998
International Standard by International Electrotechnical Commission (IEC): 62287-Series, Maritime navigation and radio communication equipment and systems — Class B shipborne equipment of the automatic identification system (AIS) Part 1: Carrier-sense time division multiple access (CSTDMA) techniques; Part 2: Self-organising time division multiple access (SOTDMA) techniques	IEC	2017
Radio Technical Commission’s for Maritime Services (RTCM) Recommended Standards for Differential GNSS (Global Navigation Satellite Systems) Service	RTCM	2010
UNECE recommendation No 28 ‘Codes for Types of Means of Transport’	UNECE	2010
Recommendation R0126 of IALA: The use of the automatic identification system (AIS) in marine aids to navigation services (A-126)	IALA	2011
Recommendation R0143 of IALA: Provision of virtual aids to navigation (O-143)	IALA	2010 revised in 2021
Guidelines G1081 of IALA: Provision of virtual aids to navigation	IALA	2013 revised in 2021

Article 1.03
Definitions

The following definitions are used in this Part:

1. Automatic Identification System

1.1 Automatic Identification System (AIS)

'Automatic Identification System (AIS)' means an automatic communication and identification system intended to improve the safety of navigation by assisting in the efficient operation of vessel traffic services (VTS), ship reporting, ship-to-ship and ship-to-shore operations.

1.2 Inland AIS

'Inland AIS' means AIS for the use in inland navigation and interoperable with (maritime) AIS-technically enabled by amendments and extensions to the (maritime) AIS.

1.3 Inland AIS station, Inland AIS mobile station, Inland AIS shore station

a) Inland AIS station is an equipment that has Inland AIS functionality.
b) An Inland AIS mobile station is an Inland AIS station installed on board of a craft or on a floating object.
c) An Inland AIS shore station is an Inland AIS station installed on shore.

1.4 Track and Trace

'Track and Trace' means the process of monitoring and recording the past and present whereabouts of a ship shipment, as it passes through different handlers on its way to its destination, through a network. Tracing refers to where the product has been, while tracking refers to where it is going next.

1.5 Track

'Track' means the path followed or to be followed between one position and another.

2. Services

2.1 River Information Services (RIS)

'River Information Services (RIS)' means the harmonised information services to support traffic and transport management in inland navigation, including, wherever technically feasible, interfaces with other transport modes. RIS do not deal with internal commercial activities between one or more of the involved companies, but are open for interfacing with commercial activities. RIS comprise services such as fairway information, traffic information, traffic management, calamity abatement support, information for transport management, statistics and customs services and waterway charges and port dues.

2.2 Vessel Traffic Management (VTM)

‘Vessel Traffic Management (VTM)’ means the functional framework of harmonised measures and services to enhance the safety, security, efficiency of shipping and the protection of the marine environment in all navigable waters.

2.3 Inland Vessel Traffic Services (VTS)

‘Inland Vessel Traffic Services (VTS)’ are a service, implemented by a competent authority, designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with the traffic and to respond to traffic situations developing in the VTS area.

A VTS area is the delineated, formally declared service area of a VTS. A VTS area may be subdivided in sub-areas or sectors.

2.4 Navigational information

‘Navigational information’ means information provided to the skipper on board to support in on-board decision-making.

2.5 Tactical Traffic Information (TTI)

‘Tactical Traffic Information’ means the information affecting immediate navigation decisions in the actual traffic situation and the close geographic surroundings. Tactical Traffic Information is used to generate a Tactical Traffic Image.

2.6 Strategic Traffic Information (STI)

‘Strategic Traffic Information’ means the information affecting the medium and long-term decisions of RIS users. Strategic Traffic Information is used to generate a Strategic Traffic Image.

2.7 Vessel Tracking and Tracing (VTT)

‘Vessel Tracking and Tracing’ means the two following functions:

- Tracking: maintaining status information of the vessel, such as the current position and characteristics, and - if needed - combined with information on cargo and consignments,
- Tracing: retrieving of information concerning the whereabouts of the vessel and - if needed - information on cargo, consignments and equipment.

2.8 Maritime Mobile Service Identity (MMSI)

‘Maritime Mobile Service Identity (MMSI)’ means series of nine digits which are transmitted over the radio path in order to uniquely identify ship, stations, coast stations and group calls.

2.9 Electronic Reporting International (ERI)

‘Electronic Reporting International (ERI)’ means the specifications established in Part IV.

2.10 Inland Electronic Chart Display and Information System (Inland ECDIS)

‘Inland Electronic Chart Display and Information System (Inland ECDIS)’ means the specifications established in Part I.

3. Players

3.1 Shipmaster

‘Shipmaster’ means the person on board of the ship being in command and having the authority to take all decisions pertaining to navigation and ship management. The terms ‘shipmaster’, ‘boatmaster’ and ‘skipper’ shall be deemed to be equivalent.

3.2 Conning skipper

‘Conning skipper (Navigating skipper)’ means the person who navigates the vessel, according to the voyage plan instructions of the shipmaster.

3.3 Competent Authority for RIS

The 'Competent Authority for RIS' means the authority designated by the Member State for the RIS application and for the international exchange of data.

3.4 RIS operator

‘RIS operator’ means a person performing one or more tasks related to the provision of RIS services.

3.5 RIS users

‘RIS users’ means all different user groups including boat masters, RIS operators, lock and/or bridge operators, waterway authorities, port and terminal operators, operators in calamity centres of emergency services, fleet managers, cargo shippers and freight brokers.

3.6 RIS application

'RIS application' means the provision of river information services through dedicated systems.

Article 1.04
Vessel Tracking and Tracing services and minimum requirements of Vessel Tracking and Tracing systems

1. VTT systems shall be able to support the following services:
   a) Navigation,
   b) Traffic Information,
   c) Traffic Management,
   d) Calamity Abatement,
   e) Transport Management,
   f) Enforcement,
   g) Waterway dues and port infrastructure charges,
   h) Fairway Information Services,
   i) Statistics.

2. VTT systems might be able to support also the following services:
   a) Information for transport logistics,
   b) Information for law enforcement (cross-border management for immigration service and customs, compliance with requirements for traffic safety, compliance with environmental requirements),
   c) Waterway charges and harbour dues.

3. The most important information of VTT relates to vessel identity and its position. VTT shall be capable of providing - at minimum - the following information on an automatic and periodical basis to other vessels and shore stations, provided these vessels or shore stations are appropriately equipped:
   a) Unique vessel ID: unique European vessel identification number (ENI)/International Maritime Organisation number (IMO number);
   b) Vessel name;
   c) Vessel call sign;
   d) Navigational status;
   e) Type of vessel or convoy;
   f) Dimensions of vessel or convoy;
   g) Draught;
   h) Dangerous cargo indication (number of blue cones in compliance with ADN);
   i) Loading status (loaded/unloaded);
   j) Destination;
   k) Estimated Time of Arrival (ETA) at destination;

l) Number of persons on board;
m) Position (+ quality indication);
n) Speed (+ quality indication);
o) Course Over Ground (COG) (+ quality indication);
p) Heading (HDG) (+ quality indication);
q) Rate of turn (ROT);
r) Blue sign information;
s) Timestamp of position fix.

These minimum requirements indicate the user needs and the necessary data for VTT systems in inland navigation.

A VTT system is designed to offer sufficient flexibility to accommodate future additional requirements.

CHAPTER 2
INLAND VESSEL TRACKING AND TRACING FUNCTIONS

Article 2.01
Introduction

1. This Chapter sets out the requirements relating to VTT information for different RIS service categories. Requirements for each service category are listed describing the user groups and usage of the VTT information.

2. The overview of VTT information needs is provided in Part II, Article 2.08, Table II-1.

Article 2.02
Navigation

1. Vessel tracking and tracing can be used to support the active navigation on board. Main user group are the conning skippers.

2. The process navigation can be divided in three phases:
   a) navigation, medium-term ahead,
   b) navigation, short-term ahead,
   c) navigation, very short-term ahead.

3. The user requirements are different for each phase.
   a) Navigation, medium-term ahead

      Navigation, medium-term ahead, is the navigation phase in which the skipper observes and analyses the traffic situation looking some minutes up to an hour ahead and considers the possibilities of where to meet, pass or overtake other vessels.

      The traffic image needed is the typical ‘looking around the corner’ feature and is mainly outside the scope of the on-board radar range.

      The update rate is depending on the task and differs from the situation in which the vessel is involved.

   b) Navigation, short-term ahead

      Navigation, short-term ahead, is the decision phase in the navigation process. In this phase traffic information has relevance for the process of navigation, including collision avoidance measures if necessary. This function deals with the observation of other vessels in the close surroundings of the own vessel.

      The actual traffic information shall be exchanged continuously at least every 10 seconds. For some routes the authorities may set a predefined update rate (maximum two seconds).

c) Navigation, very short-term ahead

Navigation, very short-term ahead, is the operational navigation process. It consists of execution of the decisions that were made beforehand, on the spot and monitoring their effects. The traffic information needed from other vessels especially in this situation is related to its own vessel conditions, such as relative position, relative speed. It is necessary to follow highly accurate information in this phase.

Therefore, Tracking and Tracing information cannot be used for very short-term navigation.

Article 2.03
Vessel traffic management

Vessel traffic management (VTM) comprises at least of the following elements:

1. Vessel traffic services

Vessel traffic services consist of the following services:

- an information service,
- a navigational assistance service,
- a traffic organisation service.

The user groups of Vessel Traffic Services (VTS) are VTS operators and conning skippers.

The user needs related to traffic information are indicated in (a) to (c).

a) Information service

An information service is provided by broadcasting information at fixed times and intervals or when deemed necessary by the VTS or at the request of a vessel, and may include reports on the position, identity and intentions of other vessels, waterway conditions, weather conditions, hazardous situations or any other factors that may influence the vessel's transit.

For the information services an overview of traffic in a network or on fairway stretch is required.

The competent authority may set a predefined update rate if needed for safe and reliable passage through the area.

b) Navigational assistance service

A navigational assistance service informs the conning skipper on difficult navigational or meteorological circumstances or assists the conning skipper in case of defects or deficiencies. This service is normally rendered at the request of a vessel or by the VTS when deemed necessary.

To provide individual information to a conning skipper, the VTS operator needs an actual detailed traffic image.

The actual traffic information has to be exchanged continuously (every three seconds, almost real time or another predefined update rate set by the competent authority).

All other information has to be made available on request of the VTS operator or in special occasions.

c) Traffic organisation service

A traffic organisation service concerns the operational management of traffic and the planning of vessel movements to prevent congestion and dangerous situations, and is particularly relevant in times of high traffic density or when the movement of special transports may affect the flow of other traffic. The service may also include establishing and operating a system of traffic clearances or VTS sailing plans or both in relation to priority of movements, allocation of space (such as berthing places, lock space, sailing routes), mandatory reporting of movements in the VTS area, routes to be followed, speed limits to be observed or other appropriate measures which are considered necessary by the VTS Authority.

2. Lock planning and operation

The lock planning processes - long- and medium-term - and lock operation process are described in (a) to (c). Main user groups are lock operators, conning skippers, shipmasters and fleet managers.

a) Lock planning, long-term

Long-term lock planning is dealing with the planning of a lock some hours up to a day ahead.

In this case the traffic information is used to improve the information on waiting and passing times at locks, which are originally based on statistical information.

Estimated Time of Arrival (ETA) shall be available on demand or shall be exchanged if the deviation from the original ETA exceeds the deviation allowed by the competent authority. Requested time of arrival (RTA) is the response to an ETA report or may be sent from a lock to propose a locking time.

b) Lock planning, medium-term

Medium-term lock planning is dealing with the planning of a lock up to two or four lock cycles ahead.

In this case the traffic information is used to map the arriving vessels to the available lock cycles and based on the planning to inform the conning skippers about the RTA.

ETA shall be available on request or shall be exchanged if the deviation from the original ETA exceeds the deviation allowed by the competent authority. All other information shall be available once at the first contact or on request. RTA is the response to an ETA report or may be sent from a lock to propose a locking time.

c) Lock operation

In lock operation phase the actual locking process take place.

The actual traffic information has to be exchanged continuously or another predefined update rate set by the competent authority.

The accuracy of VTT information does not allow for high-precision applications like closing of lock gates.

3. Bridge planning and operation

The bridge planning processes — medium- and short-term — and bridge operation process are described in (a) to (c). Main user groups are bridge operators, conning skippers, shipmasters and fleet managers.

a) Bridge planning, medium-term

The bridge planning process on medium term is dealing with the optimisation of the traffic flow in such a way that the bridges are opened in time for passing of vessels (green wave). The planning horizon varies between 15 minutes to two hours. The timeframe depends on the local situation.

ETA and position information shall be available on request, or such information shall be exchanged as soon as the deviation between the updated ETA and the original ETA exceeds a pre-defined value set by the competent authority. All other information shall be available once at the first contact or on request. RTA is the response on an ETA report or may be sent from a bridge to propose a passage time.

b) Bridge planning, short-term

In case of bridge planning on a short term, decisions are made on the basis of the strategy for opening of the bridge.

Actual traffic information on the position, speed and direction, shall be available on request or exchanged in accordance with predefined update rate, for example, every five minutes, set by the competent authority. ETA and position information shall be available on request, or such information shall be exchanged as soon as the deviation between the updated ETA and the original ETA exceeds a pre-defined value set by the competent authority. All other information shall be available once at the first contact or on request. RTA is the response on an ETA report or may be sent from a bridge to propose a passage time.

c) Bridge operation

In bridge operation phase the actual opening and passing of the vessel through the bridge take place.

The actual traffic information shall be exchanged continuously or at another update rate set by the competent authority.

The accuracy of VTT information does not allow for high-precision applications like opening or closing of the bridge.

Article 2.04
Calamity abatement

1. Calamity abatement in this context focuses on repressive measures: dealing with real accidents and providing assistance during emergencies. Main user groups are operators in calamity centre, VTS operators, conning skippers, shipmasters and the competent authorities.

2. In the case of an accident the traffic information can be provided automatically or the responsible organisation shall ask for the respective information.

Article 2.05
Transport management

Transport management (TS) is divided into the following four activities:

1. voyage planning,
2. transport logistics,
3. port and terminal management,
4. cargo and fleet management.

Main user groups are shipmasters, freight brokers, fleet managers, consignors, consignees, supply forwarders, port authorities, terminal operators, lock operators and bridge operators.

1. Voyage planning

   Voyage planning in this context focuses on the planning on-trip. During the voyage the shipmaster shall check his original planned voyage.

2. Transport logistics

   Transport logistics consist of the organisation, planning, execution and control of the transport.

   All traffic information is needed on request by the ship-owner or logistic stakeholders.

3. Intermodal port and terminal management

   Intermodal port and terminal management considers the planning of resources in ports and at terminals.

   The terminal and port manager shall request for traffic information or shall agree that in predefined situations the traffic information will be sent automatically.

4. Cargo and fleet management

   Cargo and fleet management considers the planning and optimising the use of vessels, arranging cargo and transportation.

   The shipper or ship-owner shall request the traffic information or traffic information shall be sent in predefined situations.

Article 2.06
Enforcement

1. The scope of the enforcement task is limited to the services on dangerous goods, immigration control and customs. Main user groups are customs, competent authorities and shipmasters.

2. The traffic information shall be exchanged with appropriate authorities. The traffic information exchange shall take place on request or at fixed predefined points or in special circumstances defined by the responsible authority.

Article 2.07
Waterway dues and port infrastructure charges

1. In various locations in the Union, usage of the waterway and ports is subject to the payment of fees. Main user groups are competent authorities, shipmasters, fleet managers, waterway authorities and port authorities.

2. The traffic information shall be exchanged on request or at fixed points, defined by the competent waterway or port authority.

Article 2.08
Information needs

Part II, Table II-1 provides an overview of the information needs of the different services.

Table II-1
Overview of information needs

	Identification	Name	Call sign	Navigational status	Type	Dimensions	Draught	Dangerous cargo	Loading status	Destination	ETA at destination	Number of persons	Position and time	Speed	Course/direction	Heading	Rate of turn	Blue sign	Other information
Navigation – medium-term	X	X		X	X	X		X	X	X			X	X	X			X	
Navigation - short-term	X	X		X	X	X		X	X	X			X	X	X	X		X	
Navigation - very short-term	Requirements are currently not met by VTT																		
VTM — VTS services	X	X		X	X	X	X	X	X	X		X	X	X	X			X	
VTM — lock operation	X	X		X	X		X	X					X		X				Air draught
VTM — lock planning	X	X		X	X	X	X	X					X	X	X				number of assisting tugboats, air draught, ETA/RTA
VTM — bridge operation	X	X			X	X							X	X	X				Air draught
VTM — bridge planning	X	X		X	X	X							X	X	X				Air draught, ETA/RTA

	Identification	Name	Call sign	Navigational status	Type	Dimensions	Draught	Dangerous cargo	Loading status	Destination	ETA at destination	Number of persons	Position and time	Speed	Course/direction	Heading	Rate of turn	Blue sign	Other information
Calamity abatement	X	X			X			X	X	X		X	X		X				
TM — voyage planning	X	X				X	X		X	X			X	X					Air draught, ETA/RTA
TM — transport logistics	X	X									X		X		X				
TM — port and terminal management	X	X		X	X	X		X	X				X		X				ETA/RTA
TM — cargo and fleet management	X	X		X			X		X	X			X		X				ETA/RTA
Enforcement	X	X		X	X			X		X	X	X	X		X				
Waterway and port infrastructure charges	X	X			X	X	X			X			X						

CHAPTER 3
INLAND AIS TECHNICAL SPECIFICATION

Article 3.01
Introduction

1. In maritime navigation, the IMO has introduced the carriage of automatic identification system (AIS): all seagoing vessels on international voyage falling under Chapter V of the SOLAS convention have to be equipped with AIS Class A mobile stations since the end of 2004.

2. Directive 2002/59/EC of the European Parliament and of the Council[1] establishes a Community vessel traffic monitoring and information system for seagoing vessels carrying dangerous or polluting goods using AIS for Ship Reporting and Monitoring.

3. AIS is considered as a suitable solution for automatic identification and Vessel Tracking and Tracing in inland navigation. Especially the real time performance of AIS and the availability of worldwide standards and guidelines are beneficial for safety related applications.

4. To serve the specific requirements of inland navigation, AIS has to be further developed to the so-called Inland AIS technical specification while preserving full compatibility with maritime AIS and already existing standards and technical specifications in inland navigation.

5. Because Inland AIS is compatible with the maritime AIS it enables a direct data exchange between seagoing and inland vessels navigating in mixed traffic areas.

6. AIS is:
   a) a system introduced by the IMO to support maritime safety of navigation; mandatory carriage requirement for all vessels in accordance with Chapter V of SOLAS convention;
   b) operating in direct ship-to-ship mode as well as in a ship-to-shore, shore-to-ship mode;
   c) a safety system with high requirements regarding availability, continuity and reliability;
   d) a real time system thanks to the direct ship-to-ship data exchange;
   e) an autonomously operating system in a self-organised manner without master station. There is no need for a central controlling intelligence;
   f) based on international standards and procedures in accordance with Chapter V of SOLAS convention;
   g) a type approved system to enhance safety of navigation following a certification procedure;
   h) globally interoperable.

[1] Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system repealing Council Directive 93/75/EEC (OJ L 208, 5.8.2002, p. 10).

7. The purpose of this Chapter is to define all necessary technical requirements, amendments and extensions to the existing AIS Class A mobile stations in order to create an Inland AIS mobile station for use in inland navigation.

Article 3.02
Scope

1. The AIS is a ship-borne radio data system, exchanging static, dynamic and voyage related vessel data between equipped vessels and between equipped vessels and shore stations. Ship-borne AIS stations broadcast the vessel's identity, position and other data in regular intervals. By receiving these transmissions, ship-borne or shore-based AIS stations within the radio range can automatically locate, identify and track AIS equipped vessels on an appropriate display like radar or electronic chart display systems such as the Inland Electronic Chart Display and Information System (Inland ECDIS) as defined in Part I. AIS is intended to enhance safety of navigation in ship-to-ship use, surveillance (VTS), Vessel Tracking and Tracing, and calamity abatement support.

2. AIS mobile stations are divided into following types:
   a) Class A mobile stations to be used by all sea going vessels falling under carriage requirements of Chapter V of SOLAS convention;
   b) Inland AIS mobile station, having full Class A functionality on VHF Data Link level, deviating in supplementary functions designed for the use by inland vessels;
   c) Class B SO/CS mobile stations with limited functionality which may be used by vessels not falling under carriage requirements for Class A or Inland AIS mobile stations;
   d) AIS shore stations, including AIS base stations and AIS repeater stations.

3. The following modes of operation can be distinguished:
   a) ship-to-ship operation: all AIS equipped vessels are able to receive static and dynamic information from all other AIS equipped vessels within the radio range;
   b) ship-to-shore operation: data from AIS equipped vessels can also be received by AIS shore stations connected to the RIS centre where a traffic image (Tactical Traffic Image and/or Strategic Traffic Image) can be generated;
   c) shore-to-ship operation: voyage and safety related data from shore to vessel can be transmitted.

4. A characteristic of AIS is the autonomous mode, using self-organised time division multiple access (SOTDMA), without any need for an organising master station. The radio protocol is designed in a way that vessel stations operate autonomously in a self-organised manner by exchanging link access parameters. Time is divided into one minute frames with 2250 time slots per radio channel which are synchronised by GNSS UTC time. Each participant organises its access to the radio channel by choosing free time slots considering the future use of time slots by other stations. There is no need for a central intelligence controlling the slot assignment.

5. An Inland AIS mobile station consists in general of the following components:
   a) VHF transceiver (one transmitter, two receivers),
   b) GNSS receiver,
   c) data processor.

6. Universal ship-borne AIS, as defined by IMO, ITU and IEC, and recommended for the use in inland navigation uses SOTDMA in the VHF maritime mobile band. AIS operates on the internationally designated VHF frequencies AIS 1 (161,975 MHz) and AIS 2 (162,025 MHz) and can be switched to other frequencies in the VHF maritime mobile band.

7. To serve the specific requirements of inland navigation, AIS has to be further developed to the so called Inland AIS while preserving compatibility with the maritime AIS.

8. Vessel Tracking and Tracing systems in inland navigation shall be compatible with AIS Class A mobile stations, as defined by IMO. Therefore, Inland AIS messages shall be able to provide the following types of information:
   a) static information, such as official vessel number, call sign of vessel, name of vessel, type of vessel;
   b) dynamic information, such as vessels position with accuracy indication and integrity status;
   c) voyage related information, such as length and beam of convoy, dangerous cargo on board;
   d) inland navigation specific information, such as number of blue cones/lights according to ADN or ETA at lock/bridge/terminal/border.

9. For moving vessels the update rate for dynamic information on tactical level shall be between 2 and 10 seconds. For vessels at anchor it is recommended to have an update rate of several minutes, or an update triggered when information is amended.

10. Inland AIS mobile station does not replace, but supports navigational services such as radar target tracking and VTS. Inland AIS mobile station provides an additional input for navigational information: its value added is to provide means of surveillance and tracking of vessels equipped with Inland AIS. The position accuracy derived from Inland AIS mobile station using the internal (uncorrected) GNSS is typically above 10 metres. When the position is corrected using DGNSS from either maritime beacon differential correction service, AIS Message 17 or EGNOS (SBAS) the accuracy is typically below 5 metres. Due to their different characteristics, Inland AIS mobile station and radar complement each other.

Article 3.03
Requirements

1. General requirements
   a) Inland AIS mobile station is based on the AIS Class A mobile station in accordance with SOLAS convention.
   b) Inland AIS mobile station shall cover the main functionality of AIS Class A mobile stations while considering the specific requirements for inland navigation.

c) Inland AIS shall be compatible to the maritime AIS and shall enable a direct data exchange between seagoing and inland vessels navigating in a mixed traffic area.

d) The requirements set out in Part II, Chapter 3, Articles 3.03 to 3.05 are complementary or additional requirements for Inland AIS, which differs from the AIS Class A mobile stations.

e) The Inland AIS mobile station design shall take into account the 'Technical clarifications on the Vessel Tracking and Tracing standard'.

f) The default setting of the transmission power shall be high power and shall only been set to low power if directed so by the competent authority.

2. Information content

Only Tracking and Tracing and safety related information shall be transmitted via Inland AIS mobile station.

The information content set out in (a) to (e) below shall be implemented in a way that it can be sent from an Inland AIS mobile station without the need for an external application.

The Inland AIS messages shall contain following information (items marked with '*' have to be handled differently as for seagoing vessels):

a) Static vessel information

The static vessel information for inland vessels shall have the same parameters and the same structure as in the AIS Class A mobile stations as far as it is applicable. Any conversions from inland to maritime parameters shall be done automatically where feasible. Unused parameter fields shall be set to 'not available'.

Inland specific static vessel information shall be added.

Static vessel information is broadcast autonomously from vessel or on request.

User identifier (MMSI)	in all messages
Name of vessel	AIS Message 5
Call sign of the vessel	AIS Message 5
IMO number	AIS Message 5 (not available for Inland vessels)
Type of vessel/convoy and cargo*	AIS Message 5 + Inland FI 10
Overall length (decimetre accuracy)*	AIS Message 5 + Inland FI 10
Overall beam (decimetre accuracy)*	AIS Message 5 + Inland FI 10
Unique European vessel identification number (ENI)	Inland FI 10
Reference point of reported position on the vessel (location of antenna)*	AIS Message 5

b) Dynamic vessel information

The dynamic vessel information for inland vessels shall have the same parameters and the same structure as in AIS Class A mobile stations as far as it is applicable. Not used parameter fields shall be set to 'not available'.

Inland specific dynamic vessel information shall be added.

Dynamic vessel information is broadcasted autonomously from vessel or on request.

Position according to World Geodetic System from 1984 (WGS 84)	AIS Message 1, 2 and 3
Speed Over Ground (SOG)	AIS Message 1, 2 and 3
Course COG	AIS Message 1, 2 and 3
Heading HDG	AIS Message 1, 2 and 3
Rate of turn ROT	AIS Message 1, 2 and 3
Position accuracy (GNSS/DGNSS)	AIS Message 1, 2 and 3
Time of electronic position fixing device	AIS Message 1, 2 and 3
Navigational status	AIS Message 1, 2 and 3
Status of Blue sign*	AIS Message 1, 2 and 3
Quality of speed information	Inland FI 10
Quality of course information	Inland FI 10
Quality of heading information	Inland FI 10

c) Voyage related vessel information

The voyage related vessel information for inland vessels shall have the same parameters and the same structure than in AIS Class A mobile stations as far as it is applicable. Unused parameter fields shall be set to ‘not available’.

Inland specific voyage related vessel information shall be added.

Voyage related vessel information is broadcasted autonomously from vessel or on request.

Destination (ISRS location code)	AIS Message 5
Category of dangerous cargo	AIS Message 5
ETA	AIS Message 5
Maximum present static draught*	AIS Message 5 + Inland FI 10
Dangerous cargo indication	Inland FI 10
Loaded/unloaded vessel	Inland FI 10

d) Number of persons on board

The number of persons on board is transmitted either as a broadcast message or as an addressed message from vessel to shore on request or on event.

Number of crew members on board	Inland FI 55
Number of passengers on board	Inland FI 55
Number of shipboard personnel on board	Inland FI 55

e) Safety related messages

Safety related messages (i.e. text messages) are transmitted when required as broadcast or as addressed messages.

Addressed Safety related message	AIS Message 12
Broadcasted Safety related message	AIS Message 14

3. Reporting interval of information transmission

a) The different information types of Inland AIS messages shall be transmitted with different reporting rates.

b) The reporting rate for dynamic information can be switched between autonomous mode and assigned mode for moving vessels in inland waterway areas. The reporting rate can be increased up to 2 seconds in assigned mode. The reporting behaviour shall be switchable from an AIS base station (via AIS Message 23 for group assignment or Message 16 for individual assignment) and by commands from external ship-borne systems, via IEC 61162 interface as defined in Annex 5.

c) For static and voyage related the reporting rate shall be 6 minutes, on request, or if information is amended.

d) Following reporting rates shall be applicable:

Static vessel information	Every 6 minutes, on request or when data has been changed
Dynamic vessel information	Depends on navigational status and vessel operating mode, either autonomous (default) or assigned mode, see Table II-2
Voyage related vessel information	Every 6 minutes, on request or when data has been changed
Number of persons on board	As required or on request
Safety related messages	As required
Application Specific Messages	As required (to be defined by competent authority)

Table II-2
Update rate of dynamic vessel information

Vessel dynamic conditions	Nominal reporting interval
Vessel status ‘at anchor’ and not moving faster than 3 knots	3 minutes[1)]
Vessel status ‘at anchor’ and moving faster than 3 knots	10 seconds[1)]
Vessel operating in autonomous mode, moving 0 to 14 knots	10 seconds[1)]
Vessel operating in autonomous mode, moving 0 to 14 knots and changing course	3 1/3 seconds[1)]
Vessel operating in autonomous mode, moving 14 to 23 knots	6 seconds[1)]
Vessel operating in autonomous mode, moving 14 to 23 knots and changing course	2 seconds
Vessel operating in autonomous mode, moving faster than 23 knots	2 seconds
Vessel operating in autonomous mode, moving faster than 23 knots and changing course	2 seconds
Vessel operating in assigned mode[2)]	assigned between 2 seconds and 10 seconds

[1)] When a mobile station determines that it is the semaphore (refer to ITU-R M.1371, Annex 2, § 3.1.1.4), the reporting rate shall increase to once per two seconds (refer to ITU-R M.1371, Annex 2, § 3.1.3.3.2).

[2)] Shall be switched by competent authority, when necessary.

4. Technology platform

   a) The platform for Inland AIS mobile station is the AIS Class A mobile station.

   b) The technical solution of Inland AIS mobile station is based on the same technical standards as AIS Class A mobile stations (ITU-R M.1371 and international standard IEC 61993-2).

5. Compatibility to AIS Class A mobile stations

   Inland AIS mobile stations shall be compliant to AIS Class A mobile stations and shall be capable of receiving and processing all AIS messages (according to ITU-R M.1371 and technical clarifications on ITU-R M.1371 by International Association of aids to navigation and Lighthouse Authorities (IALA)) and in addition the messages defined in Part II, Article 3.04.

6. Unique identifier

In order to guarantee the compatibility with maritime vessels, the Maritime Mobile Service Identifier (MMSI) number shall be used as a unique station identifier (radio equipment identifier) for the Inland AIS mobile stations.

7. Application requirements

a) Information referred to paragraph 2 shall be input, stored and displayed directly within the Inland AIS mobile station.

b) The Inland AIS mobile station shall be capable of storing also the inland specific static data in the internal memory, in order to keep the information when the unit is without power supply.

c) Necessary data conversions for the Minimum Keyboard Display (MKD) of the Inland AIS information content (e.g. knots into km/h) or MKD input and display of information concerning inland vessel types shall be handled within the Inland AIS mobile station.

d) Application Specific Messages (ASM) should be entered/displayed by an external application with the exemption of Inland AIS ASM DAC = 200 FI = 10 (Inland Ship static and voyage related data) and DAC = 200 FI = 55 (inland number of persons on board) which are implemented directly in the Inland AIS mobile station.

e) In order to program the inland specific data into the AIS transponder the digital interface sentences are defined in Annex 5.

f) The Inland AIS mobile station shall provide — as a minimum — an external interface for the input of DGNSS correction and integrity information according to the provisions of the Radio Technical Commission for Maritime Services Special Committee 104 on DGNSS.

8. Type-approval

Inland AIS mobile station shall be type-approved for compliance with these technical specifications.

Article 3.04
Protocol amendments for Inland AIS mobile station

Due to evolution of the ITU-R M.1371, several parameters allow for the use of new status codes. This does not harm the functioning of the AIS but may result in display of unrecognized status codes in equipment based on previous revisions of the standard.

1. Position report

Table II-3
Position report

Parameter	Bits	Description
Message ID	6	Identifier for this message 1, 2 or 3
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated 0-3; Default = 0; 3 = do not repeat any more
User ID (MMSI)	30	MMSI-number
Navigational Status	4	0 = under way using engine; 1 = at anchor; 2 = not under command; 3 = restricted manoeuvrability; 4 = constrained by her draught; 5 = moored; 6 = aground; 7 = engaged in fishing; 8 = under way sailing; 9 = reserved for future amendment of Navigational Status for a highspeed craft; 10 = reserved for future amendment of Navigational Status for Wing In Ground (WIG); 11 = power-driven vessel towing astern (regional use)[1]; 12 = power-driven vessel pushing ahead or towing alongside (regional use) [1]; 13 = reserved for future use; 14 = AIS-SART (active); 15 = not defined = default (also used by AIS)
Rate of turn ROT AIS	8	0 to + 126 = turning right at up to 708 deg/min or higher 0 to - 126 = turning left at up to 708 deg/min or higher Values between 0 and 708 deg/min coded by ROTAIS = 4.733 SQRT (ROTsensor) deg/min where ROTsensor is the rate of turn as input by an external rate of turn Indicator. ROTAIS is rounded to the nearest integer value + 127 = turning right at more than 5° per 30 s (No Turn Indicator available) - 127 = turning left at more than 5° per 30 s (No Turn Indicator available) - 128 (80 hexadecimal) indicates no turn information available (default). ROT data should not be derived from COG information
Speed over ground	10	Speed over ground in 1/10 knot steps (0-102,2 knots) 1 023 = not available; 1 022 = 102,2 knots or higher[2]
Position accuracy	1	The position accuracy (PA) flag should be determined in accordance with ITU-R M.1371 1 = high (≤10 m) 0 = low (> 10 m) 0 = default

Parameter	Bits	Description
Longitude	28	Longitude in 1/10 000 min (± 180o, East = positive (as per 2's complement), West = negative (as per 2's complement), 181= (6791AC0 hexadecimal) = not available = default)
Latitude	27	Latitude in 1/10 000 min (± 90o, North = positive (as per 2's complement), South = negative (as per 2's complement), 91= (3412140 hexadecimal) = not available = default)
Course over ground	12	Course over ground in 1/10° (0-3599). 3 600 (E10 hexadecimal) = not available = default; 3 601 — 4 095 shall not be used
True heading	9	Degrees (0-359) (511 indicates not available = default).
Time stamp	6	UTC second when the report was generated by the electronic positioning fixing system (EPFS) (0-59, or 60 if time stamp is not available, which shall also be the default value, or 61 if positioning system is in manual input mode, or 62 if Electronic Position Fixing System operates in estimated (dead reckoning) mode, or 63 if the positioning system is inoperative)
Special manoeuvre indicator: blue sign	2	Indication if blue sign is set[3)] 0 = not available = default, 1 = not engaged in special manoeuvre = blue sign not set 2 = engaged in special manoeuvre = blue sign is set 3 is not used
Spare	3	Not used. Should be set to zero. Reserved for future use.
RAIM-flag	1	Receiver autonomous integrity monitoring (RAIM) flag of electronic position fixing device; 0 = RAM not in use = default; 1 = RAIM in use. RAIM-flag should be determined in accordance with ITU-R M.1371
Communication state	19	Communication state should be determined in accordance with ITU-R M.1371
Total	**168**	**Occupies one slot**

1) Not applicable within the Member States for the purpose of this Standard.

2) Knots shall be calculated in km/h by external on-board equipment.

3) Shall only be evaluated if the report is coming from an Inland AIS mobile station and if the information is derived by automatic means (direct connection to switch).

2. Ship static and voyage related data (Message 5)

Table II-4
Ship static and voyage related data

Parameter	Bits	Description
Message ID	6	Identifier for this message 5
Repeat indicator	2	Sent by the repeater to indicate how many times a message has been repeated 0-3; Default = 0; 3 = do not repeat any more
User ID (MMSI)	30	MMSI number
AIS version indicator	2	0 = Station compliant with ITU-R M.1371-1; 1 = Station compliant with ITU-R M.1371-3 (or later), 2 = Station compliant with ITU-R M.1371-5 (or later), 3 = Station compliant with future editions
IMO number	30	0 = not available = default — not applicable to Search And Rescue aircraft 0000000001-0000999999 not used 0001000000-0009999999 = valid IMO number; 0010000000-1073741823 = official flag state number.[1)]
Call sign	42	7 x 6 bit ASCII characters, '@@@@@@@' = not available = default Craft associated with a parent vessel, should use 'A' followed by the last 6 digits of the MMSI of the parent vessel. Examples of these craft include towed vessels, rescue boats, tenders, lifeboats and liferafts
Name	120	Maximum 20 characters 6 bit ASCII, see ITU-R M. 1371; @@@@@@@@@@@@@@@@@@@@ = not available = default. For Search And Rescue (SAR) aircraft, it should be set to 'SAR AIRCRAFT NNNNNNN' where NNNNNNN equals the aircraft registration number
Type of vessel and cargo	8	0 = not available or no vessel = default; 1 — 99 = as defined in ITU-R M.1371;[2)] 100 — 199 = preserved, for regional use; 200 — 255 = preserved, for future use Not applicable to SAR aircraft
Overall dimensions of vessel/convoy and reference for position	30	Reference point for reported position; Also indicates the dimension of vessel in metres (see ITU-R M.1371). For SAR aircraft, the use of this field may be decided by the responsible administration. If used it should indicate the maximum dimensions of the craft. As default should A = B = C = D be set to '0' [3) 4) 5)]

Parameter	Bits	Description
Type of electronic position fixing device	4	0 = Undefined (default), 1 = GPS, 2 = GLONASS, 3 = Combined GPS/GLONASS, 4 = Loran-C, 5 = Chayka, 6 = Integrated Navigation System, 7 = surveyed, 8 = Galileo 9 — 14 = not used 15 = internal GNSS
ETA	20	ETA; MMDDHHMM UTC Bits 19 — 16: month; 1 — 12; 0 = not available = default; Bits 15 — 11: day; 1 — 31; 0 = not available = default; Bits 10 — 6: hour; 0 — 23; 24 = not available = default; Bits 5 — 0: minute; 0 — 59; 60 = not available = Default For SAR aircraft, the use of this field may be decided by the responsible administration
Maximum present static draught	8	in 1/10 m, 255 = draught 25,5 m or greater, 0 = not available = default[6)]
Destination	120	Maximum 20 characters using 6-bit ASCII; @@@@@@@@@@@@@@@@@@@@ = not available.[7)]
Data Terminal Equipment (DTE)	1	Data terminal ready (0 = available, 1 = not available = default)
Spare	1	Spare. Not used. Shall be set to zero. Reserved for future use
Total	**424**	**Occupies two slots**

1) Shall be set to 0 for inland vessels.

2) Best applicable vessel type shall be used for inland navigation (see Annex 6).

3) The dimensions shall be set to the maximum rectangle size of the convoy.

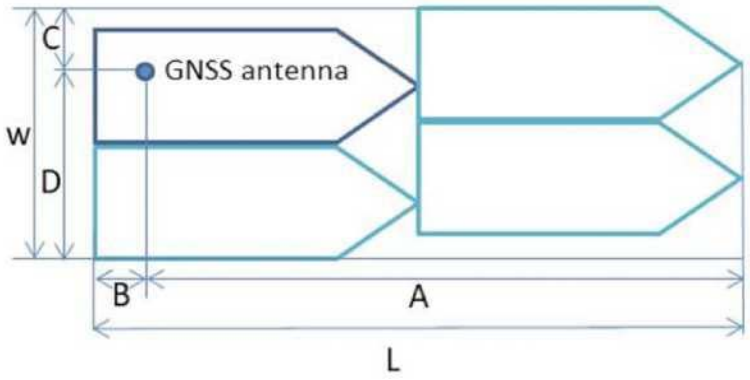
4) The decimetre accuracy of the inland information shall be rounded upwards.

5) The reference point information has to be taken out of the SSD interface sentence by distinguishing the field ‘source identifier’. Position reference point information with source identifier AI, has to be stored as internal one. Other source identifiers shall lead to reference point information for the external reference point.

6) The centimetre accuracy on the inland information shall be rounded upwards.

7) The ISRS Location Codes as part of the RIS Index shall be used derived from the European Reference Data Management System (ERDMS) kept by the European Commission.

Figure II-1
Reference point for reported position and overall dimension of vessel/convoy



	Bits	Bit fields	Distance (m)	
A	9	Bit 21 — Bit 29	0 — 511 511 = 511 m or greater	Reference Point for reported position
B	9	Bit 12 — Bit 20	0 — 511 511 = 511 m or greater	
C	6	Bit 6 — Bit 11	0 — 63 63 = 63 m or greater	
D	6	Bit 0 — Bit 5	0 — 63 63 = 63 m or greater	
L = A + B	Defined in Inland FI 10			Overall dimension used in Inland AIS mobile station
W = C + D				

The dimension should be in the direction of the transmitted heading information (bow).

Reference point of reported position not available, but dimensions of vessel/convoy are available: A = C = 0 and B * 0 and D * 0.

Neither reference point of reported position nor dimensions of vessel/convoy are available: A = B = C = D = 0 (= default).

For use of the message table, A = most significant field. D = least significant field.

3. Group assignment command (Message 23)

Inland AIS mobile stations shall be addressed for group assignment by Message 23 using station type ‘6 = inland waterways’.

4. Information content through Application Specific Messages of the International Function Messages (IFM) branch

The following messages of the IFM branch are also applicable in inland navigation and shall comply with the recommendation ITU-R-M.1371:

a) IFM 0 – Text telegram 6-bit ASCII (Msg 6 or 8, DAC=001, FI=0);
b) IFM 2 – Interrogation on specific functional message (Msg 6 or 8, DAC=001, FI=2);
c) IFM 3 – Capability Interrogation (DAC=001, FI=3);
d) IFM 4 – Capability response (DAC=001, FI=4);
e) IFM 5 – Application acknowledgement to an addressed binary message (DAC=001, FI=5);

The following message of the IFM branch is also applicable in inland navigation and shall comply with the IMO SN.1/Circ.289:

f) IFM 16 – Persons on board message (DAC=001, FI=16).

This information content of these messages is normally handled by an external application, such as Inland ECDIS.

Article 3.05
Inland AIS Messages

1. Additional Inland AIS messages
   a) To comply with the information needs, specific Inland AIS messages are defined. In addition to the information content which shall be implemented directly in the Inland AIS station, the Inland AIS mobile station may transmit additional information through Application Specific Messages (ASM). This information content is normally handled by an external application, such as Inland ECDIS.
   b) The use of Inland AIS ASM is in the responsibility of the river commission or the competent authorities.

2. Application identifier for Inland AIS Application Specific Messages
   a) The application specific messages consist of the AIS Class A mobile stations framework according ITU-R M.1371 (message ID, repeat indicator, source ID, destination ID), the Application Identifier (AI = DAC + FI) and the data content (variable length up to a given maximum).
   b) The 16-bit application identifier (AI = DAC + FI) consists of the following elements:
      i) 10-bit designated area code (DAC): international (DAC = 1) or regional (DAC > 1);
      ii) 6-bit function identifier (FI) — allows for 64 unique application specific messages.

c) For the European harmonised Inland AIS Application Specific Messages the DAC '200' is used.

d) In addition national (regional) DAC may be used in local ASM e.g. test pilots. Nevertheless it is strongly recommended to avoid the usage of regional ASM.

e) An overview of all Inland AIS specific messages is given in Table 11-3 Chapter 1 of Annex 11.

3. Mandatory information content sent from Inland AIS station through Application Specific Messages

Inland AIS ASM DAC = 200 FI = 10 (Inland Ship static and voyage related data) and DAC = 200 FI = 55 (inland number of persons on board) are sent from the Inland AIS station and shall be implemented directly in the Inland AIS station (see (a) and (b)).

a) Inland ship static and voyage related data (Inland specific Message FI 10)

This message shall be sent by Inland AIS mobile stations, to broadcast vessel static and voyage related data in addition to message 5. The message shall be sent with binary message 8 as soon as possible (from the AIS point of view) after message 5.

Table II-5
Inland vessel data report

Parameter		Bits	Description
Message ID		6	Identifier for message 8; always 8
Repeat indicator		2	Used by the repeater to indicate how many times a message has been repeated. 0-3; Default = 0; 3 = do not repeat any more
Source ID		30	MMSI number
Spare		2	Not used, shall be set to zero. Reserved for future use
Binary data	Application identifier	16	DAC = 200, FI = 10
	Unique European vessel identification number (ENI)	48	8*6 Bit ASCII characters 00000000 = ENI not assigned = default
	Length of vessel/convoy	13	1 — 8 000 (rest not to be used) length of vessel/convoy in 1/10 m; 0 = default
	Beam of vessel/convoy	10	1 — 1 000 (rest not to be used) beam of vessel/convoy in 1/10 m; 0 = default
	Vessel and convoy type	14	Numeric vessel and convoy type as described in Annex 6 0 = not available = default
	Dangerous cargo indication	3	Number of blue cones/lights 0 — 3; 4 = B-Flag, 5 = default = unknown
	Maximum present static draught	11	1 — 2 000 (rest not used) draught in 1/100 m, 0 = default = unknown

Parameter		Bits	Description
	Loaded/unloaded	2	1 = loaded, 2 = unloaded, 0 = not available/default, 3 shall not be used
	Quality of speed information	1	1 = high, 0 = low/GNSS = default (*)
	Quality of course information	1	1 = high, 0 = low/GNSS = default (*)
	Quality of heading information	1	1 = high, 0 = low = default (*)
	Spare	8	Not used, shall be set to zero. Reserved for future use
Total		**168**	**Occupies one slot**
(*) Shall be set to 0 if no type approved sensor (e.g. gyro) is connected to the transponder.			

b) Number of persons on board (Inland specific message FI 55)

This message shall be sent by Inland AIS mobile stations, to inform about the number of persons (passengers, crew, shipboard personnel) on board. The message shall be sent with binary message 6 preferably on event or on request using International Application Identifier binary functional message 2.

Table II-6
Number of persons on board report

Parameter	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; Default = 0; 3 = do not repeat any more
Source ID	30	MMSI number of source station
Sequence number	2	0 — 3
Destination ID	30	MMSI number of destination station
Repeater flag	1	Repeater flag shall be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
Spare	1	Not used, shall be set to zero. Reserved for future use

	Parameter	Bits	Description
Binary data	Application identifier	16	DAC = 200, FI = 55
	Number of crew members on board	8	0 — 254 crew members, 255 = unknown = default
	Number of passengers on board	13	0 — 8 190 passengers, 8 191 = unknown = default
	Number of shipboard personnel on board	8	0 — 254 shipboard personnel, 255 = unknown = default
	Spare	51	Not used, shall be set to zero. Reserved for future use.
Total		**168**	**Occupies one slot**

4. Optional information content sent from Inland AIS mobile station through Application Specific Messages

   a) Convoy Message (Inland specific message (FI 11))

      i) The convoy message shall be sent from vessel to shore to notify the shape of a convoy and the ID and loading status of the barges.

      ii) The details of the structure, additional information and usage notes of this message are given in Annex 11 (2.1).

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

      i) The Inland Capability Interrogation reply from external application shall be used by an application connected to the Inland AIS station to reply (using Message 6) to an Inland Capability Interrogation (DAC 200, FI 32) function message. The reply contains the availability status of the application for each function identifier in the Inland AIS ASM branch (DAC 200) or other DAC. An Inland AIS station answers to an interrogation by ITU 1371 IFM 3 using IFM 4.

      ii) The details of the structure, additional information and usage notes of this message are given in Annex 11 (2.2).

   c) ETA message (Inland specific message FI 21)

      i) The ETA message shall be sent from vessel to shore (lock, openable bridge or terminal) to notify that the vessel is heading towards the object and desires handling (locking, passing, berthing, transhipment, etc.) at the submitted date and time

      ii) The details of the structure, additional information and usage notes of this message are given in Annex 11 (2.3).

5. Optional information content/request sent from Inland AIS shore station through Application Specific Messages

a) Control Message (Inland specific message (FI 1)

i) The Control message shall be sent by the competent authority from shore only to allow or forbid the broadcasting of ASM by vessels navigating in a geographical area under their jurisdiction.

ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.1).

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

i) The Inland Capability Interrogation to external application shall be used to interrogate on-board applications connected to the Inland AIS station for the availability of Inland AIS ASM (DAC 200) or other DAC. If the Inland AIS station shall be interrogated ITU 1371 IFM3 shall be used.

ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.2).

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

i) The RTA message shall be sent as answer to a previously received ETA message (Inland ASM FI 21) from shore to the vessel to confirm the requested time of arrival, or to propose a different schedule.

ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.3).

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

i) This message shall be sent from shore to inform dynamically about the actual minimum vertical clearance of a certain bridge opening. The information is meant to be displayed on an external display such as Inland ECDIS.

ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.4).

e) Water Level message (Inland specific message FI 26)

i) This message shall be used to inform skippers about actual water levels in their area. It is additional short term information to the water levels distributed via Notices to Skippers. The update rate shall be defined by the competent authority. It is possible to transmit the water levels of more than 3 gauges using multiple messages.

ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.5).

f) Signal Station message (Inland specific message FI 41)

   i) This message shall be sent from a competent authority to inform about the status of different light signals at traffic signal stations to all vessels in a certain area. The information shall be displayed on an external display such as Inland ECDIS application as dynamic symbols. This message is an updated version of the “Signal status message” (FI40) which cannot be updated due to the lack of a version indicator.

   ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.6).

g) Geographic Notice (Inland specific message FI 42)

   i) The purpose of the Geographic Notice is to transmit information that pertains to a region or area, for example a security zone, an area of fog, or dredging operations. The areas that are being defined can be circles, rectangles, polygons, or sectors. They can also be defined as a simple point or series of points (polyline). The Geographic Notice message can be made up of multiple subareas in which case the total area is the unionsum of the subareas. This message can also be used to convey advisory lines or tracks (using the polyline subarea); however, the Route Information message should be used for recommended or directed routes.

   ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.7).

h) ISRS Text message (Inland specific message FI 44)

   i) The ISRS Text message can be used to transmit free text information which is related to any object which has an ISRS location code.

   ii) The details of the structure, additional information and usage notes of this message are given in Annex 11(3.8).

CHAPTER 4
OTHER AIS MOBILE STATIONS ON INLAND WATERWAYS

Article 4.01
Introduction

1. Vessels not obliged to operate Inland AIS mobile stations may use other AIS mobile stations. The following mobile stations can be used:
   a) AIS Class A mobile station in accordance with Articles 35(2) and 35(3) of Commission Directive 2014/90/EU[1];
   b) AIS Class B mobile station in accordance with Part II, Article 4.02.

2. The use of such stations in inland waterways is up to the decision of the Competent Authority responsible for the navigation in that area.

3. If such stations are used on a voluntary basis, the shipmaster shall keep the manually entered AIS data constantly up to date. No incorrect data shall be transmitted over AIS.

Article 4.02
General requirements for AIS Class B mobile stations on inland waterways

1. AIS Class B has restricted functionalities compared to Inland AIS mobile stations. The messages sent out by an AIS Class B mobile station are transmitted with a lower priority in comparison to Inland AIS mobile stations.

2. AIS Class B mobile stations installed on vessels navigating on Union inland waterways shall meet the requirements set out in:
   a) ITU-R M.1371,
   b) IEC International Standard 62287 (including DSC channel management).

   Note: It is the responsibility of the Competent Authority responsible for the navigation in that area to ascertain the conformity of AIS Class B mobile stations to the standards and requirements listed in the second subparagraph prior to issuing a ship station license, assigning a Maritime Mobile Service Identifier (MMSI) number, for example by type approval of the relevant AIS Class B mobile stations.

[1] Commission Directive 2014/90/EU of 23 July 2014 on marine equipment and repealing Council Directive 96/98/EC (OJ L 257, 28.8.2014, p. 146).

CHAPTER 5
AIS AIDS TO NAVIGATION IN INLAND NAVIGATION

Article 5.01
Introduction

1. A navigational aid (also known as Aids to Navigation, or AtoN) is a marker which provides support during navigation. Such aids include markings for lighthouses, buoys, fog signals, and day beacons. A list of types of AtoNs is included in Table II-8.

2. The AIS technology provides the possibility to dynamically transfer information about AtoNs.

3. For the use in inland navigation the maritime AIS AtoN report (Message 21) needs to be extended to reflect the specifics of the inland buoyage system.

4. The maritime AIS AtoN report is based on the IALA buoyage system as defined in IALA recommendation R0126:

   “An AIS AtoN can be implemented in three ways, Real, Synthetic, and Virtual. For Virtual AIS AtoN reference should be made to IALA Recommendation R0143 (O-143), and to IALA Guideline G1081.

   a) Real AIS AtoN

      A Real AIS AtoN Station is an AIS station located on an AtoN that physically exists.

   b) Synthetic AIS AtoN

      A Synthetic AIS AtoN is where Message 21 is transmitted from an AIS station located remotely from the AtoN. IEC 62320-2 states that ‘for Synthetic AIS AtoN messages, the repeat indicator field shall be set to 1, 2, or 3 to signify that the message is transmitted from a position other than that provided in the message’. There are 2 types of Synthetic AIS AtoN, ‘Monitored Synthetic AIS AtoN’ and ‘Predicted Synthetic AIS AtoN’.

      i) Monitored Synthetic AIS AtoN

         - A ‘Monitored Synthetic AIS AtoN’ is transmitted as a message 21 from an AIS Station that is located remotely from the AtoN. The AtoN physically exists and there is a communication link between the AIS Station and the AtoN. The communication between the AtoN and AIS confirms the location and status of the AtoN.
         - A Monitored Synthetic AIS AtoN ensures the integrity of the Message 21.

ii) Predicted Synthetic AIS AtoN

- A ‘Predicted Synthetic AIS AtoN’ is transmitted as a Message 21 from an AIS Station that is located remotely from the AtoN. The AtoN physically exists but the AtoN is not monitored to confirm its location or status.
- A Predicted Synthetic AIS AtoN does not ensure the integrity of the Message 21, and therefore is not recommended for use on floating AtoN.
- The use of Predicted Synthetic AIS AtoN broadcasts for fixed AtoN is acceptable as the location will not change, but the status of the AtoN is not verified.

c) Virtual AIS AtoN

i) A ‘Virtual AIS AtoN’ is transmitted as a Message 21 for an AtoN that does not physically exist.

ii) When a Virtual AIS AtoN is used, the AtoN symbol or information would be available for presentation to a mariner, even though there is no real AtoN such as a buoy or beacon. A base station or AtoN station would broadcast this message.

iii) The ‘Virtual AtoN Flag’ in Message 21 would be set to 1, to clearly identify this as a Virtual AIS AtoN.”

5. A so called Physical AIS AtoN is either a real AIS AtoN or a Synthetic AIS AtoN.

6. For inland navigation the AIS AtoN report needs to reflect the European Inland AtoN system described in Part II, Chapter 5.

7. The AIS AtoN report transfers the position and the meaning of the AtoN as well as information if a buoy is on the required position (on position) or not (off position).

Article 5.02
Use of Message 21: Aids to Navigation report

1. For the use on inland waterways the AIS AtoN report (Message 21) as defined in ITU-R M.1371 is being used. The additional European Inland types of AtoN are coded using the 'AtoN status' bits.

Table II-7
AIS AtoN Report

Parameter	Bits	Description
Message ID	6	Identifier for this message 21
Repeat indicator	2	Used by the repeater to indicate how many times a message has been repeated 0-3; Default = 0; 3 = do not repeat any more
ID	30	MMSI number, (see Article 19 of the Radio Regulations (RR) and ITU-R M.585)
Type of Aids-to-Navigation	5	0 = not available = default; refer to appropriate definition set up by IALA; see Figure II-2[1)]
Name of Aids-to-Navigation	120	Maximum 20 characters 6-bit ASCII, as defined in Table 47 '@@@@@@@@@@@@@@@@@@@@' = not available = default. The name of the AtoN may be extended by the parameter 'Name of Aids-to-Navigation Extension' below
Position accuracy (PA)	1	1 = high (< 10 m) 0 = low (> 10 m) 0 = default. The PA flag should be determined in accordance with ITU-R M.1371 table 'Determination of position accuracy information'
Longitude	28	Longitude in 1/10 000 min of position of an AtoN (± 180°, East = positive, West = negative 181 = (6791AC0h) = not available = default)
Latitude	27	Latitude in 1/10 000 min of an AtoN (± 90°, North = positive, South = negative 91 = (3412140h) = not available = default)
Dimension / reference for position	30	Reference point for reported position; also indicates the dimension of an AtoN (m) (see Figure II-2), if relevant [2)]

Parameter	Bits	Description
Type of electronic position fixing device	4	0 = Undefined (default) 1 = GPS 2 = GLONASS 3 = Combined GPS/GLONASS 4 = Loran-C 5 = Chayka 6 = Integrated Navigation System 7 = surveyed. For fixed AtoN and virtual AtoN, the charted position should be used. The accurate position enhances its function as a radar reference target 8 = Galileo 9-14 = not used 15 = internal GNSS
Time stamp	6	UTC second when the report was generated by the EPFS (0-59 or 60) if time stamp is not available, which should also be the default value or 61 if positioning system is in manual input mode or 62 if electronic position fixing system operates in estimated (dead reckoning) mode or 63 if the positioning system is inoperative)
Off-position indicator	1	For floating AtoN, only: 0 = on position; 1 = off position. NOTE 1 — This flag should only be considered valid by receiving station, if the AtoN is a floating aid, and if time stamp is equal to or below 59. For floating AtoN the guard zone parameters should be set on installation
AtoN status	8	Reserved for the indication of the AtoN status 00000000 = default[3)]
RAIM-flag	1	RAIM (Receiver autonomous integrity monitoring) flag of electronic position fixing device; 0 = RAIM not in use = default; 1 = RAIM in use; see ITU-R M.1371 table ‘Determination of position accuracy information’
Virtual AtoN flag	1	0 = default = real AtoN at indicated position; 1 = virtual AtoN, does not physically exist[4)]
Assigned mode flag	1	0 = Station operating in autonomous and continuous mode = default 1 = Station operating in assigned mode
Spare	1	Spare. Not used. Should be set to zero. Reserved for future use
Name of Aids-to-Navigation Extension	0, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84	This parameter of up to 14 additional 6-bit-ASCII characters for a 2-slot message may be combined with the parameter ‘Name of Aids-to-Navigation’ at the end of that parameter, when more than 20 characters are needed for the name of the AtoN. This parameter should be omitted when no more than 20 characters for the name of the AtoN are needed in total. Only the required number of characters should be transmitted, i.e. no @-character should be used

Parameter	Bits	Description
Spare	0, 2, 4, or 6	Spare. Used only when parameter 'Name of Aids-to-Navigation Extension' is used. Should be set to zero. The number of spare bits should be adjusted in order to observe byte boundaries
Total	**272-360**	**Occupies two slots**

1) In case an inland AtoN type code is being transmitted, this field (type of AtoN) shall be set to 0 = undefined.

2) When using Figure II-2 for AtoN the following shall be observed:

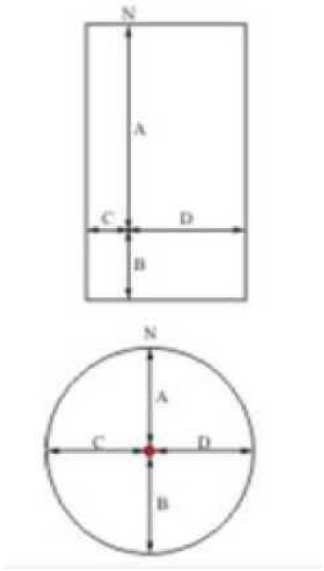
- For fixed AtoN, virtual AtoN, and for offshore structures, the orientation established by the dimension A shall point to true north.
- For floating aids larger than 2 m x 2 m the dimensions of the AtoN shall always be given approximated to a circle, i.e. the dimensions shall always be as follows A = B = C = D * 0. (This is due to the fact that the orientation of the floating AtoN is not transmitted. The reference point for reported position is in the centre of the circle.)
- A = B = C = D = 1 shall indicate objects (fixed or floating) smaller than or equal to 2 m x 2 m. (The reference point for reported position is in the centre of the circle.)
- Floating offshore structures that are not fixed, such as rigs, shall be considered as Code 31 type from Table II-8. These structures shall have their 'Dimension/reference for position' parameter as determined above in Note (1).

  For fixed offshore structures, Code 3 type from Table II-8, shall have their 'Dimension/reference for position' parameter as determined above in Note (1). Hence, all offshore AtoN and structures have the dimension determined in the same manner and the actual dimensions are contained in Message 21.

3) For Inland AIS AtoN report this field shall be used to indicate the Inland AtoN type using page 001

4) When transmitting virtual AtoN information, i.e. the virtual/pseudo AtoN Target Flag is set to one (1), the dimensions shall be set to A = B = C = D = 0 (default). This shall also be the case, when transmitting 'reference point' information.

Figure II-2
Reference point for reported position of a maritime AtoN, or the dimension of an AtoN



	Bits	Bit Fields	Distance (m)
A	9	Bit 21 — Bit 29	0-511 511 — 511 m or greater
B	9	Bit 12 — Bit 20	0-511 511 — 511 m or greater
C	6	Bit 6 — Bit 11	0-63 63 — 63 m or greater
D	6	Bit 0 — Bit 5	0-63 63 — 63 m or greater

2. If the type of AtoN to be transmitted is covered within the existing IALA types of AtoN (according to Table II-8) no changes need to be applied.

Table II-8
Types of Aids to Navigation

Code		Definition Maritime
	0	Default, Type of AtoN not specified
	1	Reference point
	2	RACON
	3	Fixed structures offshore, such as oil platforms, wind farms. (NOTE 1 — This code should identify an obstruction that is fitted with an AtoN AIS station)
	4	Emergency Wreck Marking Buoy
Fixed AtoN	5	Light, without sectors
	6	Light, with sectors
	7	Leading Light Front
	8	Leading Light Rear
	9	Beacon, Cardinal N
	10	Beacon, Cardinal E
	11	Beacon, Cardinal S
	12	Beacon, Cardinal W
	13	Beacon, Port hand

Code		Definition Maritime
	14	Beacon, Starboard hand
	15	Beacon, Preferred Channel port hand
	16	Beacon, Preferred Channel starboard hand
	17	Beacon, Isolated danger
	18	Beacon, Safe water
	19	Beacon, Special mark
Floating AtoN	20	Cardinal Mark N
	21	Cardinal Mark E
	22	Cardinal Mark S
	23	Cardinal Mark W
	24	Port hand Mark
	25	Starboard hand Mark
	26	Preferred Channel Port hand
	27	Preferred Channel Starboard hand
	28	Isolated danger
	29	Safe Water
	30	Special Mark
	31	Light Vessel/LANBY/Rigs

Note 1 The types of AtoN listed above are based on the IALA Maritime Buoyage System, where applicable.

Note 2 There is potential for confusion when deciding whether an aid is lighted or unlighted. Competent authorities may wish to use the regional/local section of the message to indicate this.

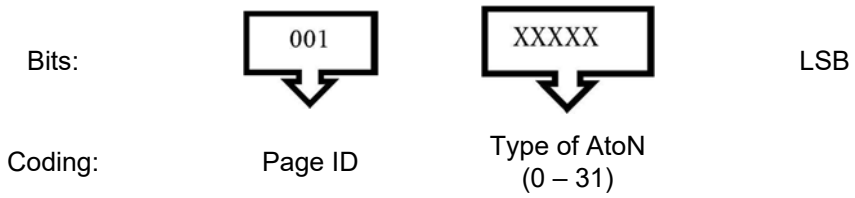
Article 5.03
Extension of Message 21 with inland-specific type of AtoN

1. The parameter field ‘AtoN status’ is used for the extension of Message 21 with inland-specific type of AtoN.

2. The parameter field ‘AtoN status’ is organised in eight pages, of which page ID 0 is 0 = default, page ID 1 to 3 is for regional use and page ID 4 to 7 is for international use. The first three bits of the AtoN status filed defines the page ID, the remaining 5 bits contains the information of the page.

3. The region, in which page ID 1 to 3 is applicable is defined by the Maritime Identification Digits within the MMSI of the transmitting AIS AtoN station. Thus the bit coding of the 5 information bits in the AtoN status field is only applicable in this specific region.

4. As regards Union inland waterways page ID 1 of the AtoN status field contains the list of inland-specific type of AtoN used.



5. Setting an inland-specific type of AtoN in Message 21 is a two-step process:
   a) First the parameter ‘Type of aids-to-navigation’ in Message 21 needs to be set to ‘0 = Default, type of AtoN not specified’.
   b) Second, the parameter ‘AIS status’ needs to be set to page ID 1 and the appropriate code of the inland-specific type of AtoN.

6. This will result that the AtoN status field will start with binary “001” followed by the binary code defined in Table II-9.

7. This table provides all types of Inland AtoN for use in AtoN status bits.

Table II-9
Types of Inland Aids to Navigation

	Inland AtoN Code	AtoN status bits in AIS Message 21	Associated marking sign	Name
	0	00100000		Default, Type not specified
fixed aids, landmarks	1	00100001		Channel near the right bank
	2	00100010		Channel near the left bank
	3	00100011		Crossover right bank
	4	00100100		Crossover left bank
	5	00100101		Bridge pier
	6	00100110		Overhead cable
floating aids	7	00100111		right-hand side of the fairway
	8	00101000		left-hand side of the fairway
	9	00101001		Bifurcation of the fairway
	10	00101010		Bifurcation, pass right-hand side
	11	00101011		Bifurcation, pass left-hand side
	12	00101100		Danger point and obstacle right-hand side
	13	00101101		Danger point and obstacle left-hand side
	14	00101110		Berth right-hand side
	15	00101111		Berth left-hand side

	Inland AtoN Code	AtoN status bits in AIS Message 21	Associated marking sign	Name
Other	16	00110000		No entry *
	17	00110001		Do not create wash*
	18	00110010		Headroom limited
	19	00110011		Signal float
Reserved	20	00110100		Reserved for future use
	21	00110101		Reserved for future use
	22	00110110		Reserved for future use
	23	00110111		Reserved for future use
	24	00111000		Reserved for future use
	25	00111001		Reserved for future use
	26	00111010		Reserved for future use
	27	00111011		Reserved for future use
	28	00111100		Reserved for future use
	29	00111101		Reserved for future use
	30	00111110		Reserved for future use
	31	00111111		Reserved for future use

* For Inland AIS AtoN report the parameter “Name of Aids to Navigation” may be used to transmit the direction of impact of the AtoN. This information may be transmitted with or without preceding name value. In this case the content of the parameter contains two percent symbols ‘%%’ directly followed by the direction of impact in full degrees clockwise starting from North e.g. %%270 for direction of impact 270 degrees.

8. The symbols shown in this table are used for unambiguous identification of the type of AtoN and do not suggest the visualisation of applicable symbols to Inland AIS AtoN in Inland ECDIS displays.

9. The design of notice marks and buoys, which has to be used at specific Inland Waterways, is prescribed in the applicable police regulation in this area.

10. The following MID are used for the transmission of Inland AtoN information in the coding of page 1 of the AtoN status bits in AIS message 21 in Europe:

Table II-10
List of applicable MIDs for Inland AIS AtoN report message (AIS message 21)

MID	Country
203	Austria
205	Belgium
207	Bulgaria
218	Germany
214	Moldova
226	France
238	Croatia
243	Hungary
246	The Netherlands
247	Italy
253	Luxembourg
261	Poland
264	Romania
267	Slovak Republic
269	Switzerland
270	Czech Republic
272	Ukraine
273	Russian Federation
279	Serbia

CHAPTER 6
ABBREVIATIONS

AI	Application Identifier
AIS	Automatic Identification System
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ASCII	American Standard Code for Information Interchange
ASM	Application Specific Message
AtoN	Aids to Navigation
DAC	Designated Area Code
DGNSS	Differential GNSS
FI	Functional Identifier
GLONASS	(Russian) GLObal NAvigation Satellite System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
HDG	Heading
IAI	International Application Identifier
ID	Identifier
ITU	International Telecommunication Union
MID	Maritime Identification Digit
MMSI	Maritime Mobile Service Identifier as referred to in ITU-R M585
ROT	Rate of turn
Class B SO/CS	Class B mobile stations using either carrier-sense time division multiple access (CSTDMA) technique (’CO’), or Self-organising time division multiple access (SOTDMA) technique (’SO’)
SOLAS	Safety Of Life At Sea
SQRT	Square root
UTC	Universal Time Coordinated
VHF	Very High Frequency
VTS	Vessel Traffic Services

PART III
NOTICES TO SKIPPERS

CHAPTER 1
GENERAL PROVISIONS

Article 1.01
Definitions

1. Fairway Information Services (FIS) mean geographical, hydrological and administrative information regarding the waterway (fairway) that are used by boatmasters and fleet managers to plan, execute and monitor a voyage. The terms ‘boatmaster’ and ‘skipper’ used in Part III, Annexes 17 to 21 shall be deemed to be equivalent with the term ‘shipmaster’ used in the River Information Services (RIS) Guidelines as defined in https://www.risdefinitions.org, while the term ‘fleet managers’ is defined as follows “A person planning and observing the actual (navigational) status of a number of vessels moving or working under one command or ownership”.

2. FIS provide dynamic information (such as water levels, water level forecasts) as well as static information (such as operating times of locks and bridges) regarding the use and status of the inland waterway infrastructure, and thereby support tactical and strategic navigation decisions.

3. Traditional means to supply FIS include visual aids to navigation, notices to skippers published on paper, provided by broadcast and by fixed telephone on locks. The mobile phone has added new possibilities of voice and data communication, but cellular network is not available in all places and at all times. Tailor-made FIS for the waterways can be supplied by radiotelephone service on inland waterways, Internet service or electronic navigational chart service, such as the Inland Electronic Chart Display and Information System (Inland ECDIS) with Electronic Navigational Chart (ENC).

Article 1.02
Primary functions and performance requirements for Notices to Skippers (NtS)

1. This technical specification for NtS provides rules for the data transmission of fairway information via Internet.

2. NtS shall:
   a) provide information related to fairway conditions, traffic, weather, water levels and ice for Fairway Information Services;
   b) provide automatic translation of the most important content of notices, using standard vocabulary based on code lists (the NtS Reference Tables as provided in Annex 21);

c) be provided in a standardised structure of data-sets to facilitate the integration of notices in voyage planning systems;

d) be compatible with the data-structure of the RIS Index and ES-RIS, Part I to facilitate integration of NtS into Inland ECDIS (Part I).

3. The technical specifications for NtS facilitate the data-exchange among NtS systems of different countries and towards other applications making use of NtS data, including Inland ECDIS (Part I).

4. Some information contained within NtS messages can be standardised, some cannot.

5. The standardised part shall cover all the information which is:

a) important for the safety of inland navigation (for example: sunken small craft on the right side of the fairway at the Danube, river-km 2010);

b) needed for voyage planning including closure of locks and reduction of vertical clearance.

6. Additional information that is not relevant for safety or voyage planning, including the cause of the closure of a lock, may be given as free text, without automatic translation. The use of free text shall be restricted to a minimum.

CHAPTER 2
PROVISION OF NOTICES TO SKIPPERS

1. Member States shall ensure that NtS messages are accessible online and via standardised NtS web service, in accordance with the technical specifications described in this Part and Annexes 17 to 21.

2. The standardised NtS web service specification is included in Annex 20 in the form of a 'Web Service Description Language' (WSDL).

3. The standardised NtS web services shall provide the user with the possibility to select messages on the grounds of at least one of the following criteria:
   a) a specific country,
   b) time of validity of the notice (start date and end date of validity period),
   c) date of publication of the notice (date and time of publication).

4. NtS messages that comply with the standards referred to in this Part can be provided, among other tools, by:
   a) mobile applications (apps),
   b) E-mail services.

5. Data exchange among the NtS systems operated in different countries may be carried out. All systems using the standards described in this Part may integrate NtS of other systems in their own services, provided the content of the message is not modified. Users shall be informed in case the connection to a source of integrated NtS is interrupted or not available.

CHAPTER 3
NTS MESSAGE TYPES

1. NtS messages are essential messages that are standardised to the highest part possible.

2. There are four NtS message types, namely:
   a) fairway and traffic related message,
   b) water related message,
   c) ice related message,
   d) weather related message.

CHAPTER 4
STRUCTURE OF NTS AND ENCODING OF NTS MESSAGES

1. This Chapter describes the structure and encoding of standardised electronic NtS messages.

2. An NtS message is a structured message using standardised elements, wherever possible. The use of free text in the data elements shall be restricted to a minimum.

3. The standardised NtS extended markup language (XML) schema definition, referred to as XSD in this Part, contains the standardised code values and possible formats is included in Annex 19.

4. The standardised code values and the XML tags, their meaning and translation are provided in the NtS Reference Tables in Annex 21 and are also available electronically in the European Reference Data Management System (ERDMS) operated by the European Commission.

Article 4.01
General structure

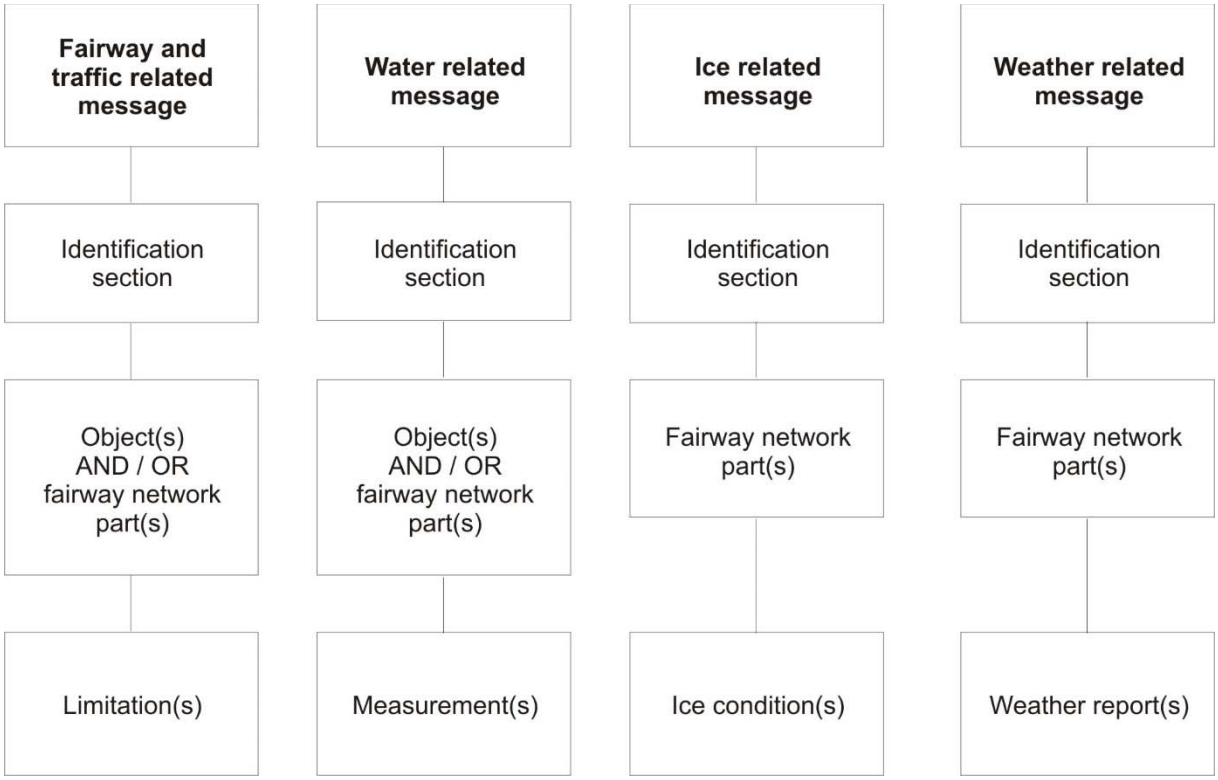
An NtS message consists of the following sections:

a) identification section;

b) section defining the applicable object(s) or fairway section(s) the message is related to;

c) limitation(s) for a fairway and traffic related message, measurement(s) for a water related message, ice condition(s) for an ice related message or weather report(s) for a weather related message.

Figure III-1
Notice to Skippers message structure



1. Identification section

   Each message must contain an identification section. The identification section contains general information about the issuer and date of publication of the message.

2. Fairway and traffic related message

   The fairway and traffic related message contains information for fairway network part(s) or object(s), and it is used to indicate limitation(s) for the following purposes:

   a) **'Warning'**: relevant for safety. The warning must contain at least one limitation that results in direct and concrete endangerment of persons, crafts or facilities, such as welding works on a bridge producing sparks, inspection cage/workers hanging from a bridge, obstacle in the fairway;
   b) '**Announcement'**: relevant for voyage planning or safety. The announcement may contain limitations, such as blockage of a lock chamber due to maintenance works, dredging on the fairway;
   c) '**Info service'**: general information that is not directly linked to voyage planning or safety. The info service must not contain specific limitations, therefore it is not directly relevant to voyage planning or safety. Such information might include general information such as local rules of traffic, Inland ECDIS Update.

3. Water related message

The water related section contains values or forecasts for:

a) water level,
b) least sounded depth,
c) vertical clearance,
d) barrage status,
e) discharge,
f) regime.

Usually, water related information is created and published automatically based on data received from sensor equipment (such as tide gauge), systems (such as water level model) or infrastructure (such as barrage status). There may be different triggers for publication, such as periodical publication or reaching certain value.

4. Ice related message

The ice related message contains information about the actual or forecasted ice conditions for fairway network part(s). Ice related information is usually generated by competent personnel based on local observation and professional assessment.

5. Weather related message

The weather related message contains information about (dangerous) weather conditions for inland navigation.

In order to facilitate the distribution of hydro-meteo information from hydro-meteo networks to skippers, weather related messages may be published.

Article 4.02
Explanation of XML tags and code values in the NtS Reference Tables

The meaning of the different elements used in the NtS XML schema definition (XSD) is described in the NtS Reference Tables provided in Annex 21. The structure, format and possible values of all XML elements are described in the NtS XSD in Annex 19.

a) Latitude and longitude coordinates are encoded according to the World Geodetic System 1984 (EPSG:4326) and are presented in degrees with six decimals ([d]d.dddddd (latitude), [d][d]d.dddddd (longitude))
b) Decimals in numeric fields are indicated with a decimal point ('.'). No separators for thousand are used.
c) NtS messages shall only use the following units for the values included in the XML message: cm, m^3/s, h, km/h and kW, m/s (wind), mm/h (rain) and degree Celsius. National applications may convert the units for user- friendly display.

Article 4.03
Identification of fairway sections and objects in NtS messages

1. To supply to RIS users all relevant data concerning navigation and voyage planning on inland waterways, the ISRS Location Code has to be used. The ISRS Location Code is used to uniquely identify objects and fairway network parts and to ensure interoperable RIS Systems and Services (such as to combine information about infrastructure from the RIS Index, ES-RIS, Part I and V for voyage planning).

2. The ISRS Location Code is a 20-digit alphanumerical code used to establish a unique and standardized relation between objects in River Information Services. It consists of the following mandatory data elements, arranged in four information blocks:
   a) Block 1: UN/LOCODE (5 letters, alphanumerical), comprising
      i) Country code (2 digits, alphanumerical as defined in ISO 3166-1 alpha 2), and
      ii) Location code (3 digits, alphanumerical, ‘XXX’ if not available);
   b) Block 2: Fairway section code (5 digits, alphanumerical, to be determined by the national authority);
   c) Block 3: Object Reference Code (5 digits, alphanumerical, ‘XXXXX’ if not available);
   d) Block 4: Fairway section hectometre (5 digits, numerical, hectometre at the centre of the area or ‘00000’ if not available).

3. The ISRS Location Code is created once and shall not be changed throughout the lifetime of the object. The ISRS Location Codes and the reference data of objects are maintained by the Member States in the RIS Index and submitted to the ERDMS operated by the European Commission according to the Maintenance procedures for the RIS Index published on the ERDMS website.

Article 4.04
Rules for encoding of NtS messages

NtS messages shall be encoded in line with the NtS Encoding Guide for editors (Annex 17) and in line with the NtS Encoding Guide for application developers (Annex 18).

PART IV
ELECTRONIC SHIP REPORTING IN INLAND NAVIGATION

CHAPTER 1
MESSAGE IMPLEMENTATION MANUAL CONVENTION

Article 1.01
Introduction

These technical specifications define the structure of five ERI messages types for electronic ship reporting in inland navigation:

The ERI messages types are:
- (Dangerous) goods reporting message — ERINOT (Annex 12),
- Passenger and crew lists message — PAXLST (Annex 13),
- ERINOT response and receipt message — ERIRSP (Annex 14),
- Berth management port notification message — BERMAN (Annex 15),
- Voyage Plan Notification message — ERIVOY (Annex 16).

In the case that electronic ship reporting in inland navigation is required by national or international law these technical specifications shall be applied.

The ERI messages ERINOT, PAXLST, ERIRSP and BERMAN can be sent using a structure based on the United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT)[1] and customised, where required, for the purpose of inland navigation.

The message types ERINOT, PAXLST, ERIRSP and ERIVOY can be sent using a structure based on extensible markup language (XML) that is described using a XML Schema Definition file (XSD).

[1] Abbrevations used in this Part are explained in the list in Article 2.05.

When the structure of a message is available in both format (UN/EDIFACT and XML) according to this standard, the use of the format XML defined in the corresponding annexes (12, 13, 14) is recommended for this message.

The format to be used is defined in the national or international regulation imposing the reporting formalities.
Both formats are equivalent from a functional point of view and are able to carry the same information.

The exact use of the messages, data elements and codes are defined in the Annexes (Message Implementation Manuals) in order to ensure a common understanding and usage of the messages.

Article 1.02
UN/EDIFACT message structure

The message structure is based on ISO 9735.

UN/EDIFACT messages are composed of segments. The structure of a message is described in a branching diagram indicating the position and the mutual relationship of the segments and segment groups.

For each segment data elements are defined: some data elements are combined to form composite data elements. A segment and a data element within a segment are either mandatory (M) or conditional (C). Mandatory segments and/or data elements contain important data for a receiving application and shall be filled with valid data.

Each message starts with two or three segments, the ‘interchange header’ (UNB) and the ‘message header’ (UNH). Where required, also the ‘service string advice’ (UNA) is used as a first segment to define which character sets are used in the message. Each message finishes with the segments ‘message trailer’ (UNT) and ‘interchange trailer’ (UNZ). Thus, each message is contained in one interchange, and an interchange contains only one single message.

Article 1.03
XML/XSD message structure

Extensible Markup Language, abbreviated XML, describes a class of data objects called XML documents and partially describes the behaviour of computer programs which process them. XML is an application profile or restricted form of the Standard Generalized Markup Language (SGML) defined by ISO 8879.

The XML is published as a recommendation of the World Wide Web Consortium (W3C) since February 1998.

XML Schema Definition (XSD) is also a recommendation of the W3C since April 2012. XSD are formally XML documents. An XSD file specifies how to formally describe the elements in an XML document. Therefore, an XML document can be validated using a specific XSD file.

Article 1.04
Introduction to message types

As mentioned in Part IV, Article 1.01, the five ERI message types are:

- (Dangerous) goods reporting message — ERINOT,
- Passenger and crew lists message — PAXLST,
- ERINOT response and receipt message — ERIRSP,
- Berth management port notification message — BERMAN,
- Voyage Plan Notification message — ERIVOY.

In addition, messages ERINOT and ERIVOY can fulfil the following functions:

- new message (identifier ‘9’),
- modification of message (identifier ‘5’),
- cancellation of message (identifier ‘1’),
- end of voyage (identifier ‘22’),
- interruption of voyage (identifier ‘150’),
- restart of voyage (identifier ‘151’).

1. ERINOT

   The ERI notification message (ERINOT) shall be used for the reporting of voyage related information and of information on dangerous and non-dangerous cargo carried on-board vessels sailing on inland waterways. The ERINOT message using UN/EDIFACT format is a specific use of the UN/EDIFACT ‘International Forwarding and Transport Dangerous Goods Notification (IFTDGN)’ message. This message has also been developed in the XML format.

   The ERINOT message encompasses the following types:

   a) transport notification from vessel to authority (identifier ‘VES’ in both XML and UN/EDIFACT formats), from ship to shore;
   b) transport notification from carrier to authority (identifier ‘CAR’ in both XML and UN/EDIFACT formats), from shore to shore;
   c) passage notification (identifier ‘PAS’ in both XML and UN/EDIFACT formats), from authority to authority.

2. PAXLST

The PAXLST message was originally based on the UN/EDIFACT message PAXLST. This message has also been developed in the XML format. It shall be used for the exchange of data in inland navigation between the captain/skipper or carrier and designated authorities such as customs, immigration, police or terminals falling under the International Ship and Port Facility Security (ISPS) Code, as defined in Regulation (EC) No 725/2004 of the European Parliament and of the Council[1].

The message shall be also used to transfer passenger/crew data from a designated authority in the country of departure to the appropriate authorities in the country of arrival of the means of transport.

3. ERIRSP

The ERI response message (ERIRSP) was originally derived from the UN/EDIFACT APERAK message. This message has also been developed in the XML format. It may be generated by the system of the designated authority. The response to a ‘modification’ or a ‘cancellation’ contains information whether or not the ‘modification’ or ‘cancellation’ has been processed by the receiving system.

4. BERMAN

The Berth Management (BERMAN) message combines the pre-arrival notification, respectively general declaration, into one single notification which is based on the UN/EDIFACT message BERMAN from the UN/EDIFACT D04B directory.

The BERMAN message shall be sent by vessels sailing on inland waterways before arriving at or departing from a berth or a port and provides information about the time of arrival and the services required to ensure a prompt handling, to support procedures and to facilitate controls.

5. ERIVOY

The ERI voyage plan notification message ERIVOY was originally based on the UN/EDIFACT IFTSAI (Transport Scheduling and Information message). This message has also been developed in the XML format. However, only the XML format is part of the standard and can be used for this type of message.

[1] Regulation (EC) No 725/2004 of the European Parliament and of the Council of 31 March 2004 on enhancing ship and port facility security (OJ L 129, 29.4.2004, p. 6).

In line with the developments in inland shipping to increasingly use Information and Communication Technologies (ICT) for the exchange of data with authorities and partners, the standardised voyage plan notification message, ERIVOY is meant to be used as a message type from a carrier, its agent or a ship to the responsible waterway authorities and where applicable involved commercial parties or between the waterway authorities mutually, reporting a voyage plan and its particulars and giving details of the voyage, ship, expected voyage details and expected passage of waypoints and other key passage points. It is meant to provide a transport route schedule of a certain ship and its voyage.

The advance availability of routing information will make communication with the involved parties such as the waterway authorities easier and will facilitate handling of certain requests and will ensure easier and safer passages of locks, bridges and other barriers. In this way a better planning of a voyage is feasible. In case of any changes or calamities planning becomes easier and better facilitating vessel traffic services and management. In that way using this message increases the performance and reliability during the voyage of a ship or a convoy.

CHAPTER 2
CODES AND REFERENCES

Article 2.01
Introduction

Codes and references, as defined in this Chapter, shall be used in electronic ship reporting for inland navigation. The use of codes and references serves the purpose of unambiguousness: it eliminates the possible misinterpretation and facilitates the translation of messages into other languages.

Therefore the usage of codes and references is mandatory for the data elements indicated in the message implementation manuals. Those codes and references are also available electronically in the European Reference Data Management System (ERDMS) operated by the Commission.

Those codes and references shall be used whenever data is interchanged between various computer applications and between parties using different languages, even beyond the message types in the subject of this Part.

Article 2.02
Definitions

For the purposes of this Part, the following definitions shall apply.

1. Agent means any person mandated or authorised to act for or to supply information on behalf of the (transport) operator of the vessel.

2. Barge means a vessel that has no propulsion of its own.

3. Blue cones means signals that inland vessels carrying out transport operations involving dangerous substances are required to show pursuant to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN), namely one, two or three blue cones by day and one, two or three blue lights at night.

4. Carrier or transport operator means the person responsible for the carriage of goods, either directly or using a third party.

5. Cargo means any goods, wares, merchandise and articles carried on a ship. So ship carries cargo consisting of one or more consignments (with the necessary equipment) each consisting of one or more goods items.

6. Code means a character string used as an abbreviated means of
   a) recording or identifying information
   b) to represent or identify information using a specific symbolic form that can be recognised by a computer.

7. Common access reference means a common key to relate all subsequent transfers of data to the same business case or file (Data Element 0068 TDED). The common access reference shall be regarded as a common denominator[1] linking through a unique number documents, electronic messages and other communications with the same objective and characteristics.

8. A consignment means a separate identifiable number of goods transported from one consignor (port of loading) to one consignee (port of discharge) and identified and specified in one single transport document. A container as equipment shall in this context be seen as a separate identifiable packing unit for which separate bookings are done and as such shall be considered a single consignment.

9. Consignee means the party such as mentioned in the transport document by whom the goods, cargo or containers are to be received.

10. Consignor means the merchant by whom, in whose name or on whose behalf a contract of carriage of goods has been concluded with a carrier or any party by whom, in whose name or on whose behalf the goods are actually delivered to the consignee in relation to the contract of carriage (Synonyms: shipper, cargo sender).

11. Container means an item of equipment for transport purposes with the following characteristics:
    a) a permanent character and accordingly strong enough to be suitable for repeated use;
    b) specially designed to facilitate the carriage of goods, by one or more modes and means of transport;
    c) fitted with devices permitting its ready handling, particularly from one mode of transport to another;
    d) so designed as to be easy to fill and to empty.

    The term container includes neither vehicles nor conventional packing.

12. Dangerous goods means the following categories, referred to in the relevant international instruments as defined in Directive 2002/59/EC of the European Parliament and of the Council[2]:
    a) goods classified in the UNDG Code,
    b) goods classified in the ADN Code,
    c) goods classified in the IMDG Code,
    d) dangerous liquid substances listed in the IBC Code,
    e) liquefied gases listed in the IGC Code,
    f) solids referred to in Appendix B of the BC Code.

13. Data element means a unit of data which, in a certain context, is considered indivisible and for which the identification, description and value representation has been specified.

[1] The common denominator means an attribute that is common to all members of a category.

[2] Directive 2002/59/EC of the European Parliament and of the Council of 27 June 2002 establishing a Community vessel traffic monitoring and information system and repealing Council Directive 93/75/EEC (OJ L 208, 5.8.2002, p. 10).

14. Deadweight tonnage (DWT) means the maximum displacement of a ship after deduction of the weight of the ship.

15. Displacement ton means a unit for measuring the displacement of ships equal to 35 ft^3; this is approximately equal to the volume of a long ton (1016,06 kg) of sea water.

16. EDI number means the electronic address of the sender or receiver of a message (e.g. the sender and receiver of the cargo). This may be an email address, an agreed identifier or e.g. a number of the European Article Numbering Association (EAN number).

17. Electronic data interchange (EDI) means the transfer of structured data by agreed standards from applications on the computer of one party to applications on the computer of another party by electronic means.

18. Goods means movable property, merchandise or wares.

19. Goods item means whole or part of the cargo (consignment) received from the shipper, including any packaging material such as pallets supplied by the shipper.

20. Gross tonnage (GRT) means the measure of the overall size of a vessel determined in accordance with the provisions of the international convention on measurement of vessels, usually expressed in register ton.

21. Gross weight means the weight (mass) of goods including packing, but excluding the carriers equipment expressed in whole kilograms.

22. Message implementation manual means a manual that describes in detail how a certain standard message will be implemented and which segments, data elements, codes and references will be used and how. In other contexts, the term “Message implementation guide” could be used and should be considered equivalent.

23. Location means any named geographical place, such as a port, an inland freight terminal, an airport, a container freight station, a terminal or any other place where customs clearance or regular receipt or delivery of goods can take place, with permanent facilities used for goods movements associated with international trade or transport and used frequently for those purposes. The location shall be recognised as such by a competent national body.

24. Means of transport means the type of vehicle used for the transport of goods such as barge, truck, vessel or train.

25. Metric ton means a unit of weight equivalent to 1000 kg.

26. Mode of transport means a method of transport used for the conveyance of goods e.g. by rail, by road, by sea, by inland waterways.

27. Next port of call means the consecutive place (port of call) where a ship will arrive after having made a voyage. The term is used, by the master only, to indicate the subsequent competent authority in accordance with the applicable regulations.

28. Passage point means a defined distinguishable spot which serves as a marker to determine parts of a voyage of a vessel and triggering a certain action. It may take the form a virtual line perpendicular on the fairway axis running from side to side of the fairway.

29. Port of call means a place where a vessel actually drops anchor, moors or otherwise comes to rest for a certain period of time to execute any necessary operations related to ship, cargo or crew.

30. Qualifier means a data element whose value is expressed as a code that gives specific meaning to the function of another data element or a segment.

31. Reference number means a number that serves to refer to or mention a relation or where applicable a restriction.

32. Register ton means a unit of internal capacity of ships equal to 100 cubic feet (2831,7 m^3).

33. Segment means a predefined and identified set of functionally related data elements values which are identified by their sequential positions within the set. A segment starts with a segment tag and ends with a segment terminator. It can be a service segment or a user data segment.

34. Segment code means a code which uniquely identifies each segment as specified in a segment directory.

35. Shipmaster means the person on-board of the ship being in command and having the authority to take all decisions pertaining to navigation and ship management (Synonyms: captain, skipper, boatmaster).

36. Tag means a unique identifier for a segment or data element.

37. Transport notification means the announcement of an intended voyage of a ship to a competent authority.

38. UN/EDIFACT means the UN rules for Electronic Data Interchange for Administration, Commerce and Transport. They comprise a set of standards, directories and guidelines for the electronic interchange of structured data, and in particular that related to trade in goods or services between independent computerised information systems. Recommended within the framework of the UN, the rules are approved and published by the UNECE in the UN Trade Data Interchange Directory (UNTDID) and are maintained under agreed procedures.

39. Vessel traffic services (VTS) means services as defined in the Part II of this present standard

40. Voyage means the journey of a vessel between the port(s) of loading and the first port of discharge of a consignment.

Article 2.03
Classifications and code descriptions

The following classifications shall be used in inland ship reporting:

1. Vessel and convoy type (UN Recommendation 28)
2. IMO ship identification number (IMO)
3. Unique European vessel identification number (ENI)
4. Harmonised Commodity Description and Coding System (HS) including Combined Nomenclature
5. Standard goods classification for transport statistics (NST)
6. International maritime dangerous goods code (IMDG)
7. European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)
8. UN country code
9. UN location code (UN/LOCODE)
10. Fairway section code
11. Terminal code
12. Container size and type code
13. Container identification code
14. Package type code
15. Handling instructions
16. Purpose of call
17. Nature of cargo

In the following, details and remarks on the application of those codes in inland navigation and user guidelines are given.

1. Vessel and convoy type (UN Recommendation 28)

FULL TITLE	Codes for types of means of transport Annex 2, Chapter 2.5: Inland water transport
ABBREVIATION	UN Recommendation 28
ORIGINATING AUTHORITY	UNECE/CEFACT http://www.unece.org/cefact
LEGAL BASIS	UN Recommendation 28, ECE/Trade/276; 2001/23
CURRENT STATUS	Operational
IMPLEMENTATION DATE	March 2001
AMENDMENT	UN/CEFACT 2010 or most current one.

STRUCTURE	4-digit alphanumeric code: digit: ‘1’ for maritime navigation, ‘8’ for ‘inland navigation’ digits for vessel or convoy 1 digit for subdivision
SUCCINCT DESCRIPTION	That recommendation establishes a common code list for the identification of the type of means of transport. It has a particular relevance to transport organisations and providers, customs and other authorities, statistical offices, forwarders, shippers, consignees and other parties concerned with transport.
LINKED CLASSIFICATIONS	UN Recommendation No 19
MEDIA THROUGH WHICH AVAILABLE	http://www.unece.org/cefact/recommendations/rec_index.htm European Reference Data Management Service (ERDMS) operated by the European Commission (EC).
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	UNECE
REMARKS	The main set of code values is governed by an international body (UNECE). To ensure harmonisation, one single set of code values representing also additional vessel types may be used by all RIS applications.

Example	
8010	Motor freighter (Inland)
1500	General cargo vessel (sea)
Usage in the implementation manuals	TDT/C228/8179 (convoy) EQD(B)/C224/8155 (vessel)

2. IMO ship identification number (IMO)

FULL TITLE	IMO ship identification number
ABBREVIATION	IMO No
ORIGINATING AUTHORITY	International Maritime Organisation/Lloyds
LEGAL BASIS	IMO Resolution A.600(15), SOLAS Chapter XI, regulation 3
CURRENT STATUS	Operational
IMPLEMENTATION DATE	—
AMENDMENT	Updated daily
STRUCTURE	Lloyd’s Register of Shipping (LR) number (seven digits).
SUCCINCT DESCRIPTION	The IMO Resolution aims at assigning a permanent number to each ship for identifying purposes.
LINKED CLASSIFICATIONS	—
USAGE	For seagoing ships

MEDIA THROUGH WHICH AVAILABLE	www.ships-register.com
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	International Maritime Organisation 4 Albert Embankment London SEI 7SR United Kingdom

Example	
Vessel dwt 2774	Danchem East 9031624
Usage in the implementation manuals.	TDT/C222/8213 EQD(1)/C237/8260 SGP/C237/8260

3. Unique European vessel identification number (ENI)

FULL TITLE	Unique European vessel identification number
ABBREVIATION	ENI
ORIGINATING AUTHORITY	European Union
LEGAL BASIS	ES-TRIN 2019/1
CURRENT STATUS	—
IMPLEMENTATION DATE	—
LIMIT OF OPERATIONAL LIFE	—
AMENDMENT	Continuously
STRUCTURE	8-digit-number
SUCCINCT DESCRIPTION	The unique European vessel identification number aims at assigning a permanent number to each vessel for identifying purposes.
LINKED CLASSIFICATIONS	IMO number
USAGE	In electronic ship reporting, tracking and tracing and certification of vessels for inland vessels.
MEDIA THROUGH WHICH AVAILABLE	Competent authorities keep a register. Access will be granted to competent authorities of other Member States. European Hull Data Base Contracting States of the Mannheim Convention and other parties based on administrative agreements.
LANGUAGES	—
ADDRESS OF RESPONSIBLE AGENCY	European Union Member States and the Contracting States of the Mannheim Convention
REMARK	The unique European vessel identification number (ENI) consists of eight Arabic numerals. The first three digits are the code of the assigning competent authority. The next five digits are a serial number.

Example	
12345678	
Usage in the implementation manuals	TDT, EQD (V1 and V2-V15) CNI/GID and CNI/GID/DGS, Tag 1311

4. Harmonised Commodity Description and Coding System (HS) including Combined Nomenclature

FULL TITLE	Harmonised commodity description and coding system
ABBREVIATION	HS; Harmonised System
ORIGINATING AUTHORITY	World Customs Organisation
LEGAL BASIS	International Convention on the Harmonised Commodity Description and Coding System
CURRENT STATUS	Operational
IMPLEMENTATION DATE	1 January 2007
AMENDMENT	In principle revised every five years. The latest version to be used.
STRUCTURE	7 466 headings, organised in four hierarchical levels Level 1: sections coded by Roman numerals (I to XXI) Level 2 chapters identified by two-digit numerical codes Level 3: headings identified by four-digit numerical codes Level 4: subheadings identified by six-digit numerical code
SUCCINCT DESCRIPTION	HS convention is a classification of goods by criteria based on raw material and the stage of production of commodities. HS is the heart of the whole process of harmonisation of international economic classifications being jointly conducted by the United Nations Statistics Division and Eurostat. Its items and sub-items are the fundamental terms on which industrial goods are identified in product classifications. Objectives: to harmonise (a) external trade classifications to guarantee direct correspondence; and (b) countries external trade statistics and to guarantee that those are comparable internationally.
LINKED CLASSIFICATIONS	Harmonised System (HS): full agreement on six-digit-level; Combined Nomenclature (CN)
	NST on 3-digit level
USAGE	Products
MEDIA THROUGH WHICH AVAILABLE	World Customs Organisation Rue de l'Industrie, 26-39 1040 Brussels, BELGIUM www.wcoomd.org Customs Cooperation Council, Brussels
LANGUAGES	All European Union official languages
ADDRESS OF RESPONSIBLE AGENCY	A subset of the codes used for electronic reporting will be maintained through the ERI Expert Group. European Reference Data Management Service (ERDMS) operated by the European Commission.
REMARKS	The HS classification is further subdivided at European Union level into a classification called Combined Nomenclature (CN)

Example	
730110	Sheet piling of iron or steel
310210	Mineral or chemical fertilisers, ammonium sulphate
Usage in the implementation manuals	CNI/GID/FTX(1)/C108/4440 CNI/GID/FTX(2)/C108/4440

5. Standard goods classification for transport statistics (NST)

FULL TITLE	Nomenclature uniforme de marchandises pour les statistiques de transport/Standard goods classification for transport statistics/revised
ABBREVIATION	NST 2007
ORIGINATING AUTHORITY	European Commission (Statistical Office/Eurostat)
LEGAL BASIS	Commission Regulation (EC) No 1304/2007[1]
CURRENT STATUS	—
IMPLEMENTATION DATE	1 January 2007
AMENDMENT	Regularly every two years. The latest version to be used
STRUCTURE	2 digit NST 2007 Level 1: a 2-digit CPA subdivision
SUCCINCT DESCRIPTION	Commodity Classification for Transport Statistics in Europe (CSTE)
LINKED CLASSIFICATIONS	Harmonised commodity description and coding system (HS) Combined Nomenclature (CN)
USAGE	Products
MEDIA THROUGH WHICH AVAILABLE	http://ec.europa.eu/eurostat/ramon/nomendatures/index.cfm? TargetUrl=LST NOM DTL&StrNom=NST 2007&StrLanguageCode=EN&IntPcKey= &StrLayoutCode=HIERARCHIC European Reference Data Management Service (ERDMS) operated by the European Commission.
LANGUAGES	All European Union official languages
ADDRESS OF RESPONSIBLE AGENCY	Statistical Office of the European Communities Eurostat) Unit C2 Bâtiment BECH A3/112 2920 Luxembourg, LUXEMBOURG
REMARKS	—

[1] Commission Regulation (EC) no 1304/2007 of 7 November 2007 amending Council Directive 95/64/EC, Council Regulation (EC) No 1172/98, Regulations (EC) no 91/2003 and (EC) No 1365/2006 of the European Parliament and of the Council with respect to the establishment of NST 2007 as the unique classification for transported goods in certain transport modes (OJ L 290, 8.11.2007, p. 14).

6. International maritime dangerous goods code (IMDG)

FULL TITLE	International maritime dangerous goods code
ABBREVIATION	IMDG code
ORIGINATING AUTHORITY	International Maritime Organisation IMO
LEGAL BASIS	—
CURRENT STATUS	Operational
IMPLEMENTATION DATE	18 May 1965
AMENDMENT	1 January 2001 (30th amendment) approximately every 2 years
STRUCTURE	2-digit numerical code: 1-digit numerical for class 1-digit numerical for division
SUCCINCT DESCRIPTION	The IMDG code governs the vast majority of shipments of hazardous material by water. The code is recommended to governments for adoption as the basis for national regulations in conjunction with the SOLAS convention.
LINKED CLASSIFICATIONS	The code is based on the UN Recommendations on the transport of dangerous goods (UNDG)
USAGE	Maritime transport of dangerous and harmful goods
MEDIA THROUGH WHICH AVAILABLE	www.imo.org European Reference Data Management Service (ERDMS) operated by the European Commission. (Included in the ADN table)
LANGUAGES	Dutch, English, French, German
ADDRESS OF RESPONSIBLE AGENCY	International Maritime Organisation 4 Albert Embankment London SE1 7SR UNITED KINGDOM
REMARKS	For inland shipping the IMO code may be used as this code is often already known, where necessary an ADN corresponding with the IMDG code shall be inserted

Example	
32	Flammable liquid, not otherwise specified (Ethanol)
Usage in the implementation manuals	CNI/GID/DGS/C205/8351

7. Agreement on Dangerous Goods (ADN)

FULL TITLE	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)
ABBREVIATION	ADN
ORIGINATING AUTHORITY	UN Economic Commission for Europe (English, French and Russian version of ADN) Central Commission for the Navigation of the Rhine (German version of ADN)
LEGAL BASIS	Directive 2008/68/EC of the European Parliament and of the Council[1] or CCNR résolution 2009-II-20
CURRENT STATUS	Operational
IMPLEMENTATION DATE	Operational
AMENDMENT	Regularly every two years as indicated
STRUCTURE	For goods on dry cargo vessel: - UN number -Name of the substance (in accordance with table A of part 3 of ADN) -Class - Danger classification code - Packing group - Hazard Identification placard (label) For goods on tank vessels: - UN number - Name of substance (in accordance with table C of part 3 of ADN) - Class - Packing group
SUCCINCT DESCRIPTION	The ADN, the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways which will replace the various regional agreements.
LINKED CLASSIFICATIONS	ADN, ADR, RID
USAGE	Transport of dangerous goods in inland navigation
MEDIA THROUGH WHICH AVAILABLE	https://www.unece.org/trans/danger/publi/adn/adn_e.html www.ccr-zkr.org http://www.danubecommission.org/ European Reference Data Management Service (ERDMS) operated by the European Commission.
LANGUAGES	English, French, German
ADDRESS OF RESPONSIBLE AGENCY	UN Economic Commission for Europe, Palais des Nations, 1211 Geneva 10, SWITZERLAND Central Commission for the Navigation of the Rhine, 2, Place de la République, 67082 Strasbourg Cedex, FRANCE

[1] Directive 2008/68/EC of the European Parliament and of the Council on the inland transport of dangerous goods (OJ L 260, 30.9.2008, p. 13).

REMARKS	The provisions of the European Agreement concerning the international carriage of dangerous goods by inland waterways (ADN) are applicable on all European waterways (including the Rhine and the Danube). The 2017 edition of ADR/RID/ADN is harmonised with the 20th revised edition of the UN Model Regulations and has entered into force on 1 January 2017.

Example	
for dry cargo vessel:	for tank vessel:
1203; petrol; 3; F1; III; 3	1203; petrol; 3; III;
Usage in the implementation manuals	CNI/GID/DGS/C205/8078

8. UN country code

FULL TITLE	International standard codes for the representation of the names of countries
ABBREVIATION	ISO 3166-1
ORIGINATING AUTHORITY	International Organisation for Standardisation (ISO)
LEGAL BASIS	UN Recommendation 3 (codes for the representation of the names of countries)
CURRENT STATUS	Operational
IMPLEMENTATION DATE	1974
AMENDMENT	As per ISO 3166-1
STRUCTURE	Two-letter-alpha code (to be used in principle) Three-digit numeric code (alternatively)
SUCCINCT DESCRIPTION	ISO provides a unique two-letter code for each country listed, as well as a three-digit numeric code which is intended as an alternative for all applications that need to be independent of the alphabet.
LINKED CLASSIFICATIONS	UN/LOCODE
USAGE	This code is used as one element in the combined location code in Part IV Article 2.04
MEDIA THROUGH WHICH AVAILABLE	UNECE http://www.unece.org/cefact/locode/welcome.html European Reference Data Management Service (ERDMS) operated by the European Commission.
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	http://www.unece.org/cefact
REMARKS	See Part IV Article 2.04 for the combination of the alpha country code with the location code.

Example	
BE	Belgium
Usage in the implementation manuals	ERINOT Message: TDT/C222/8453 NAD(1)/3207 NAD(2)/3207 ERIRSP Message: NAD(1)/3207

9. UN location code (UN/LOCODE)

FULL TITLE	UN code for trade and transport locations
ABBREVIATION	UN/LOCODE
ORIGINATING AUTHORITY	UNECE/CEFACT
LEGAL BASIS	UNECE Recommendation 16
CURRENT STATUS	Operational
IMPLEMENTATION DATE	1980
AMENDMENT	2018-2 (December 2018)
STRUCTURE	ISO 3166-1 country code (alpha 2-digit) followed by a space and a 3-digit-alpha code for the place names (5 digits) Place name (a..29) Subdivision ISO 3166-2, optional (a..3) Function, mandatory (an..5) Remarks, optional (an..45) Geographical coordinates (000N 0000 W, 000 S 00000 E)
SUCCINCT DESCRIPTION	UN recommends a five-letter alphabetic code for abbreviating the names of locations of interest to international trade, such as ports, airports, inland freight terminals, and other locations were customs clearance of goods can take place, and whose names need to be represented unambiguously in data interchange between participants in international trade.
LINKED CLASSIFICATIONS	UN country code
USAGE	This code is used as one element in the combined location code in Part IV Article 2.04 .
MEDIA THROUGH WHICH AVAILABLE	http://www.unece.org/cefact/locode/welcome.html European Reference Data Management Service (ERDMS) operated by the European Commission.
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	UNECE
REMARKS	See also Part IV Article 2.04 .

Example	
BEBRU	Belgium Brussels
Usage in the implementation manuals	TDT/LOC (1..9)/C517/3225 CNI/LOC(1..2)/C517/3225

10. Fairway section code

FULL TITLE	Fairway section code
ABBREVIATION	
ORIGINATING AUTHORITY	National administrations of waterways
LEGAL BASIS	—
CURRENT STATUS	operational
IMPLEMENTATION DATE	—
AMENDMENT	—
STRUCTURE	5-digit numerical code
SUCCINCT DESCRIPTION	The waterway network is divided into sections. These may be whole rivers and canals over several 100 km or small sections. The position of a location inside a section may be given by hectometre or by the name (code) of a terminal or passage point.
LINKED CLASSIFICATIONS	UN/LOCODE
USAGE	Numbering of the waterways in a national network. This code is used as one element in the combined location code in Part IV Article 2.04 .
MEDIA THROUGH WHICH AVAILABLE	European Reference Data Management Service (ERDMS) operated by the European Commission
LANGUAGES	—
ADDRESS OF RESPONSIBLE AGENCY	National administrations of waterways
REMARKS	See also Part IV Article 2.04.

Example	
03937	Rhein, Rüdesheimer Fahrwasser
02552	Oude Maas at Dordrecht
Usage in the implementation manuals	TDT/LOC/C517/3225 CNI/LOC/C517/3225
See:	See this document and implementation manuals Definition of the revised location and terminal code
Remark 1:	If there is no fairway code available, the field shall be filled in with zeros.
Remark 2:	See also Part IV Article 2.04.

11. Terminal code

FULL TITLE	Terminal code
ABBREVIATION	—
ORIGINATING AUTHORITY	National waterway authorities or user communities
LEGAL BASIS	—
CURRENT STATUS	Version 2, April 2000
IMPLEMENTATION DATE	—
AMENDMENT	Regularly
STRUCTURE	Type of terminal (1-digit numeric) number of terminal (5-digit alphanumeric)
SUCCINCT DESCRIPTION	A further specification of the location of a terminal within the location of the port in the country.
LINKED CLASSIFICATIONS	UN/LOCODE
USAGE	This code is used as one element in the combined location code inPart IV Article 2.04.
MEDIA THROUGH WHICH AVAILABLE	European Reference Data Management Service (ERDMS) operated by the European Commission.
LANGUAGES	—
ADDRESS OF RESPONSIBLE AGENCY	National administrations of waterways or respective user communities.
REMARKS	It is of the utmost importance that maintenance of the codes is done in such way that maximum stability and consistency is achieved to ensure that no changes are necessary apart from additions and deletions. See also Part IV Article 2.04 .

Example	
LEUVE	Leuvehaven at Rotterdam, NL
Usage in the implementation manuals	TDT/LOC/C517/3225 CNI/LOC/C517/3225
See:	Implementation manuals and this document Definition of the revised location and terminal code
Remark 1:	If there is no terminal code available, the field shall be filled in with zeros
Remark 2:	Each national RIS-authority will be responsible for its own data.

12. Container size and type code

FULL TITLE	Freight containers — coding, identification and marking
ABBREVIATION	—
ORIGINATING AUTHORITY	International Organisation for Standardisation (ISO)
LEGAL BASIS	ISO 6346, Chapter 4 and Annexes D and E
CURRENT STATUS	Operational
IMPLEMENTATION DATE	—
AMENDMENT	3rd edition 1 December 1995
STRUCTURE	Container size: two alphanumeric characters (first for length, second for combination of height and width) Container type: two alphanumeric characters
SUCCINCT DESCRIPTION	Size and type codes established for each sort of containers
LINKED CLASSIFICATIONS	ISO 6346 coding identification and marking
USAGE	Whenever known and indicated in the commercial exchange of information
MEDIA THROUGH WHICH AVAILABLE	www.iso.ch/iso/en European Reference Data Management Service (ERDMS) operated by the European Commission.
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	—
REMARKS	The size type codes are displayed on the containers and as such shall be used in the electronic reporting whenever available from other exchanged information e.g. during the booking. Size type codes shall be used as a whole i.e. the information shall not be broken into its component parts (ISO 6346:1995)

Example	
42	Length: 40 ft.; height: 8 ft. 6 in.; width: 8 ft.
Example for type	
GP	General purpose container
BU	Dry bulk container
Usage in the implementation manuals	Where appropriate EQD segment

13. Container identification code

FULL TITLE	Freight containers — coding, identification and marking
ABBREVIATION	—
ORIGINATING AUTHORITY	International Organisation for Standardisation
LEGAL BASIS	ISO 6346, Chapter 3, Annex A
CURRENT STATUS	Implemented throughout the world on all freight containers
IMPLEMENTATION DATE	1995
AMENDMENT	—
STRUCTURE	Owner code: Three letters Equipment category identifier: one letter Serial number: six numerals Check digit: one numeral
SUCCINCT DESCRIPTION	The identification system is intended for general application, for example in documentation, control and communications (including automatic data processing systems), as well as for display on the containers themselves
LINKED CLASSIFICATIONS	ISO 668, ISO 1496, ISO 8323
USAGE	—
MEDIA THROUGH WHICH AVAILABLE	www.iso.ch/iso/en
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	Bureau International des Conteneurs (BIC), 167 rue de Courcelles, 75017 Paris, France, http://www.bic-code.org/
REMARKS	—

Example	
KNLU4713308	NEDLLOYD maritime freight container with serial number 471330, (8 is the check digit)
Usage in the implementation manuals	CNI/GID/DGS/SGP/C237/8260

14. Package type

FULL TITLE	Codes for types of packages and packing materials
ABBREVIATION	UNECE Recommendation 21
ORIGINATING AUTHORITY	UN/CEFACT
LEGAL BASIS	—
CURRENT STATUS	operational
IMPLEMENTATION DATE	August 1994 (ECE/TRADE/195)
AMENDMENT	Trade/CEFACT/2002/24
STRUCTURE	2-character alphanumeric code value Code-value name 2-digit numeric code value description
SUCCINCT DESCRIPTION	A numeric code system to describe the appearance of goods as presented for transport to facilitate identification, recording, handling, and establishing handling tariffs.
LINKED CLASSIFICATIONS	—
USAGE	—
MEDIA THROUGH WHICH AVAILABLE	www.unece.org/cefact European Reference Data Management Service (ERDMS) operated by the European Commission.
LANGUAGES	English, French, German
ADDRESS OF RESPONSIBLE AGENCY	—
REMARKS	The numeric code value is not used in this standard

Example	
BG	Bag
BX	Box
Usage in the implementation manuals	CNI/GID/C213/7065

15. Handling instructions

FULL TITLE	Handling instruction description code
ABBREVIATION	UN/EDIFACT data element 4079
ORIGINATING AUTHORITY	UN CEFACT
LEGAL BASIS	—
CURRENT STATUS	Operational
IMPLEMENTATION DATE	25 July 2005
AMENDMENT	Trade/CEFACT/2005/

STRUCTURE	Repr: an..3 Code-value name 3-digit alpha code value description
SUCCINCT DESCRIPTION	An alpha code system to describe handling instructions for the tasks to be executed in a port to facilitate the handling of the vessel and establishing handling tariffs.
LINKED CLASSIFICATIONS	—
USAGE	un/edifact messages
MEDIA THROUGH WHICH AVAILABLE	www.unece.org/cefact
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	—
REMARKS	The numeric code value is not used in this standard

Example	
LOA	Loading
DIS	Discharge
RES	Re-stow
Usage in the implementation manuals	LOC/HAN/C524/4079

16. Purpose of call

FULL TITLE	Conveyance call purpose description code
ABBREVIATION	POC C525
ORIGINATING AUTHORITY	UN CEFACT
LEGAL BASIS	—
CURRENT STATUS	Operational
IMPLEMENTATION DATE	25 July 2005
AMENDMENT	Trade/CEFACT/2005
STRUCTURE	Repr an..3 2-character numeric code value Code-value name
SUCCINCT DESCRIPTION	A numeric code system to describe the purpose of the call of the vessel to facilitate identification and recording
LINKED CLASSIFICATIONS	HAN
USAGE	edifact messages
MEDIA THROUGH WHICH AVAILABLE	www.unece.org/cefact
LANGUAGES	English

ADDRESS OF RESPONSIBLE AGENCY	—
REMARKS	The numeric code value is used in this standard

Example	
1	Cargo operations
23	Waste disposal
Usage in the implementation manuals	TSR/POC/C525/8025

17. Nature of cargo

FULL TITLE	Cargo type classification code
ABBREVIATION	UN/EDIFACT 7085 cargo type
ORIGINATING AUTHORITY	UN CEFACT
LEGAL BASIS	—
CURRENT STATUS	Operational
IMPLEMENTATION DATE	25 July 2005
AMENDMENT	Trade/CEFACT/2005
STRUCTURE	an..3 2-character numeric code value Code-value name 2-digit numeric code value description
SUCCINCT DESCRIPTION	A numeric code system to specify the classification of a type of cargo as transported to facilitate identification, recording, handling, and establishing tariffs.
LINKED CLASSIFICATIONS	HAN
USAGE	EDIFACT messages
MEDIA THROUGH WHICH AVAILABLE	www.unece.org/cefact
LANGUAGES	English
ADDRESS OF RESPONSIBLE AGENCY	—
REMARKS	The numeric code value is used in these technical specifications

Example	
5	Other non-containerised
30	Cargo in bulk
Usage in the implementation manuals	TSR/LOC/HAN/C703/7085

Article 2.04
Location codes

The ISRS Location Code is defined in Part III.

Article 2.05
List of abbreviations

Abbreviations	Description
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Directive 2008/68/EC of the European Parliament and of the Council of 24 September 2008 on the inland transport of dangerous goods or CCNR Resolution 2009-II-20)
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
BERMAN	Berth management (EDI message)
CCNR	Central Commission for the Navigation of the Rhine
DWT	Dead weight
EDI	Electronic data interchange
ENI	Unique European vessel identification number
ERDMS	European Reference Data Management Service
ERI	Electronic reporting international
ERINOT	ERI notification (message)
ERIRSP	ERI response (message)
ETA	Estimated time of arrival
ETD	Estimated time of departure
HS Code	Harmonised commodity description and coding system of WCO
IFTDGN	International forwarding and transport dangerous goods notification (message)
IMDG	International maritime dangerous goods code (number)
IMO	International Maritime Organisation
IMO-FAL	Convention on the Facilitation of International Maritime Traffic, 1965, with amendments
ISO	International Standardisation Organisation
ISPS	International ship and port facility security (code)
LOCODE	UNECE location code for ports and freight stations
NST 2007	Standard goods classification for transport statistics (to be used from 2007 onwards)

Abbreviations	Description
PAXLST	Passenger list (message)
PROTECT	International Organisation of North Europeans Ports dealing with dangerous goods message implementation
RID	Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID)
RIS	River information services
SOLAS	Safety of Lives at Sea IMO Convention
TARIC	Integrated Tariff of the European Communities
UN/CEFACT	UN Centre for Trade Facilitation and Electronic Business
UNECE	United Nations Economic Commission for Europe
UN/EDIFACT	Electronic data interchange for administration, commerce and transport
UN/LOCODE	United Nations location code
UNDG	United Nations dangerous goods (number)
UNTDID	United Nations trade data interchange directory
URL	Uniform resource allocator (Internet address)
VTM	Vessel traffic management
WCO	World Customs Organisation
XML	Extensible markup language

PART V
INLAND ECDIS
OPERATIONAL AND PERFORMANCE REQUIREMENTS, METHODS OF TEST AND REQUIRED TEST RESULTS (TEST PART OF INLAND ECDIS)

CHAPTER 1
SCOPE

1. This Part specifies the minimum operational and performance requirements, methods of testing and required test results for Inland ECDIS referring to the Part I. The minimum operational and performance requirements are defined in the Electronic Chart Display and Information System for Inland Navigation Part (Inland ECDIS). This “Test Part” of Inland ECDIS (Part V of ES-RIS refers directly to Part I of ES-RIS (Inland ECDIS).

2. Part I differs between two types of “operational and performance requirements”:
   a) General requirements

      These describe general aims and conditions of the individual environment in the wheelhouse, where Inland ECDIS will be used (e.g. “The latest edition of the IENC shall be used.”).

      These general requirements shall be carefully respected during the installation and operation but cannot be formally tested as part of the certification process of the Inland ECDIS. For this reason, these requirements are not considered in this Test Part of Inland ECDIS.

   b) Specifications

      These are concrete definitions of characteristics concerning the system, its hardware components, the properties and behaviour of the software. All tests shall be completed and the outcome of the tests shall be in conformity with the required test results.

CHAPTER 2
REFERENCES

The following referenced documents are indispensable for the application of this Part. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

	Body	Edition	Reference
a)	European Committee for drawing up Standards in the field of Inland Navigation (CESNI)	ES-TRIN (2023/1)	European Standard laying down Technical Requirements for Inland Navigation vessels (ES-TRIN)
b)	European Telecommunications Standards Institute (ETSI)	302 194-1 V1.1.2 (2006-10)	Electromagnetic compatibility and Radio spectrum Matters (ERM); Navigation radar used on inland waterways: Part 1: Technical characteristics and methods of measurement
c)	International Electrotechnical Commission (IEC)	IEC 60945 fourth edition 2002-08	Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results
d)	European Norm (EN)	EN 61162	Maritime navigation and radiocommunication equipment and systems - Digital interfaces
e)	European Norm (EN)	EN 61162-1 : 2016	Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners
f)	European Norm (EN)	EN 61162-2 : 1998	Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 2: Single talker and multiple listeners, high-speed transmission
g)	European Norm (EN)	EN 61162-3 : 2014	Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 3: Serial data instrument network
h)	International Telecommunication Union (ITU)	ITU-R M.1371-1 : 2001	Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band
i)	International Electrotechnical Commission (IEC)	IEC 62288 Edition 2	Maritime navigation and radiocommunication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results

CHAPTER 3
ABBREVIATIONS

Abbreviation (EN)	Abbreviation (EN)	Description
AIS	AIS	Automatic Identification System
AtoN	AtoN	Aids to Navigation
bIENC	bIENC	bathymetric IENC
BIIT	BIIT	Built-in Integrity Test
CESNI	CESNI	European Committee for drawing up Standards in the field of Inland Navigation
DGNSS	DGNSS	Differential GNSS
DOP	DOP	Dilution of Precision
EBL	EBL	Electronic Bearing Line
ECDIS	ECDIS	Electronic Chart Display and Information System
ENC	ENC	Electronic Navigational Chart
EPFD	EPFD	Electronic Position Fixing Device
ES-TRIN	ES-TRIN	European Standard laying down Technical Requirements for Inland Navigation vessels
ETSI	ETSI	European Telecommunications Standards Institute
EUT	EUT	Equipment Under Test
GNSS	GNSS	Global Navigation Satellite System
GPS	GPS	Global Positioning System
HDG	HDG	Heading
IALA	IALA	International Association of Lighthouse Authorities
IEC	IEC	International Electrotechnical Commission
Inland ECDIS	Inland ECDIS	Inland Electronic Chart Display and Information System
IENC	IENC	Inland ENC
IHO	IHO	International Hydrographic Office
IMO	IMO	International Maritime Organization
ITU	ITU	International Telecommunication Union

Abbreviation (EN)	Abbreviation (EN)	Description
PA	PA	Precision Accuracy
Radar	Radar	Radio Detecting and Ranging
RIS	RIS	River Information Services
ROT	ROT	Rate of turn
SAR	SAR	Search and Rescue
SENC	SENC	System ENC
THD	THD	Transmitting Heading Device
VDM	VDM	AIS VHF data-link message
VDO	VDO	AIS VHF data-link own-vessel report
VHF	VHF	Very High Frequency
VDL	VDL	VHF Data Link
VRM	VRM	Variable Range Marker
VTT	VTT	Vessel Tracking and Tracing

CHAPTER 4
GENERAL REQUIREMENTS

The technical requirements in this chapter apply for all operating modes and product configurations.
EUT shall comprise the Inland ECDIS software, the processing unit, the monitor and peripheral equipment (keyboard, mouse, etc.) as a minimum setup.

Article 4.01
Ordering principles of the clauses

Depending on the technical equipment, Inland ECDIS can be used on board a vessel in two different operation modes:

1. Inland ECDIS in **"navigation mode**"

   This means the use of the Inland ECDIS for conning the vessel with overlaid radar image. The fall-back mode for navigation mode is information mode.

   The main precondition for this operation mode is the connection between type approved navigational radar and Inland ECDIS.

2. Inland ECDIS in "**Information mode**"

   This is the operation mode for Inland ECDIS, when no connection between radar and Inland ECDIS is established.

3. The term **"all modes"** is used for requirements, which have to be fulfilled in both operation modes of Inland ECDIS, in "navigation mode" as well as in "information mode".

As the Inland ECDIS Part itself orders all operational and performance requirements (general requirements and specifications) by the operational modes of Inland ECDIS, this Test Part of Inland ECDIS maintains this principle.

The clauses are composed of three parts:

a) Reference
   Points to the related specification in the Inland ECDIS Part.
b) Test method
   Describes the individual preconditions and the used procedure of this clause.
c) Required test result
   Defines the target state after the performed test, which is necessary to pass the test.

Article 4.02
General preconditions and test equipment

As well as the specific preconditions, which are described in each clause, this section defines some general preconditions. In addition, data sets and tools are defined to provide a common basis for testing.

1. Special charts for testing

   A list of special IENCs, needed to fulfil the clauses of this Part, can be found in Chapter 8, Article 8.01 of this Part.

2. Special tools for testing

   Special test equipment is needed to fulfil the clauses of this Part. A description can be found in Chapter 8 of this Part.

3. Preconditions for performing laboratory tests in accordance with the clauses of Inland ECDIS in “all operation modes” and “information mode”.

   Unless otherwise stated the Inland ECDIS in information mode or in navigation mode shall be set to the standard operation setup which is understood to be as follows:

   a) Inland ECDIS shall be connected to an AIS protocol simulator as described in Chapter 8, Article 8.02 of this Part.
   b) Inland ECDIS shall be connected to a GNSS protocol simulator as described in Chapter 8, Article 8.03 of this Part.
   c) All control elements such as keyboard, mouse, etc. shall be connected to Inland ECDIS hardware.
   d) The Inland ECDIS monitor shall be connected to the Inland ECDIS computer.
   e) The Inland ECDIS shall be set to information mode.
   f) Inland ECDIS shall be connected to a heading protocol simulator as described in Chapter 8, Article 8.05 of this Part.

4. Preconditions for clauses of Inland ECDIS in “navigation mode” completed in a laboratory

   Unless otherwise stated the Inland ECDIS in navigation mode shall be set to the standard operation setup which is understood to be as follows:

   a) A recorded real-life scenario (“scenario 01”) shall be played back and fed into the Inland ECDIS.
   b) All control elements such as keyboard, mouse, etc. shall be connected to the Inland ECDIS hardware.
   c) The Inland ECDIS monitor shall be connected to the Inland ECDIS computer.
   d) The radar overlay shall be activated so that Inland ECDIS is in navigation mode.

5. Preconditions for clauses of Inland ECDIS in “navigation mode” completed aboard a vessel

Unless otherwise stated the Inland ECDIS in navigation mode shall be set to the standard operation setup which is understood to be as follows:

a) Inland ECDIS shall be connected to the AIS protocol manipulator as described in Chapter 8, Article 8.07 of this Part. The AIS protocol manipulator shall be connected to a type-approved, fully operable Inland AIS device, installed on the same vessel.

b) Inland ECDIS shall be connected to the GNSS protocol manipulator as described in Chapter 8, Article 8.08 of this Part. The GNSS protocol manipulator shall be connected to a type-approved, fully operable GNSS receiver, installed on the same vessel. This receiver can be the THD, if it is approved for this purpose.

c) Inland ECDIS shall be connected to a type-approved, fully operable navigational radar installation, installed on the same vessel.

d) Inland ECDIS shall be connected to a type-approved, fully operable rate of turn indicator device, installed on the same vessel.

e) Inland ECDIS shall be connected to the heading protocol manipulator as described in Chapter 8, Article 8.09 of this Part. The heading protocol manipulator shall be connected to a type-approved, fully operable Transmitting Heading Device (THD, i.e. GPS compass), installed on the same vessel.

f) All control elements such as keyboard, mouse, etc. shall be connected to the Inland ECDIS hardware.

g) The Inland ECDIS monitor shall be connected to the Inland ECDIS computer.

h) The radar overlay shall be activated so that Inland ECDIS is in navigation mode.

CHAPTER 5
OPERATIONAL AND PERFORMANCE REQUIREMENTS, METHODS OF TEST AND REQUIRED TEST RESULTS COMMON TO ALL MODES OF INLAND ECDIS

Article 5.01
Content of IENC

1. Reference

This clause refers to Part I, Chapter 2, Article 2.01(1).

2. Test method

a) The test shall be performed in a laboratory.
b) The Inland ECDIS is set to the standard operation setup as defined in Article 4.02(3) of this Part.
c) An IENC that comprises all minimum required features (“chart 01”) shall be loaded into the Inland ECDIS.
d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.
e) All available features are tested with respect to the required test results by visual inspection.
f) The results obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The following features shall be included in the IENC and displayed by Inland ECDIS

a) bank of waterway (at mean water level);
b) construction (e.g. groin, longitudinal control dam, training wall – any facility that is considered as a hazard to navigation);
c) contours of locks and dams;
d) boundaries of the fairway/navigation channel;
e) isolated dangers in the fairway/navigation channel under water;
f) isolated dangers in the fairway/navigation channel above water level, such as bridges, overhead cables etc.;
g) official Sign and Marking information (AtoN “aids- to- navigation”) (e.g. buoys, beacons, lights, notice marks);
h) waterway axis with kilometric indication;
i) location of ports and transshipment sites;
j) reference data for water level gauges relevant to navigation;
k) links to the external xml-files with operation times of restricting structures, in particular locks and bridges.

Article 5.02
Updates

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.02(1).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS is set to the standard operation setup as defined in Article 4.02(3) of this Part.
   c) A set of IENCs that comprise more than one IENC cell (“chart 02”) shall be loaded into the Inland ECDIS.
   d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre of the screen; at least two IENC cells shall be displayed.
   e) The update process shall be initialised with a specific incremental update, referring to one of the loaded IENC cells (“inc_update_file_02-01”).
   f) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
   g) An incremental update with one incremental update file, with no reference to any of the loaded IENC cells (“inc_update_file_02-02”), shall then be applied.
   h) The results obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.
   i) An additional incremental update with more than one incremental update file, referring to the same loaded IENC cells (“inc_update_file_02-03”), shall then be applied.
   j) The results obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.
   k) Finally, the file with the record of the edition, updates and overlay cells shall be opened for inspection.
   l) The results obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

3. Required test result
   a) The incremental update, referring to (based on) one of the loaded IENC cells, shall be applied automatically. The implementation procedure of the update shall not interfere with the display in use.
   b) The incremental update, not referring to any of the loaded IENC cells shall be refused and the Inland ECDIS shall indicate an appropriate error message.

c) All incremental update instructions shall be applied correctly and shall be executed in the right order.

d) The opened file shall include the record of all information regarding edition, updates and overlay cells of all loaded cells, including the time of application.

Article 5.03
Screen orientation, chart orientation, positioning and shifting

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(2).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS is set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) An IENC (“chart 01”) shall be loaded into Inland ECDIS. The display of the boatmaster’s own vessel’s position shall be switched on.

d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre of the screen.

e) The results obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

f) The position source shall be switched to an external Electronic Position Fixing Device (EPFD), e.g. a GPS receiver.

g) The AIS protocol simulator shall be switched off.

h) The GNSS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre of the screen, slightly offset from the previous AIS position.

i) The results obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

j) The AIS protocol and the GNSS protocol simulator shall be switched on.

k) The results obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The boatmaster’s own vessel’s position shall be represented correctly by an appropriate symbol on the screen when connected to an Inland AIS device, an EPFD, or both.

Article 5.04
Display of SENC information

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(4).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS is set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) Inland ECDIS shall be set to factory default settings.

d) An appropriate IENC with depth information and water level model (“chart 03”) shall be loaded into the Inland ECDIS and a time variable depth information shall be applied to the IENC. The current water level shall be applied.

e) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.

f) The display mode in which Inland ECDIS starts shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

g) The display modes “Display Base”, “Standard Display” and “All Display” shall be activated consecutively. In each mode, the indication of information density and time variable depth information shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

h) It shall be switched from any display mode to Standard Information Mode.

i) The results obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

j) Within a sample, at least five features of any display category shall be selected arbitrarily and checked whether their feature classes are in accordance with the definitions in the look-up tables.

k) The results obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

l) A demanded safety depth limit shall be selected. The chart shall be inspected regarding the displayed of depth areas and safety depth limits.

m) The results obtained shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

n) The safety depth limit shall be set to a value higher than the actual water depth. The indication of Inland ECDIS shall be compared to the required test results in paragraph 3(f) in order to prove compliance with the requirement.

3. Required test result

a) When starting the Inland ECDIS the first time (factory default), display mode “Standard Display (Standard Information Density)” shall first come up.

b) At least display modes “Display Base”, “Standard Display” and “All Display” shall be implemented. Inland ECDIS shall clearly indicate the information density in use at all times and the time variable depth information in the IENC shall be displayed regardless of the three display modes.

c) It shall be possible to switch to any display mode and it shall be possible to switch to display mode “Standard Information Density” at any time by a single user action.

d) The feature classes of the selected features shall be in accordance with the definitions in the look-up-tables.

e) It shall be possible to select safety depth limits. The corresponding depth areas shall be displayed according to the selected safety depth limit.

f) If the water depth is below the safety depth limits, Inland ECDIS shall indicate this by an appropriate warning.

Article 5.05
Colours and symbols

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(5).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3).

c) A test IENC (“chart 00”), comprising all symbols from the Inland ECDIS symbol library and a selection of representative line and area features, shall be loaded into the Inland ECDIS.

d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.

e) The displayed symbols shall be checked for completeness and correctness against the Inland ECDIS symbol library.

f) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

g) Check whether it is possible to set the Inland ECDIS to colour combinations day, dusk and night.

h) The results obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

i) An IENC (“chart 04”), comprising all additional symbols provided by the manufacturer, shall be loaded into the Inland ECDIS. The Inland ECDIS, with the specific presentation library of the manufacturer, shall be compared to the Inland ECDIS symbol library as defined in Annex 2.

j) The results obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

3. Required test result

a) The displayed symbols shall be correct and complete compared to the Inland ECDIS symbol library as defined in Annex 2. The colours of the representative line and area features, as well as the symbols, shall also be correct. The symbols that deviate from the Inland ECDIS presentation library shall:

i) be legible,

ii) have sufficient size to support the nominal viewing distance.

b) At least the colour combinations of day, dusk and night shall be supported.

c) The added symbols to the presentation library by the manufacturer shall be clearly distinguishable from the default Inland ECDIS symbols (as defined in Annex 2)

Article 5.06
Scale dependent information density (SCAMIN)

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(6).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3).

c) An IENC (“chart 05”), comprising a bridge across a waterway, shall be loaded into the Inland ECDIS.

d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.

e) Inland ECDIS is set to minimum scale and switched until maximum scale, step-by-step consecutively. In each scale, the display of the symbols at the bridge shall be inspected with respect to the SCAMIN values.

f) The results obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The symbols related to the bridge shall be displayed according to their SCAMIN values.

Article 5.07
Features displayed in several cells with the same use for the same area

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.03(7).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.
   c) Two adjacent IENCs (“chart 05a and 05b”), that both comprise parts of the same feature (e.g. a bridge, that is displayed half in the cell of one IENC and half in the cell of the other IENC) shall be loaded into the Inland ECDIS. That feature shall be correctly encoded. Both parts shall have references to each other.
   d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.
   e) This test shall include the appropriate overlay cells, e.g. with bridge-related notice marks. The display of the feature shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

3. Two adjacent IENCs that are used to define the basic cells for two additional overlay-cells, that comprise part of the same bathymetric IENC feature, shall be loaded into the Inland ECDIS. These features shall be correctly encoded (depth areas) and the separated parts shall have references to each other. The presentation of the feature shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

4. Required test result
   a) The feature that is partly in both IENCs shall be visible and correctly displayed as one feature in the SENC.
   b) The feature that is partly in both overlay cells shall be visible and correctly displayed as one feature in the SENC.

Article 5.08
Display of tracking and tracing information

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(9).

2. Test method

a) The test shall be performed in a laboratory.
b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.
c) An IENC (“chart 07”) shall be loaded into the Inland ECDIS.
d) The AIS protocol simulator shall be configured as an Inland AIS device and in such a way that the vessel’s own position is shown in the centre part of the IENC.
e) A vessel shall be simulated with navigation status set to status of the simulated vessel. The reporting rate shall be 10 s. The behaviour of the vessel in the chart shall be observed.
f) The simulated vessel shall stop reporting.
g) The time until the vessel is marked as outdated shall be measured.
h) The time until the vessel disappears shall be measured.
i) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
j) This test shall be repeated with a simulated Inland AIS device on a vessel at anchor, not moving at more than 3 knots.
k) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
l) This test shall be repeated with a simulated Inland AIS device on a vessel at anchor, moving at more than 3 knots.
m) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
n) This test shall be repeated with a simulated AIS class B device on a vessel under way using engine.
o) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
p) This test shall be repeated with a simulated AIS class B device on a vessel at anchor, not moving at more than 3 knots.
q) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
r) This test shall be repeated with a simulated AIS class B device on a vessel at anchor, moving at more than 3 knots.
s) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

t) An appropriate AIS message with position A shall be created for the own vessel and fed into the Inland ECDIS. The position of the own vessel shall be marked in the chart.

u) The position for this message shall be altered significantly (Position B) and the repeater flag shall be set. The occurrence of the vessel's own symbol shall be compared, for position B, to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

v) The repeater flag shall be unset.

w) The occurrence of the vessel's own symbol shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement

x) An Inland AIS target shall be simulated with no heading information available. The presentation of this vessel shall be observed in the Inland ECDIS.

y) The result obtained shall be compared to the required test results in paragraph 3(c). The result obtained shall be noted in the test report.

z) Another Inland AIS target shall be simulated with heading information available. The presentation of this vessel shall be observed in the Inland ECDIS.

aa) The result obtained shall be compared to the required test results in paragraph 3(d). The result obtained shall be noted in the test report.

bb) An AIS base station, AIS Aids to Navigation (ATON) and AIS Search and Rescue Transmitters (SART) shall be simulated and displayed on the chart. The symbols shall be compared to similar symbols from table A.1 and table A.2 of the document referred to in Chapter 2(h).

cc) The result obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

dd) A simulated vessel with all AIS information shall be fed into the Inland ECDIS. All AIS information shall be requested and displayed. A check that all data are available shall be made.

ee) The result obtained shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

ff) An Inland AIS target shall be simulated with three blue cones. The presentation of this vessel shall be observed in the Inland ECDIS. A pick report shall be opened for this vessel. The pick report shall be inspected regarding the number of blue cones.

gg) The result obtained shall be compared to the required test results in paragraph 3(f) in order to prove compliance with the requirement.

3. Required test result

a) The overlay of information gathered by communication links regarding the position and orientation of other vessels, such as AIS, shall only be allowed when:

i) the information is up to date (real-time), and

ii) the age of information does not exceed the following maximum time out values:

Category of vessel	Nominal reporting interval class A	Maximum time out value class A	Nominal reporting interval class B	Maximum time out value class B
Vessel at anchor or moored and not moving faster than 3 knots (class B not moving faster than 2 knots)	3 min	18 min	3 min	18 min
Vessel at anchor or moored and moving at more than 3 knots	10 s	60 s	3 min	18 min
Vessel operating in SOLAS mode, moving 0 to 14 knots	10 s	60 s	30 s	180 s
Vessel operating in SOLAS mode, moving 0 to 14 knots and changing course	3 1/3 s	60 s	30 s	180 s
Vessel operating in SOLAS mode, moving 14 to 23 knots	6 s	36 s	30 s	180 s
Vessel operating in SOLAS mode, moving 14 to 23 knots and changing course	2 s	36 s	30 s	180 s
Vessel operating in SOLAS mode, moving faster than 23 knots	2 s	30 s	30 s	180 s
Vessel operating in SOLAS mode, moving faster than 23 knots and changing course	2 s	30 s	30 s	180 s
Vessel operating in inland waterway mode	2 – 10 s	60 s	—	—

iii) The symbols shall be marked as outdated if the age of the information exceeds 30 seconds for moving vessels.

b) The position information of the own vessel shall only be displayed when the position is detected by an on-board system and not if the position is received from a repeater station.

c) Only if the heading of other vessels is available, the position and the orientation of those other vessels may be presented by:
   i) a directed triangle, or
   ii) a true outline (to scale).

d) If an AIS device is connected, information regarding the position of AIS base stations, AIS Sign and Marking information (AtoN) and AIS Search and Rescue Transmitters (SART) shall be displayed, only if the symbols can be distinguished from other symbols (e.g. symbols 2.10 and 2.11 of table A.1 and table A.2 of the document referred to in Chapter 2(h)).

e) It shall be possible to display all information transmitted by an AIS on user request:
   i) AIS device identity (Maritime Mobile Service Identity, MMSI);
   ii) vessel name;
   iii) VHF radio call sign of the vessel;
   iv) vessel or convoy type;
   v) unique European vessel Identification Number (ENI) or, for seagoing vessels that have not been given an ENI number, the IMO number;
   vi) overall length of the vessel or convoy accurate to 0,1 m;
   vii) overall breadth of the vessel or convoy accurate to 0,1 m;
   viii) reference point for the positional information aboard the vessel, accurate to 1 m (this is the position of the GPS antenna of the Inland AIS device);
   ix) position of the vessel (derived from GPS in WGS 84 coordinate system);
   x) time indication of position determination by the electronic position location device;
   xi) speed over ground;
   xii) course over ground;
   xiii) navigational status.

f) The number of the blue cones/lights shall only be displayed in the pick report.

Article 5.09
Operation

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(1).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) An IENC (“chart 07”) shall be loaded into the Inland ECDIS.

d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.

e) A vessel shall be simulated with heading information available. The data of that vessel are fed into the Inland ECDIS.

f) The presentation of that vessel in the Inland ECDIS is compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

g) An additional vessel shall be simulated with no heading information available. The data of that vessel are fed into the Inland ECDIS.

h) The presentation of that vessel in the Inland ECDIS is compared to the required test results paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result

a) A vessel with heading available shall be presented correctly with respect to position and orientation with a true outline (to scale) or a directed triangle.

b) A vessel without heading shall be presented correctly with respect to position with a generic symbol (an octagon or a circle).

Article 5.10
Ergonomics of control elements

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(2).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) A recorded real-life scenario (“scenario 01”) shall be played back and fed into the Inland ECDIS.

d) The manufacturer shall provide appropriate information about the applied human machine interface. This information is compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

e) The Inland ECDIS shall be switched to each available mode (information mode, navigation mode). In each mode, the indication of the mode as well as the connected peripherals are observed.

f) The results obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

g) The height of the characters of the control elements shall be measured with an appropriate measurement tool (e.g. a ruler).

h) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result
   a) The manufacturer shall provide information as to which widely accepted human machine interface is applied.
   b) The operational state (Inland ECDIS in information mode / Inland ECDIS in navigation mode) of the system and the connected peripherals shall be clearly indicated.
   c) The symbols of the control elements shall have a minimum character height of 4 mm.

Article 5.11
Characteristics of control elements

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.04(3).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.
   c) A recorded real-life scenario (“scenario 01”) shall be played back and fed into the Inland ECDIS.
   d) The control elements shall be operated and checked against ergonomics and functionality.
   e) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
   f) The manufacturer shall provide a document that comprises a statement indicating which additional national language versions are supported.
   g) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result
   a) All control elements shall fulfil the requirements regarding the ergonomic and functional modes of operation.
   b) The statement of the manufacturer shall be noted in the test report. No verification of other language versions shall be performed.

Article 5.12
Pick report

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.04(4).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.
   c) An IENC (“chart 08”) shall be loaded into the Inland ECDIS.
   d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.
   e) At least five different features from different feature classes of the IENC shall be selected arbitrarily. For each feature, the pick report shall be activated and the content of the pick report shall be compared to the required test results in paragraph 3(a) and (b) in order to prove compliance with the requirement.

3. Required test result
   a) All underlying textual and/or graphical information (attributes) of the selected feature shall be displayed in the pick report.
   b) The pick report shall not hamper the view of the waterway in the navigational chart.

Article 5.13
Measuring features

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.04(5).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.
   c) An IENC (“chart 01”) shall be loaded into the Inland ECDIS.
   d) The AIS protocol simulator shall be configured in such a way that the vessel’s own position is shown in the centre part of the IENC.
   e) The measurement features for distances and bearings shall be activated.
   f) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

Measuring features for distances and bearings shall be implemented.

Article 5.14
Input and editing of boatmasters' own chart entries

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(6).

2. Test method

a) The test shall be performed in a laboratory.
b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.
c) An IENC ("chart 07") shall be loaded into the Inland ECDIS.
d) The AIS protocol simulator shall be configured in such a way that the vessel's own position is shown in the centre part of the IENC.
e) A new own chart entry shall be created by placing a single point-shaped object and text, and by drawing a line and a closed polygon (area), if available.
f) The new created chart entry shall be stored. Another IENC ("chart 01") shall be loaded into the Inland ECDIS. The original IENC ("chart 07") with the entry shall then be reloaded.
g) The occurrence of the previously created entry shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
h) The entry shall be modified shifting it to another position. Another IENC ("chart 01") shall be loaded into the Inland ECDIS. The original IENC ("chart 07") with the entry shall then be reloaded.
i) The occurrence of the previously created entry shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.
j) The previously created entry shall be deleted. Another IENC ("chart 01") shall be loaded into the Inland ECDIS. The original IENC ("chart 07") with the entry shall then be reloaded.
k) The occurrence of the previously created entry shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

3. Required test result

a) It shall be possible to create and store a new entry. After reloading the chart, the created entry shall still exist.

b) It shall be possible to move the previously created entry to another position in the same IENC. After reloading the chart, the modified entry shall still exist.

c) It shall be possible to delete the previously created entry. After reloading the chart, the previously created entry shall not exist anymore.

Article 5.15
Control elements

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(9).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) A recorded real-life scenario (“scenario 01”) shall be played back and fed into the Inland ECDIS.

d) The manufacturer shall provide a document that comprises a statement indicating which ergonomic principles for user-friendly operation are applied.

e) The statement shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

f) Each control element shall be inspected as to whether it is necessary.

g) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

h) Each standard setting and user-defined setting shall be checked with respect to whether it is easily retrievable.

i) The result obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

j) The following functions shall be activated consecutively; for each function checks shall be carried out regarding access, kind of control, menu level and visibility:

i) "range",

ii) "brightness",

iii) "colours",

iv) "information density".

k) The result obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

l) The following elements shall be checked for permanent visibility:
   i) range (actual range);
   ii) status (sensor status: alarms and, if connected, GNSS receiver, AIS and heading device);
   iii) water level (selected water level, if available);
   iv) safety depth limit (selected safety depth limit, if available);
   v) information density (selected information density).

m) The result obtained shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

3. Required test result

a) The statement of the manufacturer shall comprise appropriate information to which ergonomic principles for user-friendly operation are applied.

b) The Inland ECDIS shall have a minimum of control elements.

c) All standard settings and user-defined settings shall be easy to find and recover.

d) The following operational functions shall have direct access and shall have either own control elements or own menu areas, which are arranged in the highest menu level and are permanently visible:
   i) "range",
   ii) "brightness",
   iii) "colours",
   iv) "information density".

e) The following function parameters are always visible:
   i) range (actual range);
   ii) status (sensor status: alarms, and if connected GNSS receiver, AIS and heading device);
   iii) water level (selected water level, if available);
   iv) safety depth limit (selected safety depth limit, if available);
   v) information density (selected information density).

Article 5.16
Service functions

1. Reference

This clause refers to Part I, Chapter 2, Article 2.05(1).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) The service function menu shall be opened. The presence or not of a password protection shall be noted.

d) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

All service functions shall be protected by password or other suitable measures against unauthorised access.

Article 5.17
Display

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(2).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) A recorded real-life scenario (“scenario 01”) shall be played back and fed into the Inland ECDIS.

d) The screen and display shall be set to portrait format.

e) The nominal viewing distance shall be obtained from the manufacturer’s documentation.

f) All alphanumeric data and texts shall be checked for:

i) legibility,

ii) font type,

iii) font size,

iv) the character height and the size of the AIS symbols in millimetres.

g) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

h) The display shall be set to landscape format. The test shall be repeated.

i) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The following requirements shall be fulfilled in both landscape and portrait formats:

a) alphanumeric data and text shall be presented using a clearly legible non-italic sans-serif font;

b) the font size shall be appropriate for the viewing distance from user positions (i.e. with respect to reading distance and viewing angles) likely to be experienced in the wheelhouse of a vessel;

c) the minimum character height and the minimum size of AIS symbols in millimetres shall not be less than 3,5 times the typically nominal viewing distance in meters; and

d) the minimum size of AIS symbols and the minimum character height of AIS information shall be 3,5 mm.

Article 5.18
Display colours

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(5).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) A recorded real-life scenario (“scenario 01”) shall be played back and fed into the Inland ECDIS.

d) The Inland ECDIS shall be set to colour combination day, dusk and night consecutively. Each colour combination shall be checked to determine whether the chart is displayed in ergonomically proven colours.

e) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The system shall be able to display the chart in ergonomically proven colour combinations for day, dusk and night.

Article 5.19
Display and screen brightness

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(6).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) A recorded real-life scenario (“scenario 01”) shall be played back and fed into the Inland ECDIS.
d) The test shall be conducted in a dark room.
e) The Inland ECDIS shall be set to colour combination night-time.
f) The brightness of the screen (hardware button on the monitor) shall be set to minimum or if the screen is completely dark, to the lowest level where the chart can be seen.
g) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.
h) The brightness shall be increased slightly and the colour saturation shall be decreased by the software setting until the chart is just visible.
i) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.
j) The room shall be set to normal light conditions.
k) The Inland ECDIS shall be set to colour combination day.
l) The brightness of the screen (hardware button on the monitor) shall be set to maximum.
m) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.
n) The brightness shall be slightly decreased, and the colour saturation shall be increased by the software setting to its maximum value.
o) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The brightness of the display shall be adjustable to every operational reasonable value. The lowest value shall be low enough to ensure safe operation at night-time.

Article 5.20
Connection of other equipment

1. Reference

This clause refers to Part I, Chapter 2, Article 2.07(1).

2. Test method

a) This test shall be performed in a laboratory.
b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(4) of this Part.
c) An IENC (“chart 07”) shall be loaded into the Inland ECDIS.

d) An Inland AIS protocol simulator shall be connected, providing position information for a position A.

e) The vessel's own position shall be confirmed by observation on the chart and marked.

f) The AIS protocol simulator shall be disconnected.

g) A GNSS protocol simulator shall be connected, providing position information for a position B.

h) The vessel's own position shall be confirmed by observation on the chart and marked.

i) The AIS protocol simulator shall be reconnected in addition to the already connected GNSS protocol simulator.

j) The vessel's own position shall be confirmed by observation on the chart. It shall be noted whether AIS or GNSS receiver position is used.

k) The AIS protocol simulator shall provide a higher quality position information (DGNSS) for position A.

l) The vessel's own position shall be confirmed by observation on the chart. It shall be noted whether AIS or GPS receiver position is used.

m) GNSS protocol simulator shall be set to differential mode (DGPS).

n) The vessel's own position shall be confirmed by observation on the chart. It shall be noted whether AIS or GPS receiver position is used.

o) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

Inland ECDIS shall consider whether there might be more than one position source of different quality.

Article 5.21
Configuration of interfaces

1. Reference

This clause refers to Part I, Chapter 2, Article 2.07(2).

2. Test method

a) This clause only applies in the event that the manufacturer implements a ROT display.

b) The test shall be performed in a laboratory.

c) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

d) A recorded real-life scenario ("scenario 01") shall be played back and fed into the Inland ECDIS.

e) The manufacturer shall provide a complete and final list of all sensors, actors and signals, intended to be connected to the Inland ECDIS.

f) Each of these sensors, actors and signals shall be connected to the Inland ECDIS consecutively.

g) Each sensor, actor and signal shall be configured.

h) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

i) If a rate of turn indicator (ROT) is intended to be connected to the Inland ECDIS:

The question of whether a digital interface is applied and whether it is designed pursuant to document referred to in (3)(b) shall be checked.

j) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

k) The length of the scale shall be measured with an appropriate measurement tool (e.g. a ruler). The scale shall be compared to the required test results in paragraph 3(c) and (d) in order to prove compliance with the requirement.

l) A variable voltage source with an output impedance of 100 Ohm shall be connected to the Inland ECDIS.

m) The scale shall be set to 90 deg/min.

n) The variable voltage source shall be set to 20 mV, 40 mV, 200 mV, 400 mV, 1,2 V, 1,8 V.

o) If the Inland ECDIS provides a digital interface for ROT, appropriate NMEA strings with values of 1 deg/min, 2 deg/min, 10 deg/min, 20 deg/min, 60 deg/min, and 90 deg/min shall be fed into the interface consecutively.

p) The indication of the ROT shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

q) The scale shall be set to 300 deg/min.

r) The variable voltage source shall be set to 20 mV, 40 mV, 200 mV, 2,0 V, 4,0 V, 6,0 V.

s) If the Inland ECDIS provides a digital interface for ROT only, appropriate NMEA strings with values of 1 deg/min, 2 deg/min, 10 deg/min, 100 deg/min, 200 deg/min, and 300°/min, shall be fed into the interface consecutively.

t) The indication of the ROT shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

u) A negative analogue voltage of -1,2 V or a negative digital value of -60 deg/min shall be fed into the interface.

v) The direction of the indication shall be compared to the required test results in paragraph 3(f) in order to prove compliance with the requirement.

w) An analogue voltage of 0.67 mV or a negative digital value 0,3 deg/min shall be fed into the interface.

x) The indication of the ROT shall be compared to the required test results in paragraph 3(g) in order to prove compliance with the requirement.

y) An analogue voltage of 0,0 V or a negative digital value 0,0 deg/min shall be fed into interface.

z) The indication of the ROT shall be compared to the required test results in paragraph 3(h) in order to prove compliance with the requirement.

aa) An analogue voltage of 1,2 V or a negative digital value 60 deg/min shall be fed into the interface.

bb) The voltage shall be increased to 1,212 V (60,6 deg/min).

cc) The indication of the ROT shall be compared to the required test results in paragraph 3(i) in order to prove compliance with the requirement.

3. Required test result

a) It shall be possible to configure each interface for the connected sensor, actor and signal. Each interface shall comply with existing interface specifications.

b) When connecting a ROT to the Inland ECDIS, the following requirement shall be fulfilled: a digital interface shall be designed pursuant to European Standards (documents referred to in Chapter 2(d) to (g).

c) The rate of turn shall be indicated on a linear graduated scale with the zero point situated in the middle. It shall be possible to read the direction and extent of the rate of turn with the necessary accuracy. Indicators other than needle indicators and bar-graphs shall not be permitted. Digital-only indicators will not be accepted.

d) The indicator scale shall be at least 20 cm long and may be circular or rectilinear. Rectilinear scales may be arranged horizontally only.

e) The indication of the rate of turn shall be equivalent to an analogue voltage of 20 mV/deg/min. The indicated rate of turn shall not differ by more than 2 % from the measurable maximum value or by more than 10 % from the actual value; whichever is the greater.

f) Polarity shall be positive when the vessel is turning to starboard and negative when it is turning to port.

g) The operating threshold shall not exceed 0,3 deg/min.

h) Zero error shall not exceed 1 deg/min at temperatures from 0 °C to +40 °C.

i) The operating threshold shall be less than or equal to a change in angular speed equivalent to 1 % of the indicated value.

Article 5.22
Documentation

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.10(2).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The manufacturer shall provide appropriate installation and maintenance manuals as well as a user manual.
   c) The manuals shall be checked by visual inspection with respect to the required test results in paragraph 3 in order to prove compliance with the requirement.
   d) The manufacturer shall provide a document that comprises a statement about supported languages of the user interface.

3. Required test result
   a) The documentation (manuals) shall contain the following comprehensive information on:
      i) the inland ECDIS,
      ii) the installation,
      iii) the operation,
      iv) the service of the Inland ECDIS.
   b) The presentation of user-relevant information shall be clear, understandable and without unnecessary technical terms.
   c) The user manual shall be available, preferably in all supported languages of the user interface, but shall be available at least in the English language.
   d) The technical system description shall be available at least in the English language.
   e) The manufacturer's documentation shall identify the nominal viewing distance for the screen.

Article 5.23
Interfaces

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.10(3).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The manufacturer shall provide appropriate information and documentation for each interface of the Inland ECDIS.

c) The information for each interface shall be inspected and checked for completeness and correctness.

d) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

All interfaces of the Inland ECDIS shall be documented correctly and completely.

CHAPTER 6
ADDITIONAL OPERATIONAL AND PERFORMANCE REQUIREMENTS, METHODS OF TEST AND REQUIRED TEST RESULTS FOR INLAND ECDIS IN INFORMATION MODE

This Chapter contains additional requirements specific to Inland ECDIS in information mode. The requirements for “all modes” (Chapter 5) also apply for Inland ECDIS in information mode.

Article 6.01
Operation

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.04(1).

2. Test method
   a) This test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.
   c) An IENC (“chart 01”) shall be loaded into the Inland ECDIS.
   d) The GNSS protocol simulator shall be configured in such a way that the vessel’s own position follows a given track.
   e) It shall be inspected regarding whether the chart picture moves automatically and whether the displayed section matches the actual surrounding / user-selected range.
   f) The result obtained shall be noted in the test report.
   g) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

   The Inland ECDIS may be connected to a positioning sensor to move the chart picture automatically and to display the section of the chart matching the actual surrounding, namely in the user-selected range.

Article 6.02
Screen dimensions

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.06(3).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(3) of this Part.

c) An IENC (“chart 01”) shall be loaded into the Inland ECDIS.
d) The screen dimension shall be measured with an appropriate measurement tool (e.g. a ruler).
e) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The screen diagonal shall be equal to or larger than 199 mm (7.85 inches).

Article 6.03
Screen resolution

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(4).

2. Test method

Not tested, as it is a recommendation only.

3. Required test result

Not applicable.

Article 6.04
Malfunctions

1. Reference

This clause refers to Part I, Chapter 2, Article 2.08(2).

2. Test method
a) The test shall be performed in a laboratory.
b) The Inland ECDIS shall be set to the standard operation setup as in Article 4.02(3) of this Part.
c) The GNSS protocol simulator shall send position data to the Inland ECDIS. The vessel’s own position shall be confirmed by observation in the chart and marked.
d) The GNSS protocol simulator shall be stopped sending position data.
e) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

f) The GNSS protocol simulator shall retransmit position data. The vessel's own position shall be confirmed by observation in the chart and marked.

g) The GNSS protocol simulator shall be disconnected from the Inland ECDIS.

h) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

i) The AIS protocol simulator shall be configured in such a way that the vessel's own position is shown in the centre of the screen.

j) The loss of the VHF antenna of the Inland AIS device shall be simulated by configuring the AIS protocol simulator to send the appropriate data to the Inland ECDIS.

k) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

l) The AIS protocol simulator shall be stopped sending data.

m) The AIS protocol simulator shall be disconnected from the Inland ECDIS.

n) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

o) The Inland ECDIS shall be connected to a heading protocol simulator as described in Article 8.05 of this Part. The vessel's own heading shall be confirmed by observation in the chart.

p) The heading protocol simulator shall be stopped in sending heading data.

q) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

r) The heading protocol simulator shall be stopped sending data. The vessel's own heading shall be confirmed by observation in the chart.

s) The heading protocol simulator shall be disconnected from the Inland ECDIS.

t) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The Inland ECDIS shall send a suitable alarm or warning indicator of missing input from – if connected – GNSS receiver, AIS and heading device.

Article 6.05
Documentation

1. Reference

This clause refers to Part I, Chapter 2, Article 2.10(2).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The manufacturer's documentation shall be checked for a statement as required by paragraph 3) in order to prove compliance with the requirement.

3. Required test result

The manufacturer's documentation shall include information that the software, if sold as a standalone product without hardware, may only be used as an Inland ECDIS if the hardware fulfils the requirements of Part I.

Article 6.06
Interfaces

1. Reference

This clause refers to Part I, Chapter 2, Article 2.10(3).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The manufacturer's documentation shall be checked for a statement as required by paragraph 3) in order to prove compliance with the requirement.

3. Required test result

The manufacturer's system documentation shall include the information that the system includes test procedures and signal indicators according to Part I, Chapter 2, Article 2.08.

CHAPTER 7
ADDITIONAL OPERATIONAL AND PERFORMANCE REQUIREMENTS, METHODS OF TEST AND REQUIRED TEST RESULTS FOR INLAND ECDIS IN NAVIGATION MODE

This Chapter contains additional requirements specific to Inland ECDIS in navigation mode. The requirements for “all modes” (Chapter 5) also apply for Inland ECDIS in navigation mode.

Article 7.01
Updates

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.02(1).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(7).
   c) The load of a chart (“chart 02") shall be initiated manually.
   d) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
   e) A manual update process shall be initiated.
   f) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.
   g) An automatic update shall be applied.
   h) The performance of the navigation display shall be inspected.
   i) The result obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

3. Required test result
   a) The manual loading of charts shall not be possible in navigation mode.
   b) The manual updating of charts shall not be possible in navigation mode.
   c) The automatic updating shall not downgrade the performance of the navigation display.

Article 7.02
Image positioning and orientation

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.03(1).

2. Test method
   a) This test shall be conducted aboard a vessel under way.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.
   c) The positioning of the chart, motion, orientation and the own vessel's position in the presentation of the chart in the Inland ECDIS shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement
   d) The Inland ECDIS shall be set to mode true motion, north-up.
   e) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result
   a) The chart shall be automatically positioned and oriented in the relative motion, head-up display mode. The own vessel's position in the screen may be centred or off-centred.
   b) When the Inland ECDIS uses orientations other than head-up orientation, the Inland ECDIS shall switch to information mode.

Article 7.03
Screen orientation, chart orientation, positioning and shifting

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.03(2).

2. Test method
   a) This test shall be conducted aboard a vessel under way.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) The size, position and orientation of the chart and radar image under different manoeuvre situations shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

d) The Inland ECDIS shall be set to “centred”.

e) Range rings shall be switched on.

f) The own vessel’s position in the presentation of the chart in the Inland ECDIS shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

g) The Inland ECDIS shall be set to “off centred”.

h) The own vessel’s position in the presentation of the chart in the Inland ECDIS shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result

a) The chart and the radar image shall be matching in size, position and orientation.

b) The vessel’s own position shall be shown in the centre point of the range rings and visible in the display area.

Article 7.04
Position and heading of the own vessel

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(3).

2. Test method

a) This test shall be conducted aboard a vessel under way.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) The visibility, position and orientation of the heading line shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

d) The colour of the heading line when intersecting other objects shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

e) It shall be inspected as to whether there are means of switching off the heading line in order to obtain the required test results in paragraph 3(a) in order to prove compliance with the requirement.

f) The offset between position sensor and radar sensor shall be set to an arbitrary position offset.

g) The position of chart and radar image shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result

a) The heading line shall always be visible and shall represent the heading of the own vessel.

b) It shall be possible to correct an offset error (distance between the positions of the position sensor antenna and the radar antenna).

Article 7.05
Display of SENC information

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(4).

2. Test method

a) This test shall be conducted aboard a vessel under way.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) The Inland ECDIS shall be set to colour combination day.

d) The distinguishability of the colours on the radar picture and chart shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

e) The Inland ECDIS shall be set to colour combination dusk.

f) The distinguishability of the colours on the radar picture and chart shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

g) The Inland ECDIS shall be set to colour combination night.

h) The distinguishability of the colours on the radar picture and chart shall be compared to the required test results in paragraph 3(a), in order to prove compliance with the requirement.

i) The presentation of the chart and radar picture and the presentation of the heading line of the Inland ECDIS in all scales shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement

j) The presentation of chart information shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

k) The own vessel's contour and safety contour shall be switched on.

l) The result obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

m) The Inland ECDIS shall be set to minimum scale and then switched until maximum scale, step-by-step consecutively.

n) In each scale an inspection shall take place to ensure that:

   i) the matching of radar picture and chart is correct;

   ii) the heading line is always visible;

   iii) the presentation of chart information does not mask or degrade important parts of the radar picture;

   iv) the own vessel's contour and the safety contours are presented correctly; and

   v) the elements as defined in Part I Chapter 2, Article 2.01(1)(b)(i), 1st to 7th indent are not obscured by other objects.

o) The result obtained shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

3. Required test result

a) The radar picture is clearly distinguishable from the chart, independent of the chosen colour table.

b) The chart and radar picture presentation shall match in all scales and the heading line shall always be visible.

c) The presentation of chart information shall not mask or degrade important parts of the radar picture.

d) The own vessel's contour and the safety contours shall be presented correctly.

e) The following elements shall always be visible and shall not be obscured by other objects:
   i) bank of waterway (at mean water level);
   ii) construction (e.g. groin, longitudinal control dam, training wall – any facility that is considered a hazard to navigation);
   iii) contours of locks and dams;
   iv) boundaries of the fairway/navigation channel (if defined);
   v) isolated dangers in the fairway/navigation channel under water;
   vi) isolated dangers in the fairway/navigation channel above water level, such as bridges, overhead cables, etc.;
   vii) official aids-to-navigation (e.g. buoys, beacons, lights, notice marks);
   viii) heading line;
   ix) bearing line;
   x) range rings;
   xi) navigation lines;
   xii) P-lines;
   xiii) buoys;
   xiv) Inland AIS symbols;
   xv) Inland AIS labels (if displayed);
   xvi) Sign and Marking information (AtoN).

Article 7.06
Display of radar information

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.03(8).

2. Test method

   a) This test shall be completed aboard a vessel under way.

   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

   c) The radar image and the position from the position sensor shall be adjusted for the conning position.

   d) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

   e) Additional navigational information and tracking and tracing symbols shall be displayed. The presentation of radar information shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

f) Radar shall be switched off. The mode indication shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

g) Radar shall be switched on again. The mode indication shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

h) The dimensions, resolution and attributes of the radar presentation shall be checked against Part I.

i) The result obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

j) The chart shall be switched off.

k) The result obtained shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

l) The chart shall be switched on again.

m) The number of colours used and intensity levels in the representation of the radar picture shall be compared to the required test results in paragraph 3(f) in order to prove compliance with the requirement

n) Trails shall be switched on.

o) The manufacturer shall declare whether relative or absolute or both types of trails are implemented. The statement shall be noted in the test report.

p) The colours of trails shall be compared to the required test results in paragraph 3(h) in order to prove compliance with the requirement.

q) The following tests shall be performed in a laboratory or aboard a vessel under way.

r) For Inland ECDIS in system configuration 2, the requirements relative to the display and the pictures for radar and rate of turn indicators as defined in the document referred to in Chapter 2(a) (respectively in Annex 5, Section I, Article 3 and in Annex 5, Section II) shall be fulfilled.

s) The result obtained shall be compared to the required test results in paragraph 3(i) of this Part in order to prove compliance with the requirement.

t) For Inland ECDIS in system configurations 3 and 4, test against all requirements of the standards for radar equipment and rate of turn indicators as defined in Part I, shall be performed.

u) The result obtained shall be compared to the required test results in Article 7.06(3)(j) of this Part in order to prove compliance with the requirement.

v) Note: The results of test method in Article 7.08 position accuracy shall be checked and compared to the required test results in paragraph 3(g).

3. Required test result

a) The radar image and the position from the position sensor shall both be adjustable for the antenna offset to a common reference position, e.g. conning position.

b) Any additional navigational information and tracking and tracing symbols shall in no way degrade the display of the original radar content.

c) The radar image representation is mandatory for operation. When the radar image is switched off, the system shall fall back to information mode. An alarm shall be given. The switching shall always be possible by manual action.

d) The dimensions, resolution and attributes of the radar presentation shall fulfil the relevant radar requirements (as specified in Part I).

e) It shall be possible to switch off the chart or any other information layer, and to display the radar picture, only by one easily accessible control element or menu area.

f) The actual radar picture shall be represented only in monochrome colour with different intensities.

g) If the quality and plausibility monitoring of the Inland ECDIS detect that the chart cannot be oriented and/or positioned with the specified accuracy, an alarm shall be presented on the display and the chart shall be switched off automatically. If there is no radar signal, the information mode shall be displayed and an alarm shall be activated.

h) Trails shall be true or relative. Trails for radar echoes should have the same colour as the radar echoes. It is also possible to show the trails in a different colour from the colour of the radar echoes, but the colour of the trails should not dominate the radar echoes. The brightness of the trails shall always be lower than the radar echoes, no matter which colour or colour combination is used.

i) For Inland ECDIS in system configuration 2, the radar picture shall fulfil the requirements relative to the display and the pictures for radar and rate of turn indicators as defined in Part I.

j) For Inland ECDIS in system configuration 3 and 4, all requirements of the standards for radar equipment and rate of turn indicators as defined in Part I shall be fulfilled.

Article 7.07
Data and display accuracy

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(11).

2. Test method

a) This test shall be conducted aboard a moored vessel.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) The Inland ECDIS shall be set to the smallest display range (highest zoom factor) and the Inland ECDIS shall be verified for any indications.

d) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

e) The range shall be set to 500 m. The static offset between radar picture and chart image shall be corrected as best as possible. The remaining error shall be compared to the required test results in paragraph 3(b) and (c) in order to prove compliance with the requirement.

f) The permissions to adjust the offset values between the positions of the position sensor and the radar antenna of the vessel shall be inspected and compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

g) The resolution and accuracy shall be compared to the display. There shall be a check on whether better values than those of the chart data are suggested.

h) The result obtained shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.

i) Note: the static offset error cannot be tested in all ranges up to 2 000 m in a repeatable and objective way. For a usual resolution of a screen in a range of 2 000 m, a distance of 5 m corresponds to just a few pixels.

3. Required test result

a) The Inland ECDIS shall send an indication as to whether the display uses a smaller display range (higher zoom factor) than the accuracy of the IENC data offers (over-scale indication).

b) The static offset, i.e. the error between the whole radar picture and chart image, shall be less than ± 5 m in all ranges up to 2000 m.

c) The chart position shall match the radar image. Assuming an absolute position's input, the permissible static difference between actual radar position and displayed radar centre shall not exceed 5 m.

d) It shall be possible for a system administrator to only adjust the offset values between the positions of the position sensor antenna and the radar antenna of the vessel so that the SENC display matches the radar image.

e) Resolution and accuracy shall at least be the same as those of the display, but may not suggest better values than those of the chart data.

Article 7.08
Position accuracy

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(12).

2. Test method

a) The first part of the test (clause b and c) shall be performed aboard a vessel. The second part of the test (clause d and following) shall be performed in laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) Update period position:

The update time of the position estimate shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

d) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(4) of this Part.

e) Horizontal error:

The next NMEA messages which are outputted by the GNSS and according to the document referred to in Chapter 2(d) shall be sent to the Inland ECDIS:

- Time, position, and fix related data (GGA – "$--GGA") ;
- GNSS satellite fault detection (GBS – "$--GBS") ;
- GPS DOP and active satellites (GSA – "$--GSA").

The configuration shall be such that all requirements can be met without any exceeding or falling short of thresholds. The GNSS receiver shall be the source for position information for the Inland ECDIS.

A GNSS satellite fault detection (GBS) test sentence according to the document referred to in Chapter 2(e) shall be fed into the Inland ECDIS. The expected horizontal error shall be calculated on the basis of the fields "expected error in longitude" and "expected error in latitude" according to the following formula:

$$expected\ horizontal\ error = \sqrt{(expected\ error\ in\ latitude)^2 + (expected\ error\ in\ longitude)^2}$$

The result obtained shall be compared to the required test results in paragraph 3(b) .

The expected error in latitude and longitude shall be set consecutively to

- (7 m | 7 m) resulting in an expected error of 9,89 m and
- (8 m | 8 m) resulting in an expected error of 11,31 m.

The expected horizontal error and the indication of Inland ECDIS shall be compared to the required test results in paragraph 3(b).

f) Too few satellites in use error:

A GGA test sentence according to the document referred to in Chapter 2(d), containing the position, time of position fix, GNSS quality and other information, shall be fed into the Inland ECDIS. The field "number of satellites in use" shall be compared to the required test results in paragraph 3(c).

The number of satellites shall be set to 3. The field "number of satellites in use" and the indication of Inland ECDIS shall be compared to the required test results in paragraph 3(c).

g) PDOP error:

A GSA test sentence according to the document referred to in Chapter 2(b), containing satellite and DOP information, shall be fed into the Inland ECDIS. The value of the field “PDOP” shall be compared to the required test results in paragraph 3(d).

The value of the field “PDOP” shall be set to 6. The value of the field “PDOP” and the indication of Inland ECDIS shall be compared to the required test results in paragraph 3(d).

h) HDOP error:

A GSA test sentence according to the document referred to in Chapter 2(d), containing satellite and DOP information, shall be fed into the Inland ECDIS. The value of the field “HDOP” shall be compared to the required test results in paragraph 3(e) .

The value of the field “HDOP” shall be set to 4. The value of the field “HDOP” and the indication of Inland ECDIS shall be compared to the required test results in paragraph 3(e).

i) GPS quality indicator error:

A GGA test sentence according to the document referred to in Chapter 2(d), containing the position, time of position fix, GNSS quality and other information, shall be fed into the Inland ECDIS. The field “GPS quality indicator” shall be compared to the required test results in paragraph 3(f).

The field “GPS quality indicator” shall be set to 6, 7 and 8 consecutively. The field “GPS quality indicator” and the indication of Inland ECDIS shall be compared to the required test results in paragraph 3(f).

The field “GPS quality indicator” shall be set to 2 and after 60 seconds set to 1. The field “GPS quality indicator” and the indication of Inland ECDIS shall be compared to the required test results in paragraph 3(f).

j) Precision Accuracy (PA) flag error:

An Inland AIS data stream containing VDO (AIS VHF data-link own-vessel report) message type 1 shall be connected to Inland ECDIS.

The field “PA flag” shall be set to 1. Inland AIS shall be the source for position information for the Inland ECDIS.

The field “PA flag” shall be compared to the required test results in paragraph 3(g).

The field “PA flag” shall be set to 0. The field “PA flag” and the indication of Inland ECDIS shall be compared to the required test results in paragraph 3(g).

3. Required test result

a) A new position estimate shall at least be available with every revolution of the radar antenna.

b) The expected horizontal error shall be less than 10 m and no warning or alarm shall be indicated.

If the expected horizontal error exceeds the threshold of 10 m for more than 30 seconds, the Inland ECDIS shall indicate an appropriate positioning warning to the user.

c) The number of satellites in use shall be greater than 3 satellites and no warning or alarm shall be indicated.

If the number of satellites in use is less than 4 for more than 30 seconds, the Inland ECDIS shall indicate an appropriate positioning warning to the user.

d) The value of the field “PDOP” shall be smaller than 6 and no warning or alarm shall be indicated.

If the value of the field “PDOP” is greater than or equal to 6 for more than 30 seconds, the Inland ECDIS shall indicate an appropriate positioning warning to the user.

e) The value of the field “HDOP” shall be smaller than 4 and no warning or alarm shall be indicated.

If the value of the field “HDOP” is greater than or equal to 4 for more than 30 seconds, the Inland ECDIS shall indicate an appropriate positioning warning to the user.

f) GPS quality indicator shall be 1 or 2 and no warning or alarm shall be indicated.

If GPS quality indicator is 6, 7 or 8 for more than 30 seconds, the Inland ECDIS shall indicate an appropriate positioning alarm to the user.

If GPS quality indicator is 2 and comes back to 1 for more than 60 seconds, the Inland ECDIS shall indicate an appropriate positioning warning to the user.

g) The value of the field “PA flag” shall equals 1 and no warning or alarm shall be indicated.

If the value of the field “PA flag” equals 0 for more than 60 seconds, the Inland ECDIS shall indicate an appropriate positioning warning to the user.

If the quality and plausibility monitoring of the Inland ECDIS detect that the chart cannot be oriented and/or positioned with the specified accuracy, an alarm shall be presented on the display and the chart shall be switched off automatically. If there is no radar signal, the information mode shall be displayed, and an alarm shall be activated.

Article 7.09
Heading accuracy

1. Reference

This clause refers to Part I, Chapter 2, Article 2.03(13).

2. Test method

a) This test shall be conducted aboard a vessel.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) Update period heading:

The update time of the heading estimate shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

d) Orientation of chart and radar image:

The offset between vessel heading direction and radar heading shall be set to less than 1 degree.

e) EBL shall be set to 1°.

f) The radar image shall be switched on.

g) The orientation of chart and radar image shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

h) Static directional error:

The heading line of the vessel shall be aligned with a fixed object in distance of about 600 m visually. The object shall be identified in the chart. The bearing match between the radar image and chart shall be measured with the EBL.

i) The result obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

j) Heading angle estimation:

The vessel shall pass arbitrarily chosen objects in different ranges. Each chosen object shall be identified in the chart. The difference between heading angle estimate and radar heading direction shall be measured with EBL. The results obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.

3. Required test result

a) A new heading estimate shall at least be available with every revolution of the radar antenna.

b) The chart and radar image shall have the same orientation.

c) The static directional error between heading line and chart orientation shall be less than ± 0,5 degree.

d) The average heading angle estimation shall not deviate more than 1 degree from the radar heading direction and shall cover all systematic errors.

Article 7.10
Operation

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(1).

2. Test method

a) This test shall be conducted aboard a vessel under way.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) The indication of navigation mode shall be confirmed by observation.

d) The Inland ECDIS shall be switched from navigation mode to information mode manually.
e) It shall be confirmed by observation that navigation mode is not displayed anymore.
f) Inspection shall take place on how many user actions are necessary for this operation.
g) The Inland ECDIS shall be switched from information mode to navigation mode manually.
h) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.
i) Navigation mode shall be switched off. Inspection shall take place on whether this can happen unintentionally and whether there are appropriate measures implemented to prevent inadvertent switching off.
j) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.
k) The IENC shall be switched off.
l) Inspection shall take place on how many user actions are necessary for this operation.
m) The IENC shall be switched on again.
n) The result obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.
o) Radar information shall be switched off.
p) Inspection shall take place on how many user actions are necessary for this operation.
q) Radar information shall be switched on again.
r) The result obtained shall be compared to the required test results in paragraph 3(d) in order to prove compliance with the requirement.
s) AIS labels shall be switched on manually.
t) The behaviour of the Inland ECDIS chart shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.
u) AIS labels shall be switched off manually.
v) The behaviour of the Inland ECDIS chart shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.
w) A timeout value for AIS labels of 7 seconds shall be configured if the timeout feature of AIS is available.
x) Inland AIS labels shall be switched on.
y) The behaviour of the Inland ECDIS chart regarding the time until the AIS labels disappear automatically shall be compared to the required test results in paragraph 3(f) in order to prove compliance with the requirement.

z) In case the device supports other communication links for the orientation and positioning of other vessels on the screen, appropriate additional tests shall be set up on the basis of the description and documentation provided by the manufacturer of the Inland ECDIS. These clauses shall be documented completely in the test report. The results obtained shall be compared to the required test results in paragraph 3(g) in order to prove compliance with the requirement.

3. Required test result

a) It shall be possible to switch from navigation mode to information mode and back and the correct mode shall be displayed.

b) Suitable measures shall be implemented to prevent the inadvertent switching off of the navigation mode.

c) It shall be possible to temporarily switch off the IENC by a single user action.

d) It shall be possible to temporarily switch off the radar information by a single user action.

e) It shall be possible to temporarily switch Inland AIS labels on and off manually.

f) The Inland AIS labels shall disappear after the specified time when a timeout value is set.

g) Information regarding the position and orientation of other vessels, gathered by other communication links than the own radar, may be displayed only if they are up to date (nearly real-time) and meet the accuracy that is required for the support of tactical and operational navigation.

Article 7.11
Ergonomics of control elements

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(2).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) The symbols of the control elements shall be inspected for legibility.

d) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

e) The brightness and the illumination of the control elements shall be set to any arbitrary values, including minimum and maximum value. The behaviour shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

f) Each control element shall be inspected as to whether it is necessary.

g) The results obtained shall be compared to the required test results paragraph 3(c) in order to prove compliance with the requirement.

h) Inspection will take place to see whether it is possible to switch off the Inland ECDIS unintentionally and whether there are appropriate measures implemented to prevent inadvertent switching off.

i) The result obtained shall be compared to the required test results in paragraph3(d) in order to prove compliance with the requirement.

3. Required test result

a) The symbols of the control elements shall be legible under all conditions that may exist in a wheelhouse.

b) The brightness and the illumination of the control elements shall be adjustable to any arbitrary value.

c) There shall not be more control elements than required.

d) The ON/OFF switch shall have a provision to prevent switching off inadvertently.

Article 7.12
Input and editing of boatmasters' own chart entries

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(6).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) A new own chart entry shall be created by introducing a single point-shaped object.

d) The presentation of own chart entry shall be inspected to see whether it is distinguishable from the SENC data.

e) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

f) A new own chart entry shall be created by inserting a text.

g) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

h) A new own chart entry shall be created by drawing a line and polygon.

i) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

j) A new own chart entry shall be created by drawing a closed polygon (area).

k) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result
   a) It shall be possible to create and place own single point-shaped objects. This entry shall be distinguishable from the SENC data.
   b) It shall not be possible to create and place another own object in navigation mode.

Article 7.13
Scales, Ranges/Range rings

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.04(7).

2. Test method
   a) This test shall be conducted aboard a vessel under way.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.
   c) Display mode “all display” shall be activated. Cross profiles at the distance marks (at least 100 m marks) shall be displayed.
   d) The vessel shall be navigated to a 100 m distance mark (conning position) and stopped.
   e) The range shall be set from minimum range to maximum range step-by-step consecutively.
   f) For each range, the distance of range rings in relation to the cross profiles shall be compared to the required test results in paragraph 3(a) to (d) in order to prove compliance with the requirement.
   g) All VRMs shall be activated and the number available shall be noted in the test report.
   h) The result obtained shall be compared to the required test results in paragraph 3(e) in order to prove compliance with the requirement.
   i) All VRMs shall be switched off.
   j) The fixed range rings shall be switched on.
   k) The activation and the display of range rings and VRM shall be inspected and compared to the required test results in paragraph 3(f) in order to prove compliance with the requirement.
   l) The VRM shall be moved to different cross profiles. The corresponding displayed distance shall be inspected regarding increment and resolution and compared to the required test results in paragraph 3(g) in order to prove compliance with the requirement.
   m) All EBLs shall be activated and the number available shall be noted in the test report.
   n) All EBLs shall be switched off.
   o) EBL shall be activated.
   p) The functionality of EBL and VRM and their corresponding numerical displays shall be inspected for correctness using the cursor.
   q) The result obtained shall be compared to the required test results in paragraph 3(h) in order to prove compliance with the requirement.
   r) The fixed range rings shall be switched on with a range of 1200 m.

s) VRM shall be switched on and shall be moved to the 1000 m ring.

t) The accuracy of fixed range rings and VRM shall be maintained in both cases, with the display centred and off-centred. The numeric displayed values of the EBL and the VRM shall exactly match with the analogue positions of the EBL and the VRM (or correspond with the cursor coordinates).

u) The result obtained shall be compared to the required test results in paragraph 3(i) in order to prove compliance with the requirement.

v) EBL shall be switched on and shall be set to 0°, 90°, 180° and 270° consecutively.

w) When set to 0° it shall be confirmed by observation whether EBL matches exactly the heading line.

x) The resolution and increments of the numerical display shall be compared to the analogue values of EBL and VRM.

y) The result obtained shall be compared to the required test results in paragraph 3(j) in order to prove compliance with the requirement.

3. Required test result

a) The following distances of range rings shall be implemented:

Range	Range rings
500 m	100 m
800 m	200 m
1200 m	200 m
1600 m	400 m
2000 m	400 m
4000 m	1000 m

b) Smaller and larger ranges shall have a minimum of four and a maximum of six range rings.

c) Only the successive switchable ranges (scales) shall be implemented.

d) The Inland ECDIS shall have fixed range rings.

e) There shall be at least one VRM implemented.

f) It shall be possible to switch on and off independently the fixed range meters on one hand and the variable range meters (VRM) on another hand, and their display shall be clearly distinguishable.

g) The position of the VRM and the corresponding displayed distance shall use the same increments and resolution.

h) The functionality of VRM and the EBL, and the corresponding numerical display showing range and bearing, shall be correct in relation to the cursor position.

i) All numeric displayed values of the EBL and the VRM shall exactly match with the analogue positions of the EBL and the VRM (or correspond with the cursor coordinates).

j) The resolution and increments of the numerical display shall be identical to the analogue values of EBL and VRM.

Article 7.14
Inland ECDIS pre-sets (store/recall) in navigation mode

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(8).

2. Test method

a) The test shall be performed in a laboratory.
b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.
c) The Inland ECDIS shall be (re-) started.
d) After the Inland ECDIS has come up, the brightness shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

After starting, the Inland ECDIS shall come up with a moderate brightness pre-set which is neither blinding in a dark environment nor making the picture indecipherable in a bright environment.

Article 7.15
Control elements

1. Reference

This clause refers to Part I, Chapter 2, Article 2.04(9).

2. Test method

a) This test shall be conducted aboard a vessel under way.
b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.
c) The Inland ECDIS shall be inspected with regard to the permanent visibility of the sensor status (radar tuning and position quality).
d) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The following function parameters shall always be visible:

a) sensor status (radar tuning and position quality).

Article 7.16
Service functions

1. Reference

This clause refers to Part I, Chapter 2, Article 2.05(1).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) The service function “static correction of the chart position” shall be selected.

d) It shall be inspected to see whether this selection is possible.

e) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

f) The service function “static correction of the chart orientation” shall be selected.

g) It shall be inspected to see whether this selection is possible.

h) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

i) The service function “configuration of interfaces” shall be selected.

j) It shall be inspected to see whether this selection is possible.

k) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The following service functions shall not be selectable in navigation mode:

a) static correction of the chart position

b) static correction of the chart orientation

c) configuration of interfaces.

Article 7.17
Hardware requirement

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(1).

2. Test method

a) For Inland ECDIS in system configuration 4, all components of the Inland ECDIS shall be tested against the requirements of equipment categorized as ‘b) protected from weather’ as specified in the standard referred to in Chapter 2(c), with the exception that the test temperature range is limited from 0 °C to +40 °C (whereas the test temperature range in the document referred to in Chapter 2(c) is specified from –15 °C to +55 °C).

b) The manufacturer shall submit a relevant conformity declaration of an accredited laboratory.

c) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

d) For Inland ECDIS in system configuration 2 and system configuration 3, the manufacturer shall provide a CE Document of Conformity under its own responsibility.

e) Hardware components used for providing radar information from the radar processor for display on the Inland ECDIS screen shall be tested against the relevant requirements of equipment categorized as 'b) protected from weather' as specified in the standard referred to in Chapter 2(c), with the exception that the test temperature range is limited from 0 °C to +40 °C.

f) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

g) For Inland ECDIS in system configuration 3, monitors shall be tested against the requirements of equipment categorized as 'b) protected from weather' as specified in the standard referred to in Chapter 2(c), with the exception that the test temperature range is limited from 0°C to +40 °C.

h) The result obtained shall be compared to the required test results in *paragraph 3(c) in order to prove compliance with the requirement.

3. Required test result

a) For Inland ECDIS in system configuration 4, all components of the Inland ECDIS installed inside the wheelhouse shall fulfil the requirements of equipment categorized as 'b) protected from weather' as specified in the standard referred to in Chapter 2(c), with the exception that the test temperature range is limited to 0 °C to +40 °C (whereas the test temperature range in the standard referred to in Chapter 2(c) is specified from -15 °C to +55 °C).

b) For Inland ECDIS in system configuration 2 and system configuration 3, in general CE conformity is sufficient, but not for hardware components used for providing radar information from the radar processor for display on the Inland ECDIS screen.

c) For Inland ECDIS in system configuration 3, the monitor has to fulfil the same requirements as a monitor used in Inland ECDIS in system configuration 4.

Article 7.18
Display

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(2).

2. Test method

This test is already covered by other clauses of this Part.

3. Required test result

This test is already covered by other clauses of this Part.

Article 7.19
Screen dimensions

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(3).

2. Test method

a) The test shall be performed in a laboratory.
b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.
c) The dimensions of the radar display area shall be measured with an appropriate measurement tool (e.g. a ruler).
d) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.
e) The effective diameter of the visible radar picture on the screen shall be measured with an appropriate measurement tool (e.g. a ruler).
f) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The minimum chart display area on the screen shall be at least 270 mm by 270 mm and the effective diameter of the visible radar picture on the screen shall not be less than 270 mm.

Article 7.20
Screen resolution

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(4).

2. Test method

a) The test shall be performed in a laboratory.
b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.
c) The display resolution of the Inland EDCIS screen shall be checked in the video settings or by other appropriate means.
d) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The display resolution shall be equal to or higher than 1 000 pixels at the short edge of the screen.

Article 7.21
Display and screen brightness

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(6).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) The radar echo colour shall be set to white colour.

d) The foreground screen brightness will be adjusted to the lowest adjustable value. Then the luminance of a radar echo as well as of the background shall be determined by a luminance metre.

e) Following the low brightness test, the ambient room illumination shall be raised to bright daylight levels and the luminance controls suitably adjusted. Several persons of the test team shall then conduct a visual assessment to ensure that the display can be clearly interpreted.

f) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

g) The chart and radar picture shall be inspected regarding the existence of separate brightness controls.

h) The results obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

i) Inspection shall take place as to whether the Inland ECDIS has another control for the basic brightness of the display, available in addition to the colour tables in the menu.

j) The result obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

3. Required test result

a) The brightness of the features and radar echoes on the screen shall not exceed a value of 5 cd/m^2, and the background shall not exceed a value of 0,1 cd/m^2.

b) The chart and radar picture shall have separate brightness controls.

c) The Inland ECDIS shall have another control for the basic brightness of the display, available in addition to the colour tables in the menu.

Article 7.22
Picture refresh rate

1. Reference

This clause refers to Part I, Chapter 2, Article 2.06(7).

2. Test method

a) This test shall be conducted aboard a vessel under way and by inspection of documentation in the laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) The radar picture shall be observed for several revolutions.

d) The number of radar pictures per minute shall be measured and compared to the required test results in 3(a) in order to prove compliance with the requirement.

e) The brightness of consecutive radar echoes shall be inspected and compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

f) The manufacturer shall provide a document from the monitor manufacturer that provides information regarding frame repetition rate and switching time.

g) The result obtained shall be compared to the required test results in paragraph 3(c) in order to prove compliance with the requirement.

3. Required test result

a) The picture refresh rate shall not be shorter than that of the radar picture (≥ 24 pictures per minute).

b) Between two consecutive refreshes no fluctuations of brightness shall occur.

c) On raster scan monitors, the frame repetition rate shall not be lower than 60 Hz and the switching time shall not exceed 50 ms.

Article 7.23
Connection of other equipment

1. Reference

This clause refers to Part I, Chapter 2, Article 2.07(1).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) The manufacturer shall provide a complete list of optional sensors that can be connected to the Inland ECDIS.

d) All sensors shall be connected to the Inland ECDIS. As an alternative, simulated data can be fed into the Inland ECDIS.

e) The behaviour of the Inland ECDIS shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

f) Each interface shall be removed and reconnected to the Inland ECDIS during operation. The results obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result
   a) The Inland ECDIS shall not affect the performance of any connected sensors adversely.
   b) Similarly, the connection of optional sensors shall not degrade the performance of the Inland ECDIS. Electronic circuits shall be designed failsafe, mechanically as well as electronically, and shall not have degrading repercussions on connected sensors.

Article 7.24
Accuracy of rate of turn indicators

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.07(3).

2. Test method
   a) This test shall be conducted aboard a vessel under way.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.
   c) The vessel shall navigate a manoeuvre with a constant rate of turn of 10 deg/min, 30 deg/min and 60 deg/min.
   d) Each manoeuvre shall last at least 60 seconds.
   e) An autopilot shall be used to maintain constant turn rates, if available.
   f) The dynamic deviation between the chart orientation and the radar picture shall be confirmed by observation.
   g) The rate of turn, indicated on the vessel's own rate of turn indicator, shall be compared to the rate of turn indicated in the Inland ECDIS.
   h) The result obtained shall be compared to the required test results in paragraph 3(a) and (b) in order to prove compliance with the requirement.

3. Required test result
   a) When the ROT is less than ± 60 deg/min, the dynamic deviation between the chart orientation and the radar picture shall be less than ± 3 degrees.
   b) The deviation between the displayed ROT and the ROT sent by the connected ROT indicator shall be less than ± 3 deg/min.

Article 7.25
Built-in Test Equipment (BITE)

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.08(1).

2. Test method

a) The test shall be performed in a laboratory.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) The built-in self-test function shall be started manually. The items checked shall be noted in the test report.

d) If the Inland ECDIS provides an automatic self-test function, the manufacturer shall provide further information:

i) When does the automatic self-test start?

ii) How often does it run?

iii) Which event triggers the self-test?

iv) Where is the result of the self-test stored?

v) Which items are checked?

e) All this information shall be noted in the test report.

f) The log file of the automatic self-test shall be inspected.

g) The results obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

Inland ECDIS in navigation mode shall be provided with the means for carrying out on-board tests of major functions either automatically or manually. In case of a failure, the module at fault shall be shown.

Article 7.26
Malfunctions

1. Reference

This clause refers to Part I, Chapter 2, Article 2.08(2).

2. Test method

a) This test shall be conducted aboard a vessel under way.

b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.

c) The built-in test equipment shall be started.

d) The results obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

e) The GNSS receiver shall be set as the primary source for position information.

f) It shall be confirmed by observation if the Inland ECDIS processes this position information (moving chart).

g) The GNSS receiver shall be configured to stop providing positioning information. The time to alarm shall be measured. The information on the Inland ECDIS display shall be compared to the required test results in paragraph 3(a) to (f) in order to prove compliance with the requirement.

h) The GNSS receiver shall be configured providing positioning information again.

i) The radar shall be disconnected from the Inland ECDIS.

j) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

k) Radar shall be reconnected to the Inland ECDIS.

l) The rate of turn device shall be disconnected.

m) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

n) The rate of turn device shall be reconnected to the Inland ECDIS.

o) The THD shall be disconnected. The time to alarm shall be measured. The information on the Inland ECDIS display shall be compared to the required test results in paragraph 3(a) to (f) in order to prove compliance with the requirement.

p) The THD shall be reconnected to the Inland ECDIS.

q) The AIS device shall be disconnected.

r) The result obtained shall be compared to the required test results in paragraph 3(a) in order to prove compliance with the requirement.

s) The AIS device shall be reconnected to the Inland ECDIS.

t) All available non-essential sensors (e.g. wind sensor) shall be connected.

u) Each sensor shall be disconnected consecutively.

v) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

w) The requirement of paragraph 3(c) to (f) shall be checked in conjunction with Article 7.08 and Article 7.09 of this Part to prove compliance.

3. Required test result

a) Inland ECDIS shall send appropriate alarms of malfunction of the essential equipment. The following situations shall at least be covered:

i) any error in the Inland ECDIS (built-in test equipment — BITE);

ii) missing positioning signal;

iii) missing radar signal;

iv) missing rate of turn signal;

v) missing heading signal;

vi) radar map matching not possible;

vii) missing AIS signal.

b) Inland ECDIS shall send appropriate warnings of malfunction of a non-essential piece of equipment.

c) The navigation system shall check proper operation of the position and heading estimation in real-time. Problems shall be detected within 30 seconds. In case of malfunction, the navigation system shall inform the user about the problem and its consequences for navigation.

d) If a critical sensor alarm signals that the position or the heading does not meet the required accuracy criteria, the navigation chart shall be switched off.

e) The Inland ECDIS shall send an alarm if the input from the position-fixing system is lost.

f) The Inland ECDIS shall also repeat, but only as a warning, any alarm or other warning passed to it from a position fixing system.

Article 7.27
Insufficient accuracy of the SENC-positioning

1. Reference

This clause refers to Part I, Chapter 2, Article 2.09(1).

2. Test method

a) This requirement also covers the requirement as stated in Article 7.06(3)(g) of this Part.

b) This test cannot be performed in full because there is no second system available that reliably calculates the required position and heading accuracy.

c) As a minimum requirement, in case of a loss of position data or heading data, the SENC shall be switched off. This test is subject to Article 7.26 of this Part (see 7.26(3)(d)).

3. Required test result

a) The SENC shall be automatically switched off, if the SENC positioning does not match the radar picture within the limits set out in Part I, Chapter 2, Article 2.03(11)(b)(iii) and Article 2.03(13)(a)(i) of Part I.

b) If the quality and plausibility monitoring of the Inland ECDIS detect that the chart cannot be oriented and/or positioned with the specified accuracy, an alarm shall be presented on the display and the chart shall be switched off automatically. If there is no radar signal, the information mode shall be displayed, and an alarm shall be given according to Article 7.06(3)(g) of this Part.

Article 7.28
Defects

1. Reference

This clause refers to Part I, Chapter 2, Article 2.09(2).

2. Test method
   a) This test shall be conducted aboard a vessel under way.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(6) of this Part.
   c) Each of the following devices shall be disconnected:
      i) GNSS receiver
      ii) radar device
      iii) rate of turn device
      iv) heading device
      v) AIS device.
   d) The behaviour of Inland ECDIS shall be confirmed by observation and the result obtained shall be compared to the required test results in paragraph 3(a) and (b).
   e) The device shall be reconnected to the Inland ECDIS.
   f) The behaviour of Inland ECDIS shall be confirmed by observation and the result obtained shall be compared to the required test results in paragraph 3(a) and (b).

3. Required test result
   a) If Inland ECDIS has a defect, it shall send a suitable alarm at least for the following parameters:
      i) any error in the Inland ECDIS (built-in test equipment — BITE);
      ii) missing positioning signal;
      iii) missing radar signal;
      iv) missing rate of turn signal;
      v) missing heading signal;
      vi) radar image and map impossible to superimpose properly;
      vii) missing AIS signal.
   b) If there is no radar signal, the information mode shall be displayed (according to Article 7.06 of this Part).

Article 7.29
Endurance test

1. Reference

   This clause refers to Part I, Chapter 2, Article 2.10(1).

2. Test method
   a) The test shall be performed in a laboratory.
   b) The Inland ECDIS shall be set to the standard operation setup as defined in Article 4.02(5) of this Part.

c) The Inland ECDIS shall be run for at least 48 hours under normal operation conditions. Any interruption shall be noted in the test report and shall cause a restart of the test period. The performance and the resource consumption shall be monitored continually and recorded on a file. In particular, system stability, memory leaking and any kind of performance loss over time shall be monitored.

d) The result obtained shall be compared to the required test results in paragraph 3 in order to prove compliance with the requirement.

3. Required test result

The Inland ECDIS shall run for at least 48 hours of uninterrupted operation under normal operation conditions. The system shall provide standard interfaces for performance and resource monitoring during operation. Monitoring the system shall show no indication of system instability, memory leaking or any kind of performance loss over time. The Inland ECDIS that is supporting additional services shall provide the necessary test equipment.

Article 7.30
Documentation

1. Reference

This clause refers to Part I, Chapter 2, Article 2.10(2).

2. Test method

a) The test shall be performed in a laboratory.

b) The manufacturer shall provide the documents as required by Article 7.30(3)(a) of this Part.

c) Each document shall be checked against requirements of Part I and common rules (safety instructions etc.).

d) The result obtained shall be compared to the required test results in paragraph 3(b) in order to prove compliance with the requirement.

3. Required test result

a) The following documents shall be provided for admittance:

i) user’s manual

ii) installation manual

iii) service manual

iv) design specification.

b) The documents and files provided shall allow for a complete verification of compliance with the Inland ECDIS technical specifications.

CHAPTER 8
TEST DESCRIPTIONS

Article 8.01
Test charts and test scenarios

The following IENCs are necessary to complete the clauses of this Part.

No.	Ref.	Content	Note
00	5.05	Test IENC that comprises all symbols out of the Inland ECDIS symbol library and a selection of representative line and area features	WGS-84 coordinates of the centre of the IENC shall be provided with the chart
01	5.01 5.13 5.14 6.01 6.02	Test IENC that comprises the following objects: a) bank of waterway (at mean water level), b) construction (e.g. groin, longitudinal control dam, training wall – any facility that is considered a hazard to navigation), c) contours of locks and dams, d) boundaries of the fairway/navigation channel (if defined), e) isolated dangers in the fairway/navigation channel under water, f) isolated dangers in the fairway/navigation channel above water level, such as bridges, overhead cables etc., g) official Sign and Marking information (AtoN “aids-to-navigation”) aids-to-navigation (e.g. buoys, beacons, lights, notice marks), h) waterway axis with kilometres indication where it is defined, i) location of ports and transshipment sites, j) reference data for water level gauges relevant to navigation, k) links to the external xml-files with operation times of restricting structures, in particular locks and bridges.	WGS-84 coordinates of the centre of the IENC shall be provided with the chart
02	5.02 7.01	Test IENC that comprises at least two IENC cells.	WGS-84 coordinates shall be provided such that both IENC cells can be displayed simultaneously.
02-01	5.02	Incremental update test file referring to IENC cell of chart 02	
02-02	5.02	Incremental update test file not referring to any of the IENC cells of chart 02	

No.	Ref.	Content	Note
02-03	5.02	Incremental update with more than one incremental update test file, referring to all IENC cells of chart 02	
03	5.04	Test IENC that comprises depth information and water level model	WGS-84 coordinates of the centre of the IENC shall be provided with the chart
04	5.05	Test IENC that comprises all symbols out of the Inland ECDIS symbol library, a selection of representative line and area features and all additional symbols provided by the manufacturer.	Shall be provided by manufacturer; WGS-84 coordinates of the centre of the IENC shall be provided with the chart
05	5.06	A test IENC that comprises a bridge across a waterway	WGS-84 coordinates of the centre of the IENC shall be provided with the chart
06a 06b	5.07	Two adjacent test IENCs that both comprise parts of the same feature (e.g. a bridge, that is included half in one cell and half in the other IENC cell). That feature shall be correctly encoded. Both parts shall have references to each other.	WGS-84 coordinates of the centre of the IENC shall be provided with the chart
07	5.08 5.09 5.14 5.20	A test IENC with “open water” and no land mass and other features.	WGS-84 coordinates of the centre of the IENC shall be provided with the chart
08	5.12	A test IENC that comprises at least ten different features from different feature classes.	WGS-84 coordinates of the centre of the IENC shall be provided with the chart

The following real life scenarios are necessary to complete the clauses of this Part.

No	Ref.	Content	Note
01	5.10 5.11 5.15 5.17 5.18 5.19 5.21	A recorded test data file comprising an IENC with overlaid radar and ROT information	Shall be provided by manufacturer

Article 8.02
AIS protocol simulator

1. An appropriate PC-software shall be used to simulate AIS - VDM (AIS VHF data-link message) and VDO (AIS VHF data-link own-vessel report) messages according to the document referred to in Chapter 2(h). This AIS protocol simulator shall also support Inland AIS messages. It shall be possible to configure the location of the vessel (coordinate) as well as to define a track (several coordinate-pairs). The reporting rate shall be configurable from 3 seconds up to 10 minutes. It shall be possible to create messages from Inland AIS, AIS class A, AIS class B, AIS base station, AIS SAR and AIS SAR devices. It shall be possible to create a “loss of VHF antenna” message and it shall be possible to configure the following parameters:
   a) AIS device identity (Maritime Mobile Service Identity, MMSI);
   b) vessel name;
   c) VHF radio call sign of the vessel;
   d) vessel or convoy type;
   e) unique European vessel Identification Number (ENI) or, for seagoing vessels that have not been given an ENI number, the IMO number;
   f) length overall of the vessel or convoy accurate to 0.1 m;
   g) breadth overall of the vessel or convoy accurate to 0.1 m;
   h) reference point for the positional information aboard the vessel, accurate to 1 m (this is the position of the GPS antenna of the Inland AIS device);
   i) position of the vessel (derived from GPS in WGS 84 coordinate system);
   j) time indication of position determination by the electronic position location device;
   k) speed over ground;
   l) course over ground;
   m) navigational status;
   n) cones;
   o) blue sign.

2. It shall be possible to configure the position accuracy flag (“PA flag”).

Article 8.03
GNSS protocol simulator

1. An appropriate PC-software shall be used to simulate GNSS data sentences according to the standard referred to in Chapter 2(d).

2. It shall be possible to create, at least, the following data sentences:
   a) Time, position, and fix related data (GGA – "$--GGA") ;
   b) GNSS satellite fault detection (GBS – "$--GBS") ;
   c) GPS DOP and active satellites (GSA – "$--GSA").

3. Any of the fields of these data sentences shall be configurable.

4. It shall be possible to configure the location of the vessel (coordinates) as well as to define a track (several coordinate-pairs).

5. The reporting rate shall be configurable from 1 second up to 60 seconds.

Article 8.04
Heading protocol simulator

1. An appropriate PC-software shall be used to simulate heading data sentences according to the standard referred to in Chapter 2(d).

2. It shall be possible to create, at least, the following data sentences:

   Heading from True North (HDT - $--HDT).

3. Any of the fields of this data sentence shall be configurable.

4. It shall be possible to configure the current heading value of the vessel as well as to define consecutive heading values to simulate a turning manoeuvre.

5. The reporting rate shall be configurable from 1 second up to 60 seconds.

Article 8.05
Additional sensor protocol simulator

1. An appropriate PC-software shall be used to simulate additional sensor data sentences according to the standard referred to in Chapter 2(d).

2. Any of the fields of this data sentence shall be configurable.

3. This sensor protocol simulator shall be provided by the manufacturer.

Article 8.06
AIS protocol manipulator

1. An appropriate PC-software shall be used to manipulate AIS VDM and VDO data sentences in real time and according to the standards referred to in Chapter 2(d) and (h).

2. It shall be possible to set any of the fields of these data sentences to a configurable value in real time.

3. It shall be possible to add a position offset (e.g. 5 metres) to the real position in real time.

4. It shall be possible to alter the field “PA flag” to any permitted value in real time.

Article 8.07
GNSS protocol manipulator

1. An appropriate PC-software shall be used to manipulate data sentences in real time and according to the standard referred to in Chapter 2(d).

2. It shall be possible to manipulate at least the following data sentences:
   a) Time, position, and fix related data (GGA – “$--GGA“) ;
   b) GNSS satellite fault detection (GBS – “$--GBS“) ;
   c) GPS DOP and active satellites (GSA – “$--GSA“).

3. It shall be possible to set any of the fields of these data sentences to a configurable value in real time.

4. It shall be possible to add a position offset (e.g. 5 metres) to the real position in real time.

5. It shall be possible to add a simulated sentence to the output although the sentence has not been received from GNSS receiver.

Article 8.08
Heading protocol manipulator

1. An appropriate PC-software shall be used to manipulate data sentences in real time and according to the standard referred to in Chapter 2(d).

2. It shall be possible to manipulate at least the following data sentence:

   Heading from True North (HDT - $--HDT).

3. It shall be possible to set any of the fields of these data sentences to a configurable value in real time.

4. It shall be possible to add a heading offset (e.g. 0,5°) to the real heading in real time.

CHAPTER 9
RELATIONSHIP BETWEEN REQUIREMENTS AND CLAUSES

Table V-1 shows the relationship between the requirements of Part I to the corresponding clause of this Part.

Table V-1
Relationship between requirements and clauses

Legend: L = Laboratory, V = Vessel

Requirement of Part I, Chapter 2	Clause of this Part		Mode	Location of the test
Article 2.01(1)	5.01	Content of IENC	all	L
Article 2.02(1)	5.02	Updates	all	L
	7.01	Updates	navigation	L
Article 2.03(1)	7.02	Image positioning and orientation	navigation	V
Article 2.03(2)	5.03	Screen orientation, chart orientation, positioning and shifting	all	L
	7.03	Screen orientation, chart orientation, positioning and shifting	navigation	V
Article 2.03(3)	7.04	Position and heading of the own vessel	navigation	V
Article 2.03(4)	5.04	Display of SENC information	all	L
	7.05	Display of SENC information	navigation	V
Article 2.03(5)	5.05	Colours and symbols	all	L
Article 2.03(6)	5.06	Scale dependent information density (SCAMIN)	all	L
Article 2.03(7)	5.07	Features displayed in several cells with the same use for the same area	all	L
Article 2.03(8)	7.06	Display of radar information	navigation	V
Article 2.03(9)	5.08	Display of tracking and tracing information	all	L
Article 2.03(11)	7.07	Data and display accuracy	navigation	L
Article 2.03(12)	7.08	Position accuracy	navigation	L
Article 2.03(13)	7.09	Heading accuracy	navigation	L

Requirement of Part I, Chapter 2	Clause of this Part		Mode	Location of the test
Article 2.04(1)	5.09	Operation	all	L
	6.01	Operation	information	L
	7.10	Operation	navigation	V
Article 2.04(2)	5.10	Ergonomics of control elements Ergonomics of control elements	all	L
	7.11	Ergonomics of control elements	navigation	L
Article 2.04(3)	5.11	Characteristics of control elements	all	L
Article 2.04(4)	5.12	Pick report	all	L
Article 2.04(5)	5.13	Measuring features	all	L
Article 2.04(6)	5.14	Input and editing of boatmasters' own chart entries	all	L
	7.12	Input and editing of boatmasters' own chart entries	navigation	L
Article 2.04(7)	7.13	Scales, Ranges/Range rings	navigation	V
Article 2.04(8)	7.14	Inland ECDIS pre-sets (store/recall) in navigation mode	navigation	L
Article 2.04(9)	5.15	Control elements	all	L
	7.15	Control elements	navigation	V
Article 2.05(1)	5.16	Service functions	all	L
	7.16	Service functions	navigation	L
Article 2.06(1)	7.17	Hardware requirement	navigation	L
Article 2.06(2)	5.17	Display	all	L
	7.18	Display	navigation	-
Article 2.06(3)	6.02	Screen dimensions	information	L
	7.19	Screen dimensions	navigation	L
Article 2.06(4)	6.03	Screen resolution	information	-
	7.20	Screen resolution	navigation	L
Article 2.06(5)	5.18	Display colours	all	L
Article 2.06(6)	5.19	Display and screen brightness	all	L
	7.21	Display and screen brightness	navigation	L

Requirement of Part I, Chapter 2	Clause of this Part		Mode	Location of the test
Article 2.06(7)	7.22	Picture refresh rate	navigation	V
		Picture refresh rate	navigation	L
Article 2.07(1)	5.20	Connection of other equipment	all	L
	7.23	Connection of other equipment	navigation	L
Article 2.07(2)	5.21	Configuration of interfaces	all	L
Article 2.07(3)	7.24	Accuracy of rate of turn indicators	navigation	V
Article 2.08(1)	7.25	Built-in Test Equipment (BITE)	navigation	L
Article 2.08(2)	6.04	Malfunctions	information	L
	7.26	Malfunctions	navigation	V
Article 2.09(1)	7.27	Insufficient accuracy of the SENC-positioning	navigation	V
Article 2.09(2)	7.28	Defects	navigation	V
Article 2.10(1)	7.29	Endurance test	navigation	L
Article 2.10(2)	5.22	Documentation	all	L
	6.05	Documentation	information	L
	7.30	Documentation	navigation	L
Article 2.10(3)	5.23	Interfaces	all	L
	6.06	Interfaces	information	L

PART VI
INLAND AIS SHIPBORNE EQUIPMENT OPERATIONAL AND PERFORMANCE REQUIREMENTS, METHODS OF TEST AND REQUIRED TEST RESULTS (TEST PART OF INLAND AIS)

CHAPTER 1
SCOPE

This Part specifies the minimum operational and performance requirements, methods of testing and required test results for Inland AIS shipborne stations.

This edition incorporates the technical characteristics of Class A shipborne equipment included in ITU-R M.1371-5 and further described by Standard IEC 61993-2 “Class A shipborne equipment of the universal automatic identification system (AIS) – Operational and performance requirements, methods of test and required test results” as applicable.

CHAPTER 2
NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

a)	European Committee for drawing up Standards in the field of Inland Navigation (CESNI)	Edition 2021	European Standard laying down Technical Requirements for Inland Navigation vessels (ES-TRIN)
b)	European Committee for drawing up Standards in the field of Inland Navigation (CESNI)	Edition 2021	European Standard for River Information Services (ES-RIS, Part II)
c)	Recommendation	ITU-R M.1371-5	Technical characteristics for an automatic identification system using time division multiple access in the VHF maritime mobile band.
d)	International Standard	IEC 61993-2 :2018	Maritime navigation and radiocommunication equipment and systems - Part 2: Class A shipborne equipment of the universal automatic identification system (AIS) - Operational and performance requirements, methods of test and required test results.
e)	RTCM	SC-104	Interface to receive and process differential correction data

CHAPTER 3
ABBREVIATIONS

AI	Application Identifier
AIS	Automatic Identification System
BIIT	Built-in integrity tests
CESNI	European Committee for drawing up Standards in the field of Inland Navigation
COG	Course Over Ground
DAC	Designated Area Code
DGNSS	Differential GNSS
DSC	Digital Selective Calling
ECDIS	Electronic Chart Display and Information System
ENI	Unique European vessel identification number
EPFS	Electronic position fixing systems
ES-TRIN	European Standard laying down Technical Requirements for Inland Navigation vessels
ETA	Estimated Time of Arrival
EUT	Equipment under test
FI	Functional Identifier
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
ID	Identifier
IEC	International Electrotechnical Commission
IFM	International function message (DAC 001)
IMO	International Maritime Organization
ITU	International Telecommunication Union
LR	Long Range
MHz	Megahertz (Megacycles per second)
MKD	Minimum Keyboard and Display
MMSI	Maritime Mobile Service Identifier
PI	Presentation interface
RAI	Regional Application Identifier
RAIM	Receiver Autonomous Integrity Monitoring
RF	Radio frequency
RFM	Inland specific regional function message (DAC 200)

RIS	River Information Services
ROT	Rate of turn
RTA	Requested Time of Arrival
Rx	Receive
SAR	Search And Rescue
SOG	Speed Over Ground
SOLAS	Safety Of Life At Sea
TDMA	Time Division Multiple Access
Tx	Transmit
UNECE	United Nations Economic Commission for Europe
UTC	Universal Time Coordinated
VDL	VHF Data Link
VHF	Very High Frequency

CHAPTER 4
GENERAL REQUIREMENTS

Inland AIS Shipborne Equipment is based on the specification of AIS Class A shipborne equipment in accordance with ITU-R M.1371-5 and International Standard IEC 61993-2 unless otherwise stated.

Article 4.01
Class A functions not required

Inland AIS Shipborne Equipment has to fulfil all requirements of AIS Class A shipborne equipment as defined in IEC 61993-2 except:

1. Long range application by interface to other equipment,

2. Interface for long range port.

Article 4.02
Functions in addition to Class A

Additionally the following functions are required:

1. Initiate and transmit inland specific messages as specified in Table VI-2;

2. Process and display received inland specific messages as specified in Table VI-3;

3. Act upon group assignment for station type “inland waterways;

4. Interface to receive and process differential correction data (RTCM SC-104);

5. Interface for Blue Sign function (switch and use of data field in VSD sentence);

6. Suppress the transmission of certain ABM/BBM sentences from PI port as specified in Table VI-2;

7. Inland specific message RFM 10 shall be transmitted with a reporting interval of 6 minutes, alternating between both channels, following message 5;

8. All speed information shall be displayed in km/h on MKD and all range information shall be displayed in km.

Article 4.03
Manuals

The manuals shall also cover the methods necessary to support the Inland AIS specific function.

CHAPTER 5
ENVIRONMENTAL, POWER SUPPLY, SPECIAL PURPOSE AND SAFETY REQUIREMENTS

The same requirements as for AIS Class A mobile station shall be fulfilled.

CHAPTER 6
PERFORMANCE REQUIREMENTS

Article 6.01
Composition

An interface (RTCM SC-104) shall be provided to input the correction data to the internal GNSS receiver.

The Inland AIS station shall be able to process Group Assignment Commands (AIS message 23) for station type “inland waterways” and act accordingly.

The Inland AIS station shall be able to process the Blue Sign information and set the special manoeuvre indicator in AIS VDL Message 1, 2, 3 accordingly.

The Inland AIS station shall be able to process Inland specific Regional Function messages (RFM) with the Designated Area Code (DAC) “200”[1]

1. Blue Sign input

   The Blue Sign information shall be input in two ways:

   a) Blue Sign input via the IEC 61162-1 VSD sentence

      The VSD field “regional application flags” defines 4 bit (values 0...15). The two most significant bits of the regional application flags set the “Special manoeuvre indicator” parameter. The remaining two bits of the VSD sentence shall be ignored.

      The following Table describes the translation from the VSD field “regional application flags” to the VDL Message 1, 2, 3 “Special manoeuvre indicator” parameter.

Table VI-1
Translation from VSD sentence to VDL message

VSD sentence regional application flag	VDL Message 1,2,3 Special manoeuvre indicator	Blue Sign description
0 (00xx)	0 (00)	Not available (default)
4 (01xx)	1 (01)	Not set
8 (10xx)	2 (10)	Set
12 (11xx)	0 (00)	Invalid input, results in not available

[1] Unless otherwise stated “RFM” in this document refers to Inland specific Regional Function Messages (RFM) as defined in ITU-R M.1371-5 with an Application identifier (AI) consisting of DAC = 200 and the defined Function Identifier (FI) (e.g.: RFM 10 = DAC “200” + FI “10”).

The special manoeuvre indicator (Blue Sign) parameter shall only be set if the VSD sentence is received with a valid regional application flag value and an interval of at least two seconds. After a time out of two seconds the special manoeuvre indicator shall be set to not available.

b) Blue Sign status via a dedicated input port

The input for the Blue Sign status shall provide preferably a tri-state or alternatively a two-state input which can be controlled by a single switch where the switch circuit open means “Blue Sign not set” and the switch circuit closed means “Blue Sign set”.

The presence of the direct connected switch shall be made available by automatic means or manual configuration.

2. Internal GNSS receiver

The Inland AIS station shall provide an internal GNSS receiver as UTC source, for own positioning, COG and SOG. The internal GNSS receiver shall meet the appropriate requirements of the International Standards series IEC 61108 as defined in IEC 61993-2. The internal GNSS receiver shall be capable of processing differential correction data from a dedicated RTCM SC-104 interface and via VDL Message 17.

Article 6.02
Information

Information provided by the Inland AIS shall be as defined in Vessel Tracking and Tracing Standard for Inland Navigation as stated in Chapter 2 “Normative reference”. (ES-TRIN, Article 1.01(7.9).

The static, dynamic and voyage related ship information for inland vessels shall have the same parameters and the same structure than in ITU-R M.1371-5 as far as it is applicable. Not used parameter fields shall be set to “not available”. Inland specific static ship information shall be added.

Article 6.03
Information processing

1. Inland AIS Data input

The Figure 10-1 in Annex 10 illustrates the parameters and the usage to calculate the dimensions for both message 5 and RFM 10.

a) All dimensions/reference input values of own ship shall be input in decimeter resolution.

b) The total convoy length LC and convoy beam BC are calculated in dm and shall be transmitted by RFM 10.

c) Draught: input always in cm, automatic conversion to next higher value (rounding up) for message 5.

d) The ship and cargo type of message 5 shall be automatically converted from Inland-ship type (Inland vessel and convoy types; see Annex 6).

e) IMO ship and cargo type can be overwritten according to the Class A rules.

f) The number of blue cones can be entered independently of IMO ship and cargo type.

g) For backwards compatibility the PI sentences IWWIVD and IWWSSD shall be maintained for dimensions/reference input for inland navigation mode.

2. Inland AIS Data storage and message compilation

For data input of the required information for transmission either means for manual input or the proposed digital interface sentences for Inland AIS ($--SSD, $--VSD, $PIWWSSD and $PIWWIVD) shall be used. This requires means for input and storage of the inland specific data. Only inputs that change the stored data (manual input or $--SSD, $--VSD, $PIWWSSD, $--EPV, $PIWWIVD) shall generate a transmission where applicable.

The following tables define the behaviour of the Inland AIS mobile station regarding inland specific functional messages.

a) Initiation of an inland specific functional message

The following table defines the initiator of international function messages (IFM) and inland specific functional messages (RFM) to be transmitted by the Inland AIS mobile station.

(ABM/BBM = via standard Presentation Interface, MKD = via Minimum Keyboard and Display, Inland ECDIS = via connected Inland ECDIS (recommendation only). On VDL request = autonomous reaction when an IFM 2 or 3 interrogation is received).

Table VI-2
Transmission of inland specific functional messages

Message	Description	Addr/ Bc	TX INITIATED BY			
			ABM/ BBM	MKD	Auto-matically gene-rated	On VDL request
RFM 10	Inland static data [1)]	Bc	No	---	x	Opt [1) 2)]
RFM 55	Inland number of persons [2)]	Addr	x	Opt	No	x
RFM 55	Inland number of persons	Bc	x	x	No	No
IFM 4 a)	Capability response [2)]	Addr	x	---	No	x
´X´ = required; ´Opt´ = Optional; ´No´ = Not allowed; ´---´ = Not applicable						

1) Autonomously provided in conjunction with AIS VDL message 5 by the Inland AIS mobile station.

2) Message is provided only if interrogation is addressed to own station.

b) Processing of received inland specific functional messages

The following table defines the behaviour (internal processing and reaction) of the Inland AIS mobile station, when an international function message (IFM) or an inland specific functional message (RFM) is received.

(VDM = output via Presentation Interface, MKD = displayed on Minimum Keyboard and Display, Inland ECDIS = displayed on connected Inland ECDIS (recommendation only), VDL response = autonomous reaction on a received VDL message).

Table VI-3
Reception of inland specific functional messages

Message	Description	Addr/Bc	Processing		
			VDM	MKD	VDL Response
RFM 10	Inland static data	Bc	x	X	---
RFM 55	Inland number of persons [1]	Addr	x	X [2]	---
RFM 55	Inland number of persons	Bc	x	X [2]	---
IFM 2	Interrogation [3] [1]	Addr	x	---	x
IFM 3	Capability interrogation [3] [1]	Addr	x	---	x
IFM 16	Number of persons [1]	Addr	x	X	---
IFM 16	Number of persons	Bc	x	X	---
´X´ = required; ´Opt´ = Optional; ´No´ = Not allowed; ´---´ = Not applicable					

[1] Messages are processed only if addressed to own station.

[2] Only the display of total number of persons on board is required.

[3] Messages are provided only if interrogation is addressed to own station.

c) Inland specific RFM 10 (Inland ship static and voyage related data) and Inland specific RFM 55 (Persons on board)

The compilation of the RFM 10 and RFM 55 for transmission is part of the Inland AIS station itself:

i) The RFM 10 shall be used by Inland AIS only, to broadcast ship static and voyage related data in addition to message 5. The message shall be sent not later than 4 seconds after message 5 by using a message 8 / RFM 10;

ii) Message 5 and RFM 10 shall be transmitted with a reporting interval of 6 minutes, alternating between both channels;

iii) The Inland AIS station must be able to respond to an interrogation for VDL message 5 (received message 15) automatically with message 5 and message 8 / RFM 10;

iv) The Inland AIS station must be able to initiate a message 8 / RFM 55 by MKD and to respond on a request for “Inland number of persons on board” automatically with the message 6 / RFM 55.

d) Inland specific RFM's other than RFM 10 or RFM 55

The following option is available for the compilation of inland specific messages other than RFM 10 or 55.

The compilation of inland specific message shall be provided by an external application outside the Inland AIS shipborne station and is input via the Presentation Interface using IEC 61162-1 ABM or BBM sentences as applicable. External applications could be:

i) a connected Inland ECDIS equipment or Radar equipment,

ii) a connected dedicated software application (without Inland ECDIS capability).

3. Alarms and status information

Means shall be provided to selectively disable alarms during installation which are not applicable for that specific installation, i.e. external EPFS lost (25), heading lost/invalid (32), no valid ROT information (35). This feature has to be password protected.

Article 6.04
Minimum Keyboard and Display (MKD)

1. Display of received Messages

In addition to AIS Class A following information shall be displayed on a MKD:

a) Inland AIS static data

Where information is delivered both by message 5 and RFM 10 the Inland AIS specific date shall preferably be displayed (dimension, draught, ship type, dangerous cargo category).

b) Number of persons on board

RFM 55 shall have preference above IFM 16

c) Blue sign information

d) Speed information shall be displayed in km/h

e) Range information shall be displayed in km.

Table VI-4
Following information in RFM 10 shall be displayed:

Parameter	Displayed on MKD
ENI	Yes
Length of ship or convoy	Yes
Beam of ship or convoy	Yes
Inland vessel and convoy type	Yes
Number of blue cones	Yes
Draught	Yes
Loaded/unloaded	Yes
Quality of speed information	Optional
Quality of course information	Optional
Quality of heading information	Optional

2. Input of Data

In addition to AIS Class A following data shall be entered via MKD:

a) Inland AIS static data

Where information is contained in both message 5 and RFM 10 the Inland AIS specific date shall input only once to avoid conflicts, i.e. dimension/reference, draught, ship type, dangerous cargo category.

b) Number of persons on board

RFM 55 shall have preference above IFM 16.

Table VI-5
Following information in RFM 10 and RFM 55 shall be input via MKD:

Parameter	Category	Remark
ENI	Static	1)
Length of ship (LS)	Static	1) Shall also be used for the calculation of message 5 and RFM 10
Distance from reference point to stern (BI) (for internal and external position source)	Static	1) Shall also be used for the calculation of message 5 and RFM 10
Beam of ship (BS)	Static	1) Shall also be used for the calculation of message 5 and RFM 10
Distance from reference point to port (CI) (for internal and external position source)	Static	1) Shall also be used for the calculation of message 5 and RFM 10
Extension for length of convoy (EA, EB)	Voyage related	2) Shall also be used for the calculation of message 5 and RFM 10
Extension for beam of convoy (EC, ED)	Voyage related	2) Shall also be used for the calculation of message 5 and RFM 10

Parameter	Category	Remark
Inland vessel and convoy type	Voyage related	2)
Number of blue cones	Voyage related	2)
Draught	Voyage related	2)
Loaded/unloaded	Voyage related	2)
Persons on board (crew members, passengers and shipboard personnel)	Voyage related	2)
Quality of speed information	Static	On installation, shall be set to 0 if not derived from a type approved sensor
Quality of course information	Static	On installation, shall be set to 0 if not derived from a type approved sensor
Quality of heading information	static	On installation, shall be set to 0 if not derived from a type approved sensor

1) On installation, data shall be protected by the administrator password.
2) Voyage related, data shall not be protected by the administrator password.

3. Initiation of transmission of RFM 55 via MKD

Means on the MKD shall be provided to initiate the transmission of broadcast RFM 55.

CHAPTER 7
TECHNICAL REQUIREMENTS

Article 7.01
Response to Assignment Commands

An Inland AIS station shall process assignment commands in accordance with ITU-R M.1371-5 and ES-RIS, Part II. The Inland AIS mobile station shall act upon group assignment for station type “inland waterway” and not for station type “Class A mobile station”.

An assignment command, with a reporting interval less than the autonomous reporting interval, received via the digital interface sentence for Inland AIS $PIWWIVD shall decrease the reporting interval defined by ITU-R M.1371-5. An assignment command shall not increase the reporting interval above the autonomous reporting interval.

Article 7.02
Presentation interface

1. Required ports

   The Presentation Interface of the Inland AIS shall comprise the data ports listed in Table VI-6 (also see Annex 8).

Table VI-6
Presentation Interface Access

General Function	Mechanism
Automatic Input of Sensor Data (Sensor data input from shipboard equipment)	(3) IEC 61162-2 input ports, also configurable as IEC 61162-1 input ports
High Speed Input / Output Ports (Operator controlled commands and data input; AIS VHF Data Link (VDL) data; and AIS equipment status)	(2) IEC 61162-2 paired input and output ports
BITT Alarm Output	(1) Isolated normally-closed (NC) contact circuit

   Note: Pilot port is not required

2. Input data and formats

   The Inland AIS shall as a minimum be able to receive and process the input data shown in Table VI-7. The details of these sentences are contained in International Standard IEC 61162-1. Manufacturer's proprietary data may also be entered using these high-speed ports.

Table VI-7
AIS High-speed input data and formats

Data	IEC 61162-1 Sentences
Normal Access - Parameter Entry	
Voyage information: Vessel type and cargo category Navigational status Draught, max. actual static Destination ETA date and time Regional application flags Reporting rate settings Number of blue cones air draught of ship Number of assisting tugboat Number of crew members on board Number of passengers on board Number of shipboard personnel on board Convoy extensions	VSD - Voyage static data EPV – Equipment property value PIWWIVD – Inland Waterway voyage data
Station information: Vessel name (administrator password protected) Call sign (administrator password protected) Antenna location length and beam ENI number (administrator password protected) Inland vessel and convoy type Quality of speed information Quality of course information Quality of heading information	SSD - Station static data PIWWSSD – Inland Waterway static ship data
Initiate VHF Data-link Broadcasts	
Safety messages	ABM - Addressed Binary Message BBM - Broadcast Binary Message
Binary messages	ABM - Addressed Binary Message BBM - Broadcast Binary Message
Interrogation Message	AIR - AIS Interrogation Information
AIS Equipment - Parameter Entry	
AIS VHF channel selection AIS VHF power setting AIS VHF channel bandwidth Transmit/Receive mode control	ACA - AIS Channel Assignment Message
MMSI	EPV-Equipment property value (administrator password protected)
IMO number	EPV-Equipment property value (administrator password protected)
Other AIS equipment controls	EPV-Equipment property value (administrator password protected)
BIIT Input	
Alarm / indication acknowledgement	ACK Acknowledgement message

Note: Information which is not marked with “administrator password protected” shall be accepted if no administrator password is provided even if there is protected information in the same sentence. In this case the protected information is ignored.

3. Output data and formats

In addition to the AIS Class A station, an Inland AIS station outputs PIWWSSD and PIWWIVD sentences on the two high speed ports as response on a query.

Query sentences is used as defined in IEC 61162-1 with sentence formatters SSD and IVD. On query for SSD the unit will respond with both an SSD sentence and a PIWWSSD sentence.

CHAPTER 8
OPERATIONAL TESTS

Article 8.01
Operating modes/capability

1. Interrogation response

   a) Method of measurement

   Set up standard test environment and operate EUT in autonomous mode. Apply an interrogation message (message 15; EUT as destination) to the VDL for responses with message 3, message 5 and slot offset set to defined value. Record transmitted messages and frame structure.

   b) Required results

   Check that the EUT transmits the appropriate interrogation response message as requested after defined slot offset. Confirm that the EUT transmits the response on the same channel as where interrogation was received. Confirm that the EUT transmits message 5 and “Inland ship static and voyage related data” RFM 10 using binary broadcast message (message 8) to the VDL. Confirm that the “Inland ship static and voyage related data” RFM 10 follows message 5 within 4 seconds. Confirm that ITDMA is used if possible.

Article 8.02
Reporting intervals

1. Static data reporting rates

   a) Method of measurement

   Set up standard test environment and operate EUT in autonomous mode.

   i) Record the transmitted messages and check for static and voyage related data (message 5 and RFM 10).

   ii) Change static and/or voyage related station data. Record the transmitted messages and check for static and voyage related data (message 5).

   b) Required results

   i) Confirm that the EUT transmits message 5 with a reporting interval of 6 minutes and the inland specific RFM 10 not later than 4 seconds after message 5 on the same channel using ITDMA if possible. The ITDMA access scheme shall replace a scheduled position report message 1 with a message 3.

   ii) Confirm that the EUT transmits message 5 and RFM 10 within 1 minute reverting to a reporting interval of 6 minutes.

Article 8.03
Alarms and indicators, fall-back arrangements

1. Method of measurement

Disable the alarms according to Part III, Article 6.03(3).

2. Required results

Confirm that the alarms can be disabled. Confirm that the disabling of alarms is administration password protected.

Article 8.04
Input of Data on MKD

1. Method of measurement

Input all static and voyage related data according to 0 Table VI-5.

2. Required results

Confirm that all data according to 0 Table VI-5 can be input with the appropriate accuracy.

Confirm that the input of data is protected by password according to 0 Table VI-5.

Confirm that the ship and cargo type of message 5 is automatically converted from Inland ship type (Inland vessel and convoy types; see Annex 6) when the Inland vessel and convoy types is input.

Confirm that the IMO ship and cargo type can be overwritten according to the Class A rules.

Article 8.05
Display of Data on MKD

1. Method of measurement

Apply a message 1, 9, 18, 19 to the VDL.

2. Required results

Confirm that the speed is displayed in km/h and the range is displayed in km.

CHAPTER 9
SPECIFIC TESTS OF LINK LAYER

Article 9.01
Group assignment

1. Assignment by $PIWWIVD

Group assignment commands have precedence of assignments by input via $PIWWIVD.

a) Method of measurement

Address the EUT with an AIS message 23 to bring the EUT in assigned mode. Record VDL and verify the reaction of the EUT. Apply an assignment by $PIWWIVD input with a different reporting interval.

b) Required results

Verify that the EUT ignores the assignment by input via $PIWWIVD.

2. Assignment by message 16

Messages which are addressed directly to an AIS Transponder have precedence of group assignment commands and manual assignments. Following test shall verify the assignment priority of these messages.

a) Method of measurement

Set up the standard test environment and operate EUT in autonomous mode. Input sensor data to achieve a reporting interval of 10 seconds.

i) Address the EUT with an AIS message 16 to bring the EUT in assigned mode with a reporting interval of 5 seconds. Record VDL and verify the reaction of the EUT.

ii) Apply a message 23 with a reporting interval of 2 seconds. Construct message 23 in that way that the EUT will be addressed by the message.

iii) Apply a $PIWWIVD assignment input with a reporting interval of 2 seconds.

b) Required results

i) Verify that the reporting interval is 5 seconds.

ii) Verify that the EUT ignores the command given by message 23.

iii) Verify that the EUT ignores the assignment command given by $PIWWIVD.

3. Increased reporting interval assignment

a) Increased reporting interval assignment by $PIWWIVD

i) Method of measurement

Set up the standard test environment and operate EUT in autonomous mode.

- Apply a $PIWWIVD assignment to the EUT with a reporting interval greater than the autonomous reporting interval.
- Apply a $PIWWIVD assignment to the EUT with a reporting interval shorter than the autonomous reporting interval.

Record transmitted messages.

ii) Required results

- Confirm that the EUT transmits position reports with the autonomous reporting interval in $PIWWIVD.
- Verify that EUT switches to assigned mode and transmits position reports with 2 seconds reporting interval. Verify that EUT reverts to autonomous mode after timeout period.

4. Addressing by station type

a) Method of measurement

Set up standard test environment and operate EUT in autonomous mode with a reporting interval of 10 seconds.

i) Transmit a Group Assignment command (message 23) to the EUT (define geographic region so that the EUT is inside this region). Set the reporting interval to 2 seconds and the station type to 0 (all stations).

ii) Transmit a Group Assignment command (message 23) to the EUT (define geographic region so that the EUT is inside this region). Set the reporting interval to 2 seconds and the station type to 1 (Class A), 2 (Class B), 3 (SAR aircraft), 4 (Class B SO), 5 (Class B CS).

iii) Transmit a Group Assignment command (message 23) to the EUT (define geographic region so that the EUT is inside this region). Set the reporting interval to 5 seconds and the station type to 6 (Inland Waterway). Apply this message to the VDL again within 4 minutes. Record VDL and check reaction of the EUT.

b) Required result

i) Verify that EUT switches to assigned mode and transmits position reports with 2 seconds reporting interval. Verify that EUT reverts to autonomous mode after timeout period.

ii) Verify that EUT declines message 23.

iii) Verify that EUT switches to assigned mode and transmits position reports with 5 seconds reporting interval. Verify that EUT reverts to autonomous operation mode after timeout period of second transmitted group assignment.

Article 9.02
Inland AIS message formats

1. Received Inland specific messages

a) Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

i) Apply following Inland specific messages using binary message (message 8) to the VDL:

- Inland ship static and voyage related data Inland specific RFM 10 (DAC 200 / FI 10);
- Inland number of persons onboard Inland specific RFM 55 (DAC 200 / FI 55);
- Number of persons on board International Function message 16 (DAC 001 / FI 16).

ii) Apply following addressed Inland specific messages using binary message (message 6; EUT as destination) to the VDL.

- Inland number of persons onboard Inland specific RFM 55 (DAC 200 / FI 55);
- Number of persons on board International Function message 16 (DAC 001 / FI 16).

iii) Apply an addressed Inland specific message using addressed binary message (message 6; other station as destination) to the VDL.

iv) Apply position report (message 1, 2 or 3) with parameter “Blue Sign set” and static and voyage related data (message 5) to the VDL.

Record transmitted messages and frame structure.

b) Required results

i) Confirm that EUT outputs the received message via the presentation interface properly. If implemented confirm that EUT displays received Inland specific message accordingly. Confirm that the content of RFM 10 is displayed according to Table VI-4.

ii) Confirm that EUT outputs the received message via the presentation interface properly. Check that EUT transmits the appropriate acknowledgement message for addressed messages. If implemented confirm that EUT displays received Inland specific message accordingly.

iii) Confirm that the EUT does not output the message 6 (addressed to other station) on the presentation interface. If implemented confirm that EUT does not display the received Inland specific message addressed to other station as destination.

iv) Confirm that EUT outputs the received message via the presentation interface properly. If implemented confirm that EUT displays the information “Blue Sign set” only when Inland ship static and voyage related data RFM 10 (using message 8) has been received before.

2. Transmitted inland specific messages

Set up standard test environment and operate EUT in autonomous mode. Apply all static, dynamic and voyage related data to the EUT (over MKD, $--SSD, $--VSD, $PIWWIVD and $PIWWSSD). Record all messages on VDL and check the contents of the relevant messages. For all sub-points make sure that values transmitted to the EUT by MKD or PI sentences are stored in the EUT even after disconnecting the power supply. Examine VDL messages of EUT and figure out if defined values are used.

a) Position report message 1, 2 or 3

Blue Sign information may be derived by a direct connected switch or by the regional bits of the periodically received PI sentence ($--VSD). The presence of the direct connected switch shall be made available by automatic means or manual configuration. Ensure that Blue Sign information derived from direct connected switch has precedence of transferred IEC 61162-1 commands (regional bits of $--VSD sentence).

i) Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

- Apply a valid VSD sentence with the regional application flag set to:
  - “Blue Sign not set” (0100bin),
  - “Blue Sign is set” (1000bin),
  - “Blue Sign information is not available” (0000bin).
- Set the input data for Blue Sign information in VSD to invalid (e.g. wrong checksum).
- Apply a valid VSD sentence with the regional application flag set to 2. Disconnect VSD input for Blue Sign information.
- Connect Blue Sign switch to EUT in a way that the Blue Sign value is set to 1 (= not set).
- Change Blue Sign value to 2 (= set) by direct connected switch to EUT.
- Change Blue Sign value to 1 (= not set) by applying VSD sentence (regional bits of VSD sentence) to EUT.
- Disconnect Blue Sign switch from EUT in a way that Blue Sign value is set to 0 (= not available).

ii) Required results

- Check the parameter Blue Sign in VDL message 1, 2, 3:
  - 1 = not engaged in special manoeuvre (Blue Sign not set),
  - 2 = engaged in special manoeuvre (Blue Sign set),
  - 0 = not available.
  - Confirm that EUT transmits message 1 or 2 or 3 with Blue Sign value accordingly.
  - Confirm that EUT does not transmit message 5 for unchanged data derived from PI sentence (VSD).
- Confirm that EUT switches Blue Sign value to 0 (= not available) within 2 seconds after invalid input (check PI Output, VDO sentence) and that EUT transmits message 1 or 2 or 3 with Blue Sign value 0 (= not available).
- Confirm that EUT switches Blue Sign value to 0 (= not available) within 2 seconds after invalid input (check PI Output, VDO sentence) and that EUT transmits message 1 or 2 or 3 with Blue Sign value 0 (= not available).
- Confirm that EUT transmits message 1 or 2 or 3 with Blue Sign value 1 (= not set).
- Confirm that EUT transmits message 1 or 2 or 3 with Blue Sign value 2 (= set).
- Confirm that EUT ignores Blue Sign information derived from VSD sentence.
- Confirm that EUT transmits message 1 or 2 or 3 with Blue Sign value 0 (= not available).

b) Ship static and voyage related data (Message 5 and RFM 10)

i) Method of measurement

Operate EUT in autonomous mode and record messages on VDL.

- Configure several relevant ship and convoy combinations (in minimum it shall be tested for all extensions set to 0 (own ship only) and all extensions set to values not 0 and for internal and external position source).
- Configure several Inland vessel and convoy types.
- Configure ship and cargo type for message 5.
- Configure draught in dm.
- Switch off EUT by disconnecting power supply. Reconnect Power and record messages on VDL.

ii) Required results

- Confirm that EUT transmits the correct A, B, C, D values rounded up in message 5 and correct length and beam in RFM 10 according to the calculations defined in Part III, Article 6.03(1) with the specified accuracy.
- Confirm that EUT transmits the correct Inland vessel and convoy type in RFM 10 and the converted ship and cargo type in message 5.

- Confirm that EUT transmits the correct ship and cargo type in message 5.
- Confirm that EUT transmits the correct draught in cm in RFM 10 and in dm rounded up in message 5.
- Confirm that the EUT transmits message 5 and RFM 10 with values unchanged.

c) Persons on board RFM 55 (DAC 200 / FI 55)

This message shall be used by inland vessels only, to send the number of persons on Board to a competent authority in order to inform about the number of persons on board. The message shall be sent with binary message 6 RFM 55 (DAC 200, FI 55).

i) Method of measurement

- Initiate transmission of persons on board message as RFM 55 by MKD.
- Initiate transmission of persons on board message as RFM 55 by ABM.
- Initiate transmission of persons on board message as RFM 55 by BBM.

ii) Required results

- Confirm that EUT transmits AIS message 6 with proper content (check all numbers) as RFM 55.
- Confirm that EUT transmits AIS message 6 with proper content as RFM 55.
- Confirm that EUT transmits AIS message 8 with proper content as RFM 55.

3. Transmit inland specific interrogation messages

a) Transmit an interrogation for a specific FM (IFM 2)

i) Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

Apply an ABM sentence containing an IFM 2 (Interrogation for a specific FM) using binary message 6 to request “Inland ship and voyage related data (RFM 10)”. Record transmitted messages.

- Send an IFM 2, request DAC = 200 and requested FI = 10.
- Send an IFM 2, request DAC = 200 and requested FI = 55.
- Send an IFM 2, request DAC = 303 and requested FI = 10.

ii) Required results

Check that EUT reacts as follows:

- Verify that EUT sends interrogation message on VDL using binary message 6 and that DAC FI and requested DAC are correct;
- Verify that EUT sends interrogation message on VDL using binary message 6 and that DAC FI and requested DAC are correct;
- Verify that EUT sends interrogation message on VDL using binary message 6 and that DAC FI and requested DAC are correct.

4. Response to inland specific interrogation messages

a) Response to “Capability interrogation” (IFM 3) with “Capability reply” (IFM 4)

i) Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

- Apply an IFM 3 (Capability interrogation) using addressed binary message (message 6) to the VDL with requested DAC = 200. Record transmitted messages.
- Repeat the test with DAC = 303.
- Repeat the test with DAC = 001.

ii) Required results

- Check that the EUT transmits the appropriate response “Capability reply” (IFM 4) using addressed binary message (message 6) addressed to the interrogator. Check the content of this message in accordance to the specification in ITU-R M.1371-5. Bit order of ´FI capability table´:

first	sec.	first	sec.	first	sec.					first	sec.	first	sec.
FI 0		FI 1		FI 2						FI 62		FI 63	

Verify that at least the DAC 200 / FI 10 and DAC 200 / FI 55 for Inland AIS are included in the binary structure. Confirm that the EUT transmits the response on the same channel as where the request was received.

- Check that the EUT transmits the appropriate response “Capability reply” (IFM 4) using addressed binary message (message 6) addressed to the interrogator. Check the content of this message in accordance to the specification in ITU-R M.1371-5. Confirm that the EUT does respond with all values set to 0. Confirm that the EUT transmits the response on the same channel as where the request was received.
- Check that the EUT transmits the appropriate response “Capability reply” (IFM 4) using addressed binary message (message 6) addressed to the interrogator. Check the content of this message in accordance to the specification in ITU-R M.1371-5.
  Verify that at least the DAC 001 / FI 3 is included in the binary structure. Confirm that the EUT transmits the response on the same channel as where the request was received.

b) Response to interrogation for “Inland ship static and voyage related data” (RFM 10)

i) Method of measurement

Set up standard test environment and operate EUT in autonomous mode. Apply an IFM 2 (Interrogation for a specific FM) using binary message 6 to request “Inland ship and voyage related data” (RFM 10) to the VDL. Record transmitted messages.

- Request “Inland ship and voyage related data” (RFM 10) with DAC = 200, FI 10.
- Request “Inland ship and voyage related data” (RFM 10) with DAC = 303, FI 10.

ii) Required results

Check that EUT reacts as follows:

- EUT shall respond to interrogation with “Inland ship and voyage related data” (RFM 10) using binary message 6;
- EUT shall not respond.

c) Response to interrogation for “Number of Persons on board” (RFM 55 and IFM 16)

i) Method of measurement

Set up standard test environment and operate EUT in autonomous mode.

Apply an International Function message IFM 2 (Interrogation for a specific FM) using binary message 6 to request Inland number of persons onboard to the VDL. Record transmitted messages.

- Request “number of persons on board” with DAC = 200, FI 55.
- Request “number of persons on board” with DAC = 303, FI 55.

ii) Required results

Check that EUT reacts as follows:

- Confirm that EUT transmits AIS message 6 with proper content (check all numbers) as inland specific RFM 55;
- EUT shall not respond.

CHAPTER 10
HIGH SPEED INPUT

This test checks the configuration of the Inland AIS unit using the high speed input port.

Article 10.01
Voyage data configuration

1. Method of measurement
   a) Apply a VSD sentence with voyage related data.
   b) Apply a PIWWIVD sentence with Inland specific voyage data.
   c) Apply a VSD sentence with voyage related data with draught deviating from b.
   d) Apply a query for VSD.

2. Required result
   a) Confirm that all data are accepted with exception of the draught.
   b) Confirm that all Inland specific voyage data are accepted with full resolution with EPV sentence and IWWIVD sentence.
   c) Confirm that the draught from VSD is ignored.
   d) Confirm that a VSD and a PIWWIVD sentence are output with correct data.

Article 10.02
Static data configuration

1. Method of measurement
   a) Apply a PIWWSSD sentence with static data, no preceding SPW sentence.
   b) Apply a PIWWSSD sentence with static data, preceding SPW sentence with incorrect password.
   c) Apply a PIWWSSD sentence with static data, preceding SPW sentence with correct password.
   d) Apply a SSD sentence with static data different to the currently stored values, preceding SPW sentence with correct password.
   e) Apply a query for SSD.

2. Required result
   a) Confirm that the data which are protected according to Table VI-7 are not accepted. Confirm that the other data are accepted.
   b) Confirm that the data which are protected according to Table VI-7 are not accepted. Confirm that the other data are accepted.

c) Confirm that all static data of the PIWWSSD sentence are accepted.

d) Confirm that the A, B, C, D values are ignored and all other static data of the SSD sentence are accepted.

e) Confirm that a SSD and a PIWWSSD sentence are output with correct data and accuracy.

CHAPTER 11
LONG RANGE FUNCTIONALITY TESTS

Not mandatory for Inland AIS.

EUROPEAN STANDARD FOR RIVER INFORMATION SERVICES ANNEXES

ANNEX 1
PRODUCT SPECIFICATION FOR INLAND ENCS, EDITION 2.5

TABLE OF CONTENTS

1. Introduction

Inland Electronic Navigational Chart (IENC) means the database, standardized as to content, structure and format, for use with inland electronic chart display and / or information systems operated onboard of vessels transiting inland waterways. An IENC is issued by or on the authority of a competent government agency, and conforms to standards developed by the International Hydrographic Organization (IHO) and refined by the Inland ENC Harmonization Group. An IENC contains all the chart information necessary for safe navigation on inland waterways and may contain supplementary information in addition to that contained in the paper chart (e.g. sailing directions, machine-readable operating schedules, etc) which may be considered necessary for safe navigation and voyage planning.

This Product Specification for Inland ENC (IENC) is a set of specifications intended to enable ENC manufacturers to produce consistent IENC, and to use data efficiently in applications. An IENC shall be produced in accordance with the regulations defined in:

- this Product Specification for Inland ENC,
- the Feature Catalogue for Inland ENC,
- the Encoding Guide for Inland ENCs.

The numbering correlates to the ENC Product Specification, S-57 Appendix B.1, Edition 2.0.

2. General Information

2.1 Navigational purpose (usage)

IENC data is compiled for a variety of navigational purposes. The navigational purpose for which an individual IENC has been compiled is indicated in the “Data Set Identification” [DSID] field, “Intended Usage” [INTU] subfield and in the name of the data set files. The following codes are used:

Nr.	Navigational purpose (usage)	Intended use
1 S57	Overview	For route planning and oceanic crossing.
2 S57	General	For navigating oceans, approaching coasts and route planning.
3 S57	Coastal	For navigating along the coastline, either inshore or offshore.
4 S57	Approach	Navigating the approaches to ports or mayor channels or through intricate or congested waters.
5 S57	Harbour	Navigating within ports, harbours, bays, rivers and canals, for anchorages.
6 S57	Berthing	Detailed data to aid berthing.
7 (new)	River	Navigating the inland waterways (skin cell).
8 (new)	River harbour	Navigating within ports and harbours on inland waterways (skin cell).
9 (new)	River berthing	Detailed data to aid berthing manoeuvring in inland navigation (skin cell).
A (new)	Overlay	Overlay cell to be displayed in conjunction with skin cells

The navigational purposes 1 to 8 and A may be used by authorities as well as private bodies. Navigational purpose 9 should be used by private bodies only.

It is allowed to assign a range of usages to overlay cells (see clause 5.6.3).

Overlay cells may not contain skin-of-the-earth features (see clause 3.10).

2.2 Cells

In order to facilitate the efficient processing of ENC data the geographic coverage of a given usage must be split into cells. Each cell of data must be contained in a physically separate, uniquely identified file on the transfer medium, known as a data set file (see clauses 5.4 and 5.6.3).

The geographic extent of the cell must be chosen by the ENC producer to ensure that the resulting data set file contains no more than 5 Megabytes of data. Subject to this consideration, the cell size must not be too small in order to avoid the creation of an excessive number of cells.

The coordinates of the borders of the cell are encoded in decimal degrees in the “Catalogue Directory” [CATD] field.

Point or line feature objects which are at the border of two cells with the same navigational purpose must be part of only one cell. They are put in the south or west cell (i.e. north and east borders of the cell are part of the cell, south and west borders are not).

When a feature object exists in several cells its geometry must be split at the cell boundaries and its complete attribute description must be repeated in each cell.

In IENC, skin-of-the-earth features (group 1) within two overlapping cells with the same navigational purpose must not overlap. Features of overlay cells (always group 2) are allowed to overlap other features in other cells.

The minimum size of coverage at both sides of the waterway should be outside the radar coverage.

2.3 Topology

ENC data must be encoded using chain-node topology (see S-57 Part 2, clause 2.2.1.2).

3. Features and attributes

3.1 Feature object identifiers

Each feature object must have a unique world-wide identifier. This identifier, called the feature object identifier, is formed by the binary concatenation of the contents of the subfields of the “Feature Object Identifier” [FOID] field.

For IENC the feature object identifier may be used to identify multiple instances of the same feature. For example, the same feature may appear in different usages, or an feature may be split by the cell structure. In these circumstances each instance of this feature may have the same identifier. Feature object identifiers must not be reused, even when a feature has been deleted.

3.2 Standard features and attributes

Only features, attributes and enumerations which are defined in the IENC Feature Catalogue at http://ienc.openecdis.org may be used in an IENC.

3.3 Features permitted for use in IENC and their geometric primitives

The geometric primitives of the features permitted for use in IENC can be found in the Encoding Guide for Inland ENCs.

3.4 Meta features

The maximum use must be made of meta features to reduce the attribution on individual features. In a base data set (EN Application profile, see clause 6.3), some meta features are mandatory (see Encoding Guide for Inland ENCs).

3.5 Geo and meta feature attributes

3.5.1 Missing enumerations

In a base data set (EN application profile), when an attribute code is present but the enumeration is missing, it means that the producer wishes to indicate that this enumeration is unknown.

In a revision data set (ER application profile), when an attribute code is present but the enumeration is missing it means:

- that the enumeration of this attribute is to be replaced by an unknown enumeration if it was present in the original data set,
- that an unknown enumeration is to be inserted if the attribute was not present in the original data set.

In both cases the missing enumeration is encoded by the means described in S-57 Part 3, clause 2.1.

3.5.2 Mandatory attributes

For mandatory attributes of features see Encoding Guide for Inland ENCs.

3.5.3 Prohibited attributes

not applicable.

3.5.4 Numeric enumerations

Floating point or integer enumerations must not be padded by non-significant zeroes.

E.g.: For a signal period of 2.5 sec, the enumeration of SIGPER must be 2.5 and not 02.500.

3.5.5 Text enumerations

The lexical level used for the “Feature Record Attribute” [ATTF] field must be 1 (ISO 8859-1). Lexical level 1 or 2 may be used for the “Feature Record National Attribute” [NATF] field. Format effecting (C0) characters as defined in S-57 Part 3, Annex B are prohibited. The delete character is only used in the update mechanism (see S-57 part 3, clause 8.4.2.2.a and 8.4.3.2.a).

3.5.6 Hierarchy of meta data

The following table indicates:

- individual attributes that supersede meta feature attributes,
- meta feature attributes that supersede the data set subfields (see clauses 6.3.2 and 6.4.2).

Field	Subfield	Meta feature class	Meta feature attribute	Geo or spatial feature attribute
DSPM	VDAT	m_vdat	Verdat	verdat
DSPM	SDAT	m_sdat	Verdat	verdat
		m_nsys	Marsys	marsys
		M_QUAL	CATZOC	POSACC, SOUACC and TECSOU
		M_QUAL	SOUACC	SOUACC
		M_QUAL	POSACC	POSACC
		M_SREL	QUASOU	QUASOU
		M_SREL	SURATH	SORIND
		M_SREL	SUREND	SORDAT
		M_SREL	SURSTA	SORDAT
		M_SREL	TECSOU	TECSOU
		M_ACCY	POSACC	POSACC
		M_ACCY	SOUACC	SOUACC
		M_ACCY	VERACC	VERACC
		M_ACCY	HORACC	HORACC
		M_ACCY	CATTEV	CATTEV

When there is no meta feature attribute, an individual attribute can supersede a data set subfield.

It is prohibited to use an attribute on an individual feature, if this attribute has the same enumeration as the general enumeration defined by the meta feature or the equivalent data set subfield.

It is prohibited to use a meta feature, if the information given by this meta feature is the same as the enumeration given by the equivalent data set subfield.

3.6 Cartographic features

not applicable.

3.7 Time varying features

The IENC may contain information about magnetic variation, tides, tidal streams and currents. The IENC may contain time independent depth information in accordance with the Encoding Guide for Inland ENCs.

3.8 Geometry

Edges must be encoded using SG2D fields only. ARCC fields (curves) must not be used.

Despite the saving in data volume offered by the use of arcs/curves, the disadvantages are such (e.g. during updating, generating warnings/alarms) that they must not be used for IENC.

Linear features must not be encoded at a point density greater than 0.3 mm at compilation scale.

The presentation of symbolised lines may be affected by line length. Therefore, the encoder must be aware that splitting a line into numerous small edges may result in poor symbolisation.

In certain circumstances, the symbolisation of an edge may need to be suppressed. This is done using the value {1} in the “Masking Indicator” [MASK] subfield of the “Feature Record to Spatial Record Pointer” [FSPT] field. If the value in the “Usage Indicator” [USAG] subfield is set to {3} (exterior boundary truncated by the data limit), the MASK subfield must be set to {255} (null), in all other cases it must set to {2}.

3.9 Relationships

There are two ways to define relationships between features:

- nominated master feature record,
- collection features of classes “aggregation” (C_AGGR), or “association” (C_ASSO).

The use of the Catalogue Cross Reference record is prohibited.

All hierarchical relationships (master to slave) must be encoded by using a nominated “master” feature record carrying the pointers to the “slave” features in the “Relationship Indicator” [RIND] subfield in the “Feature Record to Feature Object Pointer” [FFPT] field with the value {2} = slave.

All association or aggregation relationships using collection features are assumed to be peer to peer. The “Relationship Indicator” [RIND] subfield of these collection feature records must be {3} = peer.

The use of these relationships is described in the Encoding Guide for Inland ENCs.

3.10 Groups

There are two groups defined for IENC. These are Group 1 (skin of the earth) and Group 2 for all other geo feature objects.

The group number is indicated in the “Group” [GRUP] subfield of the “Feature Record Identifier” [FRID] field.

3.10.1 Group 1 (skin of the earth)

Each area covered by a meta feature M_COVR with CATCOV = 1 must be totally covered by a set of geo features of type area that do not overlap each other (the skin of the earth).

These features make up Group 1.

The list below contains the features that must always be in Group 1, if they appear in the dataset and if they are of type area.

DEPARE, depare, DRGARE, FLODOC, HULKES, LNDARE, PONTON, UNSARE;

flodoc, hulkes and ponton are not Group 1 features.

3.10.2 Group 2 (all other features)

All feature objects which are not in Group 1 are in Group 2.

3.11 Language and alphabet

3.11.1 Language

See Encoding Guide for Inland ENCs.

3.11.2 Use of lexical level 2

If the national language cannot be expressed in lexical levels 0 or 1, the following rules apply:

- the exact spelling in the national language is encoded in the “National Attributes” [NATF] field using lexical level 2.
- translated text, including transliterated or transcribed national geographic names is encoded in the “International Attributes” [ATTF] field using lexical level 0 or 1.

Where possible international standards should be used for the transliteration of non-Latin alphabets.

4. Cartographic framework

4.1 Horizontal datum

The horizontal datum must be WGS 84. Therefore, the “Horizontal Geodetic Datum” [HDAT] subfield in the “Data Set Parameter” [DSPM] field must have the value of {2}.

The boatmaster may have to display information other than IENC data and IENC updates. In cases where this information is based on a horizontal datum other than WGS-84, it can be converted to WGS 84 by means of the meta feature Horizontal datum shift parameter (M_HOPA).

In the case that the data are transformed to WGS-84 from a local datum the responsible authority shall define the area where the local transformation parameters apply. Within this area, the difference between transformed coordinates and the surveyed WGS-84 coordinates may not exceed 0.5 m. For approval purposes, the responsible authority shall define appropriate reference points (surveyed WGS-84 coordinates) preferably exactly at the limit line of two adjacent areas. Reference points, transformation parameters and the algorithm shall be published and shall be the basis for IENC production for that area.

4.2 Vertical and sounding datum

The various levels which are used on paper charts for elevations and soundings will be used. The default values are encoded in the “Vertical Datum” [VDAT] subfield and the “Sounding Datum” [SDAT] subfield in the “Data Set Parameter” [DSPM] field.

4.3 Projection

No projection is used, therefore the “Data Set Projection” [DSPR] field must not be used. Coordinates must be encoded as geographical positions (latitude, longitude).

4.4 Units

Units to be used in an IENC are:

- Position: latitude and longitude in decimal degrees (converted into integer values, see below).
- Depth: metres.
- Height: metres.
- Positional accuracy: metres.
- Distance: nautical miles, statute miles, kilometres or metres as defined in the Feature Catalogue.

The default values for depth units, height units and positional accuracy units are encoded in the “Units of Depth Measurement” [DUNI], “Units of Height Measurement” [HUNI] and “Units of Positional Accuracy” [PUNI] subfields in the “Data Set Parameter” [DSPM] field.

Latitude and longitude values are converted from decimal degrees to integers by means of the “Coordinate Multiplication Factor” [COMF] subfield value in the “Data Set Parameter” [DSPM] field. The integer values are encoded in the “Coordinate in Y-axis” [YCOO] subfield and the “Coordinate in X-axis” [XCOO] subfield. The number of decimal digits is chosen by the data producer and is valid throughout the data set.

E.g.: If the producer chooses a resolution of 0.0001° (10-4), then the value of COMF is 10 000 (104).

A longitude = 34.5678° is converted into XCOO = longitude * COMF = 34.5678*10 000 = 345678.

The integer value of the converted coordinate is encoded in binary form.

Depths are converted from decimal meters to integers by means of the “3-D (Sounding) Multiplication Factor” [SOMF] subfield value in the “Data Set Parameter” [DSPM] field. The integer values are encoded in the “3-D (Sounding) Value” [VE3D] subfield. Soundings are never encoded with a resolution greater than one decimetre, so the value of SOMF must be 10 encoded in binary form.

5. Provision of data

5.1 Implementation

The binary implementation of S-57 must be used for IENC. Therefore, the “Implementation” [IMPL] subfield of the “Catalogue Directory” [CATD] field must be set to “BIN” for the data set files.

5.2 Compression

The use of compression algorithms is prohibited.

5.3 Encryption

IENC data may be protected from unauthorised use, possibly by the use of encryption algorithms.

5.4 Exchange set

5.4.1 Content of the exchange set

The records defined in this Annex are grouped in two file types: catalogue and data set files.

An exchange set is composed of one and only one catalogue file and at least one data set file.

Text and picture files may also be included in the IENC exchange set. These files may be included in an exchange set by a data producer to provide additional information such as that normally contained in sailing directions or coastal pilots. For format of these files see Encoding Guide for Inland ENCs.

An exchange set may also contain a README file.

Exchange set
|
|--<1>-- README file
|
|--<1>-- Catalogue file
|
|--<R>-- Data set file
|
|--<R>-- Text file
|
|--<R>-- Picture file

The README file is an optional ASCII file of general information.

The catalogue file acts as the table of contents for the exchange set.

Each data set file contains data for one cell (see clause 2.2). This includes:

- data set descriptive information that is specific to the data set,
- the description and location of the real-world entities.

Text and picture files do not conform to ISO/IEC 8211 and are not described. These files are specific to this Product Specification.

5.4.2 Volume naming

An exchange set may be split across several media volumes, therefore, each media volume must be uniquely identified within the exchange set. A file must not be split across volumes. Individual volumes must conform to the following naming convention:

VSSXNN

where:

V is the mandatory first character.
SS is the sequence number of the specific volume within the exchange set.
X is the mandatory separator character.
NN is the total number of media volumes within the exchange set.

For example, volume one of a three volume exchange set would be named V01X03.

5.4.3 Directory structure

The following directory structure is mandatory.

On each volume within an exchange set there must be a root directory called ENC_ROOT. The catalogue file for the exchange set must be in the ENC_ROOT directory of the first volume of the exchange set. The ENC_ROOT directory of the first volume may also contain a README file, containing ASCII text. Further directories and sub-directories may be defined under the root directory on any volume in the exchange set. The following example shows an example directory structure for a MS-DOS volume:

```
Volume in drive A is V01X02
Directory of A:\ENC_ROOT

.               <DIR>           09-15-96 12:40p   .
..              <DIR>           09-15-96 12:40p   ..
CATALOG     031         1,584   09-15-96 12:46p   CATALOG.031
NL600021    000        45,584   09-15-96 12:50p   NL600021.000
NL600021    001         1,095   09-15-96 12:54p   NL600021.001
NL600021    002           722   09-15-96 12:54p   NL600021.002
README      TXT           504   09-15-96 12:44p   README.TXT
      5 file(s)     49,489 bytes
      2 dir(s)      1,405,952 bytes free
```

For each file in the exchange set the catalogue file must contain the name of the volume on which it is held and the full path name relative to the root directory of that volume. The full path name relative to the root directory must be encoded in the FILE subfield of the “Catalogue Directory” [CATD] field. The LFIL subfield of the CATD field may be used for other purposes. The full path name of the NL600021.000 file shown in the example is NL600021.000.

5.5 Data sets

Four kinds of data sets may be produced:

- new data set: no IENC data has previously been produced for this area and for the same navigational purpose.
- update: changing some information in an existing data set.
- re-issue of a data set: including all the updates applied to the original data set up to the date of the reissue. A re-issue does not contain any new information additional to that previously issued by updates.
- new edition of a data set: including new information which has not been previously distributed by updates.

Each new data set, re-issue, or new edition is called a base cell file.

A data set containing updates to one base cell file is called an update cell file.

5.6 File naming

5.6.1 README file

README.TXT is the mandatory name for this file.

5.6.2 Catalogue file

The catalogue file of the exchange set must be named CATALOG.EEE.

Where EEE is the edition number of S-57 used for this exchange set, i.e. 031 for the currently [2006] used edition (3.1).

No other file may be named CATALOG.

5.6.3 Data set files

A valid data set file must be uniquely identified worldwide by its name.

The data set files are named according to the specifications given below:

```
CCPRRRRR.EEE
|  |  |     |
|  |  |     |-----  EEE     = update number
|  |  |
|  |  |-----------  RRRRR   = waterway code and waterway distance (kilometre) or
|  |                        identification of the equivalent paper chart number (in Brazil)
|  |-----------------  P     = navigational purpose (usage)
|--------------------  CC    = producer code
```

The main part forms an eight-character identifier where:

The first two characters (CC) identify the producer. This list is published in the S-100 registry at http://registry.iho.int. The list includes all producers which aren't already mentioned in IHO S-62.

The third character (P) indicates the navigational purpose (see clause 2.1). The letter "A" (in the position "usage") indicates that the cell is displayed as overlay over other cells within a range of usages. The range of usages of overlay cells is indicated in the Data Set Identification Field of the header of the overlay cell (see S57, Part 3, Data Structure, ch. 7.3.1.1). The 8th bit of the intended usage subfield (INTU) has to be set. The other seven bits describe the range:

Definition of range	from	to
Mathematical description	(INTU-128) div 10	(INTU-128) mod 10
Example (INTU=207)	(207-128) div 10 = 7	(207-128) mod 10 = 9

The fourth to eighth characters (RRRRR) identify the waterway and the waterway distance.

- For waterways with a length of more than 999 km: e.g. D1923
- For waterways with a length of more than 99 km: e.g. RH123
- For waterways with a length of more than 9 km: e.g. DCC23

The use of the fourth to eighth characters is only a recommendation.

The primarily produced base cell file has the extension (EEE) 000.

The extension is used for updating. Update cell files have the same name as the original base cell file, with an extension number greater than or equal to 001. They cover the same geographical area as the base cell file to which they apply.

5.6.4 Text and picture files

The text and picture files must be named according to the Encoding Guide for Inland ENCs.

5.7 Updating

In order to ensure that updates are incorporated into the SENC in the correct sequence without any omission, the file extension and a number of subfields in the “Data Set Identification” (DSID) field are used in the following way:

file extension	every new data set, re-issue or new edition must have a “000” extension. For update cell files the extension is the number of the update, ranging from “001” to “999”. These numbers must be used sequentially, without omission. Number “001” is the first update after a new data set or a new edition, but not after a re-issue. The update sequence is not interrupted by a re-issue. After a re-issue, subsequent updates may be incorporated into the SENC created from this re-issue or to the SENC created from the original data and kept continuously updated.
edition number	when a data set is initially created, the edition number 1 is assigned to it. The edition number is increased by 1 at each new edition. Edition number remains the same for a re-issue.
update number	update number 0 is assigned to a new data set. The first update cell file associated with this new data set must have update number 1. The update number must be increased by one for each consecutive update, until a new edition is released. The new edition must have update number 0. A re-issue of a data set must have the update number of the last update applied to the data set. In the case of an update cell file the file extension is the same as the update number.
update application	this date is only used for the base cell files (i.e. new data sets, re-issue and new edition), not update cell files. All updates dated on or before this date must have been applied by the producer.
issue date	date on which the data was made available by the data producer.

Table 5.1 gives examples of the way to manage the file extension, the “Edition Number” [EDTN], the “Update Number” [UPDN], the “Update Application Date” [UADT] and the “Issue Date” [ISDT] sub-fields.

Event	File extension	EDTN	UPDN	UADT	ISDT
New data set	.000	1	0	19950104	19950104
Update 1	.001	1	1	prohibited	19950121
Update 2	.002	1	2	prohibited	19950225
...					
Update 31	.031	1	31	prohibited	19950905
Re-issue of a data set	.000	1	31	19950905	19950910
Update 32	.032	1	32	prohibited	19951023
...					
Update 45	.045	1	45	prohibited	19951112
New edition	.000	2	0	19951201	19951201
Update 1 to edition 2	.001	2	1	prohibited	19960429
...					

This example table relates to the specifications given in S-52 App 1, “*Guidance on Updating the Electronic Navigational Chart*”, in the following way:

- The update information encoded in each individual cell file is called a sequential update.
- The collection of the update information encoded in the update cell files which have been issued since the last new data set, the last re-issue of a data set or since the last update was applied to the SENC is called a cumulative update. In the example, the cumulative update for the new data set starts with update number 1. The cumulative update for the re-issue of a data set starts with update number 32. The cumulative update for a data set to which update number n has been applied starts with update number n+1.
- The update information which has been incorporated in a re-issue of a data set is called a compilation update.

Each re-issue or new edition of a data set must have the same name as the base cell file which it replaces.

The update mechanism is described in S-57 Part 3, clause 8.

In order to delete a data set, an update cell file is created, containing only the Data Set General Information record with the “Data Set Identifier” [DSID] field. The “Edition Number” [EDTN] subfield must be set to 0. This message is only used to cancel a base cell file.

To inform the mariner that a new edition is available, an update cell file is created, containing only the Data Set General Information record with the “Data Set Identifier” [DSID] field. The “Edition Number” [EDTN] subfield must contain a value one higher than the current edition number.

In order to modify a text, picture or application file, a new file with the same name is created.

When an feature pointing to a text, picture or application file is deleted or updated so that it no longer references the file, the ECDIS software should check to see whether any other feature reference the same file, before that file is deleted.

An exchange set may contain base cell files and update cell files for the same cells. Under these circumstances the update cell files must follow on in the correct sequential order from the last update applied to the base cell file.

The record version of each feature or vector record is indicated in the “Record Version” [RVER] subfield of the “Feature Record Identifier” [FRID] field or the “Vector Record Identifier” [VRID] field. At each update of a record, this version number is incremented by 1.

5.8 Media

Data must be made available on CD-ROM. It may also be made available on any other physical media by private arrangement.

Data may be provided via telecommunication links.

5.9 Error detection

File integrity checks are based on the CRC-32 algorithm (a 32 bit Cyclic Redundancy Check algorithm) as defined in ANSI/IEEE Standard 802.3 (=IEEE Standards for Local Area Networks, Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications).

5.9.1 Implementation

The checksums for each data set are held in the “CRC” [CRCS] subfield of the “Catalogue Directory” [CATD] field. They allow the integrity of each file in the exchange set to be checked on receipt. The CRC value computed on the received file must the same as the CRC value transmitted.

The CRC values are recorded in ASCII as a hexadecimal number least significant byte first.

5.9.2 Processing

Encoding is defined by the following generating polynomial:

$$G(x) = x^{32} + x^{26} + x^{23} + x^{22} + x^{16} + x^{12} + x^{11} + x^{10} + x^8 + x^7 + x^5 + x^4 + x^2 + x + 1$$

Processing is applied to relevant files as they appear in the exchange set.

The CRC value of the file is defined by the following process:

1. The first 32 bits of the data are complemented.
2. The n bits of the data are then considered to be the coefficients of a polynomial M(x) of degree n-1.
3. M(x) is multiplied by x^{32} and divided by G(x), producing a remainder R(x) of degree <31.
4. The coefficients of R(x) are considered to be a 32-bit sequence.
5. The bit sequence is complemented and the result is the CRC.

The hexadecimal format of CRCs is converted to ASCII characters and stored in the “Catalogue Directory” [CATD] field.

An example of coding in C language is given in Annex B of S-57 published by IHO.

6. Application profiles

6.1 General

The application profiles define the structure and content of the catalogue file and data set file in an exchange set.

6.1.1 Catalogue and data set files

These files are composed of the records and fields defined in the following tree structure diagrams (see clauses 6.2.1, 6.3.1 and 6.4.1).

The order of data in each base or update cell file is described below:

Data set file
- Data set general information record
- Data set geographic reference record (for EN application profile)
- Vector records
  - Isolated nodes (SG3D)
  - Isolated nodes (SG2D)
  - Connected nodes
  - Edges
- Feature records
  - Meta features
  - Geo features (ordered from slave to master)
  - Collection features

This order of records will enable the import software to check that the child record exists each time the parent record references it (i.e. it will already have read the child record so it will know if it exists or not).

6.1.2 Records

Records and fields that do not appear in the following tree structure diagrams are prohibited. The order of records in the files must be the same as that described in these tree structure diagrams.

The combination of the file name and the “Name” of the record must provide a unique worldwide identifier of the record.

6.1.3 Fields

For base cell files, some fields may be repeated (indicated by <R>) and all of their content may be repeated (indicated by *). In order to reduce the volume of data, the encoder should repeat the sequence of subfields, in preference to creating several fields.

6.1.4 Subfields

Mandatory subfields must be filled by a non-null value.

Prohibited subfields must be encoded as missing subfields values (see S-57 Part 3, clause 2.1).

The exact meaning of missing enumerations is defined in clause 3.5.1.

In the tables following the tree structure diagrams, mandatory subfields are shown by “M” in the “use” column and prohibited subfields by “P” in the same column. If there is nothing in this column, it means that the use of this subfield is optional. When a subfield value is prescribed, it is indicated in the “value” column. The “comment” column contains general comments and an indication of whether the subfield is ASCII or binary coded.

6.2 Catalogue file

The catalogue has the same structure for EN and ER application profiles.

6.2.1 Catalogue file structure

```
Catalogue file
  |
  |--<R>-Catalogue Directory record
        |
        |--0001-- ISO/IEC 8211 Record identifier
             |
             |--<1>-- CATD - Catalogue Directory field
```

6.2.2 Catalogue Directory field - CATD

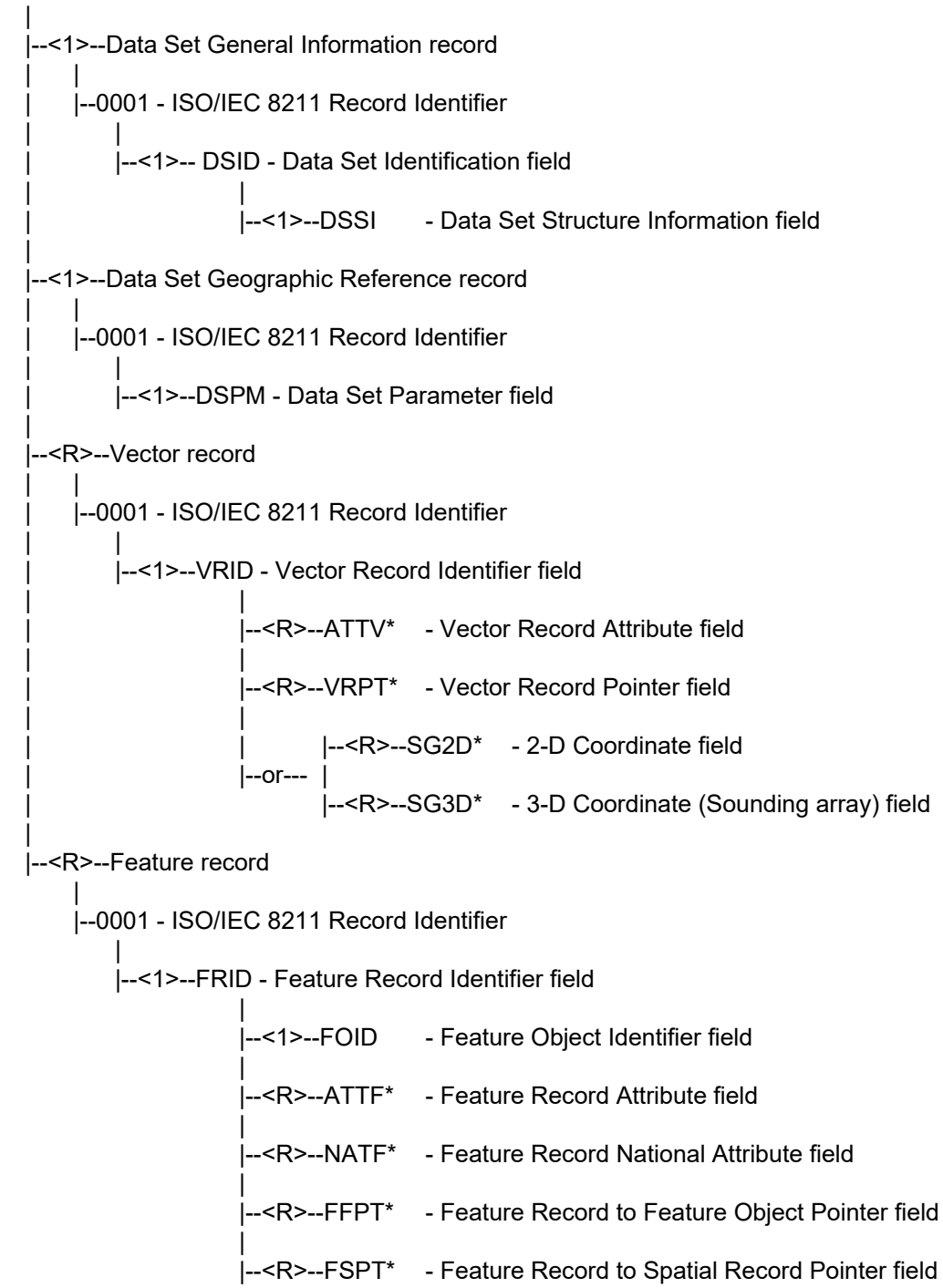
NB: All subfield values are encoded as ASCII.

Tag	subfield name	use	value	comment
RCNM	Record name	M	CD	
RCID	Record identification number	M		
FILE	File name	M		full path from ENC_ROOT directory
LFIL	File long name			
VOLM	Volume	M		name of volume on which file appears
IMPL	Implementation	M	ASC BIN TXT TIF ...	for the catalogue file for the data set files for ASCII text files (including the README.TXT file) for picture files or any other usual file extension for file provided through private agreements (see clause 5.6.4)
SLAT	Southernmost latitude			mandatory for data set files
WLON	Westernmost longitude			mandatory for data set files
NLAT	Northernmost latitude			mandatory for data set files
ELON	Easternmost longitude			mandatory for data set files
CRCS	CRC	M		except for README and catalogue files
COMT	Comment			

6.3 EN application profile

The EN application profile applies to any base cell file (i.e. new data set, re-issue and new edition of a data set).

6.3.1 Base cell file structure



6.3.2 Field content (EN)

6.3.2.1 Data set identification field - DSID

NB: Subfield values are encoded as ASCII or binary as indicated.

IENCs are considered as an independent product besides ENCs. To recognise a S-57 dataset as an IENC the content of the subfields PRSP and PRED differs from S-57.

Tag	subfield name	use	value	comment
RCNM	Record name	M	{10}	= DS, binary
RCID	Record identification number	M		Binary
EXPP	Exchange purpose	M	{1}	Data set is new, binary
INTU	Intended usage	M	{1} to {9}, {A}	Navigational purpose, see clause 2.1 and 5.6.3, binary
DSNM	Data set name	M		File name with extension excluding path, ASCII
EDTN	Edition number	M		See clause 5.7, ASCII
UPDN	Update number	M		ASCII
UADT	Update application date	M		ASCII
ISDT	Issue date	M		ASCII
STED	Edition number of S-57	M	03.1	ASCII
PRSP	Product Specification	M	{10}	= IENC, binary
PSDN	Product specification description	P		Empty, ASCII
PRED	Product Specification Edition Number	M	2.5	=ASCII
PROF	Application profile identification	M	{1}	= EN, binary
AGEN	Producing agency	M		Binary
COMT	Comment			ASCII

6.3.2.2 Data Set Structure Information field – DSSI

NB: All subfield values are encoded as binary.

Tag	subfield name	use	Value	comment
DSTR	Data structure	M	{2}	= chain node
AALL	ATTF lexical level	M	{0} or {1}	
NALL	NATF lexical level	M	{0}, {1} or {2}	
NOMR	Number of meta records	M		
NOCR	Number of cartographic records	M	{0}	cartographic records are not permitted
NOGR	Number of geo records	M		
NOLR	Number of collection records	M		
NOIN	Number of isolated node records	M		

Tag	subfield name	use	Value	comment
NOCN	Number of connected node records	M		
NOED	Number of edge records	M		
NOFA	Number of face records	M	{0}	faces are not permitted in chain node structure

6.3.2.3 Data Set Parameter field - DSPM

NB : Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	Value	comment
RCNM	Record name	M	{20}	= DP, binary
RCID	Record identification number	M		binary
HDAT	Horizontal geodetic datum	M	{2}	= WGS 84, binary
VDAT	Vertical datum	M		binary
SDAT	Sounding datum	M		binary
CSCL	Compilation scale of data	M		binary
DUNI	Units of depth measurement	M	{1}	=metres, binary
HUNI	Units of height measurement	M	{1}	=metres, binary
PUNI	Units of positional accuracy	M	{1}	=metres, binary
COUN	Coordinate units	M	{1}	= lat/long, binary
COMF	Coordinate multiplication factor	M		binary, see clause 4.4
SOMF	3-D (sounding) multiplication factor	M	{10}	binary, see clause 4.4
COMT	Comment			ASCII

6.3.2.4 Vector Record Identifier field - VRID

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	Comment
RCNM	Record name	M	{110} or {120} or {130}	= VI, isolated node = VC, connected node = VE, edge
RCID	Record identification number	M		
RVER	Record version	M		
RUIN	Record update instruction	M	{1}	= insert

6.3.2.5 Vector Record Attribute field - ATTV

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	comment
ATTL	Attribute label/code	M		binary code for an attribute
ATVL	Enumeration	M		ASCII value. Missing enumeration = attribute is relevant but value is unknown.

6.3.2.6 Vector Record Pointer field - VRPT

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
NAME	Name	M		
ORNT	Orientation	M	{255}	= null
USAG	Usage indicator	M	{255}	= null
TOPI	Topology indicator	M	{1} or {2}	= beginning node = end node
MASK	Masking indicator	M	{255}	= null

6.3.2.7 2-D Coordinate field - SG2D

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
YCOO	Coordinate in Y axis	M		latitude (see clause 4.4)
XCOO	Coordinate in X axis	M		longitude (see clause 4.4)

6.3.2.8 3-D Coordinate (Sounding array) field - SG3D

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
YCOO	Coordinate in Y axis	M		latitude (see clause 4.4)
XCOO	Coordinate in X axis	M		longitude (see clause 4.4)
VE3D	3-D (sounding) value	M		value of sounding (see clause 4.4)

6.3.2.9 Feature Record Identifier field - FRID

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
RCNM	Record name	M	{100}	= FE
RCID	Record identification number	M		
PRIM	Feature geometric primitive	M	{1} or {2} or {3} or {255}	= point = line = area = no geometry
GRUP	Group	M	{1} or {2}	Group 1, see clause 3.10.1 Group 2, see clause 3.10.2
OBJL	Feature label	M		binary code for a feature class
RVER	Record version	M		
RUIN	Record update instruction	M	{1}	= insert

6.3.2.10 Feature Object Identifier field - FOID

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
AGEN	Producing agency	M		
FIND	Feature identification number	M		
FIDS	Feature identification subdivision	M		

6.3.2.11 Feature Record Attribute field - ATTF

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	comment
ATTL	Attribute label/code	M		binary code for an attribute
ATVL	Enumeration			ASCII value. Missing enumeration = attribute is relevant but value is unknown.

6.3.2.12 Feature Record National Attribute field - NATF

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	comment
ATTL	Attribute label/code	M		binary code for an attribute
ATVL	Enumeration			ASCII value. Missing enumeration = attribute is relevant but value is unknown

6.3.2.13 Feature Record to Feature Object Pointer field - FFPT

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	comment
LNAM	Long name	M		binary
RIND	Relationship indicator	M	{2} or {3}	= slave, binary = peer, binary
COMT	Comment			ASCII

6.3.2.14 Feature Record to Spatial Record Pointer field - FSPT

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
NAME	Name	M		
ORNT	Orientation	M	{1} or {2} or {255}	= forward = reverse = null
USAG	Usage indicator	M	{1} or {2} or {3} or {255}	= exterior = interior = exterior boundary, truncated by the data limit = null
MASK	Masking indicator	M	{1} or {2} or {255}	= mask = show = null

6.4 ER application profile

The ER application profile only applies to update cell files.

6.4.1 Update cell file structure

```
Update cell file
  |
  |--<1>--Data Set General Information record
  |     |
  |     |--0001 - ISO/IEC 8211 Record Identifier
  |           |
  |           |--<1>--DSID - Data Set Identification field
  |                       |
  |                       |--<1>--DSSI - Data Set Structure Information field
  |
  |--<R>--Vector record
  |     |
  |     |--0001 - ISO/IEC 8211 Record identifier
  |           |
  |           |--<1>--VRID - Vector Record Identifier field
  |                       |
  |                       |--<R>--ATTV*    - Vector Record Attribute field
  |                       |
  |                       |--<1>--VRPC     - Vector Record Pointer Control field
  |                       |
  |                       |--<R>--VRPT*    - Vector Record Pointer field
  |                       |
  |                       |--<1>--SGCC     - Coordinate Control field
  |                       |
  |                       |         |--<R>--G2D* - 2-D Coordinate field
  |                       |---or--  |
  |                                 |--<R>--G3D* - 3-D Coordinate (Sounding array) field
  |
  |--<R>--Feature record
        |
        |--0001 - ISO/IEC 8211 Record identifier
              |
              |--<1>--FRID - Feature Record Identifier field
                          |
                          |--<1>--FOID      - Feature Object Identifier field
                          |
                          |--<R>--ATTF*     - Feature Record Attribute field
                          |
                          |--<R>--NATF*     - Feature Record National Attribute field
                          |
                          |--<1>--FFPC      - Feature Record to Feature Object Pointer Control field
                          |
                          |--<R>--FFPT*     - Feature Record to Feature Object Pointer field
                          |
                          |--<1>--FSPC      - Feature Record to Spatial Record Pointer Control field
                          |
                          |--<R>--FSPT*     - Feature Record to Spatial Record Pointer field
```

6.4.2 Field content (ER)

6.4.2.1 Data Set Identification Field - DSID

NB: Subfield values are encoded as ASCII or binary as indicated.

IENCs are considered as an independent product besides ENCs. To recognise a S-57 dataset as an IENC the content of the subfields PRSP and PRED differs from S-57.

tag	subfield name	use	value	comment
RCNM	Record name	M	{10}	= DS, binary
RCID	Record identification number	M		Binary
EXPP	Exchange purpose	M	{2}	Data set is a revision, binary
INTU	Intended usage	M	{1} to {9}, {A}	Navigational purpose, see clause 2.1 and 5.6.3, binary
DSNM	Data set name	M		File name with extension excluding path, ASCII
EDTN	Edition number	M		See clause 5.7, ASCII
UPDN	Update number	M		ASCII
UADT	Update application date	M		ASCII
ISDT	Issue date	M		ASCII
STED	Edition number of S-57	M	03.1	ASCII
PRSP	Product Specification	M	{10}	= IENC, binary
PSDN	Product specification description	P		Empty, ASCII
PRED	Product Specification Edition Number	M	2.5	= ASCII
PROF	Application profile identification	M	{2}	= ER, binary
AGEN	Producing agency	M		Binary
COMT	Comment			ASCII

6.4.2.2 Data Set Structure Information field – DSSI

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
DSTR	Data structure	M	{2}	= chain node
AALL	ATTF lexical level	M	{0} or {1}	
NALL	NATF lexical level	M	{0} or {1} or {2}	
NOMR	Number of meta records	M		
NOCR	Number of cartographic records	M	{0}	cartographic records are not permitted
NOGR	Number of geo records	M		
NOLR	Number of collection records	M		
NOIN	Number of isolated node records	M		
NOCN	Number of connected node records	M		
NOED	Number of edge records	M		
NOFA	Number of face records	M	{0}	faces are not permitted in chain node structure

6.4.2.3 Vector Record Identifier field - VRID

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
RCNM	Record name	M	{110} or {120} or {130}	= VI, isolated node = VC, connected node = VE, edge
RCID	Record identification number	M		
RVER	Record version	M		
RUIN	Record update instruction	M	{1} or {2} or {3}	= insert = delete = modify

6.4.2.4 Vector Attribute field - ATTV

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	comment
ATTL	Attribute label/code	M		binary code for an attribute
ATVL	Enumeration			ASCII value, missing enumeration = enumeration is deleted or unknown (see clause 3.5.1)

6.4.2.5 Vector Record Pointer Control field - VRPC

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
VPUI	Vector record pointer update instruction	M	{1} or {2} or {3}	= insert = delete = modify
VPIX	Vector record pointer index	M		
NVPT	Number of vector record pointers	M		

6.4.2.6 Vector Record Pointer field - VRPT

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
NAME	Name	M		
ORNT	Orientation	M	{255}	= null
USAG	Usage indicator	M	{255}	= null
TOPI	Topology indicator	M	{1} or {2}	= beginning node = end node
MASK	Masking indicator	M	{255}	= null

6.4.2.7 Coordinate Control field - SGCC

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
CCUI	Coordinate update instruction	M	{1} or {2} or {3}	= insert = delete = modify
CCIX	Coordinate index	M		
CCNC	Number of coordinates	M		

6.4.2.8 2-D Coordinate field - SG2D

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
YCOO	Coordinate in Y axis	M		latitude (see clause 4.4)
XCOO	Coordinate in X axis	M		longitude (see clause 4.4)

6.4.2.9 3-D Coordinate (Sounding array) field - SG3D

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
YCOO	Coordinate in Y axis	M		latitude (see clause 4.4)
XCOO	Coordinate in X axis	M		longitude (see clause 4.4)
VE3D	3-D (sounding) value	M		value of sounding (see clause 4.4)

6.4.2.10 Feature Record Identifier field - FRID

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
RCNM	Record name	M	{100}	= FE
RCID	Record identification number	M		
PRIM	Feature geometric primitive	M	{1} or {2} or {3} or {255}	= point = line = area = no geometry
GRUP	Group	M	{1} or {2}	Group 1, see clause 3.10.1 Group 2, see clause 3.10.2
OBJL	Feature label	M		binary code for a feature class
RVER	Record version	M		
RUIN	Record update instruction	M	{1} or {2} or {3}	= insert = delete = modify

6.4.2.11 Feature Object Identifier field - FOID

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
AGEN	Producing agency	M		
FIND	Feature identification number	M		
FIDS	Feature identification subdivision	M		

6.4.2.12 Feature Record Attribute field - ATTF

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	comment
ATTL	Attribute label/code	M		binary code for an attribute
ATVL	Enumeration			ASCII value. Missing enumeration = enumeration is deleted or unknown (see clause 3.5.1)

6.4.2.13 Feature Record National Attribute field - NATF

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	Comment
ATTL	Attribute label/code	M		Binary code for an attribute
ATVL	Enumeration			ASCII value. Missing enumeration = enumeration is deleted.

6.4.2.14 Feature Record to Feature Object Pointer Control field - FFPC

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	Comment
FFUI	Feature object pointer update instruction	M	{1} or {2} or {3}	= insert = delete = modify
FFIX	Feature object pointer index	M		
NOPT	Number of feature object pointers	M		

6.4.2.15 Feature Record to Feature Object Pointer field - FFPT

NB: Subfield values are encoded as ASCII or binary as indicated.

Tag	subfield name	use	value	Comment
LNAM	Long name	M		Binary
RIND	Relationship indicator	M	{2} or {3}	= slave, binary = peer, binary
COMT	Comment			ASCII

6.4.2.16 Feature Record to Spatial Record Pointer Control field - FSPC

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	Comment
FSUI	Feature to spatial record pointer update instruction	M	{1} or {2} or {3}	= insert = delete = modify
FSIX	Feature to spatial record pointer index	M		
NSPT	Number of feature to spatial record pointers	M		

6.4.2.17 Feature Record to Spatial Record pointer field - FSPT

NB: All subfield values are encoded as binary.

Tag	subfield name	use	value	comment
NAME	name	M		
ORNT	orientation	M	{1} or {2} or {255}	= forward = reverse = null
USAG	usage indicator	M	{1} or {2} or {3} or {255}	= exterior = interior = exterior boundary, truncated by the data limit = null
MASK	Masking indicator	M	{1} or {2} or {255}	= mask = show = null

7. Maintenance

Every member of the Inland ENC Harmonization Group (IEHG) is entitled to publish proposals for amendments or changes of this Product Specification for Inland ENCs including:

- the IENC Feature Catalogue and
- the Encoding Guide for Inland ENCs

on the IEHG discussion forum at http://ienc.openecdis.org. Each proposal has to contain an explanation, why the amendment or the change is needed.

Proposals for amendments of the IENC Feature Catalogue have to include a proposal for an amendment of the Encoding Guide for Inland ENCs with regard to the use of these amendments.

The members of the Inland ECDIS Expert Group and the IEHG are requested to react as soon as possible. A veto against a proposal has to contain an explanation for the objection. If there is no veto within six weeks, the proposal is adopted. If there is a veto, there are the following possibilities to proceed:

- The party, which has transmitted the proposal, can decide to withdraw the proposal.
- If an updated proposal is transmitted, it is handled as a new proposal.
- If the party, which has transmitted the proposal, wants to keep up the original proposal without any changes, the proposal will be discussed and decided upon at the next meeting of the IEHG.

The members of the IEHG discussion forum, who have actively participated in the development of the Product Specification and its annexes within the twelve months before a meeting of the IEHG, are entitled to take part in this meeting.

Each new version of the Feature Catalogue for Inland ENC results in a new version of the Product Specification for Inland ENCs.

Appendix 1 IENC Feature Catalogue, Edition 2.5.1, 2021-04-21 (Distributed separately)

Appendix 2 Encoding Guide for Inland ENCs, Edition 2.5.1, 2021-04-21 (Distributed separately)

ANNEX 2
PRESENTATION LIBRARY FOR INLAND ENCS, EDITION 2.5

TABLE OF CONTENTS

1. Lookup Tables

The up-to-date Look-up Tables for areas, lines and points are published at https://ienc.openecdis.org.

2. Conditional Symbology Procedures

2.1 Top marks

The CS (TOPMAR01) of S-52 has to be modified because in this CS it is checked on which structure the top mark is fixed. Since the ENC feature BOYLAT was copied, in the CS the feature boylat has to be added to the list of floating structures. If the top mark is located on a boylat the symbols TOPMA1* have to be drawn according to the top shape and colour.

2.2 Daymars

A new CS DAYMAR01 has to be introduced. This CS is similar to the CS TOPMAR01 (see clause 2.1) with the exception that there is no need for the distinction of floating and fixed structures, because daymarks exists only for beacons, i.e. fixed structures.

2.3 Restricted areas

Since the ENC feature RESARE and the attribute RESTRN were copied the CS (RESARE03) of S-52 has to be modified because in this CS the values of the attribute RESTRN are checked. That means that in the case that RESTRN is not given it has to be checked for the copied attribute restrn instead.

2.4 Lights

The CS for LIGHTS (LIGHTS05) of S-52 is affected because in this CS there is a check whether a light is located on a floating object or on a fixed object. The list of floating platforms must be extended by the new feature “boylat”. To avoid a copy of this CS which would lead to a copy of the official feature LIGHTS, the Inland ECDIS manufacturers have to extend the official CS for LIGHTS as described above.

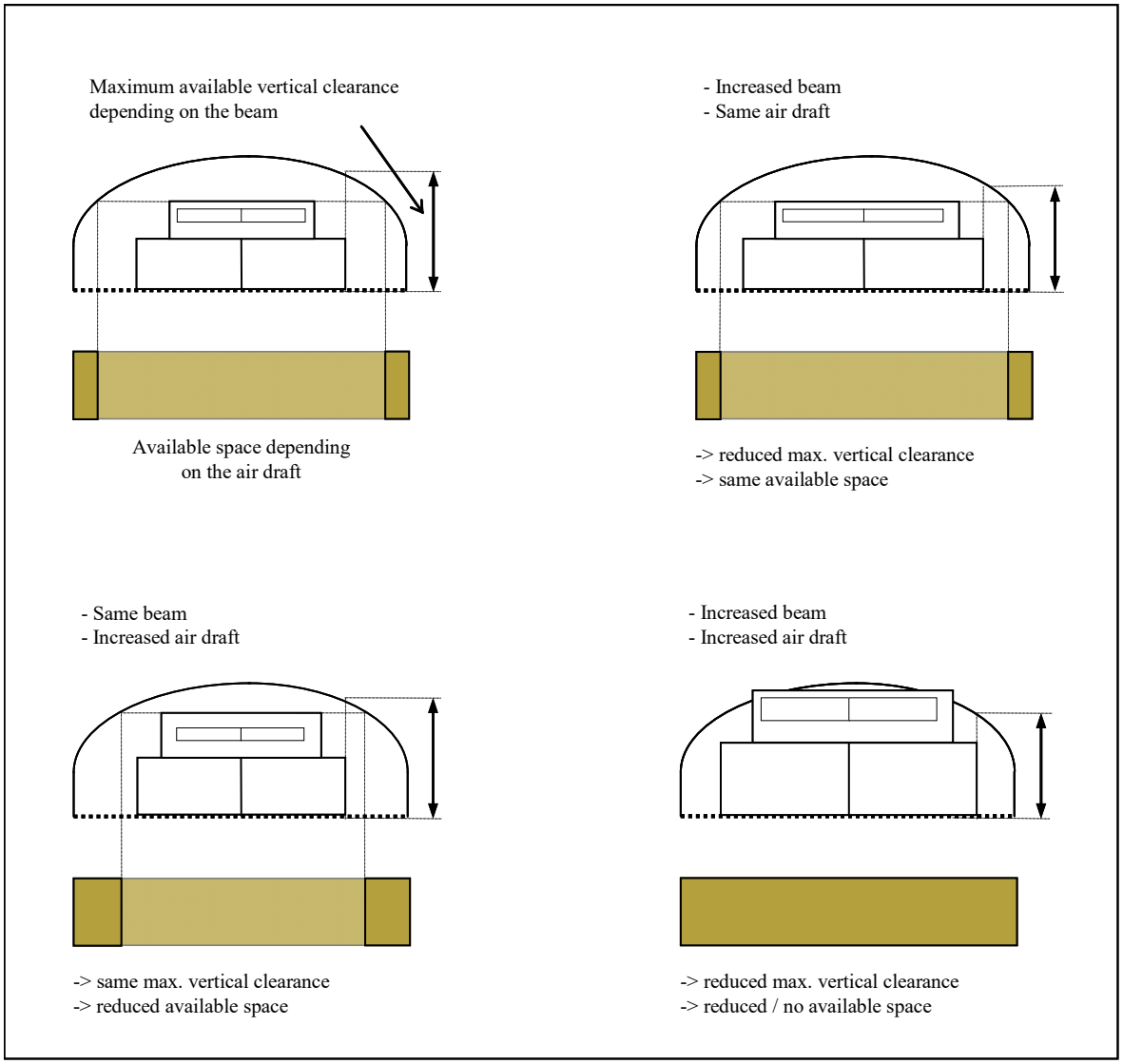
2.5 Bridges

A new CS for bridges has to be introduced to be able to indicate for bridge arches

a) the maximum vertical clearance depending on the given beam,
b) the available space depending on the given beam and air draft.

The condition for this is the encoding of a bridge arch as it is described in the Encoding Guide for Inland ENCs.

The Inland ECDIS manufacturers have to calculate the vertical clearance of aggregated bridge objects according to the given beam of the ship.



If the vertical clearance of a single bridge object of the aggregation is less than the calculated vertical clearance, this single bridge object must be symbolized by the symbol instruction “AC(CHBRN,3);TX('clr %.1f',1,2,3,'14108',1,1,CHBLK,11)”

If the vertical clearance of a single bridge object of the aggregation is larger or equal than the calculated vertical clearance, this single bridge object must be symbolized by the symbol instruction “AC(CHBRN,2)” without the indication of the non sufficient vertical clearance.

The boundaries of the bridge sequences which are not safe for navigation must be symbolized with the symbol instruction "LS(SOLD,2,DEPSC)".

The boundaries of the bridge sequences which are safe for navigation must be symbolized with the symbol instruction "LS(SOLD,1,CHGRD)".

The boundaries of the single bridge objects inside a bridge sequence, either safe or not safe for navigation, may not be symbolized.

2.6 Notice marks

A new CS has to be introduced for notice marks. If there are several notice marks at the same point the fnctnm attributes have to be evaluated for the selection of the correct symbol:

- if there is at least one notice mark with fnctnm = 1 (prohibition mark), the symbol notmrk04 has to be used;
- if there is no prohibition mark, but at least one notice mark with fnctnm = 2 (regulation mark) or fnctnm = 3 (restriction mark), the symbol notmrk05 has to be used;
- if there are only notice marks with fnctnm = 4 (recommendation mark) and/or notice marks with fnctnm = 5 (information mark), the symbol notmrk06 has to be used.

The symbols NMKREG21, NMKREG22, NMKREG23, NMKREG24, NMKRCD07, NMKRCD08, and NMKINF60 shall only be used if the attribute ORIENT is encoded and only for an optional display of detailed notice mark symbols. If ORIENT is not encoded, the symbols NMKREG02, NMKREG03, NMKREG10, NMKREG11, NMKRCD05, NMKRCD06, and NMKINF38 have to be used.

2.7 M_COVR

The CS (DATCVR02) of S-52 has to be modified for the display of bathymetric Inland ENCs. The M_COVR object of the bIENC shall be displayed with a blue outline for a clear distinction between areas which are covered by bIENCs and areas which are not.

2.8 Anchorage areas, depth areas, exceptional navigational structures, shoreline constructions and underwater rocks

The CS procedures for

- anchorage areas (RESTRN01),
- depth areas and exceptional navigational structures (DEPARE02),
- shoreline constructions (SLCONS04) and
- underwater rocks (OBSTRN07)

of S-52 have to be modified to include the display of achare, depare, excnst, slcons and uwtroc.

3. Symbols for Inland ECDIS

Symbols can be defined in vector format or in raster format. Symbols which will be rotated must be defined in vector format. The size of vector symbols is adapted automatically to the resolution and size of the screen. In case of raster symbols, different symbol sets must be designed to meet the requirements of a readable display.

A list of all Inland ECDIS symbols and their pictures is in Chapter 4 and 5. The symbols are supplied in digital form at https://ienc.openecdis.org.

4. List of symbol names

4.1 New Symbols to be shown on the chart display

4.1.1 Raster symbols

4.1.1.1 Symbols in general

BORDER01: check point, border

BUNSTA01: bunker station, diesel oil station

BUNSTA02: bunker station, water

BUNSTA03: bunker station, ballast

BUNSTA04: power supply

CUSTOM01: control point, custom

DISMAR05: distance mark on river axis

HECMTR01: hectometre point, 100 m

HECMTR02: hectometre point, 1 km

HGWTMK01: high water mark

LIFEBUOY: rescue station with life buoy, ring buoy, life ring or life saver

NOTMRK01: notice mark, prohibition

NOTMRK02: notice mark, regulation, restriction

NOTMRK03: notice mark, information, recommendation

NOTMRK04: several notice marks, at least one prohibition mark

NOTMRK05: several notice marks, no prohibition mark, at least one regulation or restriction mark

NOTMRK06: several notice marks, only information and/or recommendation marks

REFDMP01: refuse dump

SSENTR01: port entry

SSLOCK01: signal station, lock

SSWARS01: signal station, Wahrschau

TRNBSN01: turning basin

VEHTRF01: vehicle transfer

VTCLMK01: vertical clearance mark at bridges

WTLVGG02: gauge, height of water

4.1.1.2 Navigational aids

BCNSTK03: river beacon, stake – pole

BCNLAT23: river beacon, separation - simplified

BOYLAT25: river buoy, fairway separation – simplified

BOYLAT26: river buoy, obstruction at the right side

BOYLAT27: river buoy, obstruction at the left side

BOYINL01: river buoy right-hand side of the fairway (1.B of CEVNI, can be combined with a LIGHTS to 1.A or a TOPMA114 to 1.C or 1.D)

BOYINL02: river buoy left-hand side of the fairway (2.B of CEVNI, can be combined with a LIGHTS to 2.A or a TOPMA115 to 2.C or 2.D)

BOYINL03: river buoy bifurcation of the fairway (3.B of CEVNI, can be combined with a LIGHTS to 3.A, a TOPMA117 to 3.C or 3.D, a TOPMA114 to 3.E or 3.F and a TOPMA115 to 3.E1 or 3.F1)

BOYINL08: river buoy yellow float (8.C of CEVNI)

TOPMA100: beacon top mark, red cone, point down

TOPMA101: beacon top mark, red boarded cone, point down

TOPMA102: beacon top mark, green cone, point up

TOPMA103: beacon top mark, green boarded cone, point up

TOPMA104: beacon top mark, red boarded cone, point down, green boarded cone, point up, simplified

TOPMA105: beacon top mark, red boarded cone, point down, green boarded cone, point up, simplified

TOPMA106: beacon top mark, white-red square board, vertical

TOPMA107: beacon top mark, red boarded square board, vertical

TOPMA108: beacon top mark, white-green square board, diagonal

TOPMA109: beacon top mark, green boarded square board, diagonal

TOPMA110: beacon top mark, yellow-black square board, vertical

TOPMA111: beacon top mark, yellow St. Georg cross

TOPMA112: beacon top mark, yellow-black square board, diagonal

TOPMA113: beacon top mark, yellow Andreas-cross

TOPMA114: buoy top mark, red cylinder

TOPMA115: buoy top mark, green cone, point up

TOPMA116: buoy top mark, red-white-red board, entry prohibited

TOPMA117: buoy top mark, red-green sphere

4.1.1.3 Harbour facilities and terminals

HRBFAC10: default harbour facility

HRBFAC11: harbour facility naval base

HRBFAC12: harbour facility ship yard
HRBFAC13: harbour facility harbour-master's office
HRBFAC14: harbour facility pilot
HRBFAC15: water police
HRBFAC16: customs office
HRBFAC17: harbour facility service and repair
HRBFAC18: harbour facility quarantine station
TERMNL01: terminal, passenger terminal
TERMNL02: terminal, ferry terminal
TERMNL03: terminal, Container trans-shipment
TERMNL04: terminal, Bulk trans-shipment
TERMNL05: terminal, Oil trans-shipment
TERMNL06: terminal, Fuel trans-shipment
TERMNL07: terminal, Chemical trans-shipment
TERMNL08: terminal, Liquid Goods trans-shipment
TERMNL09: terminal, Explosive goods trans-shipment
TERMNL10: terminal, Fish trans-shipment
TERMNL11: terminal, Car trans-shipment
TERMNL12: terminal, General Cargo trans-shipment
TERMNL13: terminal, RoRo Terminal

4.1.2 Vector symbols for European inland waterways (must be rotated, the numbers refer to CEVNI)

NMKPRH02: no entry (general sign) (A.1)
NMKPRH12: no passing on left side (A.10)
NMKPRH13: no passing on right side (A.10)
NMKRCD01: recommended channel in both directions (D.1a)
NMKRCD02: recommended channel only in the direction indicated (D.1b)
NMKRCD03: you are recommended to keep on right side (D.2)
NMKRCD04: you are recommended to keep on left side (D.2)
NMKINF01: entry permitted (E.1)
NMKREG50: wreck pontoon, passage allowed on side showing red-white sign
NMKREG51: wreck pontoon, passage allowed on both sides

4.2 New symbols to be shown in the "information window on notice marks"

4.2.1 Notice marks for European inland waterways (the numbers refer to CEVNI)

NMKPRH03: sections closed to use, no entry except for non-motorized small craft (A.1.1a)

NMKPRH04: no overtaking (A.2)

NMKPRH05: no overtaking of convoys by convoys (A.3)

NMKPRH06: no passing or overtaking (A.4)

NMKPRH07: no berthing (i.e. no anchoring or making fast to the bank) on the side of the waterway on which the sign is placed (A.5)

NMKPRH08: no anchoring or trailing of anchors, cables or chains on the side of the waterway on which the sign is placed (A.6)

NMKPRH09: no making fast to the bank on the side of the waterway on which the sign is placed (A.7)

NMKPRH10: no turning (A.8)

NMKPRH11: do not create wash likely to cause damage (A.9)

NMKPRH14: motorized craft prohibited (A.12)

NMKPRH15: sports or pleasure craft prohibited (A.13)

NMKPRH16: water skiing prohibited (A.14)

NMKPRH17: sailing vessels prohibited (A.15)

NMKPRH18: all craft other than motorized vessels or sailing craft prohibited (A.16)

NMKPRH19: use of sail boards prohibited (A.17)

NMKPRH20: water bikes prohibited (A.20)

NMKPRH21: end of zone authorized for high speed navigation of small sport and pleasure craft (A.18)

NMKPRH22: no launching or beaching of vessels (A.19)

NMKREG01: there are restrictions on navigation: make enquiries (with additional sign at bottom of main sign) (C.4)

NMKREG02: proceed in left direction (B.1)

NMKREG03: proceed in right direction (B.1)

NMKREG04: move to the side of the fairway on your port side (B.2a)

NMKREG05: move to the side of the fairway on your starboard side (B.2b)

NMKREG06: keep the side of the fairway on your port side (B.3a)

NMKREG07: keep the side of the fairway on your starboard side (B.3b)

NMKREG08: cross fairway to port (B.4a)

NMKREG09: cross fairway to starboard (B.4b)

NMKREG10: stop as prescribed in the regulations (B.5)

NMKREG11: give a sound signal (B.7)

NMKREG12: keep a particularly sharp outlook (B.8)

NMKREG13: do not enter the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed (B.9a)

NMKREG14: do not cross the main waterway until certain that this will not oblige vessels proceeding on it to change their course or speed (B.9b)

NMKREG15: obligation to enter in a radiotelephone link on the channel as indicated on the board (B.11)

NMKREG16: depth of water limited (C.1)

NMKREG17: headroom limited (C.2)

NMKREG18: width of passage or channel limited (C.3)

NMKREG19: the channel lies at a distance from the left bank (C.5)

NMKREG20: the channel lies at a distance from the right bank (C.5)

NMKREG21: proceed in left direction (B.1), orientation encoded

NMKREG22: proceed in right direction (B.1), orientation encoded

NMKREG23: stop as prescribed in the regulations (B.5), orientation encoded

NMKREG24: give a sound signal (B.7), orientation encoded

NMKREG25: obligation to use onshore power supply point (B.12)

NMKRCD05: you are recommended to proceed in the left direction (D.3)

NMKRCD06: you are recommended to proceed in the right direction (D.3)

NMKRCD07: you are recommended to proceed in the left direction (D.3), orientation encoded

NMKRCD08: you are recommended to proceed in the right direction (D.3), orientation encoded

NMKINF02: overhead cable crossing (E.2)

NMKINF03: weir (E.3)

NMKINF04: ferry-boat not moving independently (E.4)

NMKINF05: ferry-boat moving independently (E.4b)

NMKINF06: berthing (i.e. anchoring or making fast to the bank) permitted on the side of the waterway on which the sign is placed (E.5)

NMKINF07: berthing area reserved for pushing navigation vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed (E.5.4)

NMKINF08: berthing area reserved for pushing navigation vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed (E.5.5)

NMKINF09: berthing area reserved for pushing navigation vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed (E.5.6)

NMKINF10: berthing area reserved for pushing navigation vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed (E.5.7)

NMKINF11: berthing area reserved for vessels other than pushing navigation vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed (E.5.8)

NMKINF12: berthing area reserved for vessels other than pushing navigation vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed (E.5.9)

NMKINF13: berthing area reserved for vessels other than pushing navigation vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed (E.5.10)

NMKINF14: berthing area reserved for vessels other than pushing navigation vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed (E.5.11)

NMKINF15: berthing area reserved for all vessels that are not required to carry blue lights or blue cones on the side of the waterway on which the sign is placed (E.5.12)

NMKINF16: berthing area reserved for all vessels that are required to carry one blue light or one blue cone on the side of the waterway on which the sign is placed (E.5.13)

NMKINF17: berthing area reserved for all vessels that are required to carry two blue lights or two blue cones on the side of the waterway on which the sign is placed (E.5.14)

NMKINF18: berthing area reserved for all vessels that are required to carry three blue lights or three blue cones on the side of the waterway on which the sign is placed (E.5.15)

NMKINF19: anchoring or trailing of anchors, cables or chains permitted on the side of the waterway on which the sign is placed (E.6)

NMKINF20: making fast to the bank permitted on the side of the waterway on which the sign is placed (E.7)

NMKINF21: berthing area reserved for loading and unloading vehicles (E.7.1)

NMKINF22: turning area (E.8)

NMKINF23: crossing with secondary waterway ahead (E.9a)

NMKINF24: secondary waterway ahead on the right (E.9.b)

NMKINF25: secondary waterway ahead on the left (E.9.c)

NMKINF26: secondary waterway ahead (main waterway right)

NMKINF27: secondary waterway ahead (main waterway left)

NMKINF28: secondary waterway left (main waterway right)

NMKINF29: secondary waterway right (main waterway left)

NMKINF30: secondary waterway ahead and left (main waterway right)

NMKINF31: secondary waterway ahead and right (main waterway left)

NMKINF32: crossing with main waterway ahead (E.10.a)

NMKINF33: junction with main waterway ahead (E.10.b)

NMKINF34: junction with main waterway ahead and right

NMKINF35: junction with main waterway ahead and left

NMKINF36: junction with main waterway ahead and right (secondary waterway left)

NMKINF37: junction with main waterway ahead and left (secondary waterway right)

NMKINF38: end of prohibition or obligation applying to traffic in one direction only, or end of restriction (E.11)

NMKINF39: drinking water supply (E.13)

NMKINF40: telephone (E.14)

NMKINF41: motorized vessels permitted (E.15)

NMKINF42: sport and pleasure craft permitted (E.16)

NMKINF43: water skiing permitted (E.17)

NMKINF44: sailing vessels permitted (E.18)

NMKINF45: craft other than motorized vessels or sailing craft permitted (E.19)

NMKINF46: use of sailboards permitted (E.20)

NMKINF47: possibility of obtaining nautical information by radiotelephone on the channel indicated (E.23)

NMKINF48: water bikes permitted (E.24)

NMKINF49: zone authorized for high speed navigation of small sport and pleasure craft (E.21)

NMKINF50: launching or beaching of vessels small craft permitted (E.22)

NMKINF51-55: maximum number of vessels permitted to berth abreast (E.5.3)

NMKINF56: electrical power supply point (E.25)

NMKINF57: winter harbour (E.26)

NMKINF58: winter shelter (E.27)

NMKINF59: use of spuds permitted (E.6.1)

NMKINF60: end of prohibition or obligation applying to traffic in one direction only, or end of restriction (E.11), orientation encoded

4.2.2 Notice marks for Russian inland waterways (the numbers refer to GOST 26600-98)

NMKPR101: no anchoring or trailing of anchors, cables or chains (1.1)

NMKPR102: no passing or overtaking of convoys (1.2)

NMKPR103: no passing or overtaking (1.3)

NMKPR104: do not create wash (1.4)

NMKPR105: small crafts prohibited (1.5)

NMKRE101: Attention! (keep caution) (2.1)

NMKRE102: fairway crossing (2.2)

NMKRE103: headroom limited (2.4)

NMKIN101: turning area (3.2)

NMKIN102: shipping inspection point (3.3)

4.2.3 Auxiliary panels (CEVNI Annex 7, Section II)

ADDMRK01: right (triangle to the right)

ADDMRK02: left (triangle to the left)

ADDMRK03: bottom (rectangle, portrait main board)

ADDMRK04: top (rectangle, portrait main board)

ADDMRK05: bottom (rectangle)

ADDMRK06: top (rectangle)

ADDMRK07: right (triangle to the right, landscape main board)

ADDMRK08: left (triangle to the left, landscape main board)

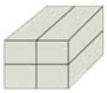
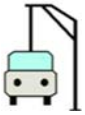
ADDMRK09: bottom (triangle to the bottom)

ADDMRK10: bottom (triangle to the bottom, portrait main board)

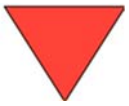
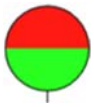
5. Pictures of Inland ECDIS symbols

5.1 Raster symbols

5.1.1 Symbols in general

 BORDER01	 BUNSTA01	 BUNSTA02	 BUNSTA03	 BUNSTA04	 CUSTOM01
 DISMAR05	 HECMTR01	 HECMTR02	 HGWTMK01	 LIFEBUOY01	 NOTMRK01
 NOTMRK02	 NOTMRK03	 NOTMRK04	 NOTMRK05	 NOTMRK06	 REFDMP01
 SSENTR01	 SSLOCK01	 SSWARS01	 TRNBSN01	 VEHTRF01	 VTCLMK01
 WTLVGG02					

5.1.2 Navigational aids

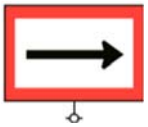
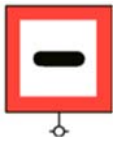
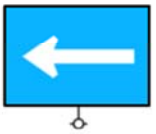
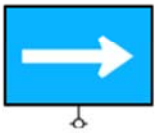
 BCNSTK03	 BCNLAT23	 BOYLAT25	 BOYLAT26	 BOYLAT27	 TOPMA100
 TOPMA101	 TOPMA102	 TOPMA103	 TOPMA104	 TOPMA105	 TOPMA106
 TOPMA107	 TOPMA108	 TOPMA109	 TOPMA110	 TOPMA111	 TOPMA112
 TOPMA113	 TOPMA114	 TOPMA115	 TOPMA116	 TOPMA117	 BOYINL01
 BOYINL02	 BOYINL03	 BOYINL08			

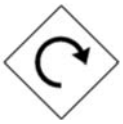
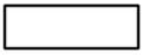
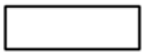
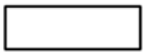
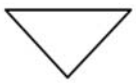
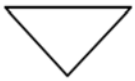
5.1.3 Harbour facilities, terminals

 HRBFAC10	 HRBFAC11	 HRBFAC12	 HRBFAC13	 HRBFAC14	 HRBFAC15
 HRBFAC16	 HRBFAC17	 HRBFAC18	 TERMNL01	 TERMNL02	 TERMNL03
 TERMNL04	 TERMNL05	 TERMNL06	 TERMNL07	 TERMNL08	 TERMNL09
 TERMNL10	 TERMNL11	 TERMNL12	 TERMNL13		

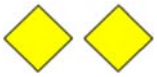
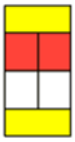
5.2 Symbols for the "information window on notice marks"

 NMKPRH03	 NMKPRH04	 NMKPRH05	 NMKPRH06	 NMKPRH07	 NMKPRH08
 NMKPRH09	 NMKPRH10	 NMKPRH11	 NMKPRH12	 NMKPRH13	 NMKPRH14
 NMKPRH15	 NMKPRH16	 NMKPRH17	 NMKPRH18	 NMKPRH19	 NMKPRH20
 NMKPRH21	 NMKPRH22	 NMKPR101	 NMKPR102	 NMKPR103	 NMKPR104
 NMKPR105	 NMKREG01	 NMKREG02	 NMKREG03	 NMKREG04	 NMKREG05
 NMKREG06	 NMKREG07	 NMKREG08	 NMKREG09	 NMKREG10	 NMKREG11
 NMKREG12	 NMKREG13	 NMKREG14	 NMKREG15	 NMKREG16	 NMKREG17

 NMKREG18	 NMKREG19	 NMKREG20	 NMKREG21	 NMKREG22	 NMKREG23
 NMKREG24	 NMKREG25	 NMKRE101	 NMKRE102	 NMKRE103	
 NMKRCD05	 NMKRCD06	 NMKRCD07	 NMKRCD08	 NMKINF02	 NMKINF03
 NMKINF04	 NMKINF05	 NMKINF06	 NMKINF07	 NMKINF08	 NMKINF09
 NMKINF10	 NMKINF11	 NMKINF12	 NMKINF13	 NMKINF14	 NMKINF15
 NMKINF16	 NMKINF17	 NMKINF18	 NMKINF19	 NMKINF20	 NMKINF21
 NMKINF22	 NMKINF23	 NMKINF24	 NMKINF25	 NMKINF26	 NMKINF27
 NMKINF28	 NMKINF29	 NMKINF30	 NMKINF31	 NMKINF32	 NMKINF33

 NMKINF34	 NMKINF35	 NMKINF36	 NMKINF37	 NMKINF38	 NMKINF39
 NMKINF40	 NMKINF41	 NMKINF42	 NMKINF43	 NMKINF44	 NMKINF45
 NMKINF46	 NMKINF47	 NMKINF48	 NMKINF49	 NMKINF50	 NMKINF51
 NMKINF52	 NMKINF53	 NMKINF54	 NMKINF55	 NMKINF56	 NMKINF57
 NMKINF58	 NMKINF59	 NMKINF60	 NMKINF58	 NMKIN101	 NMKIN102
 ADDMRK01	 ADDMRK02	 ADDMRK03	 ADDMRK04	 ADDMRK05	 ADDMRK06
 ADDMRK07	 ADDMRK08	 ADDMRK09	 ADDMRK10		

5.3 Vector symbols

 NMKINF01	 NMKPRH02	 NMKPRH12	 NMKPRH13	 NMKRCD01	 NMKRCD02
 NMKRCD03	 NMKRCD04	 NMKREG50	 NMKREG51		

6. Bathymetric Inland ENCs

Bathymetric Inland ENCs must be displayed as complementary layer only. It is not allowed to display bIENCs if the respective geographic area is not fully covered by an IENC or ENC. The usage of the respective ENCs/IENCs must be within the usage band of the bIENC. This means for example a bIENC with usage 5 to 7 may not be displayed together with an IENC of usage 4.

The bIENC has display priority over:

depare

DEPARE

DRGARE

DEPCNT

SOUNDG

UNSARE

M_COVR

and over the safety contour of the ENC or IENC. The bIENC must not have display priority over any other features of the IENC.

ANNEX 3
PRODUCT SPECIFICATION FOR BATHYMETRIC INLAND ENCS, EDITION 2.5

Unless it is specifically stated different in this Annex, the Inland ENC Product Specification (Annex 1) is applicable for bathymetric Inland ENCs as explained in the table below:

<adopted>	The definitions and sections of the IENC Product Specification apply completely for the bIENC Product Specification (100%)
<adopted with modifications>	The IENC Product Specification is relevant but for bIENCs slight deviations must be considered (e.g. exceptions). These modifications are described in the text of the relevant section.
<changed>	There's no need to refer to the IENC Product Specification. Everything is defined in the relevant section marked as <changed>.
<n/a>	This section of the IENC Product Specification is not applicable for the bIENC Product Specification.

In the following the modifications, changes and/or extensions are listed.

1. Introduction

<changed>

The bathymetric Inland ENC is a S-57 based product in addition to the already existing products (ENC, Inland ENC).

The content of bathymetric ENCs is limited to the bathymetry data only. The depth information can be encoded by means of the object classes depth area (DEPARE, depare), dredged area (DRGARE), depth contour (DEPCNT) and soundings (SOUNDG). Navigable areas without depths information are encoded as unsurveyed areas (UNSARE). Meta data is used to provide information about the pre-mentioned feature objects (e.g. accuracy and quality information).

Due to its limited content a bathymetric Inland ENC does not comply with the existing ENC Product Specification. And it complies with the Product Specification for Inland ECDIS Edition 2.0, 2.1, 2.2, 2.3 neither.

Bathymetric Inland ENCs must be regarded as bathymetric complement to ENCs and Inland ENCs. To make use of bathymetric Inland ENCs a dedicated Product Specification for bathymetric Inland ENCs is required. This Product Specification describes the dataset structure, topology, contents, meta information, object classes/attributes etc.

The use of bathymetric Inland ENCs facilitates the incorporation of survey-sensor based depth information during the ENC production process. This is because the bathymetry is stored in separate datasets which are simply replaced when new depth data is available.

Unless it is specifically stated different in this document the Inland ENC Product Specification is applicable for bathymetric Inland ENCs. In the following the modifications changes and/or extensions are listed.

A bathymetric Inland ENC shall be produced in accordance with the regulations defined in:

- this Product Specification for bathymetric Inland ENC;
- the Feature Catalogue for bathymetric Inland ENC;
- the Encoding Guide for Inland ENCs (especially pages C.1.1, C.1.4, C.1.6, C.1.7, C.1.8, I.1.1, I.1.2, I.1.3, I.1.6, I.1.7, I.1.8, I.1.9 and I.2.1).

The numbering correlates to the ENC Product Specification, S-57 Appendix B.1, Edition 2.0

1.1 Definitions

<adopted with modifications>

1.2 Contents of the document

The bENC Product Specification contains one application profile for the basic bENC used to populate the SENC (EN application profile). An application profile for updating of the SENC (ER application profile) is not defined. The application profile is described in S-57 Part 3, clause 1.4.2.

2. General information

2.1 Navigational purpose

<changed>

Bathymetric Inland ENCs make use of the same navigational purposes as ENCs (1 to 6) and Inland ENCs (1 to 9). However, a bathymetric Inland ENC has a range of categories of navigational purposes (e.g. from usage 4 to 9) it belongs to.

The INTU field of the S-57 Data Set Identification Record is used to indicate the navigational purpose of a cell. The expected input must be a binary value of type “unsigned integer”. This is why each possible range of bIENC navigational purpose categories must be mapped to a value of this type.

The mapping is done by means of the following formula:

$V_{INTU} = NP_{LC} *10 + NP_{HC} + 128$

Where

V_{INTU}: value of INTU field

NP_{LC}: lower category of navigational purpose

NP_{HC}: higher category of navigational purpose

Example: A usage range from 4 to 9 is mapped to the value 4*10+9+128 = 177.

2.2 Cells

<changed>

In order to facilitate the efficient processing of bathymetric Inland ENC data the geographic coverage of a given usage must be split into cells. Each cell of data must be contained in a physically separate, uniquely identified file on the transfer medium, known as a data set file (see clauses 5.4 and 5.6.3).

The geographic extent of the cell must be chosen by the bathymetric Inland ENC producer to ensure that the resulting data set file contains no more than 5 Megabytes of data. Subject to this consideration, the cell size must not be too small in order to avoid the creation of an excessive number of cells.

The coordinates of the borders of the cell are encoded in decimal degrees in the “Catalogue Directory” [CATD] field.

Point or line feature objects which are at the border of two cells with the same navigational purpose must be part of only one cell. They are put in the south or west cell (i.e. north and east borders of the cell are part of the cell, south and west borders are not).

When a feature object exists in several cells its geometry must be split at the cell boundaries and its complete attribute description must be repeated in each cell.

Bathymetric Inland ENCs do not have to be rectangular. The meta-object M_COVR with CATCOV1 is used to represent the geographic area containing data.

Data within bathymetric cells of the same navigational purpose must not overlap.

2.3 Topology

<changed>

Bathymetric Inland ENCs use planar graph topology without faces (edges must not cross).

3. Features and attributes

3.1 Feature object identifiers

<adopted>

3.2 Standard features and attributes

<adopted with amendments>

Object classes defined in the Feature Catalogue for Inland ENCs, but not listed in the following section of this document are prohibited for use in bIENCs.

3.3 Objects permitted for use in bENC and their geometric primitives

<changed>

Following is a list of those features allowed in a bathymetric Inland ENC and the geometric primitives allowed for each of them (P = point, L = line, A = area).

#		P	L	A
1	DEPCNT		L	
2	DEPARE			A
3	DRGARE			A
4	UNSARE			A
5	SOUNDG	P		
6	M_COVR			A
7	M_QUAL			A
8	M_SREL			A
9	M_SDAT			A
10	M_CSCL			A
11	M_NPUB			A
12	depare			A
13	m_sdat			A

The attributes and enumerations which may be used for the features are defined in the Feature Catalogue for bathymetric Inland ENCs.

3.4 Meta features

<adopted with modifications>

A meta feature M_COVR is not required to cover any part of the cell that does not contain geographical data.

The meta features M_NSYS and m_nsys are not used.

3.5 Geo and meta feature attributes

3.5.1 Missing enumerations

<adopted>

3.5.2 Mandatory attributes

<changed>

The following table gives the attributes which are mandatory for each feature. When a feature is not in the list it means that there are no mandatory attributes for this feature.

Feature	Attributes					
DEPCNT	VALDCO					
DEPARE	DRVAL1	DRVAL2				
DRGARE	DRVAL1					
M_COVR	CATCOV 1					
M_QUAL	either:	CATZOC	or at least one of:	POSACC	SOUACC	TECSOU
M_SDAT	VERDAT					
M_CSCL	CSCALE					
depare	DRVAL1	DRVAL2	hunits	wtwdis		
m_sdat	verdat					

3.5.3 Prohibited attributes

<adopted>

3.5.4 Numeric enumerations

<adopted>

3.5.5 Text enumerations

<adopted>

3.5.6 Hierarchy of meta data

<adopted>

3.6 Cartographic features

<adopted>

3.7 Time varying objects

<adopted>

3.8 Geometry

<adopted>

3.9 Relationships

<n/a>

3.10 Groups

<adopted>

3.10.1 Group 1 (skin of the earth)

<adopted with modifications>

The list below contains the features that must always be in Group 1, if they appear in the dataset and if they are of type area.

DEPARE DRGARE UNSARE depare

3.10.2 Group 2 (all other features)

<adopted>

3.11 Language and alphabet

3.11.1 Language

<adopted>

3.11.2 Use of lexical level 2

<adopted>

4. Cartographic framework

4.1 Horizontal datum

<adopted>

4.2 Vertical and sounding datum

<adopted>

4.3 Projection

<adopted>

4.4 Units

<adopted>

5. Provision of data

5.1 Implementation

<adopted>

5.2 Compression

<adopted>

5.3 Encryption

<adopted>

5.4 Exchange set

If bIENC data is made available via SENC distribution section 5.4 is not applicable.

5.4.1 Content of the exchange set

<adopted with modifications>

Picture files must not be included

5.4.2 Volume naming

<adopted>

5.4.3 Directory structure

<adopted>

5.5 Data sets

<modified>

Two kinds of data sets may be produced:

new data set: no bathymetric Inland ENC data has previously been produced for this area and for the same navigational purpose.

new edition of a data set: new information which has not been previously distributed.

Updates and re-issues must not be produced.

5.6 File naming

5.6.1 README file

<adopted>

5.6.2 Catalogue file

<adopted with modifications>

Not applicable in case of SENC distribution.

5.6.3 Data set files

<modified>

The data set files are named according to the specifications given below:

```
CCBRRRRR.000
|    | |   |       |
|    | |   |       |------ 000 = extension*
|    | |   |-------------- RRRRR =   waterway code and waterway distance (kilometre) or other
|    | |                             individual cell code.
|    | |-----------------
|    |---------------------- B = Product Id (bathymetric ENC)
|------------------------- CC = producer code
```

The main part forms an eight character identifier where:

- the first two characters identify the producer.
- the third character indicates the Product Id
- the fourth to eighth characters are used for the cell code. This code can be used in any way (e.g. to identify the waterway and the waterway distance) by the producer to provide the unique file name. If characters other than numbers are used only uppercase letters are allowed.

A valid base cell file must be uniquely identified worldwide by its name, and have the extension 000.

*In case of SENC distribution the extension may vary.

5.6.4 Text and picture files

<adopted with modifications>

Picture files are not used.

5.7 Updating

<changed>

In order to ensure that new editions are incorporated into the SENC in the correct sequence without any omission, the file extension and a number of subfields in the Data Set Identification [DSID] field are used in the following way:

file extension	every new data set or new edition must have a 000 extension. In case of SENC distribution the extension may vary.
edition number	when a data set is initially created, the edition number 1 is assigned to it. The edition number is increased by 1 at each new edition.
update number	update number 0 is assigned to a new data set.
update application	update application date
issue date	date on which the data was made available by the data producer.

Each new edition of a data set must have the same name as the base cell file which it replaces. The ENC update mechanism is described in S-57 Part 3, clause 8.

In order to modify a text file, a new file with the same name is created.

5.8 Media

<adopted>

5.9 Error detection

<adopted>

6. Application profiles

6.1 General

<adopted>

6.2 Catalogue file

<adopted with modifications>

This section is not applicable in case of SENC distribution.

6.3 EN application profile

<adopted with modifications>

Data Set Identification field [DSID]

The value of the INTU sub-field must be “unsigned binary”. It is determined by means of the following formula:

$V_{INTU} = NP_{LC} *10 + NPHC + 128$

Where

V_{INTU}: value of INTU field

NP_{LC}: lower category of navigational purpose

NP_{HC}: higher category of navigational purpose

Example: A usage range from 4 to 9 is mapped to the value 4*10+9+128 = 177

In the PRSP (Product specification) subfield the value {200} is used as the indicator for a bathymetric ENC. The Product specification edition number is 1.0 (PRED subfield).

Data Set Parameter field – DSPM

In the VDAT (vertical datum) sub-field the value {255} (= null) is used.

In the SOMF (sounding multiplication factor) sub-field the value {100} is used.

6.4 ER application profile

<n/a>

ANNEX 4
COMPARISON OF THE STRUCTURES OF THE STANDARD FOR MARITIME ECDIS AND OF ES-RIS

Maritime ECDIS	ES-RIS	OPEN ECDIS FORUM https://ienc.openecdis.org
IMO MSC.232(82) revised Performance Standards for ECDIS, December 2006 Appendix 1: Reference documents Appendix 2: SENC Information available for display during route planning and route monitoring Appendix 3: Navigational elements and parameters Appendix 4: Areas for which special conditions exist Appendix 5: Alarms and indicators Appendix 6: Back-up requirements Appendix 7: Raster Chart Display System (RCDS), mode of operation	Part I, Chapter 1: General provisions and references Part I, Chapter 2: General requirements and specifications of Inland ECDIS Part I, Chapter 3: System configurations (Figures)	
IHO S-57: Transfer Standard for Digital Hydrographic Data, Edition 3.1, Supplement No 2, June 2009 Part 1: General Introduction Part 2: Theoretical Data Model Part 3: Data Structure	Part I, Chapter 4: Data Standard for IENCs	
Appendix A: IHO Object catalogue Introduction Chapter 1: Object Classes Chapter 2: Attributes Annex B: Attributes/Object Classes Cross Reference		IENC Feature Catalogue Bathymetric IENC Feature Catalogue

Maritime ECDIS	ES-RIS	OPEN ECDIS FORUM https://ienc.openecdis.org
Appendix B: Product specifications Appendix B.1: ENC Product specification Annex A: Use of the Object Catalogue for ENC Annex B: Example of Cyclic Redundancy Check (CRC) Coding Appendix B.2: IHO Object Catalogue Data Dictionary Product Specification		Product Specification for IENCs Product Specification for bathymetric IENCs IENC Encoding Guide
IHO S-62 ENC Producer Codes, Edition 2.5, December 2009		Codes for Producers and Waterways
IHO S-52 Specification for Chart Content and Display Aspects of ECDIS, Edition 6, March 2010 Annex A: IHO ECDIS presentation library Annex B: Procedure for initial calibration of colour displays Annex C: Procedure for maintaining the calibration of displays Appendix 1: Guidance on updating the electronic chart Annex A: Definitions and acronyms Annex B: Current updating practice for paper charts Annex D: Estimate of data volume	Part I, Chapter 6: Presentation Standard for Inland ECDIS	Presentation Library for Inland ECDIS Look-up tables Symbols Conditional Symbology Procedures
IEC 61174 Edition 3.0: ECDIS - Operational and Performance Requirements, Methods of Testing and Required Test Results, 2008-09	Part V	
S-32 Appendix 1: Hydrographic Dictionary – Glossary of ECDIS-Related Terms	Part I, Chapter 7: Glossary of Terms	

ANNEX 5
DIGITAL INTERFACE SENTENCES FOR INLAND AIS

1. Input sentences

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

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

2. Inland waterway static vessel data

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

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

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

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

3. Inland waterway voyage data

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

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

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

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

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

ANNEX 6
INLAND VESSEL AND CONVOY TYPES

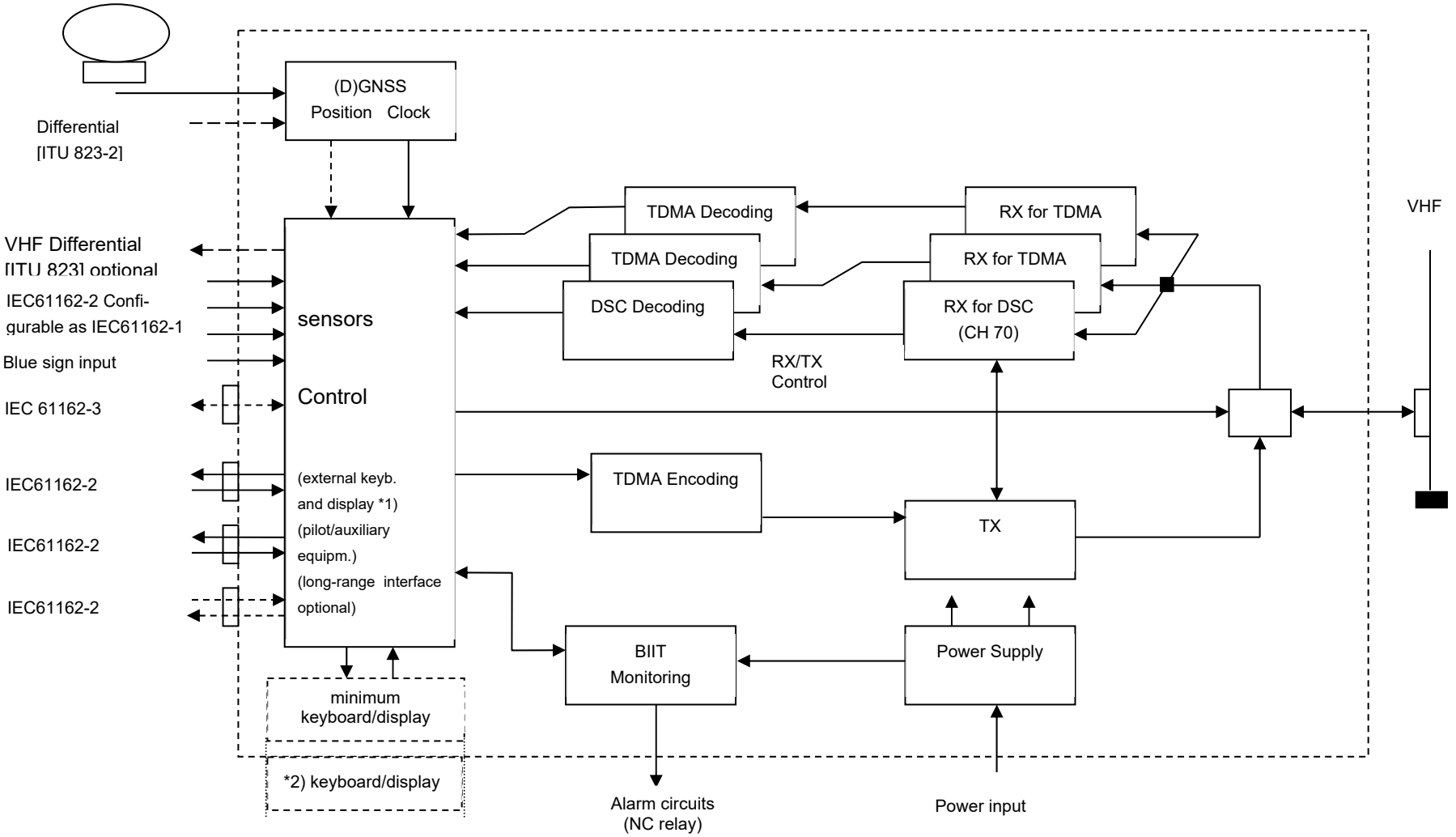
This correspondence table is based on an excerpt of the 'Codes for Types of Means of Transport' according to UNECE Recommendation 28 and the maritime ship types as defined in ITU-R M.1371 'Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band'.

Inland vessel and convoy type		Maritime ship type	
code	Vessel name	1st digit	2nd digit
8000	Vessel, type unknown	9	9
8010	Motor freighter	7	9
8020	Motor tanker	8	9
8021	Motor tanker, liquid cargo, type N	8	0
8022	Motor tanker, liquid cargo, type C	8	0
8023	Motor tanker, dry cargo as if liquid (e.g. cement)	8	9
8030	Container vessel	7	9
8040	Gas tanker	8	0
8050	Motor freighter, tug	7	9
8060	Motor tanker, tug	8	9
8070	Motor freighter with one or more vessels alongside	7	9
8080	Motor freighter with tanker	8	9
8090	Motor freighter pushing one or more freighters	7	9
8100	Motor freighter pushing at least one tank-vessel	8	9
8110	Tug, freighter	7	9
8120	Tug, tanker	8	9
8130	Tug, freighter, coupled	3	1
8140	Tug, freighter/tanker, coupled	3	1
8150	Freightbarge	9	9
8160	Tankbarge	9	9
8161	Tankbarge, liquid cargo, type N	9	0
8162	Tankbarge, liquid cargo, type C	9	0
8163	Tankbarge, dry cargo as if liquid (e.g. cement)	9	9
8170	Freightbarge with containers	8	9

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

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

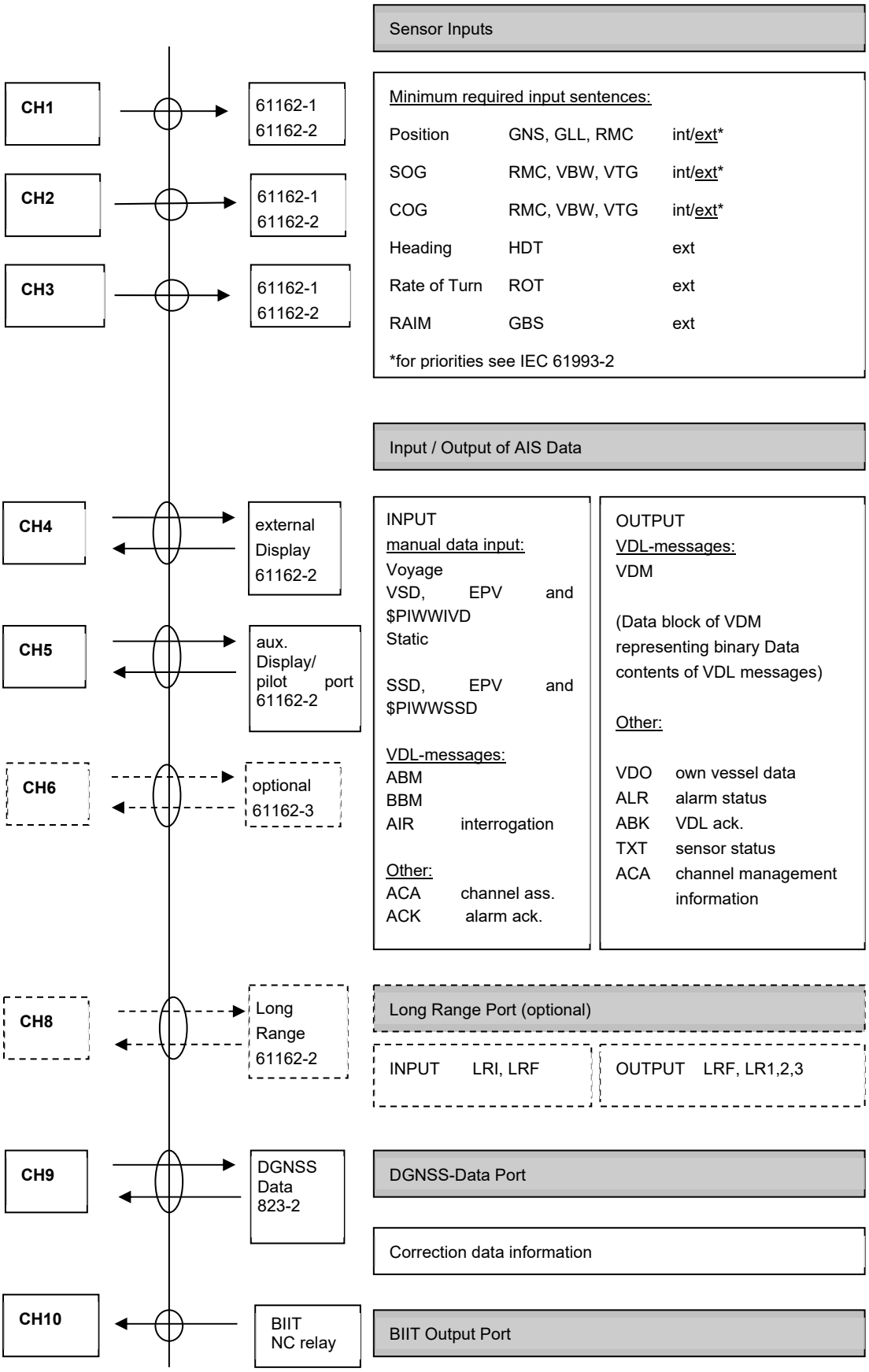
ANNEX 7
(INFORMATIVE) BLOCK DIAGRAM OF AIS



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

*2) The internal keyboard/display may be optionally

ANNEX 8
(NORMATIVE) AIS INTERFACE OVERVIEW



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

1. Inland Waterway voyage data

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

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

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

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

2. Inland Waterway Static Vessel data

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

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

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

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

ANNEX 10
VESSEL DIMENSIONS

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

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

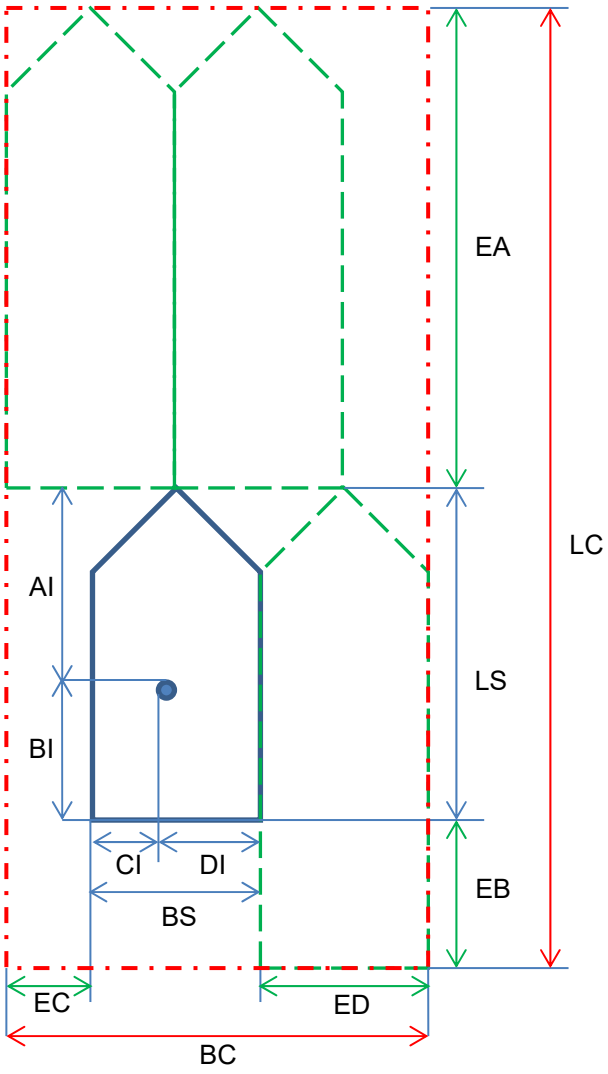
Input parameters using SSD:
(own vessel)
Password protected
AI (=A_{SSD}), BI (=B_{SSD}), CI (=C_{SSD}), DI (=D_{SSD}) (dm)

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

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

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

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



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

Output RFM 10:
LC (dm)
BC (dm)

ANNEX 11
INLAND AIS MESSAGES

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1. Overview of Inland Application Specific Messages (ASM)

Table 11-1
Overview of Inland AIS ASM

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

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

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

2.1 Convoy Message (Inland specific message FI 11)

Table 11-2
Convoy message report

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

Additional information / usage notes

a) The message shall be sent by vessels only.
b) The control status of the message is default off.
c) The timeout should be 18 minutes (3 times the reporting rate).
d) The reporting rate should be 6 minutes.

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

e) The input of the loading status is optional.
f) Additional barge information (ENI and loading condition) can be added as necessary.
g) The application creating the convoy message shall check that the formation code and the number of barge data (ENI and loading status) transmitted in the message match
h) Up to three barges can be transmitted in a single-slot message
i) Up to ten barges can be transmitted in a two-slot message
j) The XML file provided in Appendix 1 provides the details how to interpret the convoy code
k) The timeout cannot be set by the control message
l) The reporting rate cannot be set by the control message

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

Table 11-3
Inland Capability Reply

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

Additional information / usage notes:

a) The message shall be sent by vessels only
b) The control status of the message is default on
c) The reporting rate should be on event
d) The timeout is undefined
e) This broadcast message from vessel is always available and cannot be influenced by the control message.

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

Table 11-4
ETA report

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

Table 11-5
List of virtual MMSI numbers

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

Additional information / usage notes

a) The message shall be sent by vessels only
b) The control status of the message is default on
c) The reporting rate should be on event
d) The timeout is undefined
e) An acknowledgement by the RTA message (Inland ASM FI 22) should be received within 15 minutes. If not, the ETA message should be repeated once. After an additional 15 minutes the user is notified that no answer has been received.

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

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

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

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

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

Optional information content from shore through Application Specific Messages

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

3. Optional Application Specific Messages sent from AIS shore stations

3.1 Control Message (Inland specific message (FI 1)

Table 11-6
Control Report

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

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

Additional information / usage notes

a) The message shall be sent from shore only

b) The reporting rate should be on event

c) The timeout is defined in the message

d) The reporting rate depends on the conditions

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

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

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

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

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

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

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

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

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

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

Table 11-7
Inland Capability Interrogation

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

Additional information / usage notes

a) The message shall be sent from shore only.
b) The reporting rate should be on event.
c) The timeout for this message is undefined.

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

Table 11-8
Requested Time of Arrival

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

Additional information / usage notes

a) The message shall be sent from shore only

b) The reporting rate should be on event

c) The timeout for this message is undefined

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

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

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

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

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

Table 11-9
Present Bridge Clearance message

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

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

Additional information / usage notes

a) The message shall be sent from shore only

b) The reporting rate should be 10 minutes

c) The timeout for this message should be 60 minutes

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

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

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

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

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

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

3.5 Water Level message (Inland specific message FI 26)

Table 11-10
Water Level message

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

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

Additional information / usage notes

a) The message shall be sent from shore only
b) The reporting rate should be 5-15 minutes
c) The timeout for this message should be 18 minutes

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

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

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

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

3.6 Signal Station message (Inland specific message FI 41)

Table 11-11
Signal Station Message

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

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

Additional information / usage notes

a) The message shall be sent from shore only

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

c) The timeout for this message should be 4 minutes

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

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

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

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

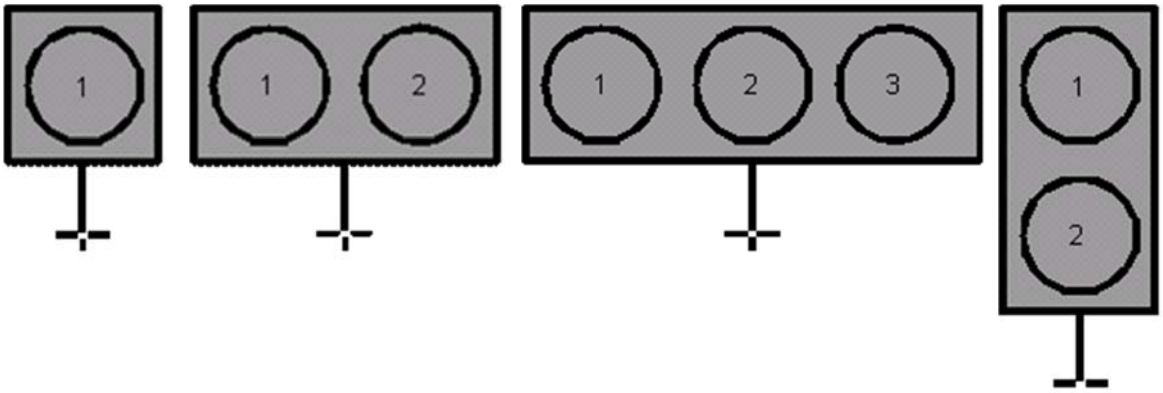
Reference tables:

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

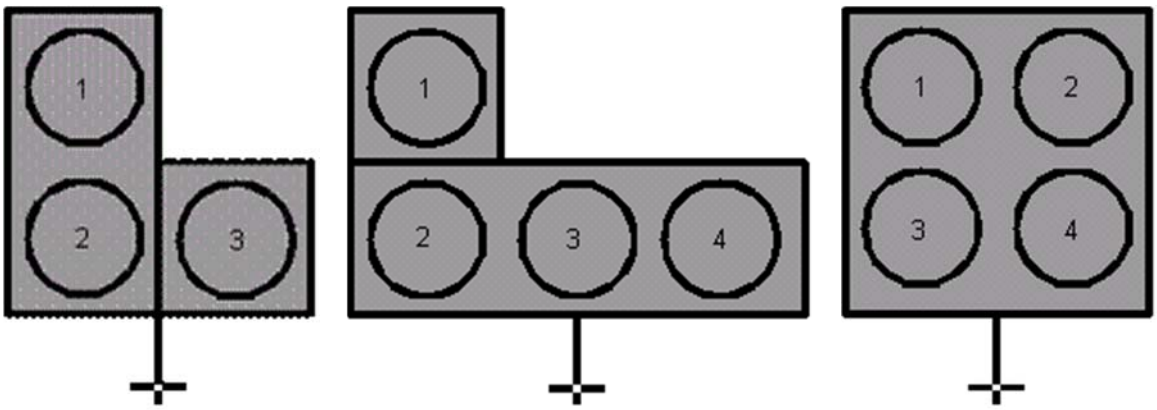
The status of a traffic signal can be “No light”, “white”, “yellow”, “green”, “red”, “white flashing” and “yellow flashing” according to CEVNI.

For harmonized display an SVG library is provided.

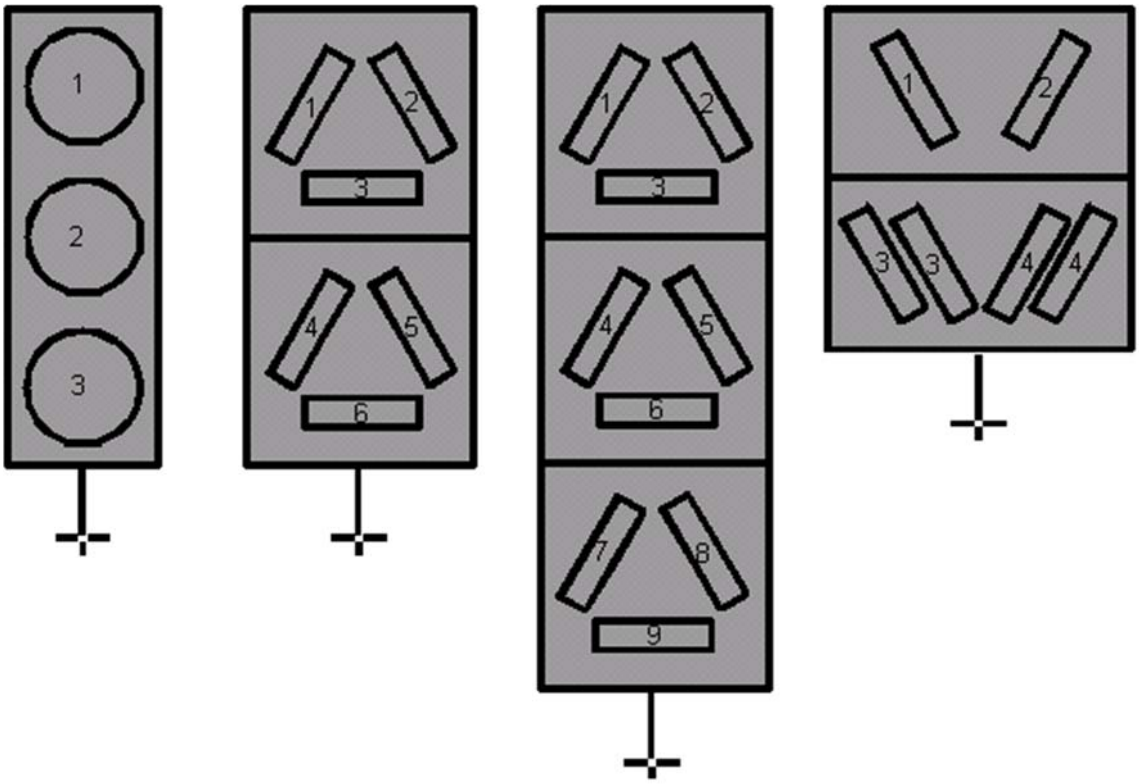
Figure 11-1
Signal forms



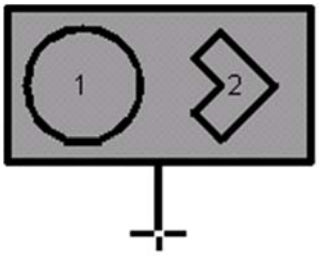
Form 1 Form 2 Form 3 Form4



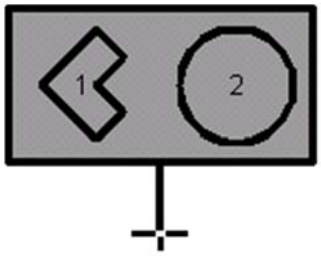
Form 5 Form 6 Form 7



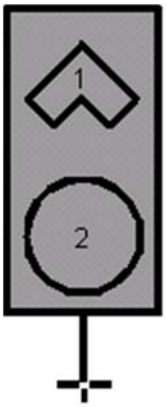
Form 8 Form 9 Form 10 Form 11



Form 12



Form 13



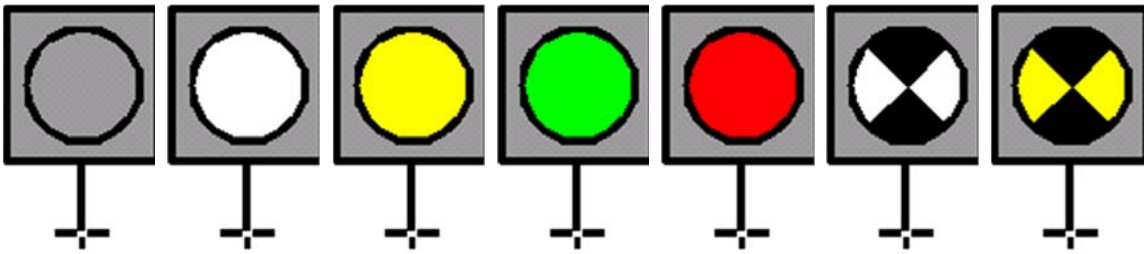
Form 14

For each of these signals there are a lot of possible combinations of lights. It is required to use

A number to indicate the kind of signal and

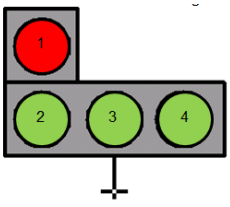
A number for each light on a signal to indicate its status
1 = no light,
2 = white,
3 = yellow,
4 = green,
5 = red,
6 = white flashing and
7 = yellow flashing.

Figure 11-2
Light Status



1 2 3 4 5 6 7

Example: Signal form: 6, light status: 5444000000



3.7 Geographic Notice (Inland specific message FI 42)

Table 11-12
Geographic Notice message (Broadcasted Message)

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

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

Table 11-13
Geographic Notice message (Addressed Message)

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

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

Table 11-14
Number of sub-area transmitted

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

Table 11-15
Sub-areas

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

Additional information / usage notes

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

s) A message version number is encoded as part of the message; If the received version number is different than what the display system has been programmed for, a message should be displayed to the operator indicating the mismatch in the version.

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

3.7.1 Defining circles and accurate polyline/polygon

Table 11-16
Circle or accurate polyline/polygon

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

Figure 11-3
Circle diagram

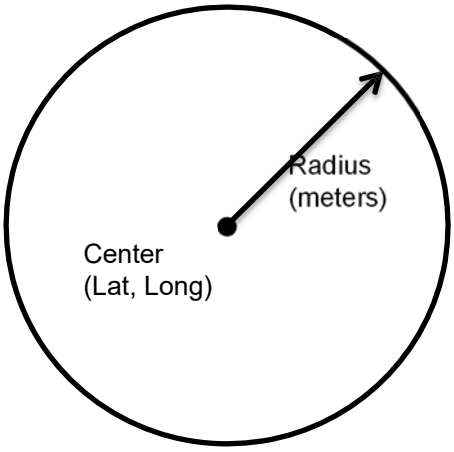
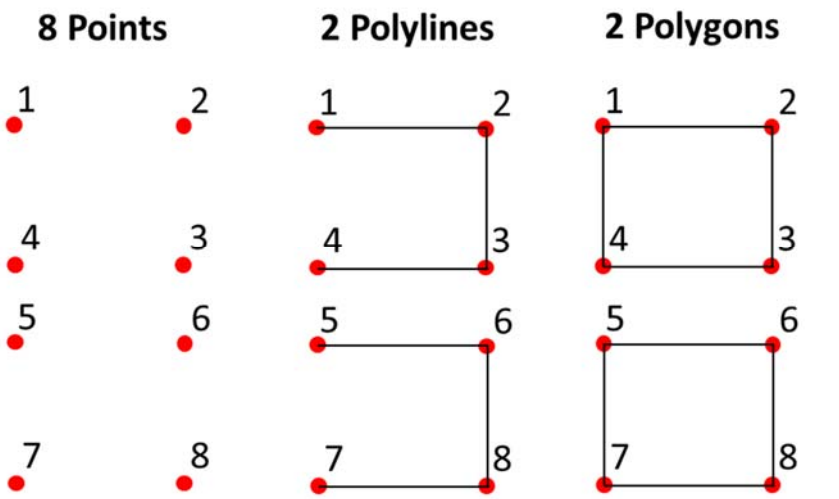


Figure 11-4
Coding of point, polylines and polygons using circle sub-areas



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

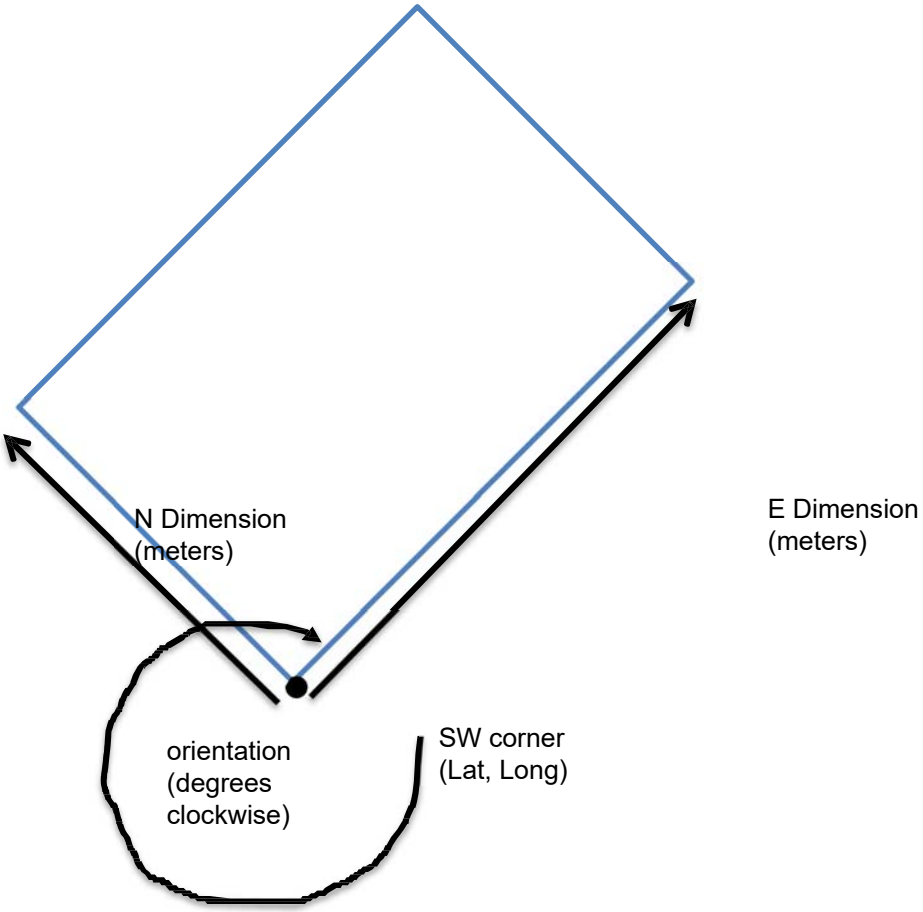
Point	Link
1	1
2	1
3	2
4	0
5	1
6	1
7	1
8	0

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

Table 11-17
Rectangle or line or point

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

Figure 11-5
Rectangle Diagram



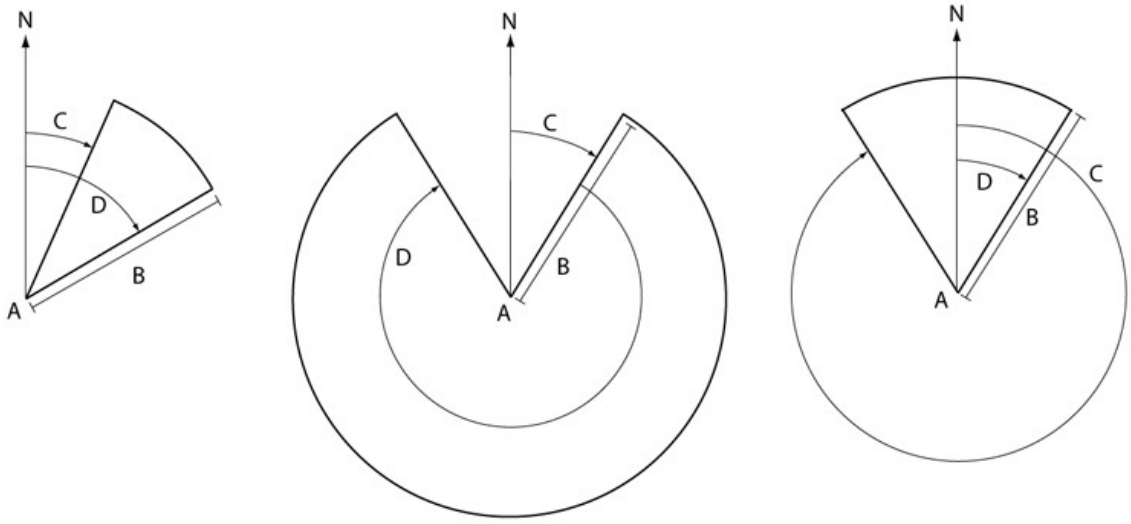
3.7.2 Defining Sectors

Table 11-18
Sector

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

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

Figure 11-6
Sector description



A) Center point,
B) Sector radius,
C) Sector bearings from center point, left boundary,
D) Sector bearings from center point, right boundary

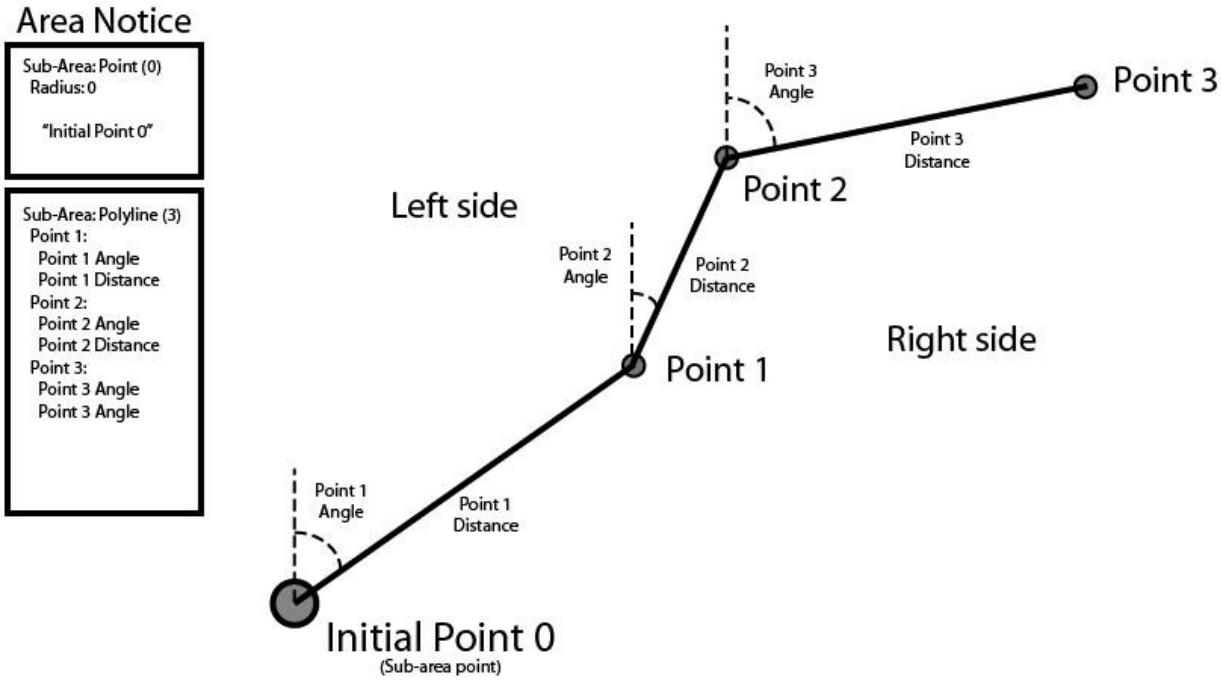
3.7.3 Defining polylines and (way)points

Table 11-19
Polyline

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

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

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



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

Figure 11-8
Graphic depiction of (1) ice boundary between sea ice and open water, and (2) recommended route through the sea ice area

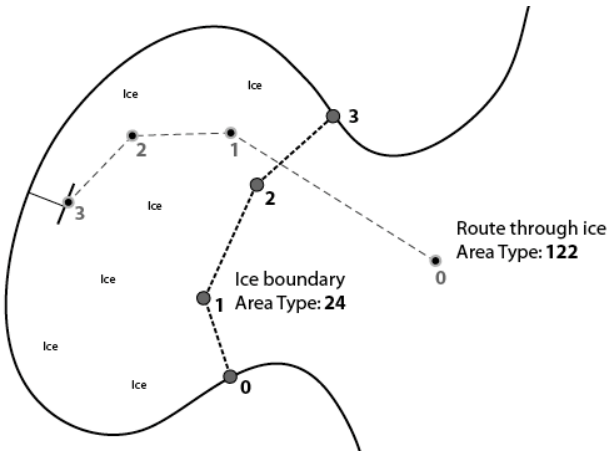
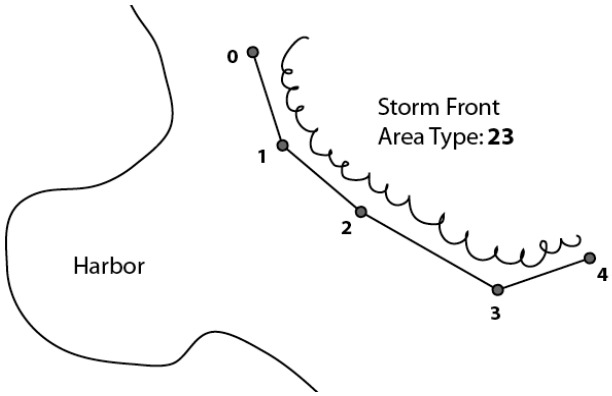


Figure 11-9
A graphic depiction of a storm front message



3.7.4 Associating text to geographical areas

Table 11-20
Associated Text

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

Table 11-21
Notice Description

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

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

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

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

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

3.8 ISRS Text message (Inland specific message FI 44)

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

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

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

	Parameter	Bit	Description
	Message ID	6	Identifier for Message 6; always 6
	Repeat Indicator	2	Used by the repeater to indicate how many times a message has been repeated. Default = 0; 3 = do not repeat any more
	Source ID	30	MMSI number
	Sequence Number	2	0 – 3
	Destination ID	30	MMSI number
	Retransmit Flag	1	Retransmit Flag should be set upon retransmission: 0 = no retransmission = default; 1 = retransmitted.
	Spare	1	not used, should be set to zero, reserved for future use
Binary data	Application Identifier	16	DAC = 200, FI = 44
	Version indicator	3	The version number of the message default = 0, other values for future use
	UN country code	12	2*6 Bit characters, digits 1 and 2 of the ISRS code
	Fairway section number	17	bit coded numerical value 1-99999, 0=unknown, other values not used, digits 6 to 10 of the ISRS code
	Object code	30	5*6 Bit characters
	Fairway hectometre	17	bit coded numerical value 1-99999, 0=unknown, other values not used, digits 16 to 20 of the ISRS code
	Text	195-419	32 to 70 x 6-bit ASCII as defined in ITU-R M.1371
	Spare	max 7	Not used for data and should be set to zero. Spare bits are needed to maintain byte boundaries. NOTE 1 – When a 6 or 7-Bit spare is needed to satisfy the 8-bit byte boundary rule, the 6-Bit spare will be interpreted as a valid 6 Bit character (all zeros is the “@” character).
	Total		**occupies 2 to 3 slots**

Additional information / usage notes

a) The message shall be sent from shore only
b) The reporting rate should be 6 minutes
c) The timeout for this message should be 18 minutes
d) Spare bits shall be used as necessary to maintain byte boundaries.
e) If an ISRS text message shall be deleted, then the text parameter shall be filled with two @ ASCII characters in a row as the first two characters.
f) Either the local language where the river is situated or the applicable international language should be used.
g) The ISRS code indicates the position of the text and shall allow the match with the Inland ECDIS display. It consists of UN country code, Fairway section number, Object code and fairway hectometre and is derived from the RIS Index as published in the ERDMS. A fairway section number is used not the alphanumeric fairway section code. This may place restrictions where an alphanumeric value is used for a fairway section.

Appendix 1 Convoy formation codes (Distributed separately)

ANNEX 12
(DANGEROUS) GOODS REPORTING - ERINOT

1. ERI notification message

The ERI notification message (ERINOT) is a specific use of the UN/EDIFACT 'International Forwarding and Transport Dangerous Goods Notification (IFTDGN)' message as it has been developed within the PROTECT organisation. The ERINOT message reproduced in paragraph 3. is based on UN/EDIFACT directory 98.B and Protect version 1.0. The ERINOT message has also been developed in an XML format (see paragraph 4.)

2. Functional description and overall information related to ERINOT message in UN/EDIFACT format

The segment table of ERINOT message is depicted in paragraph 2(d). The branching diagram of the ERINOT message is depicted in paragraph 2(e).

To ensure the usage of the message also under special circumstances such as a convoy of ships, some extra qualifiers have been introduced for the RFF segments in the TDT group.

a) Field of application

The ERI notification message (ERINOT) shall be used by skippers and on behalf of skippers by transport operators and agents for the reporting of dangerous and non-dangerous cargo carried by inland waterway vessels.

The message supports the implementation — by means of EDI — of the following reporting needs:

i) applicable police regulations either on Member States level or locally (eg. specific requirements in specific ports);

ii) reporting requirements set by river commissions (eg. on the Rhine set by CCNR);

iii) goods reporting for statistics purposes (Member States level or Eurostat).

b) Principles

The ERINOT message is a specific standard implementation and use of the UN/EDIFACT 'International Forwarding and Transport Dangerous Goods Notification (IFTDGN)' message such as has been developed within the PROTECT seaports organisation.

This standard message implementation guideline has been accepted by the IMO for the reporting of dangerous goods to authorities. It has been designated as the message from the party responsible to report 'dangerous' goods to the authority performing the control and checks on conformance with the legal requirements. The message is conveying information on the 'dangerous' goods being loaded, discharged or in transit relating to a means of transport.

Where reporting is mandatory and if technically feasible, an ERI notification message is to be composed and sent to the competent authority for each inland waterway transport.

However all vessels are invited to report electronically to the competent authorities whenever possible. Where available, this may be done through a Single Window[1] to come to the envisioned reduction of procedures.

The notification message based on this standard message can be depicted as follows:

'ERI (Electronic Reporting International) Notification Message' with the following types:

i) transport notification from vessel to authority from ship to shore;

ii) transport notification from carrier to authority from shore to shore;

iii) passage notification from authority to authority.

c) Segment index (alphabetical sequence by tag)

BGM Beginning of message

CNI Consignment information

COM Communication contact

CTA Contact information

DGS Dangerous goods

DTM Date/time/period

EQD Equipment details

FTX Free text

GID Goods item details

HAN Handling instructions

LOC Place/location identification

MEA Measurements

NAD Name and address

[1] UN/CEFACT Recommendation No 33, Recommendation and Guidelines on establishing a Single Window.

RFF Reference
SGP Split goods placement
TDT Details of transport
UNH Message header
UNT Message trailer

d) Segment table

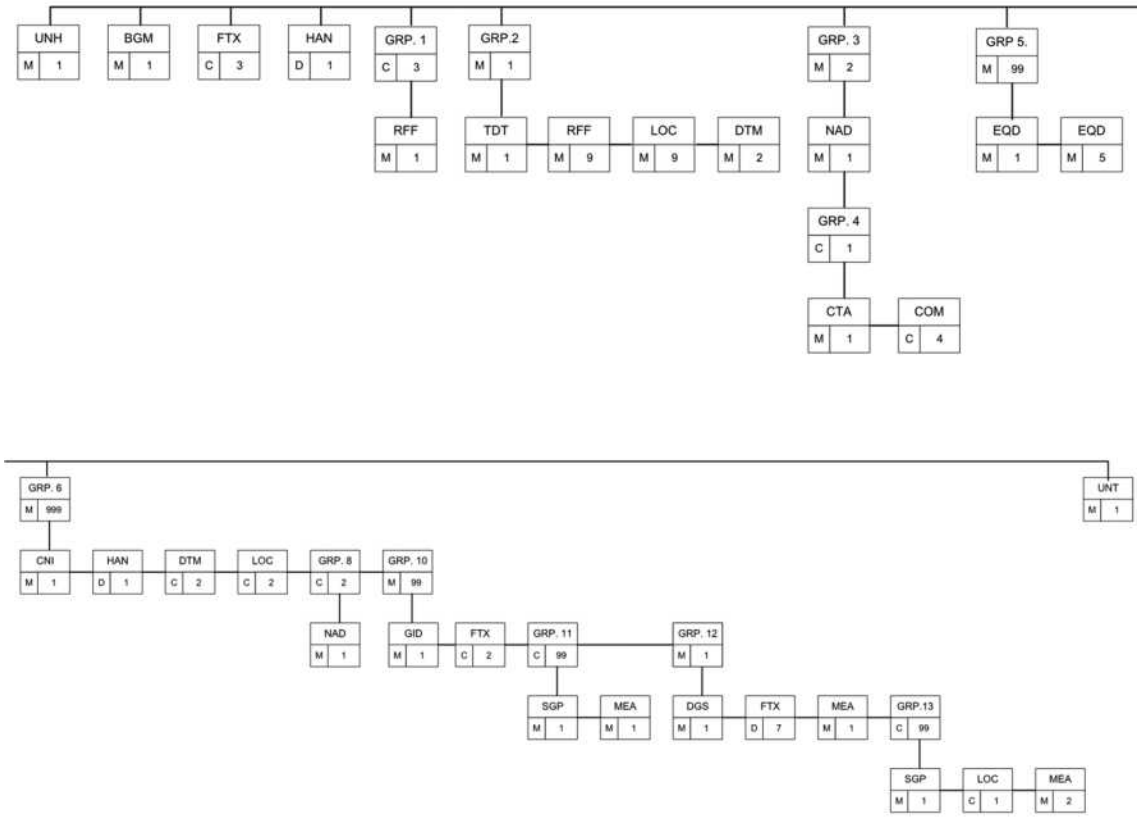
[S] Status, [R] Recurrence, [M] Mandatory, [C] Conditional, [D] Dependent on business rules

Pos	Tag	Name	S	R
0010	UNH	Message header	M	1
0020	BGM	Beginning of message	M	1
0040	FTX	Free text	C	3
0050	HAN	Handling instructions	D[1]	1
0060		Segment Group 1	C	3
0070	REF	Reference	M	1
0090		Segment Group 2	M	1
0100	TDT	Details of transport	M	1
0110	RFF	Reference	M	9
0120	LOC	Place/location identification	M	9
0130	DTM	Date/time/period	M	2
0140		Segment Group 3	M	2
0150	NAD	Name and address	M	1
0160		Segment Group 4	C	1
0170	CTA	Contact information	M	1
0180	COM	Communication contact	C	4
0190		Segment Group 5	M	99
0200	EQD	Equipment details	M	1
0210	MEA	Measurements	M	5
0220		Segment Group 6	M	999
0230	CNI	Consignment information	M	1
0240	HAN	Handling instructions	D[1]	1
0250	DTM	Date/time/period	C	2
0260	LOC	Place/location identification	C	2

Pos	Tag	Name	S	R
0300		Segment Group 8	C	2
0310	NAD	Name and address	M	1
0360		Segment Group 10	M	99
0370	GID	Goods item details	M	1
0380	FTX	Free text	C	2
0400		Segment Group 11	C	99
0410	SGP	Split goods placement	M	1
0420	MEA	Measurements	M	1
0430		Segment Group 12	M	1
0440	DGS	Dangerous goods	M	1
0450	FTX	Free text	D[5]	7
4600	MEA	Measurements	M	1
4700	LOC	Place/location identification	C	0
0480	RFF	Reference	C	0
0490		Segment Group 13	C	99
0500	SGP	Split goods placement	M	1
0510	LOC	Place/location identification	C	1
0520	MEA	Measurements	D[6]	2
0530	UNT	Message trailer	M	1

Business rules	
D[1]	The HAN-segment has to appear once, either in the vessel voyage details, on message level, or in the cargo details
D[5]	If mandatory by the applicable police regulations, this data shall be given in compliance with police regulations and then in accordance with the ADN
D[6]	The message shall contain at least one MEA-segment For the transport of liquid cargo the MEA with the measurement purpose qualifier 'VOL' shall be used For container transport the MEA with the measurement purpose qualifier 'WT' shall be used In case of a tank container both measurement purpose qualifiers are required
D[USE 1]	If the code is XXXXX, then this data-element shall be completed
D[USE 2]	If containers are carried, then this data shall be given
D[USE 3]	HS-code has preference
D[USE 4]	If the container type is known, then this data shall be given
D[USE 5]	If mandatory by the applicable police regulations, this data shall be given in compliance with police regulations and then in accordance with the ADN
D[USE 6]	The HAN-segment shall be present at least once
D[USE 7]	The transport equipment verified gross mass or estimated gross weight shall be given

e) Branching diagram (ERI notification message)



3. ERINOT message structure in UN/EDIFACT format

Table 12-1 defines the structure of the segments and the data elements of the ERI notification message.

Table 12-1
ERI notification message ERINOT

Segment Group	Segment Composite data element (C) Data element TAG	Level	Status	Format	Name	Description Qualifiers in quotation marks
1	2	3	4	5	6	7
	UNB	0	M		*INTERCHANGE HEADER*	
	S001		M		SYNTAX IDENTIFIER	
	0001		M	a4	Syntax identifier	'UNOA' Controlling agency level A
	0002		M	n1	Syntax version number	'2'
	S002		M		INTERCHANGE SENDER	
	0004		M	an..35 (an25)	Sender identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post
	0007		C	an..4	Partner identification code qualifier	n.a.
	0008		C	an..14	Address for reverse routing	n.a.
	S003		M		INTERCHANGE RECIPIENT	
	0010		M	an..35 (an25)	Recipient identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post

1	2	3	4	5	6	7
	0007		C	an..4	Partner identification code qualifier	n.a.
	0014		C	an..14	Routing address	n.a.
	S004		M		DATE/TIME OF PREPARATION	
	0017		M	n6	Date	Generation date, YYMMDD
	0019		M	n4	Time	Generation time, HHMM
	0020		M	an..14	Interchange control reference	First 14 positions of the message reference number
	S005				RECIPIENTS REFERENCE, PASSWORD	n.a
	0022			an..14	Recipient’s reference/password	n.a.
	0025			an2	Recipient’s reference, password qualifier	n.a.
	0026			an..14	Application reference	n.a.
	0029			a1	Processing priority code	n.a.
	0031		C	n1	Acknowledgement request	‘1’ = Sender requests acknowledgement, i.e. UNB and UNZ segments received and identified
	0032			an..35	Communications agreement id	n.a.
	0035		C	n1	Test indicator	‘1’ = The interchange relates to a test message
	UNH	0	M		*MESSAGE HEADER*	Identification, specification and heading of a message
	0062		M	an..14	Message reference number	First 14 positions of the message reference number
	S009		M		MESSAGE IDENTIFIER	

1	2	3	4	5	6	7
	0065		M	an..6	Message type	‘IFTDGN’, message type
	0052		M	an..3	Message version number	‘D’
	0054		M	an..3	Message release number	‘98B’
	0051		M	an..2	Controlling agency	‘UN’
	0057		M	an..6	Association assigned code	‘ERI13’, ERI Version 1.3
	0068		O	an..35	Common access reference	This unique reference code is meant to have a common denominator for all messages for the same voyage
	S010				STATUS OF THE TRANSFER	n.a.
	0070			n..2	Sequence of transfers	n.a.
	0073			a1	First and last transfer	n.a.
	BGM	0	M		*BEGINNING OF MESSAGE*	Identification of the type and function of the message
	C002		M		DOCUMENT/MESSAGE NAME	
	1001		M	an..3	Document/message name code	Type of message: ‘VES’, from vessel to RIS authority message ‘CAR’, from carrier to RIS authority message ‘PAS’, passage report from RIS authority to RIS authority (also see Annex 11(2)(g))
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	1000			an..35	Document/message name	n.a.
	C106		M		DOCUMENT/MESSAGE IDENTIFICATION	
	1004		M	an..35 (an15)	Document identifier	Message reference number. This number shall be as unique as possible, both for sender and for receiver. If a message is received and then passed on to another receiver, the original message reference number shall be used. The transitional system shall in this case not generate another message reference number
	1056			an..9	Version	n.a.
	1060			an..6	Revision number	n.a.
	1225		M	an..3	Message function code	*Function* of message: '1' = cancellation message '9' = new message, (original) '5' = modification message '22' = Final transmission (End of voyage) '150' = Interruption of voyage '151' = Restart of voyage
	4343		C	an..3	Response type code	AQ
	FTX (1)	0	C		*FREE TEXT*	To notify the number of *persons on board* and the number of *blue cones*
	4451		M	an..3	Text subject code qualifier	'SAF' for safety explanation

1	2	3	4	5	6	7
	4453			an..3	Free text function code	n.a.
	C107				TEXT REFERENCE	
	4441			an..17	Free text identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M		TEXT LITERAL	Text
	4440		M	an..70 (n4)	Free text	Total number of persons on board (If the total number of persons is not known or indicated, this field shall be filled with '9999')
	4440		C	an..70 (an1)	Free text	'0', '1', '2', '3' for number of cones (inland vessel) 'B' for red signal flag (maritime vessel) 'V' for special permit Note: Number of cones '0' will indicate that this is the result of the system which calculated zero blue cones, if the field is left blank this will indicate that no data is available.
	4440		C	an..70 (n4)	Free text	Number of passengers
	4440			an..70	Free text	n.a.
	4440			an..70	Free text	n.a.
	3453			an..3	Language, coded	n.a.
	4447			an..3	Text formatting, coded	n.a.

1	2	3	4	5	6	7
	FTX (2)	0	C		*FREE TEXT*	*To indicate whether the information in the message may be forwarded by the receiver to other authorities*
	4451		M	an..3	Text subject code qualifier	'ACK' for 'Privacy statement' or 'Confidential nature'
	4453			an..3	Free text function code	n.a.
	C107				TEXT REFERENCE	
	4441			an..17	Free text identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M		TEXT LITERAL	
	4440		M	an..70 (a1)	Free text	'Y = Yes, 'N' = No
	4440			an..70	Free text	n.a.
	4440			an..70	Free text	n.a.
	4440			an..70	Free text	n.a.
	4440			an..70	Free text	n.a.
	3453			an..3	Language, coded	n.a.
	4447			an..3	Text formatting, coded	n.a.
	FTX(3)	0	C		FREE TEXT	Reason for cancellation

1	2	3	4	5	6	7
	4451		M	an..3	Text subject code qualifier	‘ACD’ cancellation reason
	4453			an..3	Free text function code	n.a.
	C107		M		TEXT REFERENCE	Text identification
	4441		M	an..17	Free text identification	‘CAM’ mistake in notification ‘CAO’ transport does not take place ‘CAV’ the main transport destination has changed ‘CHD’ the time of arrival has changed
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M			Text
	4440		M	an..70	Free text	Free description of the reason
	4440		C	an..70	Free text	Free text for further explanation
	4440		C	an..70	Free text	Free text for further explanation
	4440		C	an..70	Free text	Free text for further explanation
	4440		C	an..70	Free text	Free text for further explanation
	3453			an..3	Language, coded	n.a.
	4447			an..3	Text formatting, coded	n.a.
	HAN(1)	0	D[6]			
	C524		M		HANDLING INSTRUCTIONS	

1	2	3	4	5	6	7
	4079		M	an..3	Handling instructions, coded	Default T T = Transit LLO = Loading LDI = Unloading TSP = Transit in the same port
	1131				Code list qualifier	n.a.
	3055				Code list responsible agency, coded	n.a.
	4078				Handling instructions	n.a.
	C218				HAZARDOUS MATERIAL	n.a.
	7419				Hazardous material class code, identification	n.a.
	1131				Code list qualifier	n.a.
	3055				Code list responsible agency, coded	n.a.
	7418				Hazardous material class	n.a.
GRP 1	**RFF (1)**	1	C		*REFERENCE*	Reference to the message for which the current message is a *replacement*. Mandatory if the message is a modification or a cancellation message
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	‘ACW’ for reference number to previous message
	1154		M	an..35 (an15)	Reference number	Message reference number from BGM, TAG 1004 of the message this message replaces

1	2	3	4	5	6	7
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
GRP 1	**RFF (2)**	1	C		*REFERENCE*	Reference to *transport document*
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	'FF' for 'freight forwarder's reference number'
	1154		M	an..35	Reference number	Reference number of the transport document
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
GRP 1	**RFF (3)**	1	C		*REFERENCE*	Reference to a *test scenario*
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	'ADD' for test number
	1154		M	an..35	Reference number	Test scenario identification, which shall be known at the receiving party
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.

1	2	3	4	5	6	7
	1060			an..6	Revision number	n.a.
GRP 2	**TDT**	1	M		*DETAILS OF TRANSPORT*	Specification of the means of transport, the *naming vessel within a convoy* (a single vessel without barge is also a convoy in this context)
	8051		M	an..3	Transport stage code qualifier	'20' for main carriage transport
	8028		C	an..17	Conveyance reference number	Voyage number, defined by sender of the message
	C220		M		MODE OF TRANSPORT	
	8067		M	an..3	Mode of transport, coded	'8' for Inland water transport, '1' for maritime transport (see UNECE Rec. 19)
	8066			an..17	Mode of transport	n.a.
	C228		M		TRANSPORT MEANS	
	8179		M	an..8 (an4)	Type of means of transport identification, *convoy type*	Code for ship and convoy types of means of transport from UN/CEFACT Rec. 28, see Part IV, Article 2.03(1)
	8178			an..17	Type of means of transport	n.a.
	C040				CARRIER	n.a.
	3127			an..17	Carrier identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3128			an..35	Carrier name	n.a.

1	2	3	4	5	6	7
	8101			an..3	Transit direction, coded	n.a.
	C401				EXCESS TRANSPORTATION INFORMATION	
	8457			an..3	Excess transportation reason	n.a.
	8459			an..3	Excess transportation responsibility	n.a.
	7130			an..17	Customer authorisation number	n.a.
	C222		M		TRANSPORT IDENTIFICATION	
	8213		M	an..9 (an7..8)	ID. of means of transport identification	*Vessel number*: 7 digits for IMO indication or unique European vessel identification number (ENI)
	1131		M	an..3	Code list qualifier	'IMO' for an IMO-number, see Part IV, Article 2.03(2) 'ENI' for a unique European vessel identification number, see Part IV, Article 2.03(3)
	3055			an..3	Code list responsible agency	n.a.
	8212		M	an..35	Id. of the means of transport	*Name of the ship*; If the name results in more than 35 positions, the name of the vessel is shortened
	8453		M	an..3	Nationality of means of transport	ISO two-alpha country code 3166-1, see Part IV, Article 2.03(8). If the nationality of the means of transport is not known, the 3-digit code of the country of the inspection body that issued the last vessel certificate shall be used.
	8281			an..3	Transport ownership	n.a.
TDT	**RFF (1)**	1	M		*REFERENCE*	Dimensions of the transport, *length*

1	2	3	4	5	6	7
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	'LEN' = Length
	1154		M	an..35 (n..5)	Reference number	Total length of the convoy in centimetres
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**RFF (2)**	1	M		*REFERENCE*	Dimensions of the transport, *width*
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	'WID'
	1154		M	an..35 (n..4)	Reference number	Total width of the convoy in centimetres
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**RFF (3)**	1	M		*REFERENCE*	Dimensions of the transport, *draught*
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	'DRA'

1	2	3	4	5	6	7
	1154		M	an..35 (n..4)	Reference number	Draught of the convoy in centimetres (If due to legal restriction this data cannot be submitted, the value of this field shall be '9999')
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**RFF (4)**	1	C		*REFERENCE*	Dimensions of the transport, *height*
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	'HGT'
	1154		M	an..35 (n..4)	Reference number	Height of the convoy above the waterline in centimetres
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**RFF (5)**	1	M		*REFERENCE*	Dimensions of the transport, *tonnage*
	C506		M		REFERENCE	Reference
	1153		M	an..3	Reference qualifier	'TON'

1	2	3	4	5	6	7
	1154		M	an..35 (n..6)	Reference number	Maximum capacity of the convoy in metric tonnes
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**RFF (6)**	1	C		*REFERENCE*	*National voyage reference, Belgium, France, Germany*
	C506		M		REFERENCE	Reference
	1153		M	an..3	Reference qualifier	‘GNB' = Belgium ‘GNF'= France ‘GNG' = Germany ‘GN1' = reserved
	1154		M	an..35	Reference number	Government reference of Belgium
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**RFF (7)**	1	C		*REFERENCE*	*LNG installation indicator*
	C506		M		REFERENCE	Reference
	1153		M	an..3	Reference qualifier	‘LNG'

1	2	3	4	5	6	7
	1154		M	an..35 (an1)	Reference number	Y = Yes
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**LOC (1)**	1	M		*PLACE/LOCATION IDENTIFICATION*	*Port of departure*, the port where the transport starts
	3227		M	an..3	Place/location qualifier	'5' place of departure
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16), see Part IV, Article 2.03(9)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..70 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	3222		D [Use 1]	an..70	Related place/location one	Full name of the terminal.
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
TDT	**LOC (2)**	1	C		*PLACE/LOCATION IDENTIFICATION*	*Passage point that has already been passed* by the ship. This segment and the TDT/DTM(2) segment with qualifier 186 are mandatory for passage reports.
	3227		M	an..3	Place/location qualifier	'172' for passage point
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16) of the passage point (lock, bridge, traffic centre), see Part IV, Article 2.03(9)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..70 (an..17)	Place/location	Full name of the passage point

1	2	3	4	5	6	7
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Passage point code
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222			an..70	Related place/location one	n.a.
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
TDT	**LOC (3)**	1	C		*PLACE/LOCATION IDENTIFICATION*	*Next passage point*
	3227		M	an..3	Place/location qualifier	‘61’ for next port of call
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16) of the passage point (lock, bridge, VTS centre), see Part IV, Article 2.03(9)

1	2	3	4	5	6	7
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..70 (an..17)	Place/location	Full name of the passage point
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25	Related place/location one identification	Passage point code
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222			an..70	Related place/location one	n.a.
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.

1	2	3	4	5	6	7
TDT	**LOC (4..8)**	1	C		*PLACE/LOCATION IDENTIFICATION*	*Further future passage points* (information on intended route). At most five intermediate points on the route may be given. The order of passage shall be the order within the message.
	3227		M	an..3	Place/location qualifier	'92' for routing
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16) of the passage point (lock, bridge, traffic centre), see Part IV, Article 2.03(9)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..17	Place/location	Full name of the passage point
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Passage point code
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		C	an..70	Passage datetime	YYMMDDHHMM as '201' of DTM 2379
	C553		C		RELATED LOCATION TWO IDENTIFICATION	

1	2	3	4	5	6	7
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
TDT	**LOC (9)**	1	M		*PLACE/LOCATION IDENTIFICATION*	*Port of destination*. This is the first port where the transport is bound.
	3227		M	an..3	Place/location qualifier	'153' for place of call
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16) of the port, see Part IV, Article 2.03(9)
	1131			an..3	Code list qualifier	n.a.
	3055			an 3	Code list responsible agency	n.a.
	3224		C	an..70 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)

1	2	3	4	5	6	7
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D [Use 1]	an..70	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
TDT/LOC(1)	**DTM (1)**	2	C		*DATE/TIME/PERIOD*	*Departure time (estimated)*
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	‘133’ for departure date/time, estimated
	2380		M	an..35	Date or time period value	Value of departure time
	2379		M	an..3	Date or time or period format code	‘201’ for YYMMDDHHMM
TDT/LOC(2)	**DTM (2)**	2	C		DATE/TIME/PERIOD	Passage time, as recorded by the traffic centre

1	2	3	4	5	6	7
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	'186' for departure time, actual
	2380		M	an..35	Date or time period value	Value of passage time: YYMMDDHHMM
	2379		M	an..3	Date or time or period format code	'201' for YYMMDDHHMM
TDT/LOC(9)	**DTM (3)**	2	C		*DATE/TIME/PERIOD*	*Estimated time of arrival at port of destination*
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	'132' for arrival time, estimated
	2380		M	an..35	Date or time period value	Value of arrival time: YYMMDDHHMM
	2379		M	an..3	Date or time or period format code	'201' for YYMMDDHHMM
GRP 3	**NAD (1)**	1	M		*NAME and ADDRESS*	name and address of *message sender*
	3035		M	an..3	Party function code qualifier	'MS' for message sender
	C082		C		PARTY IDENTIFICATION DETAILS	
	3039		M	an..35	Party identification	Identification code. For notifications to the Port of Rotterdam this element is mandatory. ERI fills this element with '900000000'.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	C058				NAME AND ADDRESS	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	C080		M		PARTY NAME	
	3036		M	an..35	Party name	Sender name
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3045			an..3	Party name format, coded	n.a.
	C059		C		STREET	
	3042		M	an..35	Street and number/PO box	Street and number or post office box
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3164		C	an..35	City name	City

1	2	3	4	5	6	7
	3229			an..9	Country sub-entity identification	n.a.
	3251		C	an..9	Postcode identification	Postal identification code
	3207		C	an..3	Country	ISO 3166-1 two alpha country code, see Part IV, Article 2.03(8)
GRP 4 NAD	**CTA**	2	C		*CONTACT INFORMATION*	Sender contact details
	3139			an..3	Contact function	n.a.
	C056		M		DEPARTMENT OR EMPLOYEE DETAILS	
	3413			an..17	Department or employee identification	n.a.
	3412		M	an..35	Department or employee	‘ERI’, dummy value
NAD/CTA	**COM**	2	C		*COMMUNICATION CONTACT*	Sender communication contact details (maximum 4 times)
	C076		M		COMMUNICATION CONTACT	
	3148		M	an..70	Communication number	Communication number

1	2	3	4	5	6	7
	3155		M	an..3	Communication channel qualifier	'TE' for telephone number 'FX' for fax number 'EM' for email address 'EI' for EDI mailbox number (EDI number or email address for NAD 1 is mandatory if a response in the form of an ERIRSP message is requested for. If no response is requested, the EDI number and email address is not to be used).
NAD	**NAD (2)**	1	C		*NAME and ADDRESS*	Name and address of *agent/invoicee*
	3035		M	an..3	Party function code qualifier	'CG' for agent/invoice address (for VNF this segment is mandatory)
	C082		C		PARTY IDENTIFICATION DETAILS	
	3039		M	an..35	Party identification	Identification code. For notifications to the Port of Rotterdam this element is mandatory. ERI fills this element with '900000000'
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C058				NAME AND ADDRESS	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.

1	2	3	4	5	6	7
	3124			an..35	Name and address line	n.a.
	C080		M		PARTY NAME	
	3036		M	an..35	Party name	Sender name.
	3036		C	an..35 (an..25)	Invoice number	Invoice number of the agent/invoicee
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3045			an..3	Party name format, coded	n.a.
	C059		C		STREET	Street
	3042		M	an..35	Street and number/PO box	Address (street name + number or post office box number)
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3164		C	an..35	City name	City
	3229			an..9	Country sub-entity identification	n.a.
	3251		C	an..9	Postcode identification	Postal code
	3207		C	an..3	Country	ISO 3166-1 two alpha country code, see Part IV, Article 2.03(8)

1	2	3	4	5	6	7
GRP 5	**EQD (1)**	1	M		*EQUIPMENT DETAILS*	Specification of the VESSELS within the convoy (for each vessel 1 segment, also the main vessel), *propulsed vessel*
	8053		M	an..3	Equipment type code qualifier	'BRY' for vessel participating in the propulsion
	C237		M		EQUIPMENT IDENTIFICATION	
	8260		M	an..17 (an7..8)	Equipment identification number	*Vessel number*: 7 digits for IMO indication or 8 digits for unique European vessel identification number (ENI)
	1131		M	an..3	Code list qualifier	'IMO' for an IMO number, see Part IV, Article 2.03(2) 'ENI' for a unique European vessel identification number, see Part IV, Article 2.03(3)
	3055			an..3	Code list responsible agency	n.a.
	3207			an..3	Country	n.a.
	C224		M		EQUIPMENT SIZE AND TYPE	
	8155		M	an..10 (an..4)	Equipment size and type identification, *vessel type*	Code for ship and convoy types of means of transport from UN/CEFACT Rec. 28, see Part IV, Article 2.03(1)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	8154		M	an..35	Equipment size and type	*Name of the vessel*. If the name results in more than 35 positions, the name of the vessel is shortened
	8077			an..3	Equipment supplier	n.a.

1	2	3	4	5	6	7
	8249			an..3	Equipment status	n.a.
	8169			an..3	Full/empty indicator	n.a.
EQD	**EQD (V)** **(2 - 15)**	1	C		*EQUIPMENT DETAILS*	Specification of the VESSELS within the convoy (for each vessel 1 segment, also the main vessel) *not propulsed vessels*
	8053		M	an..3	Equipment type code qualifier	'BRN' for vessel not participating in the propulsion
	C237		M		EQUIPMENT IDENTIFICATION	
	8260		M	an..17 (an7..8)	Equipment identification number	*Vessel number*: 7 digits for IMO indication, 8 digits for unique European vessel identification number
	1131		M	an..3	Code list qualifier	'IMO' for an IMO number, see Part IV, Article 2.03(2) 'ENI' for a unique European vessel identification number, see Part IV, Article 2.03(3)
	3055			an..3	Code list responsible agency	n.a.
	3207			an..3	Country	n.a.
	C224		M		EQUIPMENT SIZE AND TYPE	
	8155		M	an..10 (an..4)	Equipment size and type identification, *vessel type*	Code for ship and convoy types of means of transport from UN/CEFACT Rec. 28, see Part IV, Article 2.03(1)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	8154		M	an..35	Equipment size and type	*Name of the vessel*. If the name results in more than 35 positions, the name of the vessel is shortened
	8077			an..3	Equipment supplier	n.a.
	8249			an..3	Equipment status	n.a.
	8169			an..3	Full/empty indicator	n.a.
EQD	**MEA (1)**	1	M		*MEASUREMENTS*	*Vessel length*
	6311		M	an..3	Measurement purpose qualifier	'DIM' for dimension
	C502				MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'LEN' for length
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'CMT' for centimetre (UNECE Rec. 20, Annex 3. Common code)
	6314		M	an..18 (n5)	Measurement value	Length
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.

1	2	3	4	5	6	7
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
EQD	**MEA (2)**	1	M		*MEASUREMENTS*	*Vessel width*
	6311		M	an..3	Measurement purpose code qualifier	'DIM' for dimension
	C502				MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'WID' for width
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'CMT' for centimetre (UNECE Rec. 20, Annex 3: Common code)
	6314		M	an..18 (n4)	Measurement value	Width
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.

1	2	3	4	5	6	7
EQD	**MEA (3)**	1	M		*MEASUREMENTS*	*Vessel draught*
	6311		M	an..3	Measurement purpose code qualifier	‘DIM’ for dimension
	C502		M		MEASUREMENT DETAILS	Size details
	6313		M	an..3	Property measured	‘DRA’ for draught
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	‘CMT’ for centimetre (UNECE Rec. 20, Common code)
	6314		M	an..18 (n4)	Measurement value	Draught of the vessel in centimetres (If due to legal restriction this data cannot be submitted, the value of this field shall be ‘9999’)
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
EQD	**MEA (4)**	2	C		*MEASUREMENTS*	*Vessel tonnage*
	6311		M	an..3	Measurement purpose code qualifier	'VOL’ *for volume*

1	2	3	4	5	6	7
	C502		M		MEASUREMENT DETAILS	Size details
	6313		M	an..3	Property measured	'AAM' for gross tonnage
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'TNE' for metric ton (UNECE Rec. 20, Common code)
	6314		M	an..18 (n6)	Measurement value	Tonnage (capacity)
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
GRP 5	**EQD (1-15)**	1	D[Use 2]		*EQUIPMENT DETAILS*	Specification of the number of *CONTAINERS*
	8053		M	an..3	Equipment type code qualifier	'CN' for container
	C237				EQUIPMENT IDENTIFICATION	
	8260			an..17	Equipment identification number	n.a.
	1131			an..3	Code list qualifier	n.a.

1	2	3	4	5	6	7
	3055			an..3	Code list responsible agency	n.a.
	3207			an..3	Country	n.a.
	C224		M		EQUIPMENT SIZE AND TYPE	
	8155		M	an..10 (an5)	Equipment size and type identification	Container *range*: 'RNG20' for containers having a length between 20 and 29 feet 'RNG30' for containers having a length between 30 and 39 feet 'RNG40' for containers having a length of 40 feet or more
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	8154			an..35	Equipment size and type	n.a.
	8077			an..3	Equipment supplier	n.a.
	8249			an..3	Equipment status	n.a.
	8169		M	an..3	Full/empty indicator	Container *status*: '5' for loaded, '4' for empty, '6' for no volume available
EQD	**MEA (5)**	1	M	EQD(2)	*MEASUREMENTS*	Specification of the *number of containers*

1	2	3	4	5	6	7
	6311		M	an..3 (an2)	Measurement purpose qualifier	'NR' for number
	C502				MEASUREMENT DETAILS	n.a.
	6313			an..3	Property measured	n.a.
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'NUM' for number (see UNECE Rec. 20, common code)
	6314		M	an..18 (n1..4)	Measurement value	Number of containers of the given type and status.
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
GRP 6	**CNI**	1	M		*CONSIGNMENT INFORMATION*	*Consignment* (similar source/destination) specification of the transported cargo
	1490		M	n..4	Consolidation item number	Sequence number of the consignment. For modifications, the same sequence number is to be used

1	2	3	4	5	6	7
	C503				DOCUMENT/MESSAGE DETAILS	n.a.
	1004			an..35	Document/message number	n.a.
	1373			an..3	Document/message status, coded	n.a.
	1366			an..70	Document/message source	n.a.
	3453			an..3	Language, coded	n.a.
	1056			an..9	Version	n.a.
	1060			an..6	Revision number	n.a.
	1312			n..4	Consignment load sequence number	n.a.
CNI	**HAN(1)**	1	D[1]			
	C524		M		HANDLING INSTRUCTIONS	
	4079		M		Handling instructions, coded	Default T T = Transit LLO = Loading LDI = Unloading TSP = Transit in the same port
	1131				Code list qualifier	n.a.
	3055				Code list responsible agency, coded	n.a.
	4078				Handling instructions	n.a.
	C218				HAZARDOUS MATERIAL	n.a.

1	2	3	4	5	6	7
	7419				Hazardous material class code, identification	n.a.
	1131				Code list qualifier	n.a.
	3055				Code list responsible agency, coded	n.a.
	7418				Hazardous material class	n.a.
CNI	**DTM (1)**	1	C		*DATE/TIME/PERIOD*	Estimated *arrival time* at the discharge place
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	'132' for arrival time, estimated
	2380		M	an..35	Date or time period value	Value of arrival time: YYMMDDHHMM
	2379		M	an..3	Date or time or period format code	'201' for YYMMDDHHMM
CNI	**DTM (2)**	1	C		*DATE/TIME/PERIOD*	Estimated *departure time* from the loading place
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	'133' for departure time, estimated
	2380		M	an..35	Date or time period value	Time: YYMMDDHHMM
	2379		M	an..3	Date or time or period format code	'201'

1	2	3	4	5	6	7
CNI	**LOC (1)**	1	C		*PLACE/LOCATION IDENTIFICATION*	Specification of the *loading place* of the cargo
	3227		M	an..3	Place/location qualifier	‘9' for place/port of loading
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16), of the loading place, see Part IV, Article 2.03(9)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..70 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article2.03(11)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D [Use 1]	an..70 (an..17)	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..3	Code list qualifier	n.a.

1	2	3	4	5	6	7
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
CNI	**LOC (2)**	1	C		*PLACE/LOCATION IDENTIFICATION*	Specification of the *discharge place* of the cargo
	3227		M	an..3	Place/location qualifier	'11' for place/port of discharge
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16), see Part IV, Article 2.03(9)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..70 (an..17)	Place/location	Full name of the port
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D [1]	an..70 (an..17)	Related place/location one	Full name of terminal

1	2	3	4	5	6	7
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
GRP 8 CNI/NAD	**NAD (1)**	2	C		*NAME AND ADDRESS*	*Cargo sender* name
	3035		M	an..3	Party function code qualifier	‘SF for ship from
	C082		C		PARTY IDENTIFICATION DETAILS	
	3039		M	an..35 (an..25)	Party identifier	EDI number of cargo sender
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C058		M		NAME AND ADDRESS	
	3124		M	an..35	Name and address line	Name of the Sender
	3124			an..35	Name and address line	n.a.

1	2	3	4	5	6	7
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	C080		M		PARTY NAME	
	3036		M	an..35	Party name	Ship from name
	3036		C	an..35 (an..25)	Party name	Invoice number
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3045			an..3	Party name format, coded	n.a.
	C059		O		STREET	Street
	3042			an..35	Street and number or post office box	Address (street name and number or post office box number)
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3164		C	an..35	City name	City
	3229			an..9	Country sub-entity identification	n.a.
	3251		C	an..9	Postcode identification	Postal Code

1	2	3	4	5	6	7
	3207		C	an..3	Country	ISO 3166-1 two alpha country code, see Part IV, Article 2.03(8)
CNI/NAD	**NAD (2)**	2	C		NAME AND ADDRESS	*Cargo receiver* name
	3035		M	an..3	Party function code qualifier	'ST' for ship to
	C082		M		PARTY IDENTIFICATION DETAILS	
	3039		M	an..35 (an..25)	Party identification	EDI number of receiver of cargo
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C058		M		NAME AND ADDRESS	
	3124		M	an..35	Name and address line	Name of the recipient.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	C080		M		PARTY NAME	
	3036		M	an..35	Party name	Ship to name
	3036		C	an..35 (an..25)	Party name	Invoice number

1	2	3	4	5	6	7
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3045			an..3	Party name format, coded	n.a.
	C059				STREET	Street
	3042			an..35	Street and number/PO box	Address (street name and number or post office box number)
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3164		M	an..35	City name	City
	3229			an..9	Country sub-entity identification	n.a.
	3251			an..9	Postcode identification	Postal Code
	3207			an..3	Country	ISO 3166-1 two alpha country code, see Part IV, Article 2.03(8)
CNI	**GID (1..99)**	2	M		*GOODS ITEM DETAILS*	per *vessel* and per *good* a new GID segment
	1496		M	n..5	Goods item number	Sequence number of the good within a consignment. Unique within the CNI group
	C213		C		NUMBER AND TYPE OF PACKAGES	

1	2	3	4	5	6	7
	7224		C	n..8	Number of packages	For containers and tanks the default value is ‘1’
	7065		C	an..17	Type of packages identification	see Part IV, Article 2.03(14)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	7064			an..35	Type of packages	n.a.
	7233			an..3	Packaging related information, coded	n.a.
	C213				NUMBER AND TYPE OF PACKAGES	n.a.
	7224			n..8	Number of packages	n.a.
	7065			an..17	Type of packages identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	7064			an..35	Type of packages	n.a.
	7233			an..3	Packaging related information	n.a.
	C213		C		NUMBER AND TYPE OF PACKAGES	
	7224		M	n..8	Number of packages	Number of inner *packages*
	7065		M	an..17 (a2)	Type of packages identification	UNECE recommendation No 21, see Part IV, Article 2.03(14)
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	7064			an..35	Type of packages	n.a.
	7233			an..3	Packaging related information	n.a.
GRP 10 CNI/GID	**FTX (1)**	2	C		*FREE TEXT*	*Extra goods information*
	4451		M	an..3	Text subject code qualifier	'ACB' for additional information
	4453			an..3	Free text function code	n.a.
	C107				TEXT REFERENCE	
	4441			an..17	Free text identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M		TEXT LITERAL	
	4440		M	an..70 (an1)	Free text	type of good: 'D' for Dangerous 'N' for Non-dangerous
	4440		C	an..70 (n6..10)	Free text	*HS code*, may be left blank if unknown and/good is dangerous, see (2)(f) of this Annex
	4440		C	an..70 (a..4)	Free text	Customs status: 'C' = Union goods 'F = Union goods from non-fiscal area 'N' = All other goods

1	2	3	4	5	6	7
	4440		C	an..70 (an..35)	Free text	Customs document reference number if any
	4440		C	an..70 (an1)	Free text	Overseas destination ´Y = with overseas destination 'N' = without an overseas destination
	3453			an..3	Language	n.a.
	4447			an..3	Text formatting	n.a.
CNI/GID	**FTX (2)**	3	C		*FREE TEXT*	*Goods description of non-dangerous cargo*
	4451		M	an..3	Text subject code qualifier	'AAA' for goods description
	4453			an..3	Free text function code	n.a.
	C107				TEXT REFERENCE	n.a.
	4441			an..17	Free text identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M		TEXT LITERAL	
	4440		M	an..70	Free text	Goods name of the non-dangerous cargo
	4440					n.a.
	4440		D [Use 3]	an..70 (n6..10)	Free text	*HS code* of the non-dangerous cargo, see Part IV, Article 2.03(4)

1	2	3	4	5	6	7
	4440		D [Use 3]	an..70 (n4)	Free text	NST code of the non-dangerous cargo, see Part IV, Article 2.03(5)
	4440			an..70	Free text	n.a.
	3453			an..3	Language, coded	n.a.
	4447			an..3	Text formatting	n.a.
GRP 11 CNI/GID	**SGP (1..99)**	3	C		SPLIT *GOODS* PLACEMENT	*Specification of the location of the non-dangerous cargo within the means of transport*
	C237		M		EQUIPMENT IDENTIFICATION	
	8260		M	an..17 (an7..8)	Equipment identification number	*Ship number:* 7 digits for IMO indication, 8 digits for unique European vessel identification number (ENI)
	1131		M	an..3	Code list qualifier	'IMO' for an IMO number, see Part IV, Article 2.03(2) 'ENI' for a unique European vessel identification number, see Part IV, Article 2.03(3)
	3055			an..3	Code list responsible agency	n.a.
	3207			an..3	Country	n.a.
	7224			n..8	Number of packages	n.a.
CNI/GID/SGP	**MEA**	3	M		*MEASUREMENTS*	*Specification of the weight of a non-dangerous good on board the vessel*
	6311		M	an..3	Measurement purpose qualifier	'WT' for weights

1	2	3	4	5	6	7
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'AAL' for net weight including normal packing
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'KGM' for kilogram (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	weight in kilogram
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			an..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
CNI/GID/SGP	**MEA**	3	C		*MEASUREMENTS*	*Specification of the tonnage of a non-dangerous good on board the vessel*
	6311		M	an..3	Measurement purpose qualifier	'VOL' for volume
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'AAX' The observed volume after adjustment for factors such as temperature or gravity

1	2	3	4	5	6	7
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'TNE' for metric ton (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Tonnage
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			an..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
GRP 12 CNI/GID	**DGS**	3	M		*DANGEROUS GOODS*	*Dangerous goods identification*
	8273		M	an..3	Dangerous goods regulations	'ADN' for inland vessels (UNECE ADN Code) 'IMD' for sea going vessels (IMO IMDG code)
	C205		M		HAZARD CODE	
	8351		D[USE 5]	an..7	Hazard code identification	*ADN* Classification *(Column 3a)*, or *IMDG code*, see Part IV, Article 2.03(7) or 2.03(6)
	8078		D[USE 5]	an..7	Additional hazard classification identifier	ADN Classification (Column 3b), see Part IV, Article 2.03(7)

1	2	3	4	5	6	7
	8092			an..10	Hazard code version number	n.a.
	C234		M		UNDG INFORMATION	
	7124		M	n4	UNDG number	UN number or identification number (Column 1) (UNNR code), see Part IV, 2.03(7), or IMDG number, see 2.03(6)
	7088			an..8	Dangerous goods flashpoint	n.a.
	C223		C		DANGEROUS GOODS SHIPMENT FLASHPOINT	
	7106		M	n..3	Shipment flashpoint	*Flashpoint* of the good transported
	6411		M	an..3	Measure unit qualifier	‘CEL’ for Celsius ‘FAH’ for Fahrenheit
	8339		C	an..3	Packing group	Packing group (column 4) ‘1’ for great danger ‘2’ for medium danger ‘3’ for minor danger Empty if not available
	8364		C	an..6	EMS number	Emergency procedures
	8410		C	an..4	MFAG number	Medical first aid guide
	8126			an..10	TREM card number	n.a.
	C235		C		HAZARD IDENTIFICATION PLACARD DETAILS	Placards mandatory for dangerous goods on dry cargo vessels
	8158		M	an..4	Hazard identification number, upper part	see ADN

1	2	3	4	5	6	7
	8186		M	an..4	Substance identification number, lower part	see ADN
	C236		D[USE 5]		DANGEROUS GOODS LABEL	Dangerous labels.
	8246		M	an..4	Dangerous goods label marking	ADN Labels, (Column 5)
	8246			an..4	Dangerous goods label marking	n.a.
	8246			an..4	Dangerous goods label marking	n.a.
	8255			an..3	Packing instruction	n.a.
	8325			an..3	Category of means of transport	n.a.
	8211			an..3	Permission for transport	n.a.
CNI/GID/DGS	**FTX (1)**	3	M		*FREE TEXT*	*Dangerous good description*
	4451		M	an..3	Text subject code qualifier	'AAD' for dangerous goods, proper shipping name and technical name
	4453			an..3	Free text function code	n.a.
	C107		D[USE 5]		TEXT REFERENCE	*GOODS HAZARD LIMITED QUANTITIES INDICATOR*
	4441		M	an..17	Free text identification	*'TLQ' Transport of dangerous goods in limited quantities*
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M		TEXT LITERAL	

1	2	3	4	5	6	7
	4440		M	an..70	Free text	Name of dangerous good (proper shipping name) *Proper shipping name, supplemented as necessary with the correct technical name, by which a dangerous substance or article may be correctly identified or which is sufficiently informative to permit identification by reference to generally available literature.*
	4440		D[USE 5]	an..70	Free text value	Correct Technical Name
	4440			an..70	Free text	n.a.
	4440			an..70	Free text	n.a.
	4440			an..70	Free text	n.a.
	3453		M	an..3	Language	as specified in ISO 639-1
	4447			an..3	Text formatting	n.a.
CNI/GID/DGS						
CNI/GID/DGS	**MEA**	3	M		*MEASUREMENTS*	*Total weight of the dangerous good within a transport*
	6311		M	an..3	Measurement purpose qualifier	WT for weights
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	‘AAL’ for net weight including normal packing
	6321			an..3	Measurement significance, coded	n.a.

1	2	3	4	5	6	7
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	‘KGM' for kilogram (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Weight of the dangerous good in the consignment
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
CNI/GID/DGS	**MEA**	3	M		*MEASUREMENTS*	*Total volume of the dangerous good within a transport*
	6311		M	an..3	Measurement purpose qualifier	‘VOL' for volume
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	‘AAX' The observed volume after adjustment for factors such as temperature or gravity
	6321			an..3	Measurement significance, coded	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.

1	2	3	4	5	6	7
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'TNE' for metric ton (UN/ECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Tonnage
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
GRP 13 CNI/GID/DGS	**SGP (1..99)**	4	M		SPLIT *GOODS* PLACEMENT	*Specification of the location of the goods.* For the transported cargo, this segment shall contain the identification of the vessel (barge) the cargo is stowed on. Remark: Cargo means, in this context, container, liquid cargo and general cargo
			M		EQUIPMENT IDENTIFICATION	
	C237		M	an..17 (an7..8)	Equipment identification number	*Ship number*: 7 digits for IMO indication, 8 digits for unique European vessel identification number (ENI)
	8260		M	an..3	Code list qualifier	'IMO' for an IMO-number, see Part IV, Article 2.03(2) 'ENI' for a unique European vessel identification number, see Part IV, Article 2.03(3)
	1131			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	3055			an..3	Country	n.a.
	3207			n..8	Number of packages	n.a.
	7224					
CNI/GID/DGS/SGP	**MEA**	5	M		*MEASUREMENTS*	*Total of the goods within the vessel*
	6311		M	an..3	Measurement purpose qualifier	'WT' for weights
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'AAL' for net weight including normal packing
	6321			an..3	Measurement significance, coded	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'KGM' for kilogram (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Weight of the goods in the vessel
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.

1	2	3	4	5	6	7
CNI/GID/DGS/SGP	**MEA**	5	C		*MEASUREMENTS*	*Total tonnage of the goods within the vessel*
	6311		M	an..3	Measurement purpose qualifier	'VOL' for volume
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'AAX' The observed volume after adjustment for factors such as temperature or gravity
	6321			an..3	Measurement significance, coded	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'TNE' for metric ton (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Tonnage
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
CNI/GID/DGS	**SGP**	4	C		SPLIT *GOODS* PLACEMENT	*The location of the goods if in containers or tanks.* If the goods are transported in containers or tanks at least one SGP combination specifying the ship on which the cargo is stowed shall be specified.

1	2	3	4	5	6	7
	C237		M		EQUIPMENT IDENTIFICATION	Identification
	8260		M	an..17	Equipment identification number	*For containers the Container identification* code shall be used (owner code, identifier, serial number. check digit), see Part IV, Article 2.03(13) For the transport of liquid cargo the code 'NA' shall be used.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3207			an..3	Country	n.a.
	7224			n..8	Number of packages	n.a.
CNI/GID/DGS/SGP	**LOC**	4	C		*PLACE/LOCATION IDENTIFICATION*	*Stowage location*
	3227		M	an..3	Place/location qualifier	For containers: '147' for stowage cell For tanks and other cargo: 'ZZZ' Mutually defined
	C517		M		LOCATION IDENTIFICATION	

1	2	3	4	5	6	7
	3225		M	an..25	Place/location identification	For containers 'BBBRRTT' for bay/row/tier (In accordance with ISO 9711-1 (1990)) For tanks: LLnn where - LL describes the location of the tank (PS for port side, SB for starboard, CC for Center side, CP for Center portside, CS for Center starboard (in case of 4-width configuration)) - nn describes the sequence number of the tank, starting with 01 from front to nn to the back.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224			an..70	Place/location	n.a.
	C519				RELATED LOCATION ONE IDENTIFICATION	n.a.
	3223			an..25	Related place/location one identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222			an..70	Related place/location one	n.a.
	C553				RELATED LOCATION TWO IDENTIFICATION	n.a.
	3233			an..25	Related place/location two identification	n.a.
	1131			an 3	Code list qualifier	n.a.

1	2	3	4	5	6	7
	3055			an..3	Code list responsible agency	n.a.
	3232			an..70	Related place/location two	n.a.
	5479			an 3	Relation	n.a.
CNI/GID/DGS/SGP	**MEA**	4	D[6]		*MEASUREMENTS*	*Specification of the weight of the good in the container*
	6311		M	an..3	Measurement purpose qualifier	WT for weights
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'AAL' for net weight including normal packing
	6321			an..3	Measurement significance, coded	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154		D[Use 4]	an..70	Measurement attribute	Container type (ISO 6346 chapter 4 and annexes D and E)
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'KGM' for kilogram (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Weight of the good in this container
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.

1	2	3	4	5	6	7
	7383			an..3	Surface/layer indicator	n.a.
CNI/GID/DGS/SGP	**MEA**	4	D[6]		*MEASUREMENTS*	*Total tonnage of the goods within the vessel*
	6311		M	an..3	Measurement purpose qualifier	'VOL' for weights
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'AAX' The observed volume after adjustment for factors such as temperature or gravity
	6321			an..3	Measurement significance, coded	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'TNE' for metric ton (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Tonnage
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
CNI/GID/DGS	**SGP**	4	C		SPLIT *GOODS* PLACEMENT	*The total weight of the container.*

1	2	3	4	5	6	7
	C237		M		EQUIPMENT IDENTIFICATION	Identification
	8260		M	an..17	Equipment identification number	*For containers the Container identification* code shall be used (owner code, identifier, serial number, check digit), see Part IV, Article 2.03(13) For the transport of liquid cargo the code 'NA' shall be used.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3207			an..3	Country	n.a.
	7224			n..8	Number of packages	n.a.
CNI/GID/DGS/SGP	**MEA**	4	D[USE 7]		*MEASUREMENTS*	*Specification of the verified gross mass of this container*
	6311		M	an..3	Measurement purpose qualifier	WT for weights
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'VGM' Transport equipment verified gross mass
	6321			an..3	Measurement significance, coded	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'KGM' for kilogram (UNECE Rec. 20)

1	2	3	4	5	6	7
	6314		M	an..18 (n9)	Measurement value	Verified gross mass (Weight) of this container
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
CNI/GID/DGS/SGP	**MEA**	4	D[USE 7]		*MEASUREMENTS*	*Specification of the Estimated gross weight of this container*
	6311		M	an..3	Measurement purpose qualifier	WT for weights
	C502		M		MEASUREMENT DETAILS	
	6313		M	an..3	Property measured	'ACN' Estimated gross weight
	6321			an..3	Measurement significance, coded	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	'KGM' for kilogram (UNECE Rec. 20)
	6314		M	an..18 (n9)	Measurement value	Estimated gross weight of this container
	6162			n..18	Range minimum	n.a.

1	2	3	4	5	6	7
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.
	UNT	0	M		*MESSAGE TRAILER*	*End and control of completeness of the message*
	0074		M	n..6	Number of segments in a message	
	0062		M	an..14	Message reference number	First 14 positions of the message reference number
	UNZ		M		*INTERCHANGE TRAILER*	*End and control of the interchange*
	0036		M	n..6	Interchange control count	‘1’ for number of messages contained in the interchange
	0020		M	an..14	Interchange control reference	First 14 positions of the message reference number

a) Clarification regarding the use of the CNI and GID segments

Segment Group	Segment Composite data element (C) Data element TAG	Level	Status	Format	Name	Description Qualifiers in quotation marks
CNI	**GID (1..99)**	**2**	**M**		**GOODS ITEM DETAILS**	per *vessel* and per *good* a new GID segment
	1496		M	n..5	Goods item number	Sequence number of the good within a consignment. Unique within the CNI group

Clarification:

i) Each item shall be separately identified by means of the line (goods) item number and particulars.

ii) Goods item number: The sequence number of the good within a consignment. This means, if a consignment consists of several goods items, all the goods items shall be represented as unique goods items (GID). If the consignment only consists of one line (goods) item, the shipper (cargo sender) shall represent this in one line. It is important that commercial information remains unchanged in the respective messages and does not disappear.

iii) The division of an ERINOT message can be explained as follows:

- A means of transport may contain in its cargo one or more consignments. Each consignment may contain one or more goods items, each with its own particulars. Consignments, including the goods within this respective consignment, may be divided over one or more vessels (e.g. in a convoy in one voyage).
- Each container in itself is represented in the ERINOT message as separate consignment information group; as a result, the number of consignments will increase with each container.

b) Dummy segments

In some cases, amongst others in the passage message ERINOT(PAS), ‘dummy” segments shall be used as part of mandatory groups of segments. For these ‘dummy” segments the following rules apply:

CNI group:

- CNI: sequence number: ‘9999’

CNI/GID group:

- GID: sequence number: ‘99999’

CNI/GID/DGS group:

- DGS:
  - Class type: ‘IMD’
  - Classification: ‘0.0’
  - UNDG number: ‘0000’
- FTX AAD: good name: ‘DUMMY’
- MEA: weight: 0

c) Empty vessels

If an empty vessel is reported, the following rules apply for the mandatory segment groups:

i) Empty of non-dangerous goods or unknown previous cargo:

CNI group:

- CNI: sequence number: ‘9999”

CNI/GID group:

- GID: sequence number: ‘99999”

CNI/GID/DGS group:

- DGS:
  - Class type: ‘IMD’
  - Classification: ‘0.0’
  - UNDG number: ‘0000’
- FTX AAD: good name: ‘DUMMY’
- MEA: weight: 0

ii) Empty of dangerous goods (in the case previous dangerous cargo were reported):

CNI group:

- CNI: valid sequence number
- LOC: source and destination (current voyage)

CNI/GID group:

- GID: valid sequence number
- FTX ACB: type of good: ‘D’, HS code of (previous) dangerous good

CNI/GID/DGS group:

- DGS: dangerous goods details (previous cargo)
- FTX AAD: dangerous good name
- MEA: weight: 0
- SGP: details of the empty vessel
- MEA: weight: 0

d) Container transport with non-dangerous goods

If containers are transported, the following extra rules apply for the mandatory groups if a container does not carry dangerous goods:

CNI group:

- CNI: valid sequence number
- LOC: source and destination

CNI/GID group:

- GID: valid sequence number
- FTX ACB: type of good: ‘N’, HS code of the good
- FTX AAA, good name, NST code of the good, HS code of the good
- SGP: details of the vessel
- MEA: total weight of the non-dangerous good in the vessel

CNI/GID/DGS group:

- DGS:
  - Class type: ‘IMD’
  - Classification: ‘0.0’
  - UNDG number: ‘0000’
- FTX AAD: good name: ‘DUMMY’
- MEA: weight: 0
- SGP group (1):
  - SGP: vessel details
  - MEA: weight of the good in the vessel
- SGP group (2-99):
  - SGP: Container number
  - MEA: weight of the good in the container

This way of entering data for a container loaded with non-dangerous goods follows the way the data for a container with dangerous goods are entered. Due to compatibility reasons with previous versions, the vessel details are entered twice.

e) Stowage encoding for 30' and 45'containers

If for a 30’container the front of the container falls between two 20’ slots, the highest bay number is used for the encoding of the 30’ container.

The 45’ container is used in similar manner as a 40’ container (even bay slot number). The container type will be used to uniquely determine that the slot contains a 45’ container.

f) Containers with unknown details on the goods or empty containers

If containers are transported where the details of the goods in the containers are not known, or empty containers are transported, the following extra rules apply:

EQD group:

EQD: container range

MEA: number of containers in the given range

CNI group:
CNI: valid sequence number
LOC: source and destination
CNI/GID group:
GID: valid sequence number
FTX ACB: type of good: ‘N’, HS code
FTX AAA: good name, NST code, HS code
SGP: details of the vessel
MEA: total weight of the containers in the given range
CNI/GID/DGS group:
dummy group
Depending on the range of containers the following codes shall be used:

	HS code	
Containers 20 ft empty	8609000002	
Containers 30 ft empty	8609000004	
Containers 40 ft empty	8609000003	
Containers 20 ft loaded	8609000007	
Containers 30 ft loaded	8609000008	
Containers 40 ft loaded	8609000009	

g) Exchanging information between RIS authorities

When exchanging information between RIS authorities, a passage message type shall be used by specifying ‘PAS’ in the BGM segment (element 1001).

In this PAS message the following information regarding the voyage shall be included:

- BGM element 1001 = ‘PAS’.
- TDT group:
  - LOC(1), type ‘5’ = Place of departure.
  - LOC(2), type ‘172’ = Passage point.
  - LOC(9), type ‘153’ = Place of destination (first port where transport is bound).
  - DTM(2), type ‘186’ = Passage time of LOC(2).
  - DTM(3), type ‘132’ = ETA of LOC(9) only if available.
- CNI groups with all the (known) cargo onboard.

The CNI group may be empty only if it is a passage message notifying another (local) party of the last position/passage point of that vessel.

h) Cancelling a notification or notifying an interruption/a restart of a voyage

When cancelling a notification or when notifying an interruption/a restart of a voyage, the following information shall be specified:

- BGM element 1225 = ‘1’ or ‘150’ or ‘151’ (according to message function).
- RFF(ACW) element 1154 refers to the last message sent.
- All other segments (TDT, CNI, etc.) contain the same information as specified in the last notification message sent.

4. XML edition of ERINOT

Both XSD and UN/EDIFACT formats of the ERINOT message are functionally equivalent and share the same business rules.

In the ERINOT message structure in UN/EDIFACT format, the column 'Description Qualifiers in quotation marks' indicates which information should be provided in a particular data element, including additional restrictions on size and allowed character set. In the XSD, these fill-in instructions are included in the ’xs:annotation’ field of the respective data elements. This field also integrates a subfield ‘xs:documentation’ which indicates the corresponding field name of the UN/EDIFACT format. Besides, the instructions which are applicable for the UN/EDIFACT format are also applicable by default in the XSD. If additional information or deviating restrictions are required, it will be provided in this field.

Appendix 1 XML edition of ERINOT, XSD file (source code) (Distributed separately)

ANNEX 13
PASSENGER AND CREW LIST - PAXLST

1. Objective of the message PAXLST

a) Functional definition

The passenger/crew list message (PAXLST) permits the transfer of passenger or crew data, or both. The message shall be used for the exchange of data in inland navigation between the captain/skipper or carrier and designated authorities such as ISPS terminals, customs, immigration, police.

The message shall be also used to transfer passenger/crew data from a designated authority in the country of departure to the appropriate authorities in the country of arrival of the means of transport.

b) Field of application

The passenger list message can be used for both national and international applications. It is based on general practice in administration, commerce and transport, and it is not dependent on the type of business or industry, neither on the mode of transport. The basic concept of the PAXLST message is that there is one message for all crew members for a specified ship on a specified voyage, and another message for the passengers on that voyage whilst also possible stowaways can be reported through a separate message. The messages can be transmitted separately or combined into one transmission.

The message supports the implementation — by means of EDI — of the following reporting needs:

i) national reporting requirements with respect to crew/passengers and stowaway

ii) Regulation (EC) No 725/2004 on enhancing ship and port facility security also has provisions related to crew and passenger lists.

Moreover, in accordance with recommended practice set out in the Convention on the Facilitation of International Maritime Traffic, maritime authorities are not to require more than the following information in the crew list:

iii) Name and nationality of ship (country of the inspection body that issued the last vessel certificate)

iv) Family name

v) Given names

vi) Nationality

vii) Rank or rating

viii) Date and place of birth

ix) Nature and number of identity document

x) Port and date of arrival

xi) Arriving from

In addition, in accordance with the requirements of the competent authorities in inland shipping, the following information might be required:

xii) Names of visitors to a vessel

xiii) Licence plates of the vehicles

xiv) Exact place and time of boarding and going ashore

xv) Required services such as deliveries, stores and spares
xvi) Names of repair people together with company name
xvii) Changes of crew
xviii) Children of the crew.
All these details can be exchanged through the PAXLST message.

2. Message structure in the UN/EDIFACT format

The passenger respectively crew list notification is based on the UN/EDIFACT message PAXLST.

The structure for implementation of the crew or passenger list notification message is as follows:

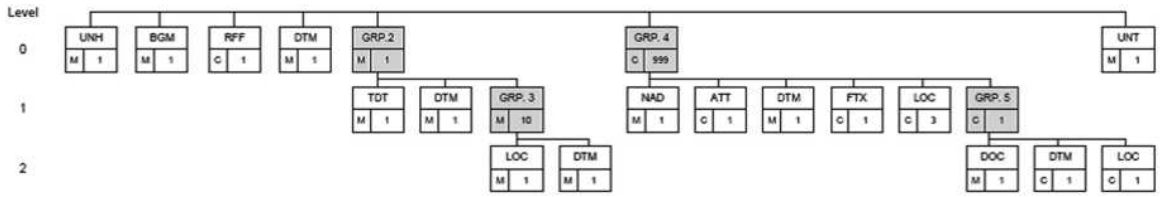
a) Segment index (alphabetical sequence by tag)
UNH Message header
BGM Beginning of message
ATT Attribute
DOC Document/message details
DTM Date/time/period
FTX Free text
LOC Place/location identification
NAD Name and address
RFF Reference
TDT Details of transport
UNT Message trailer

b) Segment table

Pos	Tag	Name	S	R
	UNA		C	1
	UNB		M	1
0010	UNH	Message header	M	1
0020	BGM	Beginning of message	M	1
0090		Segment group 2		
0100	TDT	Details of transport	M	1
0110	DTM	Date/time/period	M	1
0120		Segment group 3	M	4
0130	LOC	Place/location identification	M	1
0140	DTM	Date/time/period	M	1
0150		Segment group 4	C	999
0160	NAD	Name and address	M	1
0170	ATT	Attribute	C	1

Pos	Tag	Name	S	R
0180	DTM	Date/time/period	M	1
0210	FTX	Free text	C	1
0220	LOC	Place/location identification	C	3
0270		Segment group 5	C	1
0280	DOC	Document/message details	M	1
0290	DTM	Date/time/period	C	1
0320	LOC	Place/location identification	C	1
0440	UNT	Message trailer	M	1

c) Branching diagram



d) Passenger / Crew list message format in UN/EDIFACT format

Segment Group	Segment Composite data element (C) Data element TAG	Level	Status	Format	Name	Description Qualifiers in quotation marks
1	2	3	4	5	6	7
	UNA	**0**	**C**		**Service String Advice**	
			M	an1	Component data element separator	
			M	an1	Segment Tag and Data element separator	+
			M	an1	Decimal notation	
			M	an1	Release indicator	?
			M	an1	Reserved future use	space
			M	an1	Segment terminator	‘
					Advised string: UNA:+.? ’	6 characters
	UNB	**0**	**M**		**Interchange header**	
	S001		M		SYNTAX IDENTIFIER	
	0001		M	a4	Syntax identifier	‘UNOC’ Controlling agency
	0002		M	n1	Syntax version number	‘2’
	S002		M		INTERCHANGE SENDER	

1	2	3	4	5	6	7
	0004		M	an..35 (an25)	Sender identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post
	0007			an..4	Partner identification code qualifier	n.a.
	0008			an..14	Address for reverse routing	n.a.
	S003		M		INTERCHANGE RECIPIENT	
	0010		M	an..35 (an25)	Recipient identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post
	0007			an..4	Partner identification code qualifier	n.a.
	0014			an..14	Routing address	n.a.
	S004		M		DATE/TIME OF PREPARATION	
	0017		M	n6	Date	Generation date, YYMMDD
	0019		M	n4	Time	Generation time, HHMM
	0020		M	an..14	Interchange reference identification.	First 14 positions of the message reference number
	S005		C		RECIPIENTS REFERENCE, PASSWORD	n.a
	0022			an..14	Recipient’s reference/password	n.a.
	0025			an2	Recipient’s reference, password qualifier	n.a.
	0026			an..14	Application reference	n.a.
	0029			a1	Processing priority code	n.a.
	0031		C	n1	Acknowledgement request	‘1’ = Sender requests acknowledgement, i.e. UNB and UNZ segments received and identified

1	2	3	4	5	6	7
	0032			an..35	Communications agreement id	n.a.
	0035		C	n1	Test indicator	‘1’ = the interchange relates to a test message
	UNH		**M**		**MESSAGE HEADER**	Identification, specification and heading of a message
	0062		M	an..14	Message reference number	First 14 positions of the message number
	S009		M		MESSAGE IDENTIFIER	Message identification
	0065		M	an..6	Message type	‘PAXLST’, message type
	0052		M	an..3	Message version number	‘D’, message version number
	0054		M	an..3	Message release number	‘05A’, message release number
	0051		M	an..2	Controlling agency	‘UN’, controlling agency
	0057		M	an..6	Association assigned code	‘ERI13’, ERI Version 1.3
	0068		M	an..35	Common access reference	Common access reference Reference to all messages related to one common file
	S010				STATUS OF THE TRANSFER	Transfer status
	0070			n..2	Sequence of transfers	n.a.
	0073			a1	First and last transfer	n.a.
	BGM	**0**	**M**		**BEGINNING OF MESSAGE**	Identification of the type and function of the message

1	2	3	4	5	6	7
	C002				Document/message name	Message name
	1001		M	an..3	Document name code	Message type: ‘250’ crew list 745’ passenger list ‘10’ stowaway list
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	1000		M	an..35	Document name	Document name: ‘CREW LIST' ‘PASSENGER LIST' ‘STOWAWAY LIST' (One PAXLST message contains one document.)
	C106		M		Document/message identification	
	1004		M	an..35 an(15)	Document identifier	message reference number
	1056		C	an..9	Version identifier	version identifier
	1060		C	an..6	Revision identifier	revision identifier

1	2	3	4	5	6	7
	1225		M	an..3	MESSAGE FUNCTION CODE	Function of message ‘1' = cancellation message ‘9' = new message (original) ‘5' = modification message ‘22' = Final transmission (End of voyage) ‘150' = Interruption of voyage ‘151' = Restart of voyage
	4343			an..3	RESPONSE TYPE CODE	QA
	RFF	**0**	**C**		**REFERENCE**	Reference to the message which is changed, mandatory if the message is a modification message
	C506		M		REFERENCE	Reference
	1153		M	an..3	Reference qualifier	‘ACW’
	1154		M	an..35	Reference number	(an14) message reference number of the BGM, tag 1004 of the message the current message refers to
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..35	Revision number	n.a.
	DTM	**0**	**M**		**DATE/TIME/PERIOD**	
	C507		M		DATE/TIME/PERIOD	Date/time/period

1	2	3	4	5	6	7
	2005		M	an..3	Date or time or period function code qualifier	'184' Notification date
	2380		M	an..35	Date or time period value	Time: CCYYMMDD
	2379		M	an..3	Date or time or period format code	'102'
	TDT	**1**	**M**		**Specification of the means of transport**	Specification of the means of transport, the naming vessel within a convoy (a single vessel without barge is also a convoy in this context)
	8051		M	an..3	'20' (main transport)	Transport stage code qualifier
	8028		C	an..17	Conveyance reference number	Voyage number, defined by sender of the message
	C220		M		Transport modality	n.a.
	8067		M	an..3	Mode of transport, coded	'8' for inland water transport, '1' for maritime transport (see UNECE Rec. 19)
	8066			an..17	Transport mode name	n.a.
	C001		M		Type of means of transport identification, convoy type	Code for ship and convoy types of means of transport from UNCEFACT Rec. 28, see Part IV, Article 2.03(1)
	8179			an..8	Transport means description code	n.a.
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	8178			an..17	Transport means description	n.a.
	C040				Carrier	

1	2	3	4	5	6	7
	3127			an..17	Carrier identifier	n.a.
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	3128			an..35	Carrier name	n.a.
	8101			an..3	Transit direction indicator code	n.a.
	C401				Excess transportation information	n.a.
	8457			an..3	Excess transportation reason code	n.a.
	8459			an..3	Excess transportation responsibility code.	n.a.
	7130			an..17	Customer shipment authorisation identifier	n.a.
	C222		M		Transport identification	
	8213		M	an..9 (an7..8)	ID. of means of transport identification	*Vessel number*: 7 digits for IMO indication, 8 digits for unique European vessel identification number (ENI)
	1131		M	an..17	Code list qualifier	'IMO' for an IMO number, see Part IV, Article 2.03(2) 'ENI' for a unique European vessel identification number, see Part IV, Article 2.03(3)
	3055			an..3	Code list responsible agency code	n.a.
	8212		M	an..35	Name of the vessel	*Name of the ship*. If the name results in more than 35 positions, the name of the vessel is shortened.

1	2	3	4	5	6	7
	8453		M	an..3	(an2) Nationality, ISO 3166 country code	ISO two-alpha country code 3166-1, see Part IV, Article 2.03(8) Dependency note. The country of the inspection body that issued the last vessel certificate.
	8281			an..3	Transport means ownership indicator code.	n.a.
TDT	**DTM**	**1**	**M**	**TDT(20)**	**Estimated time of arrival/departure**	
	C507				Date/time/period	
	2005		M	an..3	Date or time or period function code qualifier	‘132’ for arrival ‘133’ for departure
	2380		M	an..35	Date or time period value	Given in the local time of the place of arrival
	2379		M	an..3	Date or time or period format code	‘203’ for CCYYMMDDHHMM
TDT	**LOC(1)**	**1**	**M**		**PLACE/LOCATION IDENTIFICATION**	*Port of departure*, the port where the transport starts
	3227		M	an..3	Place/location qualifier	‘5’ place of departure
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..35 (an5)	Place/location identification	UNECE location code (Rec. 16), see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	3224		D[Use 1]	an..256 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, Part IV, Article 2.03(11)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
TDT/LOC1	**DTM**	**1**	**M**		**Estimated time of departure**	
	C507				Date/time/period	

1	2	3	4	5	6	7
	2005		M	an..3	Date or time or period function code qualifier	'133' for departure
	2380		M	an..35	Date or time period value	Given in the local time of the place of arrival
	2379		M	an..3	Date or time or period format code	'203' for CCYYMMDDHHMM
TDT	**LOC(2)**	**1**	**M**		**PLACE/LOCATION IDENTIFICATION**	First port of call
	3227		M	an..3	Place/location qualifier	'87'
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..35 (an5)	Place/location identification	UNECE location code (Rec. 16), see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		D[Use 1]	an..256 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70	Related place/location one	Full name of the terminal

1	2	3	4	5	6	7
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
TDT/LOC 2	**DTM**	**1**	**M**		**Estimated time of first port of call**	
	C507				Date/time/period	
	2005		M	an..3	Date or time or period function code qualifier	‘252’ Arrival date/time at initial port
	2380		M	an..35	Date or time period value	Given in the local time of the place of arrival
	2379		M	an..3	Date or time or period format code	'203’ for CCYYMMDDHHMM
TDT	**LOC(3)**	**1**	**M**		**PLACE/LOCATION IDENTIFICATION**	Last port of call
	3227		M	an..3	Place/location qualifier	‘125’
	C517		M		LOCATION IDENTIFICATION	

1	2	3	4	5	6	7
	3225		M	an..35 (an5)	Place/location identification	UNECE location code (Rec. 16), see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		D[Use 1]	an..256 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.

1	2	3	4	5	6	7
TDT/LOC 3	**DTM**	**1**	**M**		**Estimated time of arrival/departure**	
	C507				Date/time/period	
	2005		M	an..3	Date or time or period function code qualifier	‘253’ Departure date/time from last port of call
	2380		M	an..35	Date or time period value	Given in the local time of the place of arrival
	2379		M	an..3	Date or time or period format code	‘203’ for CCYYMMDDHHMM
TDT	**LOC(4)**	**1**	**M**		**PLACE/LOCATION IDENTIFICATION**	Port of arrival
	3227		M	an..3	Place/location qualifier	‘60’
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..35 (an5)	Place/location identification	UNECE location code (Rec. 16), see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		D[Use 1]	an..256 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)

1	2	3	4	5	6	7
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
TDT/LOC 4	**DTM**	**1**	**M**		**Estimated time of arrival/departure**	
	C507				Date/time/period	
	2005		M	an..3	Date or time or period function code qualifier	‘132’ for arrival
	2380		M	an..35	Date or time period value	Given in the local time of the place of arrival
	2379		M	an..3	Date or time or period format code	‘203’ for CCYYMMDDHHMM
GRP 4	**NAD**	**0**	**M**		**NAME and ADDRESS**	Name and address details of person

1	2	3	4	5	6	7
	3035		M	an..3	Party function code qualifier	Name type: 'FM' for crew member 'FL' for passenger 'BV' for stowaway persons
	C082		C		PARTY IDENTIFICATION DETAILS	Name identification
	3039			an..35	Party identification	Code or textual description of the relation
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C058		M		NAME AND ADDRESS	n.a.
	3124		M	an..35	Name and address line	Family name
	3124		M	an..35	Name and address line	Given names
	3124		C	an..35	Name and address line	Prefix (gender)
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	C080		C		PARTY NAME	
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.

1	2	3	4	5	6	7
	3045			an..3	Party name format, coded	n.a.
	C059		C		STREET	
	3042		C	an..35	Street and number/PO box	Street and number or post office box
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3164		C	an..35	City name	City
	C819		C		Country sub-entity identification	n.a.
	3229		C	an..9	Country sub-entity name code	Postal identification code
	1131		C	an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	3228			an..70	Country sub-entity name	n.a.
	3251		C	an..17	postal code	
	3207		M	an..3	(an2) nationality, ISO3166 country code	ISO 3166-1 two alpha country code, see Part IV, Article 2.03(8)
GRP 4	**ATT**	**1**	**C**		**Rank/title**	Rank/title
	9017		M	an..3	Attribute function qualifier	‘5’ Professional title ‘1’ Crew member
	C955		C		Attribute type	

1	2	3	4	5	6	7
	9021			an..17	Attribute type, coded	
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	9020			an..70	Attribute type description	n.a.
	C956		C		Attribute detail	
	9019			an..17	Attribute description code	n.a
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	9018		M	an..256	Attribute description	Rank/title name e.g. Chief officer
NAD	**DTM**	**1**	**M**		**DATE/TIME/PERIOD**	Date of birth
	C507				Date/time/period	Date/time/period
	2005		M	an..3	Date or time or period function code qualifier	‘329’
	2380		M	an..35	Date or time period value	Date: CCYYMMDD
	2379		M	an..3	Date or time or period format code	‘102'
NAD	**FTX**	**1**	**C**		***Free text***	General information

1	2	3	4	5	6	7
	4451		M	an..3	Text subject qualifier	Text subject type 'AAI' General Information
	4453			an..3	Text function, coded	
	C107		C		Text reference	
	4441		M	an..17	Free text, coded	Call information related to boarding of persons. General information on the call of the vessel.
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency, coded	n.a.
	C108		C		Text literal	
	4440		C	an..512	Free text	License number vehicle
	4440		C	an..512	Free text	Visitor
	4440		C	an..512	Free text	Company name of service provider and other details
	4440		C	an..512	Free text	Names and duration of visit of the visiting children
	4440		D[Use 2]	an..512	Free text	Health Status
	3453			an..3	Language, coded.	
	4447			an..3	Text formatting, coded	
NAD	**LOC(1)**		**M**		**PLACE/LOCATION IDENTIFICATION**	Place of birth
	3227		M	an..3	Place/location qualifier	'180'

1	2	3	4	5	6	7
	C517		M		LOCATION IDENTIFICATION	
	3225		C	an..35 (an5)	Place/location identification	ISO 3166-1 two alpha country code, see Part IV, Article 2.03(8)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		M	an..256 (an..35)	Place/location	Place of birth
	C519		C		RELATED LOCATION ONE IDENTIFICATION	n.a.
	3223			an..35	Related place/location one identification	n.a.
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222			an..70	Related place/location one	n.a.
	C553				RELATED LOCATION TWO IDENTIFICATION	n.a.
	3233			an..25	Related place/location two identification	n.a.
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232			an..70	Related place/location two	n.a.
	5479			an..3	Relation	n.a.

1	2	3	4	5	6	7
NAD	**LOC(2)**		**M**		**PLACE/LOCATION IDENTIFICATION**	Place of Embarkation
	3227		M	an..3	Place/location qualifier	‘178’ for place of Embarkation
	C517		M		LOCATION IDENTIFICATION	
	3225		C	an..35 (an5)	Place/location identification	UNECE location code (Rec. 16) of the port, see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		D[Use 1]	an..256	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..35 (an5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..35 (an5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..17	Code list qualifier	
	3055			an..3	Code list responsible agency	n.a.

1	2	3	4	5	6	7
	3232		C	an..70 (an5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
NAD	**LOC(3)**		**M**		**PLACE/LOCATION IDENTIFICATION**	Place of Disembarkation
	3227		M	an..3	Place/location qualifier	‘179’ for place of disembarkation
	C517		M		LOCATION IDENTIFICATION	
	3225		C	an..35 (an5)	Place/location identification	UNECE location code (Rec. 16) of the port, see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		D[Use 1]	an..256	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	

1	2	3	4	5	6	7
	3233		M	an..25 (an5)	Related place/location two identification	Fairway section code, see Part IV, 2.03(10)
	1131			an..17	Code list qualifier	
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
NAD	**DOC**	**1**	**M**		**Travel document details**	Travel document details
	C002		M		Document/message name	Document/message name
	1001		M	n..3	Document/message name, coded	Document type: ‘39’ Passport ‘36’ Identity card ‘SMB’ Seaman’s book ‘40’ Driving licence (national) ‘41’ Driving licence (international) ‘483’ Visa
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency, coded	n.a.
	1000		C	an..35	Document name	Type of Visa
	C503		M		Document/message details	

1	2	3	4	5	6	7
	1004		M	an..35	Document/message number	Document identifier
	1373			an..3	Document/message status, coded	n.a.
	1366			an..70	Document/message source	n.a.
	3453			an..3	Language, coded	n.a.
	1056			an..9	Version	n.a.
	1060			an..6	Revision number	n.a.
	3153			an..3	Communication channel identifier, coded	n.a.
	1220			n..2	Number of copies of document required	n.a.
	1218			n..2	Number of originals of document required	n.a.
DOC	**DTM**	**2**	**C**		**DATE/TIME/PERIOD**	Expiration date
	C507				Date/time/period	Date/time/period
	2005		M	an..3	Date or time or period function code qualifier	‘192’
	2380		M	an..35	Date or time period value	Date: CCYYMMDD
	2379		M	an..3	Date or time or period format code	‘102'
TDT	**LOC(1)**	**1**	**M**		**PLACE/LOCATION IDENTIFICATION**	Place of issue of document
	3227		M	an..3	Place/location qualifier	‘44'

1	2	3	4	5	6	7
	C517		M		LOCATION IDENTIFICATION	
	3225		C	an..35 (an5)	Place/location identification	UNECE location code (Rec. 16), see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224			an..256	Place/location	n.a.
	C519				RELATED LOCATION ONE IDENTIFICATION	n.a.
	3223			an..25	Related place/location one identification	n.a.
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222			an..70	Related place/location one	n.a.
	C553				RELATED LOCATION TWO IDENTIFICATION	n.a.
	3233			an..25	Related place/location two identification	n.a.
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3232			an..70 (an..5)	Related place/location two	n.a.
	5479			an..3	Relation	n.a.

1	2	3	4	5	6	7
	UNT	**0**	**M**		**MESSAGE TRAILER**	End and control of completeness of the message
	0074		M	n..6	Number of segments in the message	
	0062		M	an..14	First 14 positions of the message reference number	First 14 positions of the message reference number
	UNZ		**M**		**INTERCHANGE TRAILER**	End and control of the interchange
	0036		M	n..6	Interchange control count	‘1’ for number of messages contained in the interchange
	0020		M	an..14	Interchange control reference	First 14 positions of the message reference number

Business rules	
D[USE 1]	If the code is XXXXX, then this data-element shall be completed.
D[USE 2]	This data-element is mandatory if person requires additional support.

3. PAXLST message in XML format

In the PAXLST message structure in UN/EDIFACT format, the column 'Description Qualifiers in quotation marks' indicates which information should be provided in a particular data element, including additional restrictions on size and allowed character set.

In the XSD, these fill-in instructions are included in the ’xs:annotation’ field of the respective data elements. This field also integrates a subfield ‘xs:documentation’ which indicates the corresponding field name of the UN/EDIFACT format.

Besides, the instructions which are applicable for the UN/EDIFACT format are also applicable by default in the XSD. If additional information or deviating restrictions are required, it will be provided in this field.

Appendix 1 PAXLST message in XML format, XSD file (source code) (Distributed separately)

ANNEX 14
ERI RESPONSE AND RECEIPT MESSAGE - ERIRSP

1. ERIRSP message

This message shall be used to provide where required answering and response functions to sent messages.

The function of this message is:

- to inform a message issuer that his ERI message has been received by the addressee's application and has been rejected due to errors encountered during its processing in the application;
- to acknowledge to a ERI message issuer the receipt of his message by the addressee's application.

a) Field of application

The application error and acknowledgement message can be used for both national and international applications. It is not dependent on the type of business or industry, neither it is a legal requirement: it is based on business practices related to administration and transport.

b) Principles

An ERI message can first be controlled at system level (e.g. the CONTRL message) to detect syntax errors and to acknowledge its receipt. It shall be then transmitted to the application process to be processed.

When an acknowledgement is necessary an ERIRSP message shall be sent specifying the reasons of acknowledgement. If an error is detected at the application level, which prevents its complete processing, an ERIRSP message shall be sent to the original message issuer providing details of the error(s) encountered. In case of application error, the ERIRSP message shall be transmitted manually.

In case of acknowledgement the ERIRSP message shall be processed automatically or manually, at recipient's discretion.

2. ERI RESPONSE MESSAGE ERIRSP in UN/EDIFACT format

The ERIRSP message is derived from the UN/EDIFACT APERAK message. The response messages to the functions (new, modification or cancellation) of the notification message ERINOT have all the same structure. The response to a 'modification' or a 'cancellation' contains information whether or not the 'modification' or 'cancellation' has been processed by the receiving system. A response is required only if the NAD (1)/COM segment, with qualifier 'EI', contains the mailbox number, or with qualifier 'EM', contains the email address where the response is to be returned to.

a) Segment index (alphabetical sequence by tag)

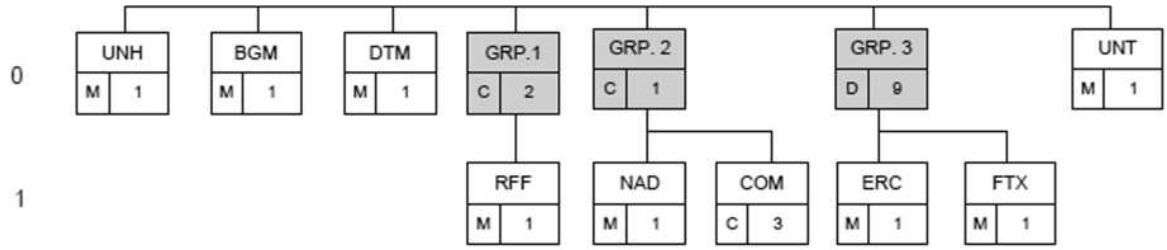
BGM Beginning of message
COM Communication contact
DTM Date/time/period
ERC Application error information
FTX Free text
NAD Name and address
RFF Reference
UNH Message header
UNT Message trailer

b) Segment table

Pos	Tag	Name	S	R
	UNB		M	1
0010	UNH	Message header	M	1
0020	BGM	Beginning of message	M	1
0030	DTM	Date/time/period	M	1
0060		Segment group 1	C	2
0070	RFF	Reference	M	1
0090		Segment group 2	C	1
0100	NAD	Name and address	M	1
0120	COM	Communication contact	C	3
0130		Segment group 3	D[1]	9
0140	ERC	Application error information	M	1
0150	FTX	Free text	M	1
0190	UNT	Message trailer	M	1

Business rules	
D[1]	This segment-group is to be used if any application error(s) occur.

c) Branching diagram



d) ERIRSP message structure in UN/EDIFACT format

Table 14-1 defines the segments of the ERI response messages.

Table 14-1
ERI response message ERIRSP

Segment Group	Segment Composite data element (C) Data element TAG	Level	Status	Format	Name	Description Qualifiers in quotation marks
1	2	3	4	5	6	7
	UNB	**0**	**M**		**INTERCHANGE HEADER**	
	S001		M		SYNTAX IDENTIFIER	
	0001		M	a4	Syntax identifier	'UNOA' Controlling agency
	0002		M	n1	Syntax version number	'2'
	S002		M		INTERCHANGE SENDER	
	0004		M	an..35 (an25)	Sender identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post
	0007			an..4	Partner identification code qualifier	n.a.
	0008			an..14	Address for reverse routing	n.a.
	S003		M		INTERCHANGE RECIPIENT	
	0010		M	an..35 (an25)	Recipient identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post
	0007			an..4	Partner identification code qualifier	n.a.

1	2	3	4	5	6	7
	0014			an..14	Routing address	n.a.
	S004		M		DATE/TIME OF PREPARATION	ho
	0017		M	n6	Date	Generation date, YYMMDD
	0019		M	n4	Time	Generation time, HHMM
	0020		M	an..14	Interchange control reference	First 14 positions of the message reference number
	S005				RECIPIENTS REFERENCE, PASSWORD	
	0022			an..14	Recipient’s reference/password	n.a.
	0025			an2	Recipient’s reference, password qualifier	n.a.
	0026			an..14	Application reference	n.a.
	0029			a1	Processing priority code	n.a.
	0031			n1	Acknowledgement request	n.a.
	0032			an..35	Communications agreement id	n.a.
	0035		C	n1	Test indicator	'1’ = the interchange relates to a test message
	UNH	**0**	**M**		**MESSAGE HEADER**	Identification, specification and heading of a message
	0062		M	an..14	Message reference number	First 14 positions of the message reference number
	S009		M		MESSAGE IDENTIFIER	
	0065		M	an..6	Message type	‘APERAK’, message type

1	2	3	4	5	6	7
	0052		M	an..3	Message version number	‘O’
	0054		M	an..3	Message release number	‘98B’
	0051		M	an..2	Controlling agency	‘UN’
	0057		M	an..6	Association assigned code	‘ERI13', ERI Version 1.3
	0068			an..35	Common access reference	n.a.
	S010				STATUS OF THE TRANSFER	
	0070			n..2	Sequence of transfers	n.a.
	0073			a1	First and last transfer	n.a.
	BGM	**0**	**M**		**BEGINNING OF MESSAGE**	Identification of the type and function of the message
	C002		M		DOCUMENT/MESSAGE NAME	
	1001		M	an..3	Document/message name code	Type of message received for which this message contains the acknowledgement information: ‘VES', from vessel to RIS authority message ‘CAR', from carrier to RIS authority message ‘PAS', passage report from RIS authority to RIS authority
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	1000			an..35	Document/message name	n.a.

1	2	3	4	5	6	7
	C106		M		DOCUMENT/MESSAGE IDENTIFICATION	
	1004		M	an..35 (an15)	Document identifier	Message reference number. This number shall be as unique as possible, both for sender and for receiver. If a message is received and then passed on to another receiver, the original message reference number shall be used. The transitional system shall in this case not generate another message reference number.
	1056			an..9	Version	n.a.
	1060			an..6	Revision number	n.a.
	1225		M	an..3	Message function code	Function of message: ‘9’ = new message (original)
	4343		M	an..3	Response type code	‘AP’ accepted ‘RE’ rejected. The notification is rejected if the transport is already arrived at its destination.
	DTM	**1**	**M**		**DATE/TIME/PERIOD**	The date/time that the receiving application encounters the approval or rejection
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	‘137’ for document/message date/time
	2380		M	an..35	Date or time period value	Value of arrival time: YYMMDDHHMM
	2379		M	an..3	Date or time or period format code	‘201’ for YYMMDDHHMM

1	2	3	4	5	6	7
GRP 1	**RFF (1)**	**1**	**C**		**REFERENCE**	Reference to previous message
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	‘ACW’ for reference number to previous message
	1154		M	an..35	Reference number	Message reference number from BGM, TAG 1004 of the message this message refers to
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
GRP 1	**RFF (2)**	**1**	**C**		**REFERENCE**	Reference to transaction/invoice number
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	‘AAY’ for reference number to transaction
	1154		M	an..35	Reference number	Reference number assigned by the receiving authority. The reference number shall start with the UN country code followed by three positions for the assigning system. The final part is the actual reference number.
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.

1	2	3	4	5	6	7
GRP 2	**NAD**	**1**	**M**		**NAME and ADDRESS**	Name and address of the sender of the notification
	3035		M	an..3	Party function code qualifier	'MS' for message sender
	C082				PARTY IDENTIFICATION DETAILS	n.a.
	3039			an..35	Party identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C058				NAME AND ADDRESS	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	C080		M		PARTY NAME	
	3036		M	an..35	Party name	Name of the sender of the notification
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.

1	2	3	4	5	6	7
	3045			an..3	Party name format, coded	n.a.
	C059		C		STREET	
	3042		M	an..35	Street and number/PO box	Street and number or post office box
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3164		C	an..35	City name	City
	3229			an..9	Country sub-entity identification	n.a.
	3251		C	an..9	Postcode identification	Postal identification code
	3207		C	an..3	Country	ISO 3166-1 two alpha country code, see Part IV, Article 2.03(8)
NAD	**COM**	***2***	***C***		***COMMUNICATION CONTACT***	Sender communication contact details (maximum 3 times)
	C076		M		COMMUNICATION CONTACT	
	3148		M	an..70	Communication number	Communication number
	3155		M	an..3	Communication channel qualifier	‘TE’ for telephone number ‘FX’ for fax number ‘EM’ for Email address
GRP 3	**ERC**	**1**	**C**		**APPLICATION ERROR INFORMATION**	

1	2	3	4	5	6	7
	C901		M		APPLICATION ERROR DETAIL	
	9321		M	an..8	Application error	Application error code
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
ERC	**FTX**	**2**	**M**		**FREE TEXT**	To communicate the reason for rejection
	4451		M	an..3	Text subject code qualifier	‘AAO’ for free text error description
	4453			an..3	Free text function code	n.a.
	C107				TEXT REFERENCE	
	4441			an..17	Free text identification	n.a.
	1131			an..3	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		C		TEXT LITERAL	Text
	4440		M	an..70	Free text	Further description
	4440		C	an..70	Free text	Further description
	4440		C	an..70	Free text	Further description
	4440		C	an..70	Free text	Further description
	4440		C	an..70	Free text	Further description
	3453			an..3	Language, coded	n.a.

1	2	3	4	5	6	7
	4447			an..3	Text formatting, coded	n.a.
	UNT		**M**		**MESSAGE TRAILER**	End and control of completeness of the message
	0074		M	n..6	Number of segments in a message	
	0062		M	an..14	Message reference number	First 14 positions of the message reference number
	UNZ		**M**		**INTERCHANGE TRAILER**	End and control of the interchange
	0036		M	n..6	Interchange control count	'1' for number of messages contained in the interchange
	0020		M	an..14	Interchange control reference	First 14 positions of the message reference number

3. XML format of ERIRSP message

Both XSD and UN/EDIFACT formats of the ERIRSP message are functionally equivalent and share the same business rules.

In the ERIRSP message structure in UN/EDIFACT format, the column 'Description Qualifiers in quotation marks' indicates which information should be provided in a particular data element, including additional restrictions on size and allowed character set. In the XSD, these fill-in instructions are included in the ’xs:annotation’ field of the respective data elements. This field also integrates a subfield ‘xs:documentation’ which indicates the corresponding field name of the UN/EDIFACT format. Besides, the instructions which are applicable for the UN/EDIFACT format are also applicable by default in the XSD. If additional information or deviating restrictions are required, it will be provided in this field.

The choice to use one or the other format is conditioned by the format of the original message. When a user sends an ERI message using XML format, he expects to receive an ERIRSP message using XML format in return, and vice versa, when he sends an ERI message using UN/EDIFACT format, he expects to receive an ERIRSP message using UN/EDIFACT format.

Appendix 1 XML format of ERIRSP message, XSD file (source code) (Distributed separately)

4. Error codes

For data attribute: MESSAGE ***REFERENCE ANSWERED TO ERROR DESCR CODE,*** the error codes defined in the tables 14-3, 14-4, 14-5 and 14-6 shall be used in segment ERC:

- Data element 9321 (EDIFACT).
- Data element <ErrorCode> (XML)

The purpose of the error codes is to inform the sender why a message has not been accepted or processed by the receiving party. The causes can be very diverse and cannot be always solved directly/indirectly by the sender. Despite this, it is important that a clear message is returned so that either the sender or the software supplier can determine the cause. The categories “Technical errors” and “Data invalid” are used when there is something wrong with the message structure/syntax/codes. When these error categories are returned, the sender should contact the supplier of the reporting software. The category “Invalid Rerefence Data” relates to the use of invalid reference data (see Annex 12 for the details of the reference data to be used). The last category is “Business violation” and is often related to invalid input or overwrite maximum dimensions, cones etc. Often the boatmaster can determine the cause of the error based on the subcategory returned.

a) Presentation of the categories of codes
The codes are divided in four categories and subcategories

Table 14-2
Categories of codes

Code	Groups
1	Technical errors
2	Data invalid
3	Invalid Reference Data
4	Business violation

b) Presentation of the subcategories of codes

Table 14-3
Subcategory 1

Code	Technical errors
101	Invalid Endpoint
102	XML format not respected or XSD not respected
104	Message not supported
105	Sender not Authorized
106	UN/EDIFACT format not respected
107	Invalid message version
108	Syntax version or level not supported
109	Character invalid as service character
110	Test indicator not supported
112	Invalid decimal notation
113	Invalid service character(s) (UN/EDIFACT format only)
114	Too many segment group repetitions (UN/EDIFACT format only)
199	Unspecified error

Table 14-4
Subcategory 2

Code	Data invalid
201	Message sequence invalid
202	Previous message not received
203	#PassengersOnBoard > #PersonsOnBoard
204	ETD >= ETA (for a voyage)
205	ETA >= ETD (for visiting a port)
206	Transport Mode not indicated
207	Transport Means not indicated
208	Navigation mode incorrect or not provided
209	Duplicate notification/request for vessel
210	Vessel tonnage exceed
299	Other error

Table 14-5
Subcategory 3

Code	Invalid Rerefence Data
301	Invalid Location information-code
302	Invalid Dangerous goods-code
303	Invalid Non-Dangerous goods-code
304	Invalid Vessel/Convoy-Type
305	Invalid Container-Type
399	Other

Table 14-6
Subcategory 4

Code	Business violation
403	Number of blue cones not indicated
410	Total convoy dimensions not allowed
415	Actual draught not allowed
419	Max. persons on board capacity exceeded
448	Maximum tonnage exceeded
470	Container-Type invalid or does not exist
475	Proper shipping name invalid or not indicated
476	No indication regarding an LNG system on-board
478	Actual airdraft not allowed
479	Actual length not allowed
480	Actual width not allowed
483	ENI number is invalid or not indicated
484	ENI number is not supported
485	IMO number invalid or not indicated
486	IMO number is not supported
487	Port of departure is invalid or not indicated
488	Next port of call is invalid or not indicated
489	Port of destination is invalid or not indicated
490	Port of loading is invalid or not indicated
491	Port of discharge is invalid or not indicated
492	Passage point is invalid or not indicated
493	Route point is invalid or not indicated
499	Other

ANNEX 15
BERTH MANAGEMENT PORT NOTIFICATION - BERMAN

1. Necessary data in accordance with the FAL convention

In the FAL General Declaration[1], public authorities shall not require more than the following information:

1. name and description of the ship
2. nationality of ship (country of the inspection body that issued the last vessel certificate)
3. particulars regarding registry
4. particulars regarding tonnage
5. name of master
6. name and address of ship's agent
7. brief description of cargo
8. number of crew
9. number of passengers
10. brief particulars of voyage
11. date and time of arrival, date of departure
12. port of arrival or departure
13. position of the ship in the port
14. the ships requirements in terms of waste and residue reception facilities
15. purpose of call

In addition the following particulars are to be included for ISPS[2] purposes:

16. name of the ships security officer
17. security certificate (ISSC) number and authority

1 IMO Compendium on facilitation and electronic business, FAL.5/Cic.35, 9 September 2011; referred to in the Annex to Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC (OJ L 283, 29.10.2010, p. 1).

2 The International Ship and Port Facility Security Code (ISPS code) was adopted by the IMO in 2002; it is mandatory under the SOLAS Convention entering in force on 1 July 2004.

18. security level at which ship is operating level 1, 2 or 3

19. information on number of persons and vehicles

2. Message function

a) Functional definition

The BERMAN message is a message from a carrier, its agent or a vessel to the responsible port authority, requesting a berth, giving details of the call, ship, berth requirements and expected operations[1]. It is based on the EDIFACT BERMAN message as published in the UN/EDIFACT D 04B directory.

b) Field of application

The message is based on and supports the implementation by means of EDI of the following international and European legislation:

i) the IMO FAL Form 1 (as also contained in the IMO Compendium on Facilitation and electronic business, document FAL.5/Circ.15, dated 19 February 2001 and also contained in Directive 2010/65/EU of the European Parliament and of the Council[2]);

ii) International ship and port facility security (ISPS) code, adopted by the Conference of Contracting Governments of the International Maritime Organisation (IMO) on 12 December 2002, in the amendments to the annex to the International Convention of Safety of Life at Sea (SOLAS), 1974 and Regulation (EC) No 725/2004.

c) Message principles

The following principles shall apply to the BERMAN message as defined in these technical specifications for the purpose of electronic ship reporting in inland navigation:

1. A message shall contain information on only one means of transport/conveyance.
2. One message shall relate to one visit of a ship to one port of call.
3. The visit of the vessel shall be identified by a unique call reference number that is issued by or on behalf of the authority in the port (e.g. the port authority or the customs authority).
4. The message shall incorporate the information related to applicable requirements regarding the notification of a ship to a port. It shall support one request for the ship — be it for entering the port, berthing on arrival of the ship, leaving the berth on departure of the ship or shifting of berths for the ship within the port or for only transiting through the port area.

1 In accordance with the IMO Compendium, the BERMAN message can be used as a substitute for the IMO General Declaration (CUS- REP) for the purpose of the announcement of the expected arrival of a ship in a certain port.

2 Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC (OJ L 283, 29.10.2010, p. 1).

5. The arrival notification shall contain all details regarding the movement of the ship from outside the port area to the first berth in the port area. The additional services to be arranged for arrival at the first berth (e.g. arrangement of pilots, VTS, tugboats, and linesmen) may be specified. The ETA (estimated time of arrival) at the entry point and previous port of call of the ship shall be given.
6. A shift berthing request shall contain all details as to the movement from one berth to the next berth in the same port area. The additional services to be arranged (e.g. arrangement of tugboats, pilots or linesman) may be specified for each berth separately. The ETD (estimated time of departure) for the first berth is mandatory. The shift berthing request shall further contain the other berths that are planned to be visited during the ship's call, including the ETA at those berths.
7. A departure request shall contain all details related to the departure of the ship from the (last) berth in the port area. Additional services to be arranged for departure from the berth (e.g. arrangement of tugboats, pilots or linesman) may be specified. The ETD from the berth and the next port of call of the ship shall be given upon departure.
8. The message shall cater for the provision of sending a replacement or a cancellation of a previously sent original message.
9. The message content shall be uniquely identified by means of the message reference (in BGM 1004) and the message sender identification (in NAD(MS) 3039). All other identifying data, such as the unique ship ID of the ship or the voyage number, are secondary references. The sending of replacements and updates also makes use of this principle.

3. Message structure

a) Segment index (alphabetical sequence by tag)

BGM Beginning of message
COM Communication contact
CTA Contact information
DTM Date/time/period
FTX Free text
GDS Nature of cargo
HAN Handling instructions
LOC Place/location identification
MEA Measurements
NAD Name and address

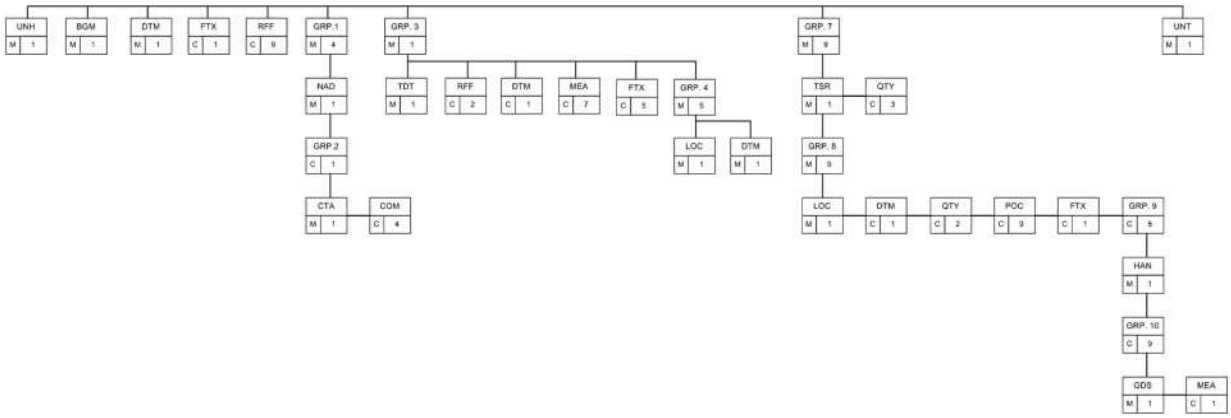
POC Purpose of call
QTY Quantity
RFF Reference
TDT Transport information
TSR Transport service requirements
UNH Message header
UNT Message Trailer

b) Segment table

Pos	Tag	Name	S	R
	UNA		C	1
	UNB		M	1
0010	UNH	Message header	M	1
0020	BGM	Beginning of message	M	1
0030	DTM	Date/time/period	M	1
0040	FTX	Free text	C	1
0050	RFF	Reference	C	9
0070		Segment Group 1	M	4
0080	NAD	Name and address	M	1
0090		Segment Group 2	C	1
0100	CTA	Contact information	M	1
0110	COM	Communication contact	C	4
0120		Segment Group 3	M	1
0130	TDT	Transport information	M	1
0140	RFF	Reference	C	2
0150	DTM	Date/time/period	C	1
0160	MEA	Measurements	C	7
0170	FTX	Free text	C	9
0190		Segment Group 4	M	5
0200	LOC	Place/location identification	M	1

Pos	Tag	Name	S	R
0210	DTM	Date/time/period	M	1
0300		Segment Group 7	M	9
0310	TSR	Transport service requirements	M	1
0320	QTY	Quantity	C	3
0340		Segment Group 8	M	9
0350	LOC	Place/location identification	M	1
0370	DTM	Date/time/period	C	1
0380	QTY	Quantity	C	2
0390	POC	Purpose of call	C	9
0400	FTX	Free text	C	1
0410		Segment Group 9: HAN	C	8
0420	HAN	Handling instructions	M	1
0440		Segment Group 10: GDS	C	9
0450	GDS	Nature of cargo	M	1
0470	MEA	Measurements	C	1
0500	UNT	Message Trailer	M	1

c) Branching diagram



The pre-arrival notification message format for the berth management message is as follows:

Segment Group	Segment Composite data element (C) Data element TAG	Level	Status	Format	Name	Description Qualifiers in quotation marks
1	2	3	4	5	6	7
	UNA		**C**		**SERVICE STRING ADVICE**	
			M	an1	Component data element separator	:
			M	an1	Segment tag and data element separator	+
			M	an1	Decimal notation	.
			M	an1	Release indicator	?
			M	an1	Reserved future use	*Space*
			M	an1	Segment terminator	‘
					Advised string: UNA:+.? ’	*6 characters*
	UNB		**M**		**INTERCHANGE HEADER**	
	S001		M		SYNTAX IDENTIFIER	
	0001		M	a4	Syntax identifier	‘UNOC’ Controlling agency
	0002		M	n1	Syntax version number	‘2’
	S002		M		INTERCHANGE SENDER	

1	2	3	4	5	6	7
	0004		M	an..35 (an25)	Sender identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post
	0007			an..4	Partner identification code qualifier	n.a.
	0008			an..14	Address for reverse routing	n.a.
	S003		M		INTERCHANGE RECIPIENT	
	0010		M	an..35 (an25)	Recipient identification	Mailbox number or unique name or the unique identifier of a RIS-centre or traffic post
	0007		C	an..4	Partner identification code qualifier	n.a.
	0014		C	an..14	Routing address	n.a.
	S004		M		DATE/TIME OF PREPARATION	
	0017		M	n6	Date	Generation date, YYMMDD
	0019		M	n4	Time	Generation time, HHMM
	0020		M	an..14	Interchange reference identification	First 14 positions of the message reference number
	S005		C		RECIPIENTS REFERENCE, PASSWORD	n.a
	0022			an..14	Recipient’s reference/password	n.a.
	0025			an2	Recipient’s reference, password qualifier	n.a.
	0026			an..14	Application reference	n.a.
	0029			a1	Processing priority code	n.a.
	0031		C	n1	Acknowledgement request	‘1’ = Sender requests acknowledgement, i.e. UNB and UNZ segments received and identified

1	2	3	4	5	6	7
	0032			an..35	Communications agreement id	n.a.
	0035			C	Test indicator	Test indicator ‘1’ = the interchange relates to a test message
	UNH		**M**		**IDENTIFICATION, SPECIFICATION AND HEADING OF A MESSAGE**	
	0062		M	an..14	Message reference number	First 14 positions of the message number
	S009		M		MESSAGE IDENTIFIER	Message identification
	0065		M	an..6	Message type	‘BERMAN’, message type
	0052		M	an..3	Message version number	‘D’, message version number
	0054		M	an..3	Message release number	‘05B’, message release number
	0051		M	an..2	Controlling agency	‘UN’, controlling agency
	0057		M	an..6	Association assigned code	‘ERI13’, ERI version 1.3
	0068		C	an..35	Common access reference	Reference to all messages related to one common file
	S010				STATUS OF THE TRANSFER	
	0070			n..2	Sequence of transfers	n.a.
	0073			a1	First and last transfer	n.a.
	BGM		**M**		**BEGINNING OF MESSAGE**	Identification of the type and function of the message

1	2	3	4	5	6	7
	C002				DOCUMENT/MESSAGE NAME	
	1001		M	an..3	Document/message name code	Message Type: ‘22’ = Final transmission (End of voyage) ‘23’ Status information Information regarding the status of a related message. ‘185’ Conveyance declaration (arrival) Declaration to the public authority upon arrival of the conveyance. ‘186’ Conveyance declaration (departure) Declaration to the public authority upon departure of the conveyance. ‘187’ Conveyance declaration (combined) Combined declaration of arrival and departure to the public authority. ‘318’ Application for shifting from the designated place in port Document to apply for shifting from the designated place in port. ‘282’ Modification of existing message Requesting a change to an existing message. *Note: ‘187’ to be used as continued voyage indicator*
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	1000			an..35	Document/message name	n.a.
	C106		M		DOCUMENT/MESSAGE IDENTIFICATION	
	1004		M	an..35	Document identifier	Use max. (an15) for message reference number

1	2	3	4	5	6	7
	1056			an..9	Version	
	1060			an..6	Revision number	
	1225		M	an..3	Message function code	Function of message: ‘9’ = new message, original ‘5’ = modification message by replacement ‘1’ = cancellation ‘22’ = Final transmission (End of voyage) ‘150’ = Interruption of voyage’ ‘151’ = Restart of voyage
	4343			an..3	Response type code	‘QA’
	DTM		**M**		**DATE/TIME/PERIOD**	
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	‘137’ Date of preparation
	2380		M	an..35	Date or time period value	Date: CCYYMMDD
	2379		M	an..3	Date or time or period format code	‘102’ For CCYYMMDDHHMM use ‘203’
	FTX		C		FREE TEXT	
	4451		M	an..3	Text subject code qualifier	‘CHG’ = Change information

1	2	3	4	5	6	7
	4453			an..3	Free text function code	n.a.
	C107				TEXT REFERENCE	
	4441		C	an..17	Free text identification	General information on the call of the vessel 'CAM' = mistakes in previous message 'CAN' = cancelled because of cargo change 'GIV' = General info vessel
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		C			
	4440		C	an..512	Free text	Free text: Vessel defects info (vessel, nautical equipment, cargo handling, protruding parts, fire, overheating, smoke)
	4440			an..512	Free text	n.a.
	4440			an..512	Free text	n.a.
	4440			an..512	Free text	n.a.
	4440			an..512	Free text	n.a.
	3453			an..3	Language, coded	n.a.
	4447			an..3	Text formatting, coded	n.a.

1	2	3	4	5	6	7
	RFF		**C**		**REFERENCE**	Reference to the message which is changed, mandatory if the message is a modification message
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	‘ACW' Reference to previous message
	1154		M	an..70	Reference number	Use (an15) message reference number of the BGM, tag 1004 of the message this current message refers to
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
	RFF		**C**		**REFERENCE**	Reference information
	C506		M		REFERENCE	Only if known
	1153		M	an..3	Reference qualifier	‘ATZ' Ship’s stay reference number ‘GDN' General Declaration number ‘AAE' Goods declaration number
	1154		M	an..70	Reference identifier	Reference number or declaration number
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.

1	2	3	4	5	6	7
	RFF		**C**		**REFERENCE**	REFERENCE INFORMATION
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	‘EPC’ = Electronic port clearance (single window) ‘ACE’ Related document number ‘EPC’ Referenced document is sent via EDI and an EPC application ‘ROB’ Referenced document is available but remains on board
	1154		M	an..70	Reference identifier	‘799’ Ship’s stores declaration ‘797’ Maritime declaration of health ‘745’ Passenger list ‘744’ Crew’s effects declaration ‘250’ Crew list declaration ‘85’ Cargo declaration
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
NAD Gr 1	**NAD**		**M**		**Name and address**	

1	2	3	4	5	6	7
	3035		M	an..3	Party function code qualifier	Sender, carrier's agent and/or vessel master are mandatory Name type: 'MS' Message sender 'CG' Carrier's agent 'CPE' Vessel captain (master) 'AM' Authorised official (security officer)
	C082		C		PARTY IDENTIFICATION DETAILS	Code if known at receiver, otherwise other fields
	3039		M	an..35	Party identification	EAN number
	1131			an..17	Code list qualifier	n.a
	3055			an..3	Code list responsible agency	n.a
	C058				NAME AND ADDRESS	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	3124			an..35	Name and address line	n.a.
	C080				PARTY NAME	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.

1	2	3	4	5	6	7
	3036			an..35	Party name	n.a.
	3036			an..35	Party name	n.a.
	3045			an..3	Party name format, coded	n.a.
	C059				STREET	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3042			an..35	Street and number/PO box	n.a.
	3164			an..35	City Name	n.a.
	C819				Country sub-entity details	n.a.
	3229			an..9	n.a.	n.a.
	1132			an..17	n.a.	n.a.
	3055			an..3	n.a.	n.a.
	3228			an..70	n.a.	n.a.
	3251		C	an..17	Postcode identification	Postal identification code
	3207		C	an..3	Country	ISO 3166-1 two digit alpha country code, see Part IV, Article 2.03(8)
NAD Gr 2	**CTA**		**M**	**NAD**	**CONTACT INFORMATION**	Sender contact details

1	2	3	4	5	6	7
	3139		M	an..3	Contact function	'IC' = Information contact
	C056				DEPARTMENT OR EMPLOYEE DETAILS	
	3413			an..17	Department or employee identification	n.a.
	3412		C	an..35	Department or employee	Contact person, name or function
CTA	**COM**		**C**	**NAD/ CTA**	**COMMUNICATION CONTACT**	Sender communication contact details
	C076				COMMUNICATION CONTACT	
	3148		M	an..512	Communication number	Communication number
	3155		M	an..3	Communication channel qualifier	'TE' for telephone number 'FX' for fax number 'EM' for email address 'EI' for EDI mailbox number (EDI number or email address for NAD 1 is mandatory if a response in the form of an APERAK message is requested for. If no response is requested, the EDI number and email address is not to be used).
TDT Gr 3	**TDT**		**M**		**TRANSPORT INFORMATION**	Specification of the means of transport, the naming vessel within a convoy (a single vessel without barge is also a convoy in this context)
	8051		M	an..3	Transport stage code qualifier	'20' for main carriage transport

1	2	3	4	5	6	7
	8028		M	an..17	Conveyance reference number	Voyage number, defined by sender of the message
	C220		M		MODE OF TRANSPORT	
	8067		M	an..3	Mode of transport, coded	'8' for inland water transport' '1' for maritime transport see UNECE Rec. 19
	8066			an..17	Mode of transport	n.a.
	C228		M		TRANSPORT MEANS	
	8179		M	an..8	Type of means of transport identification, convoy type	Code for ship and convoy types of means of transport from UN/CEFACT Rec. 28, see Part IV, Article 2.03(1)
	8178			an..17	Type of means of transport	n.a.
	C040				CARRIER	n.a.
	3127			an..17	Carrier identification	n.a.
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3128			an..35	Carrier name	n.a.
	8101			an..3	Transit direction, coded	n.a.
	C401				EXCESS TRANSPORTATION INFORMATION	
	8457			an..3	Excess transportation reason	n.a.
	8459			an..3	Excess transportation responsibility	n.a.

1	2	3	4	5	6	7
	7130			an..17	Customer authorization number	n.a.
	C222		M		TRANSPORT IDENTIFICATION	
	8213		M	an..9 (an7..8)	ID. of means of transport identification	*Vessel number*: 7 digits for IMO indication, 8 digits for unique European vessel identification number (ENI)
	1131			an..17	Code list qualifier	'IMO' for an IMO number, see Part IV, Article 2.03(2) 'ENI' for a unique European vessel identification number, see Part IV, Article 2.03(3)
	3055			an..3	Code list responsible agency	n.a.
	8212		M	an..35	ID of the means of transport	*Name of the ship*. If the name results in more than 35 positions, the name of the vessel is shortened.
	8453		M	an..3	Nationality of means of transport	ISO two-alpha country code 3166-1, see Part IV, Article 2.03(8). If the nationality of the means of transport is not known, the 3 digit code of the country of the inspection body that issued the last vessel certificate shall be used.
	8281			an..3	Transport ownership	n.a.
TDT	**RFF**		**C**	**TDT**	**REFERENCE**	
	C506		M		REFERENCE	
	1153		M	an..3	Reference qualifier	'VM' Vessel identification 'PEX' Pilotage exemption number

1	2	3	4	5	6	7
	1154		M	an..70	Reference number	Radio call sign if applicable or the identity of each barge/ vessel in a combination (ERI ID) Number of exemption
	1156			an..6	Line number	n.a.
	4000			an..35	Reference version number	n.a.
	1060			an..6	Revision number	n.a.
TDT	**DTM**		**C**	**TDT**	**DATE/TIME/PERIOD**	
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	Local time at the place of arrival Code ‘132’ = ETA
	2380		M	an..35	Date or time period value	Date/time: CCYYMMDDHHMM
	2379		M	an..3	Date or time or period format code	‘203'
TDT	**MEA**		**C**	**TDT**	**MEASUREMENTS**	
	6311		M	an..3	Measurement purpose qualifier	Measurement application qualifier: ‘AAE' Measurement
	C502		M		MEASUREMENT DETAILS	

1	2	3	4	5	6	7
	6313		M	an..3	Property measured	Measurement dimension: ‘AAM' Gross tonnage of vessel, BT ‘AAN' Net tonnage of vessel ‘ACS' Length overall, ‘ADS' Length bow to bridge ‘WM' Width, maximum ‘DP' Draft, maximum (depth) ‘HM' Height maximum above the water (air draft)
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	Measure unit qualifier: ‘TNE’ Metric tons ‘CMT’ Centimetre ‘MTR’ Metre
	6314		M	n..18	Measurement value	
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	n.a.

1	2	3	4	5	6	7
TUT	**FTX**		**C**	**TDT**	**FREE TEXT**	
	4451		M	an..3	Text subject code qualifier	General subject indicator Text subject type ‘ACB’ Additional information ‘AFJ’ Defect description ‘HAZ’ Hazardous ‘AAA’ General goods description ‘WAS’ Waste reporting ‘VES’ vessel particulars
	4453		C	an..3	Free text function code	If text subject is ACB, WAS, AAA or AFJ, here the dangerous goods can be indicated through: ‘DGN’ = No dangerous goods ‘DGY’ = Dangerous goods on board
	C107		C		TEXT REFERENCE	

1	2	3	4	5	6	7
	4441		C	an..17	Free text identification	'WEX' = Waste report exempt for 'WAS' 'CGS' = Cargo is gassed for 'ACB' For 'HAZ': Co0 = 0 Cone Co1 = 1 Cones Co2 = 2 Cones Co3 = 3 Cones 'B' = Red Flag (B) for IMO 'V' special permit
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M			
	4440		C	an..512	Free text	Text description of defects such as AIS, Navigation equipment radar, engine, rudder, etc.
	4440			an..512	Free text	n.a.
	4440			an..512	Free text	n.a.
	4440			an..512	Free text	n.a.
	4440			an..512	Free text	n.a.
	3453			an..3	Language, coded	n.a.
	4447			an..3	Text formatting, coded	n.a.

1	2	3	4	5	6	7
TDT GR 4	**LOC**		**M**	**TDT**	**PLACE/LOCATION IDENTIFICATION**	Port.
	3227		M	an..3	Place/location qualifier	Place/location qualifier: '5' Place of departure '94' Previous of port of call '61' Next port of call '89' Place of registration '153' Port of call
	C517		M		LOCATION IDENTIFICATION	
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16) of the port, see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..256	Place/location	Full name of the port
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70 (an..17)	Related place/location one	Full name of the terminal

1	2	3	4	5	6	7
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		C	an..25 (an..5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..17	Code list qualifier	
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.
	DTM		**C**	**TDT/LOC**	**DATE/TIME/PERIOD**	Required if place of registration is given
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	‘259’ Registration date
	2380		M	an..35	Date or time period value	Date: CCYYMMDD
	2379		M	an..3	Date or time or period format code	‘102’ date format
TSR Gr 7	**TSR**		**M**		**Transport service requirements**	
	C536				Contract and carriage condition	n.a.
	4065			an..3	Contract and carriage condition code	n.a.
	1131			an..17	Code list identification code	n.a.

1	2	3	4	5	6	7
	3055			an..3	Code list responsible agency code	n.a.
	C233		M		Service	
	7273		M	an..3	Service requirement code	Service requirement: ‘BER’ Request for mooring service at a berth ‘PIL’ Request for pilot service ‘VTS’ Request for Vessel Traffic Services ‘TUG’ Request for tugboat service ‘MAR’ Planned handling of MARPOL substances ‘SEC’ Security services
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	7273			an..3	Service requirement code	n.a.
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	C537				Transport priority	
	4219			an..3	Transport service priority code	n.a.
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	C703				Nature of cargo	
	7085			an..3	Cargo type classification code	n.a.

1	2	3	4	5	6	7
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
TSR	**QTY**		**C**	**TSR/QTY**	**QUANTITY**	To indicate the number of crew, passengers and others such as pets or other animals
	C186		M		Quantity details	
	6063		M	an..3	Quantity type code qualifier	'115' = Total number of crew on board including the master '114' = Total number of people on board '14' = Total number of animals on board
	6060		M	an...35	Quantity	Number e.g. 4
	6411		C	an..8	Measure unit code	n.a.
TSR Gr 8	**LOC**		**M**	**TSR**	**PLACE/LOCATION IDENTIFICATION**	Port
	3227		M	an..3	Place/location qualifier	Place/location qualifier: '5' Place of departure '94' Previous of port of call '61' Next port of call '89' Place of registration '153' Port of call
	C517		M		LOCATION IDENTIFICATION	

1	2	3	4	5	6	7
	3225		M	an..25 (an5)	Place/location identification	UNECE location code (Rec. 16) of the port, see Part IV, Article 2.03(9)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3224		C	an..256 (an..17)	Place/location	Full name of the port location
	C519		C		RELATED LOCATION ONE IDENTIFICATION	
	3223		M	an..25 (an..5)	Related place/location one identification	Terminal code, see Part IV, Article 2.03(11)
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	3222		D[Use 1]	an..70 (an..35)	Related place/location one	Full name of the terminal
	C553		C		RELATED LOCATION TWO IDENTIFICATION	
	3233		M	an..25 (an..5)	Related place/location two identification	Fairway section code, see Part IV, Article 2.03(10)
	1131			an..17	Code list qualifier	
	3055			an..3	Code list responsible agency	n.a.
	3232		C	an..70 (an..5)	Related place/location two	Fairway section hectometre
	5479			an..3	Relation	n.a.

1	2	3	4	5	6	7
Gr 8	**DTM**		**C**	**TSR/LOC**	**DATE/TIME/PERIOD**	Date and time of the start of the transport service requirement
	C507		M		DATE/TIME/PERIOD	
	2005		M	an..3	Date or time or period function code qualifier	'132' Arrival date/time, estimated
	2380		M	an..35	Date or time period value	Time: CCYYMMDDHHMM
	2379		M	an..3	Date or time or period format code	'203'
Gr 8	**QTY**		**C**	**TSR/LOC**	**QUANTITY**	
	C186		M		Quantity details	Quantity details
	6063		M	an..3	Quantity type code qualifier:	Quantity type code qualifier: '1' Discrete quantity
	6060		M	an..35	Quantity	Number of tugboats required Number of linesman
	6411			an..3	Measurement unit code	n.a.
Gr 8	**POC**		**M**	**TSR**	**PURPOSE OF CALL**	
	C525		M		Purpose of conveyance call	Purpose of conveyance call

1	2	3	4	5	6	7
	8025		M	an..3	Conveyance call purpose description code	‘1’ Cargo operation ‘2’ Passenger movement ‘3’ Taking bunkers ‘4’ Changing crew ‘5’ Goodwill visit ‘6’ Taking supplies ‘7’ Repair ‘8’ Laid-up ‘9’ Awaiting orders ‘10’ Miscellaneous ‘11’ Crew movement ‘12’ Cruise, leisure and recreation ‘13’ This is a visit to a port which has been ordered by government ‘14’ Quarantine inspection ‘15’ Refuge ‘16’ Tank cleaning ‘17’ Waste disposal
	1131			an..17	Code list identification code	n.a.
	3055			an..3	Code list responsible agency code	n.a.
	8024			an..35	Conveyance call purpose description	n.a.
Gr 8	**FTX**		**C**	**TSR/LOC**	**FREE TEXT**	Only to be used for security information

1	2	3	4	5	6	7
	4451		M	an..3	Text subject code qualifier	The security information may be given in 4441 'SEC' Current security information
	4453			an..3	Free text function code	n.a.
	C107		M		TEXT REFERENCE	
	4441		M	an..17	Free text identification	Level of security S1 Security level 1 S2 Security level 2 S3 Security level 3
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency	n.a.
	C108		M			
	4440		M	an..512	Free text	Further remarks 'PER' followed by the number of persons on board.
	4440		C	an..512	Free text	ISSC information 'SCN' Security certificate not available 'SCY' Security certificate on board
	4440		C	an..512	Free text	Here the brand of the car and licence plate number can be given 'CAR' licence number
	4440		C	an..512	Free text	Free text: Name of the service provider requested for in the TSR segment

1	2	3	4	5	6	7
	4440			an..512	Free text	n.a.
	3453			an..3	Language, coded	n.a.
	4447			an..3	Text formatting, coded	n.a.
LOC Gr 9	**HAN**		**C**	**TSR/LOC**	**HANDLING INSTRUCTIONS**	
	C524		M		HANDLING INSTRUCTIONS	Handling instructions
	4079		M	an..3	Handling instructions, coded	Handling instructions coded: 'LLO' 'LOA' = Loading 'LDI' 'DIS' = Discharge 'RES' 'RES' = Re-stow 'T' 'TRA' = Transit 'TSP' 'CTC' = Cargo tank cleaning 'BUN' 'BUN' = Bunkering only 'DRY' 'RED' = Repairs in dry-dock 'WET' 'REW' = Repairs in wet-dock 'NCO' = No cargo operation
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency, coded	n.a.
	4078		C	an..70	Handling instructions	Bolder numbers, preferred side for berthing, pilot embarkation point, MFO, MDF, fresh water, etc.
	C218				HAZARDOUS MATERIAL	

1	2	3	4	5	6	7
	7419			an..7	Hazardous material class code, identification	n.a.
	1131			an..17	Code list qualifier	n.a.
	3055			an..3	Code list responsible agency coded	n.a.
	7418			an..35	Hazardous material class	n.a.
HAN Gr 10	**GDS**		**M**	**TSR/LOC /HAN**	**NATURE OF CARGO**	
	C703		M		Nature of cargo	

1	2	3	4	5	6	7
	7085		M	an..3	Cargo type classification code	Nature ‘5’ Other non-containerised ‘6’ Vehicles ‘7’ Roll-on roll-off ‘8’ Palletised ‘9’ Containerised ‘10’ Break bulk ‘11’ Hazardous cargo ‘12’ General cargo ‘13’ Liquid cargo ‘14’ Temperature controlled cargo ‘15’ Environmental pollutant cargo ‘16’ Not-hazardous cargo ‘17’ Diplomatic ‘18’ Military ‘19’ Obnoxious ‘21’ Household goods ‘22’ Frozen cargo ‘30’ Cargo in bulk (sand, gravel, ore, etc.)
	1131			an..17	Code list identification code.	n.a.
	3055			an..3	Code list responsible agency, coded	n.a.

1	2	3	4	5	6	7
	MEA		**C**	**TSR/LOC /HAN/ GDS**	**MEASUREMENTS**	
	6311		M	an..3	Measurement purpose qualifier	Measurement application qualifier: ‘AAE’ Measurement
	C502		M		MEASUREMENT DETAILS	Measurement details
	6313		M	an..3	Property measured	Measurement dimension: ‘G’ Gross weight
	6321			an..3	Measurement significance	n.a.
	6155			an..17	Measurement attribute identification	n.a.
	6154			an..70	Measurement attribute	n.a.
	C174		M		VALUE/RANGE	
	6411		M	an..3	Measurement unit qualifier	Measure unit qualifier: ‘KGM’ Kilogram ‘TNE’ Metric tons
	6314		M	n..18	Measurement value	Weight
	6162			n..18	Range minimum	n.a.
	6152			n..18	Range maximum	n.a.
	6432			n..2	Significant digits	n.a.
	7383			an..3	Surface/layer indicator	

1	2	3	4	5	6	7
	UNT		**M**		**MESSAGE TRAILER**	End and control of completeness of the message
	0074		M	n..10	Number of segments in a message	
	0062		M	an..14	Message reference number	First 14 positions of the message reference number
	UNZ		**M**		**INTERCHANGE TRAILER**	End and control of the interchange
	0036		M	n..6	Interchange control count	‘1’ for number of messages contained in the interchange
	0020		M	an..14	Interchange control reference	First 14 positions of the message reference number

Business rules	
D[USE 1]	If the code is XXXXX, then this data-element shall be completed.

ANNEX 16
VOYAGE PLAN NOTIFICATION - ERIVOY

1. Introduction

1.1 Objective of the message

In line with the developments in inland shipping to increasingly use Information and Communication Technologies (ICT) for the exchange of data with authorities and partners, the standardised message for voyage plan notification, ERIVOY is meant to be used as a message type from a carrier, its agent or a vessel to the responsible waterway authorities and where applicable involved commercial parties or between the waterway authorities mutually, reporting a voyage plan and its particulars and giving details of the voyage, vessel, intended voyage details and expected passage of waypoints and other key passage points. It is meant to provide a transport route schedule of a certain vessel and its voyage.

The advance availability of routing information will make communication with the involved parties such as the waterway authorities easier and will facilitate handling of certain requests and will ensure easier and safer passages of locks, bridges or of other events that could impact the planification of the voyage. In this way a better planning of a voyage is feasible. In the event of changes or disaster, planning becomes easier and vessel traffic services and management are facilitated. In that way using this message increases the performance and reliability during the voyage of a vessel or a convoy.

1.2 Functional definition

The functional definition of the ERIVOY message is as follows:

Send a notification message as described in the “objective of the message”

Request an update of the message and send the answer to this request.

- A waterway authority can inform the skipper if the time-difference between the calculation of the skipper significantly differs of the calculation by the authority(ies)

1.3 Message principles

The following principles are applicable to the voyage plan message:

a) The function of this message is to provide a transport route schedule of a certain vessel.
b) One message relates to one voyage plan.
c) The message incorporates the legal requirements regarding the notification of the planned voyage of a vessel to the waterway authorities.
d) The voyage plan contains all details regarding the (planned) movement of the vessel from the place of departure to the place of arrival at the first berth in the port area. More than one destination will be possible (in case of two or more ports as destination of a journey). Preferably a new updated voyage plan will be created after the arrival at a port or the first port of a journey.

e) The responsibility for the definition of a waypoint lies primarily with the sender of the message so primarily the skipper. It is possible to define less waypoints to be mandatory for voyages of a long distance. The carrier, its agent or the skipper will declare the ETA for those waypoints on a voyage which are considered essential to ensure a good overview of the chosen route.

f) A message update should be sent in case of an unexpected (long) waiting time e.g. at one lock.

g) The information related to ETA at certain waypoints and key points such as movable bridges, locks and other essential passage points of the vessel are mandatory datafields in the message. This ETA may be estimated through a period of time (time span) that the vessel is to be expected at a certain point. This can be considered as the timespan between the first possible arrival time and last possibility of arrival.

h) The voyage status information will be reported in addition to other reporting messages whereby the repetition of the same data will be avoided wherever possible.

i) The ETD from the berth and the next port of call of the vessel is mandatory information if the message is sent before departure of the vessel.

j) The message caters for the provision of sending a Replacement, Modification, Status update or a cancellation of a previously sent original message.

1.4 Necessary data in accordance with the user requirements

In accordance with the user requirements for the ERI voyage plan message the following information is required:

a) Name of the vessel

b) Type of vessel (see Annex 6)

c) Unique vessel identification number

d) Nationality (country of the inspection body that issued the last vessel certificate)

e) Voyage plan status

f) Name of skipper

g) Length and width of the vessel

h) Length and width of the convoy (including possible oversize cargo)

According to experience gained it is important to provide information about the dimensions of a convoy as a whole. This can be done best by providing the maximum length and the maximum width. This information is essential for lock planning in particular.

i) Draught

j) Air draught (highest point of vessel or convoy above the waterlevel)

k) Average estimated speed over ground for a certain voyage (cruising speed)

l) Origin of the voyage (Place of departure)

m) Voyage destination in compliance with the voyage definition

n) Date / time of departure (estimated and actual)

o) Start of daily navigation

p) End of daily navigation

q) Preference for passing locks or bridges on demand

A skipper may specify its preference regarding how to pass objects along his voyage, with the 3 following possibilities:

Normal: he only wants to pass locks or bridges on regular opening hours

All Free: he wants to pass locks or bridges on regular opening hours and “on demand” but only when this is free of charge

All: he wants to pass locks or bridges on regular opening hours and “on demand” even if he has to pay on call

r) Waypoints (key passage points)

s) ETA waypoints (including estimated passage time of border) or where applicable the period through 2379 code 713 = YYMMDDHHMM - YYMMDDHHMM

t) ETD waypoints (where required estimated period of time = YYMMDDHHMM – YYMMDDHHMM in actual message without hyphen).

u) ATA waypoints (including actual passage time of border)

v) ATD waypoints

w) Other relevant information for the calculation of the voyage

It is possible to specify here any additional relevant information that can be useful for the calculation of the voyage.

x) Number of persons on board

y) Brief description of cargo.

2. XML format of ERIVOY message

The Voyage Plan Notification (ERIVOY) can be used using XML formatting.

Appendix 1 XML format of ERIVOY message, XSD file (source code) (Distributed separately)

ANNEX 17
NOTICES TO SKIPPERS ENCODING GUIDE FOR EDITORS

TABLE OF CONTENTS

Abbreviations

Abbreviation	Meaning
CEVNI	European Code for Inland Waterways (http://www.unece.org/trans/main/sc3/sc3res.html)
ENC	Electronic Navigational Chart
FTM	Fairway and Traffic related Message
ICEM	ICE Message
Inland ECDIS	Inland Electronic Chart Display and Information System
ISRS Location Code	“International Ship Reporting Standard” Location Code
NtS	Notices to Skippers
RIS	River Information Services
VHF	maritime mobile band
WERM	Weather Related Message
WRM	Water Related Message
WSDL	Web Services Description Language
XSD	XML Schema Definition

1. Background and Structure

ES-RIS is continuously being improved. A major step forward was the release of the NtS web service facilitating exchange of NtS messages between authorities as well as between authorities and NtS users.

Two documents have been developed to facilitate the harmonised encoding of NtS messages nationally and internationally: the NtS Encoding Guide for editors and the NtS Encoding Guide for application developers. These Guides apply to the NtS XSD and the NtS Web Service WSDL as described in Annex 19 and Annex 20 respectively.

Considering increased use of the NtS web service, NtS messages shall be further harmonised to ensure proper display of content on third party systems. Uniform encoding of messages is also a prerequisite for consideration of messages in voyage planning applications.

Elements that would contain only standard or default values shall be omitted if they are conditional, because they lead to message overhead with no added value.

The NtS Encoding Guide for editors is intended for those editing (and publishing) of NtS messages, including step-by-step instructions to create the proper message types as well as an explanation of codes. The NtS Encoding Guide explains the applicability of the four NtS message types, provides filling instructions as well as codes to be used in certain events. The NtS Encoding Guide for editors corresponds to Annex 17.

The NtS Encoding Guide for application developers includes guidelines for NtS application development and implementation, explaining its logic, processes and auto/default values. The NtS Encoding Guide for application developers corresponds to Annex 18.

2. Applicability of NtS messages

An NtS message may relate to object(s) and/or network part(s). Objects are defined in the Reference Data and may be selected by editors upon creation of a message. In NtS messages objects are defined in the ‘geo location’ section of the NtS XSD.

A network part is defined by a start- and endpoint within the waterway network. There has to be an unambiguous route between the start- and the endpoint which have to lie on the same waterway (only one waterway name is possible between start- and endpoint). In combination with the fairway_name an unambiguous route can be provided (sidearms and potential shortcuts with different fairway_names would be excluded).

If the network_part spans over more than one waterway the NtS editor application may provide functionality to easily select routes or areas to be included within one message.

3. Selection of the NtS message type

a) FTM

Choose this type if you want to create a „Fairway and traffic related message“ for network parts or objects on the waterway (go to paragraph 4).

b) WRM

Choose this type if you want to create a „Water related message“, which enables provision of information on current and forecasted water levels as well as other information. The water related message contains information for an object or a network part (go to paragraph 6).

c) ICEM

Choose this type if you want to create an „Ice related message“. The Ice message section contains information about the ice conditions for a network part (go to paragraph 7).

d) WERM

Choose this type if you want to create a “Weather related message”, which enables provision of information on current as well as forecasted weather situations on a network part (go to paragraph 8).

4. FTM basic considerations, steps towards publication of an FTM

Detailed information which codes have to be used is given in paragraph 5. The considerations beginning from paragraph 4.4 are not necessarily in the input order of an FTM editor tool.

4.1 Is there a need to publish information via NtS FTM according to Part V? All relevant information concerning safety and voyage planning has to be published via NtS messages. Information that is not relevant in terms of safety and voyage planning may be published. Each topic/incident/event has to be published in a separate message.

4.2 Does a valid FTM already exist related to the current situation (related to the content as well as to the time of validity)?

a) Yes:

The already existing FTM has to be updated. The respective published message has to be selected and updated in the FTM editor tool.

An expired FTM cannot be updated any more.

b) No:

A new FTM has to be compiled. In case a similar event is already coded in an existing FTM the respective FTM can be used as draft for the creation of a new FTM (if this function is available), or a template may be used (if this function is available).

4.3 Content of the FTM is to be entered

All information that can be expressed using the NtS Reference Tables has to be coded in the standardised message fields. Only additional information (which is not encodable otherwise) shall be stated in free text fields. The free text shall be kept as short as possible and only include essential information.

4.4 The geographical range of validity is to be set

4.4.1 In case the FTM is related to a specific object (e.g. bridge, lock etc.) on the waterway the respective object is to be selected out of the list of available objects (if selection is available).

In case an FTM applies to several objects they can all be included in one FTM.

4.4.2 In case the FTM is related to a specific network part the start- and end points have to be defined (unambiguous route possible between start- and endpoint). If the content applies to several waterways they can all be listed in one FTM including all affected network parts.

4.4.3 Combination of object- and network part related information is possible within one message as long as the information relates to one specific cause/event (same subject and reason code).

4.4.4 The detailed geographic impact of an NtS may be added to the message. It is used for visualisation in web-applications and Apps, and not for navigational purposes.

In case of a network_part, it is advised to automatically generate the geographic impact based upon the coordinates (stretch based upon geo_location_from and geo_location_to).

The geographic_impact in the NtS message shall be in line with the information (fairway/waterway coordinates/objects) published in Inland ENCs (in case Inland ENCs are available for the area).

4.5 The limitation section is to be entered if applicable

If limitations are applicable they have to be included in the FTM as defined in paragraph 5.3.

If values bound to limitations are known they have to be stated. Values for ship dimensions, speed limit and available space for navigation are obliged to be given.

All limitations have to include the limitation periods in order to allow proper calculations within voyage planning applications (to ease the work there might be a function provided by the NtS application to copy limitation periods or to select more than one limitation for a limitation period).

In case the date end of a limitation is known it has to be included in the FTM.

If known also time start and time end of the limitation have to be provided.

The limitation period of a limitation has to lie within the validity period of an FTM, limitation periods outside the validity period of an FTM are not valid and shall not be taken into account for voyage planning and display to users in applications.

The only exception where it is allowed that a limitation period exceeds the validity period of the message is when a limitation is withdrawn. The limitation is ended by means of the withdrawal date. The limitation periods stay as they were thus may exceed the validity period of the message. Because of the set withdrawal date the limitations are not valid any more. The withdrawn date has to be set to the current time or to the past.

For example maintenance works on a lock are completed earlier as originally announced. In this case the limitation periods stay as originally announced, only the withdrawn date and time is set to the actual end date of the blockage.

4.6 The target group(s) concerning the type of vessels and affected directions is/are to be entered if applicable

4.6.1 In case the message is valid for all crafts (all types of vessels) in all directions the target group shall be left out in order to only code essential information. If the message/limitation is addressed to a specific target group or direction the respective codes are to be selected.

4.6.2 In case the whole message is valid for specific target groups, the target group information is to be provided in the general part of the FTM (and not repeated in the limitation section(s)).

4.6.3 In case there are different target groups applicable to different limitations the target group information is to be provided within the respective limitations (and not repeated in the general part).

4.6.4 In case exemptions from limitations are granted to individual vessels or local traffic by the competent authorities (e.g. vessels participating in an event for which a general blockage is applicable, local ferry traffic in blocked areas) such exemptions need not be taken into account for coding of the target group(s). Such information may be stated in the free text field for additional information.

4.7 The validity period of the message is to be set.

The start date of the validity of the message is to be set.

In case the end date of the validity of a message is already known it shall be set as well. The validity end date must not be before the present date. Editors have the obligation to check published messages periodically to set an end date as soon as known or to withdraw messages or limitations that are not applicable any more to ensure that only actual and valid messages are displayed to the users.

Note that the validity period information will be used by applications to select the messages, which are to be displayed to users for a requested time.

4.8 Notice withdrawn

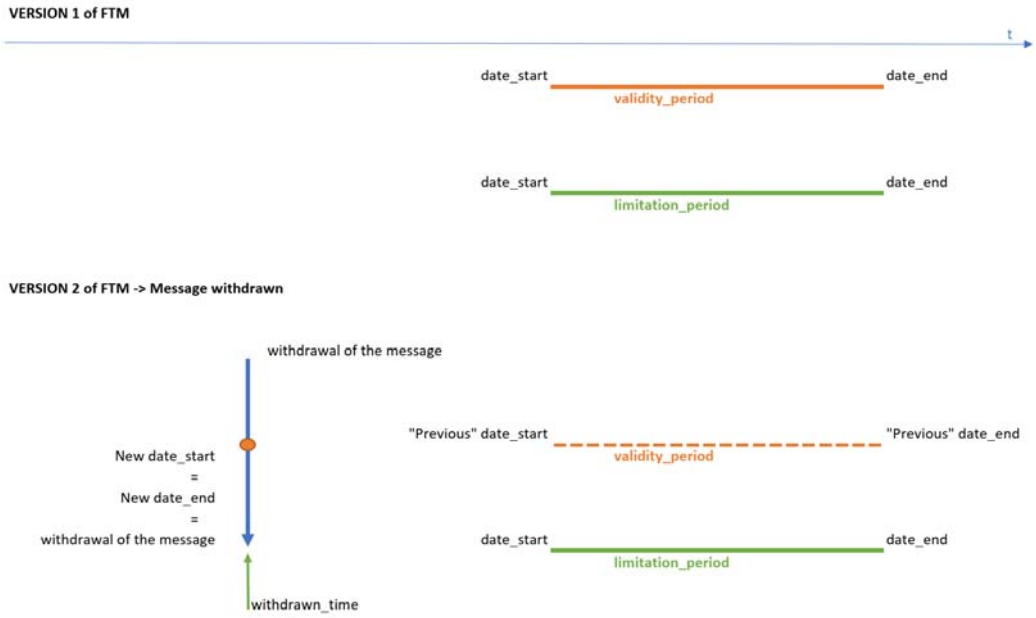
A notice is withdrawn in case a notice was published but it becomes obsolete because

- the announced limitations will not become effective (e.g. dredging was planned but cannot be started due to high water level).
- the announced limitations started but end right away before their original indicated end date (e.g. maintenance works end earlier than originally planned).

In case the entire message is withdrawn before its validity has begun (see Figure 17-1)

- the notice withdrawn flag is set to true.
- the content of the message itself must remain the same, with exception of the validity period. The start and end date of the message are set to present date.
- the withdrawn time has to be filled out for all limitation periods with present date

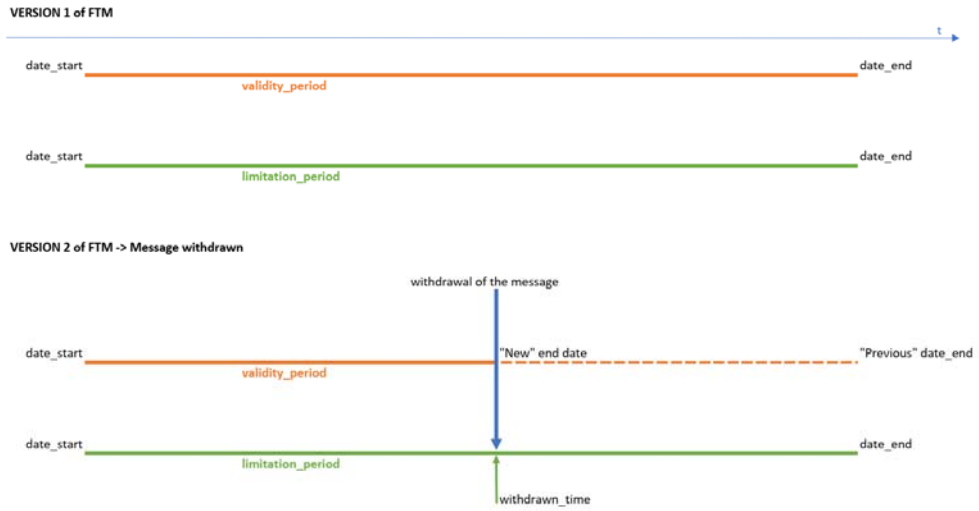
Figure 17-1
Validity period of FTM not started yet



In case the entire message is withdrawn after its validity has begun (see Figure 17-2)

- the notice withdrawn flag is set to true.
- the content of the message itself must remain the same, with exception of the validity end date of the message which is set to present date.
- the withdrawn time has to be filled out for all limitation periods and must not be in the future

Figure 17-2
Validity period of FTM is started



In case individual limitations are withdrawn but other limitations of the message stay valid

- this is an update of the message but not a withdrawal of the entire message;
- the notice withdrawn flag is not included in the message;
- the withdrawn time has to be filled out for limitations that are withdrawn;
- the withdrawn time must not be in the future;
- limitations that stay valid may be updated if there is a change.

If there is another update of the message all previously withdrawn limitations are not provided in the updated message any more. This is to keep the content of the message as small as possible and to only indicate withdrawn limitations compared to the previous message. A history of all withdrawn limitations is not kept inside of the message. As long as the message stays valid the notice withdrawn flag is not included in the message.

4.9 The communication section is to be entered if applicable

If additional information is available via a specific source it should be stated in this section. If there is an additional obligation to report via a specific medium it is to be stated in this section.

4.10 The message can be published

5. FTM explanation of codes

5.1 Subject_code:

Definition of use of Subject Codes:

- ‘Warning’: relevant for safety

  The warning must contain at least one limitation that results in direct and concrete endangerment of persons, crafts or facilities, e.g. welding works on a bridge producing sparks, inspection cage/workers hanging from a bridge, obstacle in the fairway,
- ‘Announcement’: relevant for voyage planning or safety

  The announcement may contain limitations, e.g. blockage of a lock chamber due to maintenance works, dredging on the fairway, rules of traffic in addition to national legislation,
- ‘Info service’: general information that is not directly linked to voyage planning or safety

  The info service must not contain specific limitations, therefore it is not directly relevant to voyage planning or safety. Such information might include e.g. local rules of traffic, Inland ECDIS Update.

  The validity period is used to specify the time the Info service Message is displayed to the users, not for the period of validity of the provided information (e.g. 1 month or as defined in the national procedures). For ‘Info service’ a validity end date shall always be set.

5.2 Reason_code

The Reason code should be filled to give additional information to the skippers.

Table 17-1
Definition of use of Reason codes

building work	Announcement of construction works
calamity	Warning of a calamity
changes of the fairway	Announcement of changes of the fairway
change marks	Announcement of changes of waterway marks
constriction of fairway	Announcement of a reduced width of the fairway if no other reason_code is applicable
damaged marks/signs	Announcement about damaged marks/signs
diver under the water	Warning about diver under water
dredging	Announcement of dredging works
event	Announcement of events e.g. swimming-, sailing- or rowing competition
exercises	Announcement of exercises e.g. rescue- or military exercises
explosives clearing operation	Announcement of explosives clearing operation

extensive sluicing	Announcement of higher discharge rate as usual through weirs or locks for water management reasons
falling material	Announcement of falling material e.g. icicles, limbs of trees
false radar echos	Announcement of the possibility of false radar echoes
fireworks	Announcement of fireworks
floating material	Announcement regarding floating materials above the water level (visible) and below the water level (invisible)
flow measurement	Announcement of measurement works
health risk	Warning or announcement regarding e.g. through oak processionary caterpillar, leaking gas, etc.
high voltage cable	Announcement of an intersecting high voltage cable
high water	Announcement of a high water situation before the prohibitory water level is reached
ice	Announcement of ice; further information will be sent out via ice-information (Ice-related Message)
Inland ECDIS update	Info service regarding an Inland ECDIS update
inspection	Announcement of inspection works; only used in case of inspection; not used for (repair/building) works. There may be limitations because of inspection cars/cages or scaffolds
launching	Announcement of a vessel leaving a dockyard
local rules of traffic	Info service regarding supplementary or changed rules of valid law or regulation without special limitations, dates of limitations or dates of validity
low water	Announcement of low water situation before the prohibitory water level is reached
lowering water level	Announcement of a controlled lowering of the water level for inspections or works or water management reasons
minimum sluicing	Announcement of lower discharge rate as usual through weirs or locks for water management reasons
new object	Announcement of information regarding a new available object e.g. bridge, berth
obstacle	Announcement of a reduced clearance height and/or reduced width of the fairway because of an obstacle above water level
obstruction under water	Announcement of a reduced available depth and/or for a reduced width of the fairway because of an obstacle under water
prohibitory water level	Announcement of a water level (high water or low water) which causes prohibited navigation

radio coverage	Announcement regarding radio coverage
removal of object	Announcement of removed objects
repair	Announcement in case something is broken or out of order and must be repaired e.g. a lock control system, it can also be used for planned repairs
rising water level	Announcement of natural rising water levels, not because of water management
siltation	Announcement of a reduced available depth because of siltation
sounding works	Announcement of sounding works
special marks	Announcement of the use of special marks e.g. for the blocking from water areas or fishing areas
special transport	Announcement of special transports
strike	Announcement regarding strike of the operating personnel having impact on availability of waterway infrastructure
water level of cautious navigation	Announcement of a water level (high water or low water) by which particular caution for navigation is needed
work	Announcement of general works at objects, at the banks and/or beds of waterways (rivers- or canals)
limitations	Shall only be used as indication for existing limitations if no other reason code is applicable

5.3 Limitation_code:

Definition of use of Limitation codes:

a) blockage:

In case no form of navigation is possible:

- through a lock chamber,
- through a bridge opening,
- through a (flood) gate,
- through a specified point on the waterway,
- on a specified section of the waterway network.

For other individual objects such as berth, terminal the limitation blockage must not be used as it would lead to wrong results of route- and voyage planners (a closed berth does not imply a blockage of the waterway in front of it). In case a berth is closed the limitations ‘no mooring’, ‘no anchoring’ or ‘no berthing’ shall be used.

b) partial obstruction:

The code may be used in case e.g. a lock/bridge is revised and it is not known to the editor which basin of the lock/opening of the bridge is blocked at the given time of the notice so a partial obstruction is valid for the whole lock complex\bridge. In addition the Position_code “variable” can be used. The use of this code shall be reduced to a minimum thus only be used if it is not possible to publish a notice for a specific lock basin or bridge opening.

c) no service:

shall be used in case a movable bridge is not operated during a specified period. This period should be within the normal operating hours.

No service of a movable bridge means that passing under the bridge is still possible. Otherwise it is a ‘Blockage’. No service of a lock is to be encoded as ‘Blockage’.

d) changed service:

shall be used in case the normal operating hours of objects (e.g. locks, (moveable) bridges) change, are extended or reduced.

e) permissible dimension:

Permissible vessel/convoy dimensions (length, breadth, height, draught) are sometimes to be handled as a pair and not separately. To give an example, the following maximum dimensions for formations might be applicable on a waterway:

- Maximum length: 85 m,
- Maximum breadth: 10.5 m,

OR

- Maximum length: 110 m,
- Maximum breadth: 9.6 m.

This means if a formation has a maximum length of 85 m it may be up to 10.5 m wide, but if the formation is longer (up to 110 m) it may only have a maximum breadth of 9.6 m.

A maximum of the following four limitations may be given in combination with each other:

- length (maximum length of a vessel/convoy),
- breadth (maximum breadth of a vessel/convoy),
- height (maximum height of a vessel/convoy),
- draught (maximum draught of a vessel/convoy).

For permissible dimensions absolute maximum values have to be provided (together with indication_code ‘maximum’)

f) If there are limitations related to allowed vessel/convoy dimensions (not in direct relation with infrastructure), the limitation is to be encoded with the following codes:

- vessel draught,
- vessel breadth,
- convoy breadth,
- vessel length,
- convoy length,
- vessel air draught.

If available an absolute value shall be provided.

g) If there are limitations related to available size of an object or a network part, the following codes are used:
   - clearance height,
   - available length,
   - clearance width,
   - available depth.

   If available an absolute value shall be provided.

h) least depth sounded:

   shall be used in case depth may cause problems (e.g. due to siltation). A value for the absolute depth (referred to a reference value) shall be provided.

i) delay:

   shall be used in case an obstruction/incident with a limited duration occurs at an object or on a network part between a specified start and end date.

   The estimated maximum duration of the obstruction/incident should be encoded. Delay shall not be used in cases when one of several lock chambers of a lock is not available.

j) If specific manoeuvres or actions are prohibited, the respective limitations are to be encoded. These limitations should only be encoded if they are not already announced via navigational signs or regulations that are encoded in the official Inland ENC unless it helps to provide a complete picture of the overall situation:
   - minimum power,
   - alternate traffic direction,
   - no turning,
   - no passing,
   - no overtaking,
   - no berthing,
   - no mooring,
   - no anchoring,
   - no wash of waves,
   - speed limit,
   - not allowed to go ashore.

   If available an absolute value shall be provided for speed limit and minimum power.

k) special caution:

   In cases the FTM (or a part of an FTM) is related to a fairway/waterway this limitation shall be used to indicate on which position of the fairway/river/canal/lake an incident occurs.

   Furthermore it shall be used in cases where it is not possible to describe the limitation in detail but it is helpful or necessary to warn or inform skippers that they have to watch out and pay attention to radio information.

l) no limitation:

   should only be used in case it shall be explicitly stated that there are no limitations in a certain time period, for example when a lock which is normally used in locking process stands open because the water level at both sides is even.

5.4 Limitation interval_code:

Definition of use of interval codes:

a) “continuous”:

shall be used for limitations that are applicable from a start date/time until an end date/time without interruption (e.g. blockage from 01.01.2021, 00:00 hrs, until 31.03.2021, 23:59 hrs, but also blockage on 17.09.2021 from 08:00 hrs until 18:00 hrs).

b) “daily”:

shall be used for regularly repeated application of a limitation (e.g. no wash of waves during working hours at a dredging site – 07.04.2021 until 11.04.2021, daily from 06:00 hrs until 18:00 hrs).

c) day-time (as it is defined in CEVNI):

The term "day" means the period between sunrise and sunset. If possible, absolute times shall be provided to allow proper consideration of the limitation times in voyage planning applications.

d) night-time (as it is defined in CEVNI):

The term "night" means the period between sunset and sunrise. If possible, absolute times shall be provided to allow proper consideration of the limitation times in voyage planning applications.

e) Days of the week:

If there are intervals related to different days of the week these have to be selected from the following codes:

- Monday,
- Tuesday,
- Wednesday,
- Thursday,
- Friday,
- Saturday,
- Sunday,
- Monday to Friday,
- Saturday and Sunday.

f) “in case of restricted visibility”:

shall be used if the limitation is only in force in case of conditions in which visibility is reduced owing to fog, haze, snow, rain or other reasons.

g) “Monday to Friday except public holidays”:

is only to be used if public holidays are within the validity period of the limitation. As a service for the users public holiday may be stated in the free text section of the FTM. Voyage planning software will not be able to take national public holidays into account for the calculation of ETAs.

5.5 Indication_code:

The Indication_code is intended to be used for information about specific values with regard to certain limitations (e.g. speed limit, minimum power, available depth). In order to determine certain dimensions a reference to either an external reference system (geographical or hydrological) (e.g. clearance height, available depth, least depth sounded) or relative to known dimensions of artificial structures (e.g. available length, clearance width) is necessary.

5.5.1 If absolute dimensions or references are known they have to be used because relative values can hardly be taken into account in voyage planning applications. Only if it is not possible to refer to an external reference system relative values should be used.

reduced by → this is a relative value
maximum → this is an absolute value
minimum → this is an absolute value

5.5.2 If the dimension indicating a limitation refers to a geographical or hydrological co-ordinate, the respective reference system has to be indicated in the NtS Message (e.g. clearance height min. 4 m referred to highest navigable water level; available depth min. 1.7 m referred to regulated low water level)

5.5.3 If the dimension indicating a limitation refers to a dimension of an artificial structure (e.g. bridge, lock), the reference may be given relative to known dimensions (e.g. clearance height reduced by 1.5 m, available length reduced by 27 m).

5.6 Position_code (objects):

Wherever possible the Position_code shall refer to the side of the fairway where the object is located relative to the fairway axis (left/middle/right) or other commonly known information (old/new) or geographic direction (north/south/east/west). The position_code for objects may be prefilled automatically from the RIS Index reference data. The left/right side of the fairway is defined looking downstream direction.

5.7 Position_code (limitations):

5.7.1 Wherever possible the Position_code shall refer to the side of the fairway or object where the limitation occurs (left/right). The left/right side of the fairway is defined looking downstream direction.

5.7.2 The Position_code shall direct the attention of the skipper to the side of the fairway where e.g. an area of special interest, a danger or an obstacle is located. Therefore a rough indication (e.g. left bank – left – middle – right – right bank) is sufficient. A finer subdivision is not intended.

5.7.3 If necessary, more precise position information should preferably be given by way of maps or sketches (Attachment, see paragraph 4.9)

5.7.4 For network parts where the usual position indication by fairway side (left/right) does not seem appropriate (e.g. harbour basins, certain canal sections without distinct direction of flow) the cardinal points (north/east/south/west) may be used.

5.8 Target_group_code (see paragraph 4.6)

5.9 Reporting_code

5.9.1 The Reporting_code shall, as a general rule, only be used in case there is a special need for communication (e.g. additional duty to report to local authority with regard to on-site traffic regulation) or where additional information is available (e.g. VHF contact point like channel name or call-sign for current position of dredger) with direct relevance for the FTM.

5.9.2 A routine reiteration of publicly available communication data (e.g. telephone numbers of local authorities, VHF channels of locks, etc.) shall be avoided if there is no direct cause for such communication with reference to the FTM.

5.9.3 Generally applicable means of communication according to official regulation (e.g. ship-to-ship and ship-to-shore VHF communication as laid down by CEVNI or regional or national rules for navigation) shall, as a general rule, not be repeated by the Reporting_code if there is no direct cause for such communication with reference to the FTM).

5.10 Communication_code

the following format shall be used (examples):

- VHF “number, call sign”: ’10, Schifffahrtsaufsicht Wien’
- Phone or Fax number: ‘+43123456789, Schifffahrtsaufsicht Wien‘
- Internet address: ‘https://example.com’
- Sound signalling: ‘long blast / langer Ton’
- E-mail: ‘example@authority.eu’
- EDI mailbox number: ‘900012345@edi.bics.nl’
- Teletext: ‘ARD, 992 - 995’

5.11 Type_code:

A waterway is either a canal, lake or river.

- anchoring area
- bank
- beacon
- berth
- border control
- bridge
- bridge opening
- buoy
- cable overhead
- canal (The term “canal” is used if a message is relating to the whole canal (not just the fairway))
- canal bridge: aqueduct
- culvert
- distance mark (A distance mark is used to indicate a certain location on the waterway)

- fairway (The term “fairway” means that part of the waterway that can actually be used by shipping).
- ferry
- floating dock
- flood gate (A flood gate is used to protect an area in high water situations)
- harbourigure
- harbour facility
- harbour master´s office
- lake (The term “lake” is used if a message is relating to the whole lake (not just the fairway))
- light
- lock basin: individual lock chamber
- lock: whole lock complex
- mooring facility
- notice mark
- pipeline
- pipeline overhead
- ramp
- refuse dump
- reporting point
- reservoir
- river (The term “river” is used if a message is relating to the whole river (not just the fairway))
- ship lift
- shipyard
- signal station
- terminal
- tide gauge
- tunnel
- turning basin
- vessel traffic centre
- weir (A weir is used to control the water level in rivers).

6. WRM basic considerations

Water related messages shall, as a general rule, be generated automatically. Where this is not possible the manual generation of WRM shall follow the processes set out for automatically generated WRM (see NtS Encoding Guide for Developers) as closely as possible.

7. ICEM basic considerations, steps towards publication of an ICEM

Ice Messages depend on local observation and assessment and will usually be generated by authorised staff.

An ICEM shall be issued in case of ice. The ice is not necessarily causing a limitation thus also information about ice not hindering navigation may be feasible.

7.1 Is there a need to publish information via NtS ICEM?

The first ice message for a network part shall only be published in case of ice at the waterway or tributaries, also in case there are no limitations.

7.2 Does a valid ICEM already exist for the affected network part?

a) Yes:

If a message for the affected stretch is (still) valid the already existing message may be updated. It is possible to update existing ice messages even if the area of applicability changes (e.g. ice is expanding increasing the size of affected stretch).

b) No:

In case there is no valid ice message available for the affected stretch, a new message is to be created.

7.3 One ICEM is always valid for one single stretch of the waterway. The geographical range of validity is to be set by defining the network part.

7.4 Measurement time is to be entered. The respective ice conditions are to be entered by using at least one of the code lists (depending on national requirements).

7.4.1 Ice_condition_code

7.4.2 Ice_accessibility_code

7.4.3 Ice_classification_code

7.4.4 Ice_situation_code (the ice situation code should always be provided to allow presentation of ice situation on a map e.g. using ‘traffic light’ colours).

7.5 The ICEM can be published. Ice messages will be valid automatically until the next day after publication or until as defined in national procedures.

8. WERM basic considerations

Taking into account the abundance of available Web Services and apps for weather forecasts and weather warnings WERM should only be used for weather information of specific importance for navigation which is not covered by general weather information services.

Weather related messages shall, as a general rule, be generated automatically. Where this is not possible the manual generation of WERM shall follow the processes set out for automatically generated WERM as closely as possible (see NtS Encoding Guide for application developers).

9. Rules for certain elements

9.1 Filling of elements “from”, “publisher” and “source”

- The element “from” includes the name of the system the message was sent from.
- The element “publisher” includes the name of the organisation which published the message.
- The element “source” includes the organisation/department providing the information published in the message.

9.2 Rules for the element “name” related to objects

Object names are usually prefilled by the NtS editor tool based on RIS Index reference data. Names shall be entered in local language, thus also e.g. diacritics or Cyrillic letters may be used. (e.g. Baarlerbrücke, Volkeraksluis or Mannswörth).

Do not include information on characteristics of feature, the type of object shall not be repeated in the name unless additional information to the object type is given.

- E.g.: The lock “Schleuse Freudenau” shall only be named “Freudenau”, the object type “lock” is added automatically based on the type_code.
- E:g.: The object name for the Railway bridge in Krems (AT) is “Eisenbahnbrücke Krems”. The information ‘railway bridge’ is included in the object name as it adds information in addition to the type_code “bridge”.
- E.g.: The object name for a bridge in Linz (AT) is “Nibelungenbrücke”. The word “brücke” stays within the object name as it is part of the bridge name itself.
- E.g.: The waterway gauge “Pegelstelle Wildungsmauer” is named „Wildungsmauer“ as the information that this object is a gauge is already coded in the type_code.

A name of a Distance Mark shall only be given to provide extra information to be displayed to fairway users (for example nautical mile indication). If an object name is given it overrules the general logic that the information displayed to users is a combination of fairway name and fairway hectometre.

- E.g.: At the lower Danube the distance mark at km 1.8 is also the location of the nautical mile 1. The information on the nautical mile may be included in the object name of the distance mark to display it to the users as additional information.

9.3 Rules for the element “name” in the start and end point of a network part

Object names for the start and end point shall only be provided if it provides added value to the users (e.g. name of a bridge where the message applicability starts). For distance marks not object name shall be included unless information on nautical miles (or other relevant information for users) on that specific location shall be given.

9.4 Rules for elements including “object name”, “fairway name” and “route name”

If a name is available / relevant in several languages translations may be provided including the language code in the attribute. This shall be done automatically from the reference data.

E.g. DE: “Staatsgrenze AT-SK”; SK: “Statna hranica AT-SK”.

9.5 Rules for the elements “value” and “unit” within limitations

Unless stated otherwise only cm, m^3/s, h, km/h and kW, m/s (wind), mm/h (rain) and degree Celsius are allowed to be used as units within NtS messages. Editors applications may offer different units for the entering of the information and then convert it.

ANNEX 18
NOTICES TO SKIPPERS ENCODING GUIDE FOR APPLICATION DEVELOPERS

TABLE OF CONTENTS

Abbreviations

Abbreviation	Meaning
ID	Identification
NtS	Notices to Skippers
RIS	River Information Services
SOAP	Simple Object Access Protocol; network protocol typically used for web services
URL	Uniform Resource Locator; location of a network resource typically used for internet addresses
WS	Web Service; service that provides its interfaces in the internet and is used by internet communication
WSDL	Web Services Description Language; standard for the specification of web services
WS-I	Web Services Interoperability Organisation; industry consortium with the objective to support interoperability of web services
XML	Extensible Markup Language; meta language for the structured and platform independent representation of data
XSD	XML Schema Definition; standard to specify the structure of XML documents

1. Background & Structure

ES-RIS is continuously being improved. A major step forward was the release of the NtS web service facilitating exchange of NtS messages between authorities as well as between authorities and NtS users.

Two documents have been developed to facilitate the harmonised encoding of NtS messages nationally and internationally: the NtS Encoding Guide for editors and the NtS Encoding Guide for application developers. These Guides apply to the NtS XSD and the NtS Web Service WSDL as described in Annex 19 and Annex 20 respectively.

Considering increased use of the NtS web service, NtS messages shall be further harmonised to ensure proper display of content on third party systems. Uniform encoding of messages is also a prerequisite for consideration of messages in voyage planning applications.

Elements that would contain only standard or default values shall be omitted if they are conditional, because they lead to message overhead with no added value.

The NtS Encoding Guide for editors is intended for those editing (and publishing) of NtS messages, including step-by-step instructions to create the proper message types as well as an explanation of codes. The NtS Encoding Guide explains the applicability of the four NtS message types, provides filling instructions as well as codes to be used in certain events. The NtS Encoding Guide for editors corresponds to Annex 17.

The NtS Encoding Guide for application developers includes guidelines for NtS application development and implementation, explaining its logic, processes and auto/default values. The NtS Encoding Guide for application developers corresponds to Annex 18.

2. Applicability of NtS messages

An NtS message may relate to object(s) and/or network part(s). Objects are defined in the Reference Data. An NtS editor application shall provide capabilities for editors to select such objects upon creation of a message. In NtS messages objects are defined in the ‘geo_location’ section of the NtS XSD.

A network part is defined by a start- and endpoint within the waterway network. There has to be an unambiguous route between the start- and the endpoint and the geo_location_from and geo_location_to have to lie on the same waterway (only one waterway name is possible between the geo_location_from and geo_location_to). In combination with the fairway_name an unambiguous route can be provided (sidearms and potential shortcuts with different fairway_names would be excluded).

If the network_part spans over more than one waterway, a network_part section for each waterway has to be defined within the same message. An NtS editor application may provide capabilities for editors supporting them in selecting routes or areas an NtS message applies to.

Optionally an unambiguous route can also be defined by providing the network_part within the geographic_impact section via coordinates in WKT (well-known-text) format.

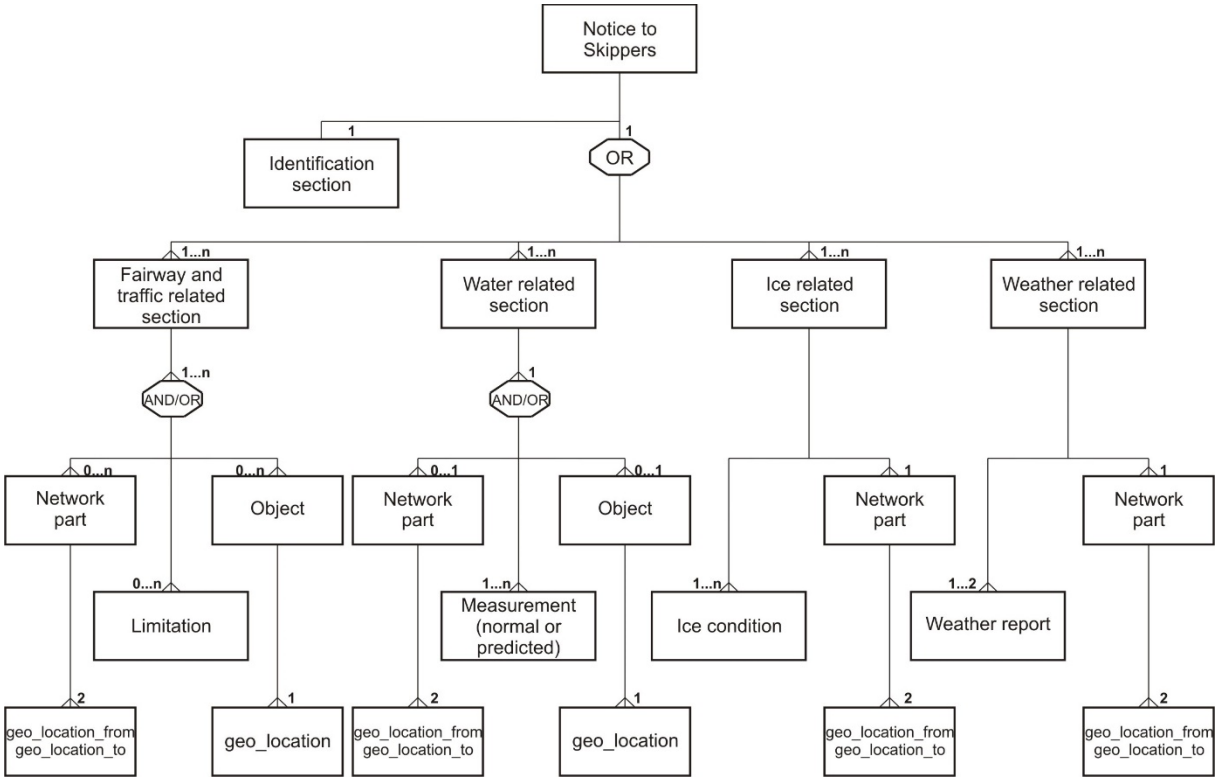
3. NtS messages and sections

An NtS message consists of the following:

a) the identification section,

b) one or more of the following sections according to the message type:
   - limitation(s) for the Fairway and traffic related message,
   - limitation(s) for the Water level related message,
   - ice condition(s) for the Ice related message,
   - weather report(s) for the Weather related message.

Figure 18-1
Visualisation of the NtS message structure



mandatory element (1),
mandatory element that may occur one or two times (1…2),
mandatory element that has to occur two times (2),
mandatory elements that may occur as often as necessary (1-n),
optional element that may occur as often as necessary (0…n).

The identification section includes general information about the message originator, sender, date issue, country and original language and is provided together with one of the four different NtS message section types:

- Fairway and traffic related section: a „Fairway and Traffic related Message“ (FTM) is usually created by NtS editors following the NtS Encoding Guide for editors. It is related to network parts and/or objects on the waterway (go to paragraph 7).

- Water level related section: a „Water Related Message" (WRM) facilitates provision of information on current and forecasted water levels as well as other information. Usually WRM are created automatically (and periodically) based on sensor measurements or infrastructure status not requiring NtS editor interaction. The water related message section contains information for an object (e.g. gauge station) or a network_part (e.g. least sounded depth for a network part, applicable regime at a network part) (go to paragraph 4).
- Ice related section: an „ICE Message" (ICEM) contains information about the ice conditions for a network part (go to paragraph 5).
- Weather related section: a "WEather Related Message" (WERM) enables provision of information on current as well as forecasted weather situations on a network part (go to paragraph 6).

4. WRM basic considerations

Water level information is very important for voyage planning as well as safety. At the moment there is no common standard of referencing water level information. The values of gauges are referring to different sea-levels or to special reference points. To provide a proper reference, the respective "reference_code" shall always be provided together with the value. WRM may be used to provide the following information:

- Water level (including forecasts),
- Least sounded depth (including forecasts),
- Vertical clearance (including forecasts),
- Discharge (including forecasts),
- Barrage status,
- Regime.

Clarifications for translations in the spreadsheet "reference_code" are provided in paragraph 8.12.

Usually WRM are created and published automatically based on information received from sensor equipment or information received from infrastructure (e.g. forecasts, barrage status). There may be different triggers for WRM publication, e.g. periodically or when certain values are reached.

4.1 Filling of nts_number section in the WRM

In the NtS XSD described in Annex 19, the NtS number is optional within WRM messages. If it is provided every number has to be unique (Organisation/Year/Number/Serial) per message type and it is up to the organisation providing the WRM to ensure unique numbers (it is not required to have consecutive numbers).

4.2 Filling of WRM including forecasts

The date_start of validity_period has to be filled with present date (date_issue). In order to avoid WRM being displayed to users that are not valid any more, the validity date_end has to be filled automatically by the NtS application with the day after publication.

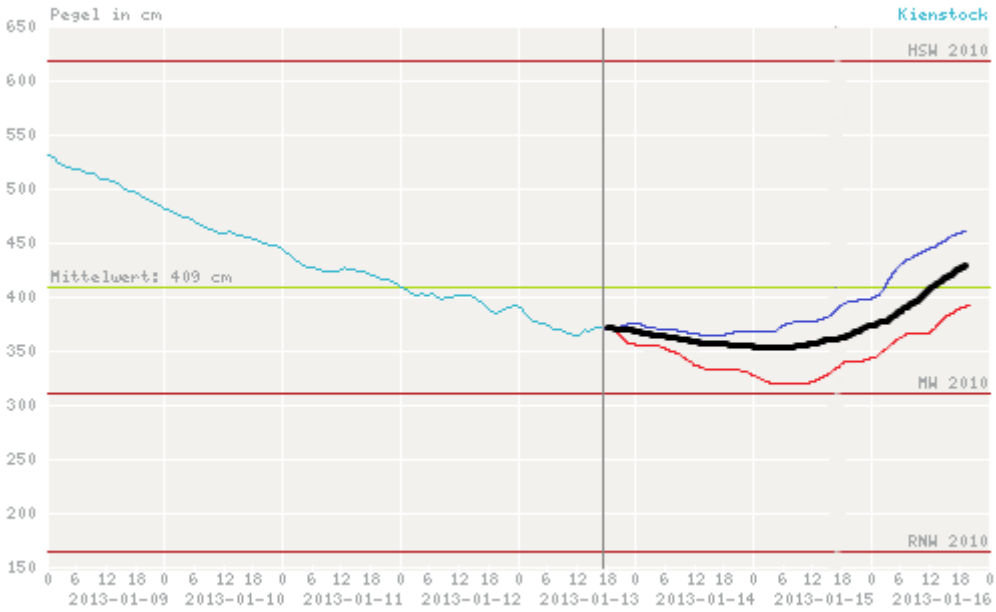
To provide changes in e.g. water level in a user friendly way the difference to a previous comparative measurement may be provided in the WRM difference section. Besides the change in the value (e.g. -5 [cm]) also the time difference to the comparative measurement has to be provided.

In case of forecasts the “measure_date” is the date/time the forecast is valid for.

Water level forecasts always include a factor of uncertainty. Usually models with different parameters (e.g. weather forecast) are calculated leading to different forecasted water level values. To enable provision of a minimum and maximum forecasted value e.g. visualisation of a water level forecast confidence interval, two additional optional data fields are included in the WRM ‘measure’ section.

An illustration of water level forecast confidence interval is given in the following figure:

Figure 18-2
Visualisation of water level forecast confidence interval



most probable value: black
confidence interval upper boarder: violet
confidence interval lower boarder: red

Two elements are available in the NtS XSD:

<value_min> lowest value of confidence interval,

<value_max> highest value of confidence interval.

Besides forecasted water levels the confidence interval may also be used to state the uncertainty of published least sounded depth and vertical clearance information.

The confidence interval value_min and value_max enable provision of WRM value confidence interval via standardised NtS WRM Message to use it in graphs. The raw data itself shall not be displayed to IWT users (e.g. in code format).

5. ICEM processes

Ice Messages depend on local observation and assessment and will usually be generated manually (in case of automatic generation the rules for manual creation have to be followed, see NtS Encoding Guide for editors).

The ICEM is published for a certain network_part and contains the ice_condition at a certain measurement date.

The validity of the ICEM starts at the date of publication (automatically set by the NtS application). In order to avoid ICEM being displayed to users that are not valid any more, the validity date_end has to be filled automatically by the NtS application with the day after publication (unless it is ensured by national processes that messages will get a validity date end as soon as the information included in the message is not up-to-date any more).

In the NtS Encoding Guide for editors it is described under which circumstances an NtS editor creates a new ICEM or updates an existing ICEM. The following processes apply:

5.1 New ICEM

a) NtS applications may offer NtS editors
   i) to use existing notices as draft upon creation of new ICEM (e.g. if ice conditions are similar to the existing notice) and/or
   ii) to use notice templates for certain situations.

b) The content (e.g. time of measurement or respective ice conditions) has to be entered by the editor in line with paragraph 7 of the NtS Encoding Guide for editors (Annex 17). The date and time of measurement could also be set by the application according to national definitions.

c) When an NtS editor/publishers triggers the publication action,
   i) it is checked if all mandatory content is provided in line with the NtS XSD (if no go back to (b)),
   ii) the nts_number is generated by the NtS application,
      - the ‘organisation’ is filled with the name or code of the responsible organisation depending on the role of the publishing user,
      - the ‘year’ is filled with the current year,
      - the next available ‘number’ is assigned,
      - the ‘serial number’ 0 is assigned,

iii) ‘date_issue’ is automatically filled with the actual date/time of publication action,

iv) ‘validity_period’ – ‘date_start’ is automatically filled with the actual date of publication,

v) ‘validity_period’ – ‘date_end’ is automatically filled with the next day after the date of publication (unless it is ensured by national processes that messages will get a validity date end as soon as the information included in the message is not up-to-date any more).

5.2 Update of an existing ICEM

d) The respective published message has to be selected to be updated in the ICEM editor tool. The original ICEM has to be copied or altered in the DB (depending on national processes). Expired ICEM (which passed the validity_date_end) cannot be updated any more, if this is the case NtS editors have to create a new ICEM.

e) The content (e.g. time of measurement or respective ice conditions) has to be altered by the editor in line with paragraph 7 of the NtS Encoding Guide for editors (Annex 17). The date and time of measurement could also be altered by the application according to national definitions.

f) When an NtS editor/publisher triggers the publication action,

i) it is checked if all mandatory content is provided in line with the NtS XSD (if not, go back to (b));

ii) the nts_number is generated by the NtS application,

- the ‘organisation’ stays unchanged,
- the ‘year’ stays unchanged,
- the ‘number’ stays unchanged,
- the ‘serial number’ is incremented (increased by 1);

iii) ‘date_issue’ is automatically filled with the actual date/time of publication action;

iv) ‘validity_period’ – ‘date_start’ is automatically filled with the actual date of publication;

v) ‘validity_period’ – ‘date_end’ is automatically filled with the next day after the date of publication (unless it is ensured by national processes that messages will get a validity date end as soon as the information included in the message is not up-to-date any more).

6. WERM basic considerations

Usually WERM are created and published automatically based on information received from sensor equipment or information received from infrastructure. The date_start of validity_period has to be filled with present date (date_issue). In order to avoid WERM being displayed to users that are not valid any more, the validity date_end has to be filled automatically by the NtS application with the day after publication.

A WERM applies to a network part, i.e. area of applicability of the weather station (gauge).

Date and time of measurement/forecast have to be provided.

In case of forecasts the “measure date” is the date/time the forecast is valid for.

6.1 Filling of nts_number section in the WERM

In NtS XSD 4.0 the NtS number is optional within WERM messages. If it is provided every number has to be unique (Organisation/Year/Number/Serial) per message type and it is up to the organisation providing the WERM to ensure unique numbers (it is not required to have consecutive numbers).

6.2 Filling of WERM 'weather_category_code'

The wind speed in 'weather_category_code' (values 0 to 12) shall be provided in line with the Beaufort scale published by the World Meteorological Organization in its Manual on Marine Meteorological Services "WMO-No. 558".

The visibility in 'weather_category_code' (values 13 to 22) shall be provided as defined in the following table:

Value, meaning	Visibility	Additional information
13, thick fog	below 50 meters	
14, dense fog	below 100 meters	
15, moderate fog	below 200 meters	
16, fog	below 1000 meters	Fog consists of water droplets.
17, mist	from 1 km to 4 km	Mist consists of water droplets. Mist is used in case of "dry fog", this phenomenon usually takes place before sunrise.
18, haze	from 1 km to 4 km	Haze consists of dry particles.
19, light haze	from 4 km to 10 km	
20, clear	from 10 km to 20 km	
21, very clear	no limitation of visibility	
22, no fog		"no fog" is used to state that there is no fog depending on national/local requirements.

7. FTM processes

In the NtS Encoding Guide for editors it is described under which circumstances an NtS editor creates a new FTM or updates an existing FTM. The following processes apply:

7.1 New FTM

a) NtS applications may offer NtS editors to
   i) use existing notices as draft upon creation of new FTM and/or
   ii) use notice templates for certain situations.

b) The content (e.g. time of validity, limitations) has to be entered by the editor in line with paragraph 4 and 5 of the NtS Encoding Guide for editors (Annex 17).

c) When an NtS editor/publisher triggers the publication action,
   i) it is checked if all mandatory content is provided in line with the NtS XSD (if not go back to (b)),
   ii) the nts_number is generated by the NtS application,
      - the ‘organisation’ is filled with the content of the ‘publisher’ which is included in the identification section,
      - the ‘year’ is filled with the current year,
      - the next available ‘number’ is assigned, in case a dedicated number was entered by the NtS editor or an application process in step b) it is taken over (given that (Organisation/Year/Number/Serial) is unique as explained in paragraph 8.1),
      - the ‘serial number’ 0 is assigned‘,
   iii) date _issue’ is automatically filled with the actual date/time of publication action.

7.2 Update/withdrawal of an existing FTM

a) The respective published message has to be selected to be updated in the FTM editor tool, the original FTM has to be copied or altered in the DB (depending on national processes).
   i) Expired FTM (which passed the validity_date_end) cannot be updated any more, if an update on an incident is nevertheless necessary the NtS editor has to create a new FTM.
   ii) The “Notice withdrawn” flag is set to "true" when the entire message is withdrawn. The subject code of the previous version must remain the same.

      The content of the message itself must remain the same, with exception of the validity period.
      - If the message did not become valid yet the validity start_date and validity date_end have to be set to present date (see Figure 18-3).
      - If the message already became valid the validity date_start remains unchanged and the validity date_end has to be set to present date. (see Figure 18-4).

      Notice_withdrawn is an optional element and must not be included in the message if the notice is not withdrawn.

      The element notice_withdrawn is used instead of the subject code “CANCEL” (used in previous editions of the NtS standard). Even if a message is withdrawn the previous subject code (‘announcement’, ‘warning’, ‘information service’) is kept. This makes it possible to display that e.g. a ‘warning’ is withdrawn. The subject code “CANCEL” shall therefore no longer be used for new messages and shall be de-activated in NtS applications.

In addition to setting notice_withdrawn to “true” all individual limitations have to be withdrawn (fill in the withdrawn_time). Present date could be pre-set and changed by editors.

iii) FTM with “Notice withdrawn” flag set to "true" must not be considered for voyage planning (any more).

b) The content (e.g. time of validity, limitations) has to be altered by the editor in line with paragraph 4 and 5 of the NtS Encoding Guide for editors (Annex 17).

c) When an NtS editor/publisher triggers the publication action;

i) it is checked if all mandatory content is provided in line with the NtS XSD (if not go back to (b));

ii) the nts_number is generated by the NtS application,

- the ‘organisation’ stays unchanged,
- the ‘year’ stays unchanged,
- the ‘number’ stays unchanged,
- the ‘serial number’ is incremented (increased by 1);

iii) ‘date_issue’ is automatically filled with the actual date/time of publication action.

Figure 18-3
Validity period of FTM not started yet

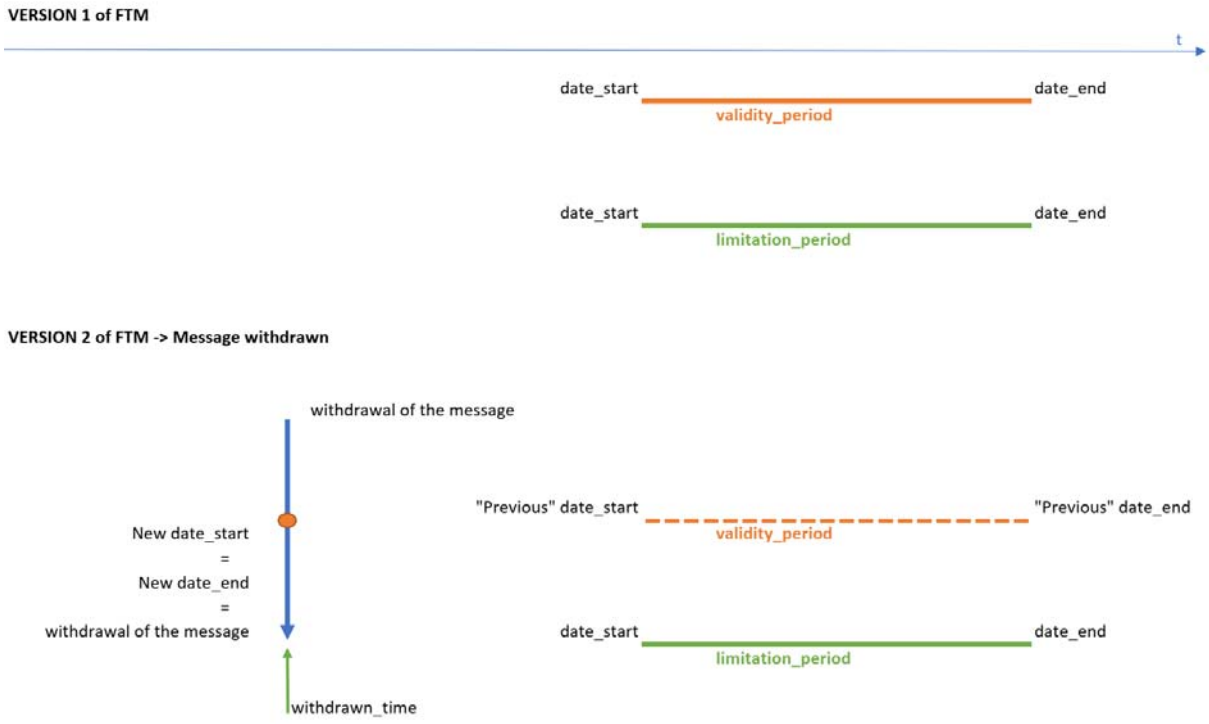


Figure 18-4
Validity period of FTM started

7.3 Handling of FTM limitation groups

a) At least one network part or object has to be included in an FTM_limitation_group

b) Limitation_groups that apply to different network parts and/or objects have to be included in different FTM_limitation_groups together with the respective network parts and/or objects.

c) Limitations that are valid at different limitation periods have to be included in different limitation_groups.

d) Limitations with the same limitation periods should be grouped/listed together in one limitation_group to support reader-friendly display.

e) All limitations have to include a limitation period with an interval code in order to allow proper calculations within voyage planning applications.

f) The NtS editor tools should provide a function to select more than one limitation code for specific limitation period(s) and automatically create the required limitation groups based on the information entered by the NtS editor.

g) “Monday to Friday except public holidays”: The value ‘holidays’ is very difficult for voyage planning applications. A list of holidays for each country is needed for proper calculation. If no such list is available the respective limitations will be assigned to the public holidays as well.

h) “with the exception of”: must not be used; Interrupted intervals have to be given as separate limitation periods within the same limitation, therefore this code shall not be displayed/available to message editors.

i) Logic and display of information applicable in case of interval code ‘continuous’ (default):
<date_start>2022-04-01+01</date_start>,
<date_end>2022-06-30+02</date_end>,
<time_start>06:00:00</time_start>,
<time_end>10:00:00</time_end>,
<interval_code>CON</interval_code>.
If the interval_code is continuous, the start_time refers to the start_date only and the end_time refers to the end_date only, e.g. from 1 April 06:00 to 30 June 10:00.

j) Logic and display of information applicable in case of any other interval code than ‘continuous’:
<date_start>2022-04-01+01</date_start>,
<date_end>2022-06-30+02</date_end>,
<time_start>06:00:00</time_start>,
<time_end>10:00:00</time_end>,
<interval_code>WRK</interval_code>.
If the interval_code has another value the start_time and end_time refer to the respective interval_code, e.g. from 1 April to 30 June Monday to Friday from 06:00 to 10:00.

k) The limitation time end always has to be filled in the last version of a message unless the respective limitation is withdrawn and therefore the withdrawn_time is set instead.

l) If a limitation “time_start” is not filled out by the editor the value “00:00” is automatically included in the message.

m) If a limitation “time_end” is not filled out by the editor the value “23:59” is automatically included in the message.

n) The limitation period of a limitation has to lie within the validity period of an FTM, limitation periods outside the validity period of an FTM are not valid and shall not be taken into account for voyage planning and display to users in applications. In case a limitation is withdrawn the withdrawn_time has to be within the validity period of the message. In this case the limitation date_end and time_end are not considered any more thus may exceed the validity date_end of the message.

o) When withdrawing a limitation_period, the withdrawn_time must be provided with a timestamp which is ether equal to the date of publication of the NtS message or a timestamp which is in the past. It is not allowed to enter a timestamp in the future.

p) In case several limitations are present in the message but only one of them is withdrawn the content of the limitation_group is to be split in two limitation_groups. One limitation_group ends (and has the withdrawn_time set) and the other one stays valid (no withdrawn_time set).

q) In case a message is updated and one or more limitations are withdrawn, the withdrawn_time is provided for these limitations. If there is another update of the message all previously withdrawn limitations are not provided in the updated message any more. This is to keep the content of the message as small as possible and to only indicate withdrawn limitations compared to the previous message. A history of all withdrawn limitations is not kept inside of the message.

r) Depending on the limitation usually no value or exactly one value is provided. The limitation code ‘PERDIM’ (permissible dimension) is an exception. For ‘PERDIM’ a minimum of two and a maximum of four values shall be provided together with the dimension_type:
   - LEN: length (maximum length of a vessel/convoy),
   - BRE: breadth (maximum breadth of a vessel/convoy),
   - HEI: height (maximum height of a vessel/convoy),
   - DRA: draught (maximum draught of a vessel/convoy).

   The indication_code ‘MAX’ (maximum) has to be used together with the limitation_code ‘PERDIM’.

   The unit (cm) has to be provided together with the limitation_code ‘PERDIM’.

s) All provisions set in this paragraph have to be considered by NtS applications automatically reducing manual editor interactions as much as possible.

7.4 Automatic ordering of limitation codes

Different limitations have different impact on navigation. In order to allow display of the most severe limitation e.g. in an FTM list overview, the following order shall be considered starting with the most severe limitation having Rank 1:

Table 18-1
Order of limitations according to severity

Rank	Value	Meaning (EN)
1	OBSTRU	blockage
2	PAROBS	partial obstruction
3	NOSERV	no service
4	SERVIC	changed service
5	PERDIM	permissible dimension
6	VESDRA	vessel draught
7	VESBRE	vessel breadth
8	CONBRE	convoy breadth
9	VESLEN	vessel length
10	CONLEN	convoy length
11	CLEHEI	clearance height
12	VESHEI	vessel air draught
13	AVALEN	available length
14	CLEWID	clearance width
15	AVADEP	available depth
16	LEADEP	least depth sounded
17	DELAY	delay
18	ALTER	alternate traffic direction

Rank	Value	Meaning (EN)
19	TURNIN	no turning
20	PASSIN	no passing
21	OVRTAK	no overtaking
22	NOBERT	no berthing
23	NOMOOR	no mooring
24	ANCHOR	no anchoring
25	SPEED	speed limit
26	WAVWAS	no wash of waves
27	NOSHORE	not allowed to go ashore
28	MINPWR	minimum power
29	CAUTIO	special caution

8. General implementation rules

The following is to be considered:

- The table “GUI_labels” provided in the NtS Reference Tables shall be considered when building NtS applications (search masks, e-mail subscription form, display of messages).
- The date_end cannot be before date_start.
- Codes that have been disabled (are not to be used any more) via NtS change requests (see comments in the NtS XSD) shall not be displayed to NtS editors upon creation of new messages. The codes are still included in the NtS XSD enumerations for backwards compatibility.

8.1 Filling of the “number_section”

Every number (Organisation/Year/Number/Serial) has to be unique per message type. That means that messages of different types can have the same NtS Number.

For users the message numbers are only relevant for FTM and ICEM, for all other message types display of the message number can be skipped depending on national requirements.

To users the message number shall be displayed in the following format “Message Type/Country/Organisation/Year/Number/Serial” (it can be shortened depending on applied filters if no information gets lost).

8.2 Filling of elements “from”, “publisher”, “organisation” and “source”

The element “from” includes the name of the system the message was sent from (e.g. ELWIS, DoRIS, SLOVRIS, VisuRIS).

The element “publisher” includes the name of the organisation which published the message.

The element “source” includes the organisation/department providing the information published in the message.

The element “organisation” within the nts_number section is the name of the ”publisher”.

8.3 Omission of elements

Elements that would contain only standard or default values shall be omitted if they are conditional, because they lead to message overhead with no added value.

This concerns the following elements:

- Target Group: target_group_code ALL with direction_code ALL (if there are no other specific target groups within the message),
- position_code: AL.

8.4 Automatic filling of date_issue

FTM and ICEM

For FTM and ICEM the value of date_issue element is the actual date and time of publishing. In case of updated messages date_issue is the date and time when the update was published.

WRM and WERM

For WRM and WERM the value of date_issue element is the date and time of the processing request, because there can be several measurements with different issuing time stamps within one W(E)RM message.

8.5 Handling of time zone information in NtS messages

Date and time shall always be provided in local time including time zone information within the NtS XML messages.

The only exceptions from this provision are the “time_start” and the “time_end” within the ‘limitation_period’ section. This is because in the limitation section an interval can be applied. If date start and date end have different time regimes (e.g. CEST and CET) this would result in a change of the time zone information within this interval. This change cannot be expressed via a single limitation period. Instead of creating different limitation periods for each time change only a single limitation period without time zone information is used to reduce overhead in message processing and transmission.

8.6 Handling of Seconds in NtS messages

As a general rule seconds have to be provided in (date)/time fields but shall not be displayed to NtS users. Minutes are sufficient for NtS granularity.

8.7 Format of decimals in NtS messages

Decimals in numeric fields are indicated with a “.” (period). No thousand separators are used.

The number of decimals used for values shall be limited to a feasible amount to ensure user friendly display.

8.8 Units to be used in NtS messages

Only cm, m^3/s, h, km/h and kW, m/s (wind), mm/h (rain) and degree Celsius are allowed to be used as units within NtS messages, applications may convert the units for user friendliness.

In case the input units differ from the standardised units the entered values have to be converted by the application accordingly.

8.9 Rules for the element “waterway_hectometre”

The element “waterway_hectometre” includes the position of a location on a waterway. In general this position is deemed to be meaningful to the users thus displayed together with the “type_code” and “object_name” to the users.

For objects of the type “dismar” (distance mark) an object name shall only be given to provide extra information to be displayed to fairway users (for example nautical mile indication). If an object name is given it overrules the general logic that the information displayed to users is a combination of fairway name and fairway hectometre.

8.10 Rules for the elements “localisation_name”, “location”, “position_code” and “type_code”

The element localisation_name is mandatory for objects and optional for network parts. The “object_name” shall be prefilled automatically from the RIS Index reference data “national object name” (NtS editors might amend the prefilled name if this is a national requirement). Naming conventions for object names are included in the RIS Index Encoding Guide version 3.0 or higher. Examples for proper object names are also given in the NtS Encoding Guide for editors.

With more detailed information on each RIS Index object the NtS message contains more information to create a comprehensive visualisation to the end-user, which will look the same for all NtS messages of all authorities.

For RIS Index objects the following attributes are considered and shall be automatically filled from the RIS Index:

- ISRS Location Code;
- Main RIS Index key-attributes in separate fields:
  - Country Code & UN Location Code,
  - Fairway Section Code,
  - Object Reference Code,
  - Fairway Hectometre;
- Object name of the impacted object(s) in one or more languages;
- Location name of the impacted object(s) in one or more languages;
- Object type of the impacted object(s).

The type code is added to the object by the NtS application in front of the object name.

The position of objects is encoded via position code and added to the object by the NtS application out of the RIS Index. Editors may change prefilled type and position codes.

A full object name is composed of its position code, type code and name.

To ease the work of NtS editors the following mapping may be implemented in NtS editor applications supporting editors in finding / selecting the proper objects based on the RIS Index function_code or the NtS type_code:

Table 18-2
Matching, RIS Index function_code' – 'NtS type_code'

Function Code	Function Code Meaning	Type Code	Type Code Meaning
-	-		
BUAARE	E.1.1 Built-Up Areas		to be selected by editor
BUISGL	E.1.2 Building of Navigational Significance		to be selected by editor
brgare	G.1.1 - G.1.6 Bridge Area [C_AGGR()]	BRI	bridge
bridge_5	G.1.1 Bascule Bridge	BRO	bridge opening
bridge_1	G.1.2 Bridges with Bridge Arches	BRO	bridge opening
bridge_1	G.1.3 Fixed Bridge	BRO	bridge opening
bridge_4	G.1.4 Lift Bridge	BRO	bridge opening
bridge_12	G.1.5 Suspension Bridge	BRO	bridge opening
bridge_3	G.1.6 Swing Bridge	BRO	bridge opening
TUNNEL	G.1.7 Tunnel	TUN	tunnel
cblohd	G.1.8 Overhead Cable	CAB	cable overhead
pipohd	G.1.9 Overhead Pipe	PPO	pipeline overhead
bridge_7	G.1.12 Drawbridge	BRO	bridge opening
bunsta	G.3.2 Bunker / Fuelling Station	BUS	Bunker / Fuelling Station
hrbare	G.3.9 Harbour Area	HAR	harbour
hrbbsn	G.3.10 Harbour Basin	HAR	harbour
ponton	G.3.11 Landing Stage, Pontoon		to be selected by editor
morfac	G.3.12 Mooring Facility	MOO	mooring facility
prtare	G.3.15 Port Area	HAR	harbour
refdmp	G.3.17 Refuse Dump	REF	refuse dump
termnl	G.3.19 Terminal	TER	terminal

Function Code	Function Code Meaning	Type Code	Type Code Meaning
trm01	G.3.19 RORO-terminal	TER	terminal
trm03	G.3.19 Ferry-terminal	TER	terminal
trm07	G.3.19 Tanker-Terminal	TER	terminal
trm08	G.3.19 Passenger Terminal	TER	terminal
trm10	G.3.19 Container Terminal	TER	terminal
trm11	G.3.19 Bulk Terminal	TER	terminal
lokbsn	G.4.3 Lock Basin	LKB	lock basin
lkbspt	G.4.4 Lock Basin Part	LKB	lock basin
lokare	G.4.3 / G.4.4 Lock Area [C_AGGR()]	LCK	lock
excnst	G.4.8 Exceptional Navigational Structure	CBR	canal bridge
gatcon_4	G.4.9 Lock Gate	BAR	weir
gatcon_2	G.4.9 Flood Barrage Gate	FLO	flood gate
wtwgag	I.3.4 Waterway Gauge	GAU	tide gauge
FERYRT_2	L.2.1 Cable Ferry	FER	ferry
FERYRT_1	L.2.2. Free Moving Ferry	FER	ferry
feryrt_4	L.2.3. Swinging Wire Ferry	FER	ferry
dismar	L.3.2 Distance Mark along Waterway Axis	DMR	distance mark
achare	M.1.1 Anchorage Area	ANC	anchoring area
achbrt	M.1.2 Anchorage Berth	BER	berth
berths_3	M.1.3 Berth / Fleeting Areas	BER	berth
berths_1	M.1.4 Transhipment Berth	BER	berth
trnbsn	M.4.5 Turning Basin	TUR	turning basin
		CAN	canal
		FWY	fairway
rdocal	Q.2.1 Radio Calling-In Point (notification point)	REP	reporting point
chkpnt	R.1.1 Check Point	BCO	border control
sistat_8	R.2.1 Traffic Sistat – Bridge Passage	SIG	signal station
sistat_6	R.2.2 Traffic Sistat – Lock	SIG	signal station

Function Code	Function Code Meaning	Type Code	Type Code Meaning
sistat_10	R.2.3 Traffic Sistat – Oncoming Traffic Indicator	SIG	signal station
sistat_2	R.2.4 Traffic Sitat – Port Entry and Departure	SIG	signal station
riscen	RIS centre	VTC	vessel traffic centre
trafp	Traffic Points (first reporting points)	REP	reporting point
junction	Waterway node / end of waterway / Junction		to be selected by editor

Legend:

green	Direct match (1:1 relation)
yellow	matching example, other TypeCodes possible (1:n relation)
blue	no direct match / to be selected by editor

8.11 Rules for the element “fairway_name” and “route_name”

To avoid application logic / necessity of proper reference data at the receiving system (software displaying the notice to the user) the element ‘fairway_name’ shall always be included in the network_part or object and automatically filled by the NtS application with the ‘Waterway name’ from the RIS Index. NtS editors shall not alter the content of the element fairway_name.

If the “route_name” is included in the network_part or object it shall be filled automatically from the RIS Index.

8.12 Clarifications for translations in the spreadsheet “reference_code”

The following definition shall be used for reference_code values provided in the NtS Reference Tables:

- NAP: In the Netherlands the abbreviation NAP is used and understood, NAP is not translated
- KP: “channel level” shall be translated thus provided in national language
- FZP: only the abbreviation “FZP” shall be used (nowadays hardly used anymore)
- ADR: “Adriatic Sea” shall be translated thus provided in national language
- TAW/DNG: “Tweede algemene waterpassing” (Dutch) – “Deuxième Nivellement Général” (French) is the reference height used in Belgium to express height measurements. 0 is the average sea water level at low water in Oostende
    - Dutch: TAW,
    - French: DNG,
    - All other Languages: TAW/DNG.

- LDC: “low navigable water level Danube Commission” shall be translated thus provided in national language;
- HDC: “high navigable water level Danube Commission” shall be translated thus provided in national language;
- ETRS: “European Terrestrial Reference System 1989” the abbreviation “ETRS89” is used in all languages.

8.13 Recommendations for the element “geographic_impact”

A polygon consisting of an array of coordinates in WKT (Well-known-text) format may be defined to specify a geographic area for which messages apply.

The geographic impact of an NtS may be added to the message. It is used for visualisation in web-applications and Apps, and not for navigational purposes.

The following coordinate system must be used: WGS84 latitude/longitude (EPSG:4326).

The geographic impact shall be filled automatically from the reference data and correspond to the area of validity of the FTM message: In case of a network_part, it is advised to automatically generate the geographic impact based upon the coordinates (stretch based upon geo_location_from and geo_location_to).

The geographic_impact in the NtS message shall be in line with the information (fairway/waterway coordinates/objects) published in Inland ENCs (in case Inland ENCs are available for the area).

8.14 Handling of target groups

The target group section consists of target group code and direction code. If both have the value ALL the whole section shall be omitted if there are no other specific target groups within the message. If just one of these two is given the other must be filled with the default value ALL because both elements are mandatory.

Further information concerning target groups can be found in the NtS Encoding Guide for editors.

8.15 Display of valid messages at a given time

The validity_period shall be used by applications to select the messages, which are to be displayed to users for a requested time.

If subject_code is INFSER (Info service) the validity period is used to specify the time the Info service Message is displayed to the users, not for the period of validity of the provided information (e.g. 1 month).

8.16 Optional functions to increase user friendliness of NtS editor tools

The following functions may be offered to NtS editors depending on national requirements:

- NtS applications may offer NtS editors to save draft NtS messages (not all mandatory content has to be provided in order to save draft messages),
- Different user roles may apply to different editors (e.g. editors that are allowed to enter/alter notices, publishers that are allowed to publish notices (in addition to editing)).

9. NtS XML Message Structure

The NtS XML Message Structure and the content and purpose of data elements are defined and further explained in Annex 17: NtS XML Schema Definition (XSD).

10. NtS Web Service

10.1 Objective

The NtS Expert Group identified the web service technology as an appropriate means to provide the Notices to Skippers.

This paragraph constitutes the specification of the web service for the provision of the Notices to Skippers, short NtS Web Service.

One goal of the conceptual design was to ensure a good balance between flexibility and robustness of the resulting web service. The filter parameters provided in the requests are essentially the criteria specified in the NtS standard, but focused on machine-to-machine interfacing. This seems sufficiently expressive considering the use cases of the web service and at the same time limits the complexity of the implementation.

The core result is a contract for the web service, in which the requests and responses are specified. The consumers of the web service can rely on this contract and the providers have to comply with it. This contract is specified using the international standard WSDL.

Every participating Member State shall implement one or more web services for the different message types of the NtS (FTM, WRM, ICEM, WERM) and provide them via the internet (“NtS Message Service”).

The technical details of the implementation of the NtS WS, e.g. choice of appropriate data pools, applications and platforms, are not in the scope of this specification and are in the responsibility of each individual participating Member State.

In the context of NtS all information are public. So there is no need to secure the NtS data themselves in terms of data protection. Therefore every provider has to decide on its own in how far this aspect will be implemented in its service.

10.2 Basic Principles and constraints

10.2.1 Web standards

The NtS Web Service has to comply with the WS-I Basic Profile 1.1. This profile provides interoperability guidance for a core set of non-proprietary web services specifications, such as SOAP and WSDL. The most relevant standards herein are

- XML Schema Definition (XSD),
- Simple Object Access Protocol (SOAP) and
- Web Services Description Language (WSDL).

The response message of the NtS WS is an NtS message which is defined in XML Schema Definition (XSD) in Annex 19.

SOAP is an application protocol for data transmission among IT-Systems and is standardised by the World Wide Web Consortiums (W3C).

The specific elements for the NtS Web Service are defined inline in the corresponding WSDL specifications in Annex 20. The schema of the NtS standard (XSD) is included with an import statement.

10.3 General specifications and recommendations

10.3.1 Specification: Version information

The version information of the NtS Web Service consists of two sections:

- version of the web service itself,
- version of the NtS schema used by the web service.

The section of the web service itself consists of two parts:

- major version of the web service,
- minor version of the web service.

The major version is given as a positive integer denoting the major version of the web service.

The minor version is given as a non-negative integer denoting the minor version of the web service within the major version.

The section of the NtS schema contains the version of the NtS schema as defined by the NtS Temporary Working Group of CESNI/TI.

Hence, the version of the NtS Web Service specified here is 3.0.5.0, where 3.0 is the version of the web service itself and 5.0 is the version of the NtS schema used.

Explicit version information is not necessary in the requests or responses of the NtS Web Service. There are only a few versions of the services expected to be online at the same time. Different versions shall be provided with different URLs. Hence, each instance of an NtS Web Service implementation shall support one specific version of the NtS Web Service.

10.3.2 Specification: Structure of namespaces

The namespaces in the NtS Web Service are based on the web domain of CESNI/TI: https://ris.cesni.eu.

The namespaces contain a particle indicating the corresponding service and version information. Hence, the service specified here uses the following namespace:

NtS Message Service:

https://ris.cesni.eu/_assets/NtS_MS/5.0.5.0/NtS_XSD_V.5.0.5.0.html

10.3.3 Recommendation: Use of namespaces

For higher transparency of XML documents it is recommended to define namespaces in the outmost suitable element in the schemas as well as the instance documents and not to use local namespace definitions in nested elements.

10.3.4 Recommendation: Use of namespace prefixes

Requests and responses in the NtS Web Service shall use XML elements in qualified form, i.e. with an explicit namespace prefix, and XML attributes in unqualified form, i.e. without a namespace prefix.

It is recommended to use intuitive namespace prefixes like “nts” for better human readability.

10.3.5 Definition of the ISRS Location Code

The ISRS Location Code is defined in Part III, Chapter 4, Article 4.03.

10.3.6 Definition of location attributes

Meaningful information with respect to the location of objects shall be extracted from the elements:

- un_locode,
- fairway_section_code,
- object_reference_code,
- fairway_hectometre.

These elements shall be filled automatically by the editor application with information from the RIS Index.

10.4 NtS Message Service (implementation specification)

In this paragraph the implementation specification of the NtS message service is given, deduced from the considerations and choices in the preceding paragraphs.

The NtS message service provides the four types of messages in the NtS:

- NtS FTM (fairway and traffic related message),
- NtS WRM (water related message),
- NtS ICEM (ice message),
- NtS WERM (weather related message).

An implementation of the NtS message service can support all message types or just a selection. It is allowed that a participating Member State provides more than one service for a specific message type, that complement each other.

10.4.1 Request

In order to achieve a maximum robustness of the service while keeping the complexity on a low level no additional query language is used for the NtS Web Service. Instead the constructs provided by WSDL itself are applied. The specific operations together with their parameters are specified entirely within the WSDL specification. In the case of the NtS Message Service a single operation is defined.

The WSDL allows for a number of filtering parameters, which resemble items of the message. With the filtering parameters it is possible for developers to accurately specify the information they want to provide to the user. There is no need to set up different Web Services for different subjects handled in NtS. A combination of multiple filtering parameters can be defined in the same request. The available filtering parameters are:

- Message Type: The NtS message type allows for filtering between FTM, WRM, ICEM or WERM. The Message Type is a mandatory request parameter, only one Message Type can be given in one request.
- Country Code: The two-digit country code allows for filtering of messages concerning a specific country.
- Date Issue: Either a single timestamp or a time span defined by two timestamps (from – to) can be specified for filtering messages, which have been published at a certain date and time (accuracy minutes, no seconds).
    - Provide only one timestamp: request all messages which are published since the given timestamp.
    - Provide two timestamps: request all messages which are published between both timestamps or on the start timestamp.
- Validity Period: Either a single date or a time span defined by two dates (from – to) can be specified for filtering messages, which are valid at a certain date.

10.4.2 Paging mechanism

In order to control the amount of data a paging mechanism must be supported. The paging parameter is defined with a complex type containing the following elements:

- offset: serial number of the first returned message (integer ≥ 0),
- limit: max. number of messages (integer ≥ 0),
- total count: flag, if total number of messages shall be returned (Boolean value).

The complex paging parameter is optional, but if it is present, all elements within have to be given. Then, the paging mechanism works in the following way:

The total number of messages will not exceed the value of the parameter limit, with the exception that a value of 0 means “no limit”. The response skips as many messages as defined in the parameter offset. In order to provide this mechanism, the service has to observe a temporarily stable (but otherwise arbitrary) sequence of the messages, e.g. between two updates of message data on the underlying data set of the web service. This means that two consecutive identical calls must return the same messages in the same order. The parameter total count determines whether the response shall provide the total number of messages matching the subject-specific criteria. Usually it should be sufficient to request this information with the first response, but omit it in all consecutive responses. This should result in a better performance of the web service.

The paging mechanism provides a means to request the messages iteratively in “pages”. In order for the paging mechanism to work properly, the same subject-specific parameters have to be provided in each call.

The number of messages is the maximum number of NtS messages (the container) in the response of the message service. Inside an NtS message, which is the container – the envelope, an FTM, ICEM, WERM of WRM is present. To have a good control over the paging mechanism, one ICEM, WERM or WRM shall be provided inside the NtS envelop (according to the standard, it’s prohibited to add more than one FTM in an NtS envelope).

If f.e. 100 WRM messages are inside one envelop, the sending and receiving system, do not have control over the paging and the size of the response message. And if the sending system want to control the size of the response, it would have to cut NtS messages in different parts (according to the amount of the “limit”) and this way edit official send out messages, which could cause operational and possibly legal problems.

10.4.3 Response

In case of a successful request the NtS Web Service response contains the NtS messages that match the request parameters. The NtS messages have to comply with the NtS schema and can be validated against that schema. Since the message type is a compulsory request parameter, each response can contain only NtS messages of the same message type, FTM, WRM, ICEM or WERM respectively.

The result is ordered ascending on the date_issue.

10.4.4 Error Handling

If the service detects errors while processing the request it can return an arbitrary number of error messages, using the error codes listed in the following subparagraph.

One response of an NtS Web Service can contain NtS messages and error messages at the same time.

In the paging information the offset and number of contained messages are mandatory, the total count needs only be present if it has been requested.

Please note: It is assumed that the communication between the web service and the user is technically established, i.e. the service receives the request and the user receives the corresponding response. Technical errors, e.g. breakdown of the internet connection or inaccessibility of the web service due to maintenance or crash, are not considered here. Only error situations that happen “behind” the web service layer from the users point of view are considered here.

10.4.5 Error messages

The error codes for the expected error situations are given below, together with an explanation. The error code together with the description is contained in the response.

Table 18-3
Error codes for the NtS message service

Code	Description	Explanation
e010	message type not supported	web service does not support the requested message type
e030	paging parameters inconsistent with messages	parameters for paging mechanism do not fit the available messages, e.g. Offset ≥ Total Count
e100	syntax error in request	request violates the schema for requests; can be specified in more detail by further e1xx-Codes
e110	incorrect message type	given message type is not known
e130	incorrect paging parameters	given parameters for the paging mechanism are erroneous
e140	country not supported	web service does not provide messages for the requested country
e200	operation not known	the requested operation is unknown
e300	data source unavailable	data source of the web service for the NtS data is temporarily unavailable (technical problem)
e310	too many results for request,	server is unable to handle number of results

ANNEX 19
STANDARDISED NTS EXTENDED MARKUP LANGUAGE (XML) SCHEMA DEFINITION, REFERRED TO AS XSD, STANDARDISED CODE VALUES AND POSSIBLE FORMATS

1. Description of the XML tags

Nr.	Tag	Description	Remarks	Occurence M (mandatory) C (conditional)	Rule
	xmlns:nts="https://ris.cesni.eu/_assets/NtS_XSD/5.0.5.0"				
	<RIS_Message>	Notice to Skippers			
1s	<identification>	Identification section		M (1x)	1
1.1	<internal_id>xs:string (64)</internal_id>	Internal ID		C (0..1x)	
1.2	<from>xs:string (64)</from>	Sender (System) of the message		M (1x)	
1.3	<publisher>xs:string (64)</publisher>	Publisher (organisation) of the message		M (1x)	
1.4	<source>xs:string (64)</source>	The organisation/department providing the information published in the message		C (0..1x)	
1.5	<country_code>nts:country_code_enum</country_code>	Country where message is valid		M (1x)	
1.6	<language_code>nts:language_code_enum</language_code>	Original language used in the textual info (contents)		M (1x)	
1.7	<district>xs:string (64)</district>	District / Region within the specified country, where the message is applicable		C (0..1x)	
1.8	<date_issue>xs:dateTime<date_issue>	Date and time of publication including time zone		M (1x)	
1e	</identification>				

2s	<ftm>	Fairway and traffic related section		C (1..Nx)	1
2.1	<internal_id>xs:string (64)</internal_id>	Internal ID		C (0..1x)	
2.2s	<nts_number>	NtS number		M (1x)	
2.2.1	<organisation>xs:string (64)</organisation>	Name of the publishing organisation (NtS Provider)		M (1x)	
2.2.2	<year>xs:gYear (1900-9999)</year>	Year of first issuing of the notice		M (1x)	

2.2.3	<number>xs:integer (0-99999999)</number>	Number of the notice (per year, starting with: 1, 0 shall not be used for published notices)	Starting by 1, number is incremented for each published new message within the same year.	M (1x)	
2.2.4	<serial_number>xs:integer (0-99)</serial_number>	Serial number of notice (replacements and withdrawals), original notice: 0	Starting by 0 for initial version, serial number is incremented for each published change of this message.	M (1x)	
2.2e	</nts_number>				
2.3s	<target_group>	Target group information		C (1..Nx)	
2.3.1	<target_group_code>nts:target_group_code_enum </target_group_code>	Target group (vessel type)		M (1x)	5
2.3.2	<direction_code>nts:direction_code_enum</direction_code>	Upstream or downstream traffic, or both		M (1x)	5
2.3e	</target_group>				
2.4	<subject_code>nts:subject_code_enum</subject_code>	Subject code must contain one of the following: Announcement (ANNOUN), Warning (WARNIN) or Information service (INFSER). More information on the use of codes can be found in the NtS Encoding Guide.		M (1x)	
2.5	<notice_withdrawn>xs:boolean</notice_withdrawn>	Indication that the entire message is withdrawn. Notice Withdrawn flag set to "true" when the entire message is withdrawn, otherwise it should be ommited (value "false" should not be used). The subject code of previous version must remain the same.		C (0..1x)	
2.6s	<validity_period>	Overall period of validity		M (1x)	
2.6.1	<date_start>xs:date</date_start>	Start date of validity period including time zone		M (1x)	
2.6.2	<date_end>xs:date</date_end>	End date of validity period including time zone		C (0..1x)	
2.6e	</validity_period>				
2.7	<contents>xs:string (500)</contents>	Additional information in local language		C (0..1x)	
2.8	<reason_code>nts:reason_code_enum</reason_code>	Reason / justification of the notice		C (0..1x)	
2.9s	<communication>	Communication channel information		C (0..Nx)	
2.9.1	<reporting_code>nts:reporting_code_enum</reporting_code>	Reporting regime (information, or duty to report)		M (1x)	5
2.9.2	<communication_code>nts:communication_code_enum </communication_code>	Communication code (telephone, VHF etc.)		M (1x)	5

2.9.3	<number>xs:string (128)</number>	Telephone, VHF number (including callsign), e-mail address, URL or teletext		C (0..1x)	
2.9.4	<label>xs:string (256)</label>	Name of the attachment or additional information		C (0..1x)	
2.9.5	<remark>xs:string (1024)</remark>	Additional remarks concerning the communication		C (0..1x)	
2.9e	</communication>				
2.10s	<ftm_limitation_group>	FTM limitation group must contain at least one network_part or object		M (1..Nx)	
2.10.1s	<network_part>	An unambiguous part on the network delimited by two points		C (0..Nx)	2
2.10.1.1s	<geo_location_from>	Type of geographical object - start of network part		M (1x)	5, 7
2.10.1.1.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
2.10.1.1.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the start of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
2.10.1.1.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
2.10.1.1.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
2.10.1.1.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
2.10.1.1.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
2.10.1.1.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
2.10.1.1.1.7s	<coordinate>	Coordinate		M (1x)	
2.10.1.1.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
2.10.1.1.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
2.10.1.1.1.7s	</coordinate>				
2.10.1.1.1e	</location>				
2.10.1.1.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	

2.10.1.1.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
2.10.1.1.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
2.10.1.1.2e	</localisation_name>				
2.10.1.1e	</geo_location_from>				
2.10.1.2s	<geo_location_to>	Type of geographical object - end of network part		M (1x)	5, 7
2.10.1.2.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
2.10.1.2.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the end of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
2.10.1.2.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
2.10.1.2.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
2.10.1.2.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
2.10.1.2.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
2.10.1.2.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
2.10.1.2.1.7s	<coordinate>	Coordinate		M (1x)	
2.10.1.2.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
2.10.1.2.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
2.10.1.2.1.7e	</coordinate>				
2.10.1.2.1e	</location>				
2.10.1.2.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	
2.10.1.2.2.1	<un_location_name language=nts:language_code_enum> xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
2.10.1.2.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5

2.10.1.2.2e	</localisation_name>				
2.10.1.2e	</geo_location_to>				
2.10.1.3	<fairway_name language=nts:language_code_enum>xs:string (256)</fairway_name>	Waterway name	Optional attribute - language	M (1..Nx)	
2.10.1.4	<route_name language=nts:language_code_enum>xs:string (256)</route_name>	Route name	Optional attribute - language	C (0..Nx)	
2.10.1.5	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
2.10.1.6	<geographic_impact>xs:string</geographic_impact>	Geographical impact via coordinates in WKT (Well-Known-Text) format		C (0..1x)	
2.10.1e	</network_part>				
2.10.2s	<object>	Object section		C (0..Nx)	2
2.10.2.1s	<geo_location>	Type of geographical object		M (1x)	5
2.10.2.1.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
2.10.2.1.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the object. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
2.10.2.1.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
2.10.2.1.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
2.10.2.1.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
2.10.2.1.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
2.10.2.1.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
2.10.2.1.1.7s	<coordinate>	Coordinate		M (1x)	
2.10.2.1.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
2.10.2.1.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
2.10.2.1.1.7e	</coordinate>				
2.10.2.1.1e	</location>				
2.10.2.1.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	

2.10.2.1.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
2.10.2.1.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
2.10.2.1.2e	</localisation_name>				
2.10.2.1e	</geo_location>				
2.10.2.2	<position_code>nts:position_code_enum</position_code>	Position of the object related to the fairway		C (0..1x)	
2.10.2.3	<fairway_name language=nts:language_code_enum>xs:string (256)</fairway_name>	Waterway name	Optional attribute - language	M (1..Nx)	
2.10.2.4	<route_name language=nts:language_code_enum>xs:string (256)</route_name>	Route name	Optional attribute - language	C (0..Nx)	
2.10.2.5	<geographic_impact>xs:string</geographic_impact>	Geographical impact via coordinates in WKT (Well-Known-Text) format		C (0..1x)	
2.10.2e	</object>				
2.10.3s	<limitation_group>	Group of limitations and periods for Fairways and Objects		C (0..Nx)	
2.10.3.1s	<limitation>	Fairway section or object limitations		M (1..Nx)	5
2.10.3.1.1	<limitation_code>nts:limitation_code_enum</limitation_code>	Kind of limitation		M (1x)	
2.10.3.1.2	<position_code>nts:position_code_enum</position_code>	Describes the position of the limitation related to the fairway		C (0..1x)	
2.10.3.1.3	<value dimension_type=nts:dimension_type_code_enum>xs:float</value>	Value of limitation (i.e. max draught)	Optional attribute - dimension_type for the limitation 'Permissible dimension'	C (0..4x)	
2.10.3.1.4	<unit>nts:unit_enum</unit>	Unit of the value of the limitation (cm, m^3/s, h, km/h, kW, m/s, mm/h, °C)	Unit has to be provided when a value is provided.	C (0..1x)	
2.10.3.1.5	<reference_code>nts:reference_code_enum</reference_code>	Value reference		C (0..1x)	
2.10.3.1.6	<indication_code>nts:indication_code_enum</indication_code>	Minimum or maximum or reduced by		C (0..1x)	
2.10.3.1.7s	<target_group>	Target group information		C (0..Nx)	
2.10.3.1.7.1	<target_group_code>nts:target_group_code_enum</target_group_code>	Target group (vessel type)		M (1x)	5
2.10.3.1.7.2	<direction_code>nts:direction_code_enum</direction_code>	Upstream or downstream traffic, or both		M (1x)	5
2.10.3.1.7e	</target_group>				
2.10.3.1e	</limitation>				
2.10.3.2s	<limitation_period>	Limitation periods / intervals		C (0..Nx)	

2.10.3.2.1	<date_start>xs:date</date_start>	Start date of limitation period including time zone		M (1x)	5
2.10.3.2.2	<date_end>xs:date</date_end>	End date of limitation period including time zone		C (0..1x)	
2.10.3.2.3	<time_start>xs:time</time_start>	Start time of limitation period without time zone		C (0..1x)	
2.10.3.2.4	<time_end>xs:time</time_end>	End time of limitation period without time zone		C (0..1x)	
2.10.3.2.5	<interval_code>nts:interval_code_enum</interval_code>	Interval for limitation		M (1x)	
2.10.3.2.6	<withdrawn_time>xs:dateTime</withdrawn_time>	Date and time of withdrawal including time zone		C (0..1x)	
2.10.3.2e	</limitation_period>				
2.10.3e	</limitation_group>				
2.10e	</ftm_limitation_group>				
2e	</ftm>				

3s	<wrm>	Water related section		C (1..Nx)	1
3.1	<internal_id>xs:string (64)</internal_id>	Internal ID		C (0..1x)	
3.2s	<nts_number>	NtS number; optional for WRM		C (0..1x)	
3.2.1	<organisation>xs:string (64)</organisation>	Name of the publishing organisation (NtS Provider)		M (1x)	5
3.2.2	<year>xs:gYear (1900-9999)</year>	Year of first issuing of the notice		M (1x)	5
3.2.3	<number>xs:integer (0-99999999)</number>	Number of the notice (per year, starting with: 1, 0 shall not be used for published notices)		M (1x)	5
3.2.4	<serial_number>xs:integer (0-99)</serial_number>	Serial number of notice (replacements and withdrawals), original notice: 0		M (1x)	5
3.2e	</nts_number>				
3.3s	<validity_period>	Overall period of validity		M (1x)	
3.3.1	<date_start>xs:date</date_start>	Start date of validity period including time zone; has to be filled with present date (of publication) for WRM		M (1x)	
3.3.2	<date_end>xs:date</date_end>	End date of validity period including time zone; has to be filled with the day after publication for WRM		C (0..1x)	
3.3e	</validity_period>				
3.4s	<network_part>	An unambiguous part on the network delimited by two points	Network parts are applicable for least sounded depth and regime information in the WRM	C (0..1x)	2
3.4.1s	<geo_location_from>	Type of geographical object - start of network part		M (1x)	5, 7

3.4.1.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
3.4.1.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the start of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
3.4.1.1.2	<type_code>nts:type_code_enum </type_code>	Type of geographical object		M (1x)	
3.4.1.1.3	<un_locode>xs:string (5) </un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
3.4.1.1.4	<fairway_section_code>xs:string (5) </fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
3.4.1.1.5	<object_reference_code>xs:string (5) </object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
3.4.1.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
3.4.1.1.7s	<coordinate>	Coordinate		M (1x)	
3.4.1.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
3.4.1.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
3.4.1.1.7e	</coordinate>				
3.4.1.1e	</location>				
3.4.1.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	
3.4.1.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
3.4.1.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
3.4.1.2e	</localisation_name>				
3.4.1e	</geo_location_from>				
3.4.2s	<geo_location_to>	Type of geographical object - end of network part		M (1x)	5, 7
3.4.2.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	

3.4.2.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the end of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
3.4.2.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
3.4.2.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
3.4.2.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
3.4.2.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
3.4.2.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
3.4.2.1.7s	<coordinate>	Coordinate		M (1x)	
3.4.2.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
3.4.2.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
3.4.2.1.7e	</coordinate>				
3.4.2.1e	</location>				
3.4.2.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	
3.4.2.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
3.4.2.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
3.4.2.2e	</localisation_name>				
3.4.2e	</geo_location_to>				
3.4.3	<fairway_name language=nts:language_code_enum>xs:string (256)</fairway_name>	Waterway name	Optional attribute - language	M (1..Nx)	
3.4.4	<route_name language=nts:language_code_enum>xs:string (256)</route_name>	Route name	Optional attribute - language	C (0..Nx)	
3.4.5	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
3.4.6	<geographic_impact>xs:string</geographic_impact>	Geographical impact via coordinates in WKT (Well-Known-Text) format		C (0..1x)	

3.4e	</network_part>				
3.5s	<object>	Object section	e.g. gauge station (for provision of water levels)	C (0..1x)	2
3.5.1s	<geo_location>	Type of geographical object		M (1x)	5
3.5.1.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
3.5.1.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the object. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
3.5.1.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
3.5.1.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
3.5.1.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
3.5.1.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
3.5.1.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
3.5.1.1.7s	<coordinate>	Coordinate		M (1x)	
3.5.1.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
3.5.1.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
3.5.1.1.7e	</coordinate>				
3.5.1.1e	</location>				
3.5.1.2s	<localisation_name>	Local and translated localisation names of the geographical object		M (1x)	
3.5.1.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
3.5.1.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	
3.5.1.2e	</localisation_name>				
3.5.1e	</geo_location>				
3.5.2	<position_code>nts:position_code_enum</position_code>	Position of the object related to the fairway		C (0..1x)	

3.5.3	<fairway_name language=nts:language_code_enum>xs:string (256)</fairway_name>	Waterway name	Optional attribute - language	M (1..Nx)	
3.5.4	<route_name language=nts:language_code_enum>xs:string (256)</route_name>	Route name	Optional attribute - language	C (0..Nx)	
3.5.5	<geographic_impact>xs:string</geographic_impact>	Geographical impact via coordinates in WKT (Well-Known-Text) format		C (0..1x)	
3.5e	</object>				
3.6	<reference_code>nts:reference_code_enum</reference_code>	Value reference (measurement reference)		C (0..1x)	6
3.7s	<measure>	Measurements (real measurements or forecasts)		M (1..Nx)	
3.7.1	<forecast>xs:boolean</forecast>	Forecast (true) or real measurement (false)		M (1x)	
3.7.2	<measure_code>nts:measure_code_enum</measure_code>	Kind of water related information		M (1x)	
3.7.3	<value>xs:float</value>	Forecast or real measured value		C (0..1x)	8
3.7.4	<value_min>xs:float</value_min>	Lowest value of confidence interval		C (0..1x)	
3.7.5	<value_min>xs:float</value_min>	Highest value of confidence interval		C (0..1x)	
3.7.6	<unit>nts:unit_enum</unit>	Unit of the water related value (cm, m^3/s)	Unit has to be provided when a value is provided.	C (0..1x)	
3.7.7	<barrage_code>nts:barrage_code_enum</barrage_code>	Barrage status		C (0..1x)	9
3.7.8	<regime_code>nts:regime_code_enum</regime_code>	Regime applicable		C (0..1x)	10
3.7.9	<measuredate>xs:dateTime</measuredate>	Date and Time of forecast or measurement value including time zone Format=yyyy-mm-ddThh:mm:ss+hh:mm		M (1x)	
3.7.10s	<difference>	Difference with comparative value		C (0..1x)	
3.7.10.1	<value_difference>xs:float</value_difference>	Difference with comparative value		M (1x)	5
3.7.10.2	<time_difference>xs:duration</time_difference>	Time difference to measuredate of comparative value		M (1x)	5
3.7.10e	</difference>				
3.7e	</measure>				
3e	</wrm>				

4s	<icem>	Ice related section		C (1..Nx)	1
4.1	<internal_id>xs:string (64)</internal_id>	Internal ID		C (0..1x)	
4.2s	<nts_number>	NtS number		M (1x)	
4.2.1	<organisation>xs:string (64)</organisation>	Name of the publishing organisation (NtS Provider)		M (1x)	

4.2.2	<year>xs:gYear (1900-9999)</year>	Year of first issuing of the notice		M (1x)	
4.2.3	<number>xs:integer (0-99999999)</number>	Number of the notice (per year, starting with: 1, 0 shall not be used for published notices)		M (1x)	
4.2.4	<serial_number>xs:integer (0-99)</serial_number>	Serial number of notice (replacements and withdrawals), original notice: 0		M (1x)	
4.2e	</nts_number>				
4.3s	<validity_period>	Overall period of validity		M (1x)	
4.3.1	<date_start>xs:date</date_start>	Start date of validity period including time zone	To be filled with present date (date_issue)	M (1x)	
4.3.2	<date_end>xs:date</date_end>	End date of validity period including time zone	To be pre-filled with the day after publication	C (0..1x)	
4.3e	</validity_period>				
4.4s	<network_part>	An unambiguous part on the network delimited by two points		M (1x)	
4.4.1s	<geo_location_from>	Type of geographical object - start of network part		M (1x)	5, 7
4.4.1.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
4.4.1.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the start of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
4.4.1.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
4.4.1.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
4.4.1.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
4.4.1.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
4.4.1.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
4.4.1.1.7s	<coordinate>	Coordinate		M (1x)	
4.4.1.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
4.4.1.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
4.4.1.1.7e	</coordinate>				

4.4.1.1e	</location>				
4.4.1.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	
4.4.1.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
4.4.1.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
4.4.1.2e	</localisation_name>				
4.4.1e	</geo_location_from>				
4.4.2s	<geo_location_to>	Type of geographical object - end of network part		M (1x)	5, 7
4.4.2.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
4.4.2.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the end of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
4.4.2.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
4.4.2.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
4.4.2.1.4	<fairway_section_code>xs:string (5) </fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
4.4.2.1.5	<object_reference_code>xs:string (5) </object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
4.4.2.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
4.4.2.1.7s	<coordinate>	Coordinate		M (1x)	
4.4.2.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
4.4.2.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
4.4.2.1.7e	</coordinate>				
4.4.2.1e	</location>				
4.4.2.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	

4.4.2.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
4.4.2.2.2	<object_name language=nts:language_code_enum> xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
4.4.2.2e	</localisation_name>				
4.4.2e	</geo_location_to>				
4.4.3	<fairway_name language=nts:language_code_enum>xs:string (256)</fairway_name>	Waterway name	Optional attribute - language	M (1..Nx)	
4.4.4	<route_name language=nts:language_code_enum>xs:string (256)</route_name>	Route name	Optional attribute - language	C (0..Nx)	
4.4.5	<type_code> nts:type_code_enum </type_code>	Type of geographical object		M (1x)	
4.4.6	<geographic_impact> xs:string </geographic_impact>	Geographical impact via coordinates in WKT (Well-Known-Text) format		C (0..1x)	
4.4e	</network_part>				
4.5s	<ice_condition>	Ice conditions	At least one of the following code lists needs to be provided	M (1..Nx)	
4.5.1	<measuredate>xs:dateTime</measuredate>	Date and Time of forecast or measurement including time zone Format=yyyy-mm-ddThh:mm:ss+hh:mm		M (1x)	
4.5.2	<ice_condition_code> nts:ice_condition_code_enum </ice_condition_code>	Condition code		C (0..1x)	4
4.5.3	<ice_accessibility_code> nts:ice_accessibility_code_enum </ice_accessibility_code>	Accessibility code		C (0..1x)	4
4.5.4	<ice_classification_code> nts:ice_classification_code_enum </ice_classification_code>	Classification code		C (0..1x)	4
4.5.5	<ice_situation_code> nts:ice_situation_code_enum </ice_situation_code>	Situation code	Should always be provided	C (0..1x)	4
4.5e	</ice_condition>				
4e	</icem>				

5s	<werm>	Weather related section		C (1..Nx)	1
5.1	<internal_id>xs:string (64)</internal_id>	Internal ID		C (0..1x)	
5.2s	<nts_number>	NtS number		C (0..1x)	
5.2.1	<organisation>xs:string (64)</organisation>	Name of the publishing organisation (NtS Provider)		M (1x)	5

5.2.2	<year>xs:gYear (1900-9999)</year>	Year of first issuing of the notice		M (1x)	5
5.2.3	<number>xs:integer (0-99999999)</number>	Number of the notice (per year, starting with: 1, 0 shall not be used for published notices)		M (1x)	5
5.2.4	<serial_number>xs:integer (0-99)</serial_number>	Serial number of notice (replacements and withdrawals), original notice: 0		M (1x)	5
5.2e	</nts_number>				
5.3s	<validity_period>	Overall period of validity		M (1x)	11
5.3.1	<date_start>xs:date</date_start>	Start date of validity period including time zone	To be filled with present date (date_issue)	M (1x)	
5.3.2	<date_end>xs:date</date_end>	End date of validity period including time zone	To be filled with the day after publication	C (0..1x)	
5.3e	</validity_period>				
5.4s	<network_part>	An unambiguous part on the network delimited by two points		M (1x)	
5.4.1s	<geo_location_from>	Type of geographical object - start of network part		M (1x)	5, 7
5.4.1.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
5.4.1.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the start of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
5.4.1.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
5.4.1.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
5.4.1.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
5.4.1.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
5.4.1.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
5.4.1.1.7s	<coordinate>	Coordinate		M (1x)	
5.4.1.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
5.4.1.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
5.4.1.1.7e	</coordinate>				

5.4.1.1e	</location>				
5.4.1.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	
5.4.1.2.1	<un_location_name language=nts:language_code_enum> xs:string (256) </un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
5.4.1.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
5.4.1.2e	</localisation_name>				
5.4.1e	</geo_location_from>				
5.4.2s	<geo_location_to>	Type of geographical object - end of network part		M (1x)	5, 7
5.4.2.1s	<location>	Detailed information of geographical object - extracted from RIS Index		M (1x)	
5.4.2.1.1	<isrs_code>xs:string (20)</isrs_code>	ISRS Location Code of the end of network part. Unique identification of the geo object as defined in RIS Index encoding guide.		M (1x)	
5.4.2.1.2	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
5.4.2.1.3	<un_locode>xs:string (5)</un_locode>	UN Locode of geographical object - extracted from RIS Index		M (1x)	
5.4.2.1.4	<fairway_section_code>xs:string (5)</fairway_section_code>	Fairway section of geographical object - extracted from RIS Index		M (1x)	
5.4.2.1.5	<object_reference_code>xs:string (5)</object_reference_code>	Object Reference Code of geographical object - extracted from RIS Index		M (1x)	
5.4.2.1.6	<fairway_hectometre>xs:string (5)</fairway_hectometre>	Fairway hectometre of geographical object - extracted from RIS Index		M (1x)	
5.4.2.1.7s	<coordinate>	Coordinate		M (1x)	
5.4.2.1.7.1	<lat>xs:float</lat>	Latitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d]d.dddddd (latitude)		M (1x)	
5.4.2.1.7.2	<long>xs:float</long>	Longitude, encoded according to WGS 1984 (EPSG:4326) and presented in degrees with six decimals [d][d]d.dddddd (longitude)		M (1x)	
5.4.2.1.7e	</coordinate>				
5.4.2.1e	</location>				
5.4.2.2s	<localisation_name>	Local and translated localisation names of the geographical object		C (0..1x)	

5.4.2.2.1	<un_location_name language=nts:language_code_enum>xs:string (256)</un_location_name>	UN Location name of geographical object	Optional attribute - language	C (0..Nx)	
5.4.2.2.2	<object_name language=nts:language_code_enum>xs:string (256)</object_name>	Object name of geographical object	Optional attribute - language	M (1..Nx)	5
5.4.2.2e	</localisation_name>				
5.4.2e	</geo_location_to>				
5.4.3	<fairway_name language=nts:language_code_enum>xs:string (256)</fairway_name>	Waterway name	Optional attribute - language	M (1..Nx)	
5.4.4	<route_name language=nts:language_code_enum> xs:string (256) </route_name>	Route name	Optional attribute - language	C (0..Nx)	
5.4.5	<type_code>nts:type_code_enum</type_code>	Type of geographical object		M (1x)	
5.4.6	<geographic_impact>xs:string</geographic_impact>	Geographical impact via coordinates in WKT (Well-Known-Text) format		C (0..1x)	
5.4e	</network_part>				
5.5s	<weather_report>	Weather Report (1x or 2x)		M (1..2x)	
5.5.1	<measuredate>xs:dateTime</measuredate>	Date and time of forecast or measurement value including timezone Format=yyyy-mm-ddThh:mm:ss+hh:mm		M (1x)	
5.5.2	<forecast>xs:boolean</forecast>	Forecast (true) OR Actual report (false)		M (1x)	
5.5.3	<weather_class_code> nts:weather_class_code_enum </weather_class_code>	Classification of weather report		C (0..Nx)	3
5.5.4s	<weather_item/>	Weather items		C (0..Nx)	
5.5.4.1	<weather_item_code> nts:weather_item_code_enum </weather_item_code>	Weather item type (Wind, Wave etc)		M (1x)	5
5.5.4.2	<value_min>xs:float</value_min>	Actual or Minimum value		M (1x)	5
5.5.4.3	<value_max>xs:float</value_max>	Maximum value		C (0..1x)	
5.5.4.4	<value_gusts>xs:float</value_gusts>	Gusts value (Wind)		C (0..1x)	
5.5.4.5	<unit>nts:unit_enum</unit>	Unit of the value (cm, m^3/s, km/h, m/s, mm/h, °C)	Unit has to be provided when a value is provided.	C (0..1x)	
5.5.4.6	<weather_category_code>nts:weather_category_code_enum </weather_category_code>	Classification of wind report		C (0..1x)	
5.5.4.7	<direction_code_min>nts:weather_direction_code_enum </direction_code_min>	Direction of wind or wave		C (0..1x)	

5.5.4.8	<direction_code_max>nts:weather_direction_code_enum </direction_code_max>	Direction of wind or wave		C (0..1x)	
5.5.4e	</weather_item/>				
5.5e	</weather_report>				
5e	</werm>				
	</RIS_Message>				

2. Applicable Rules

1.	In one <RIS_Message> at least two sections have to be filled in:
—	the <identification> section (1),
—	one of the following sections:
—	<ftm> (fairway and traffic related messages) (2),
—	<wrm> (water related message) (3),
—	<icem> (ice message) (4),
—	<werm> (weather related message) (5).
2.	At least one of the <network_part> or <object> has to be given in the <ftm_limitation_group> and in <wrm>.
3.	A combinations of <weather_class_code> tags (5.5.3) in section <weather_report> can be given.
4.	In group 4.5 (<ice_condition>) at least one of the conditional elements 4.5.2 to 4.5.5 have to be given.
5.	If a conditional group contains mandatory subgroups or elements these will only be mandatory if the group on the higher level is applied.
6.	Element <reference_code> is only mandatory for "WAL" (water level) in <wrm> (3.6).
7.	A <network_part> is defined by the begin (<geo_location_from>) and end (<geo_location_from>) ISRS Location Codes and coordinates (2 ISRS Location Codes and 2 sets of coordinates).
8.	If there is a measurement the elements <value> (3.7.3) or <value_min> (3.7.4) and <value_max> (3.7.5) is/are mandatory if <measure_code> (3.7.2) is either "DIS", "VER", "LSD" or "WAL". In case there is no measurement (and a message should be sent anyhow) the value elements shall be omitted.
9.	Element <barrage_code> (3.7.7) is mandatory if <measure code> (3.7.2) is "BAR".
10.	Element <regime_code> (3.7.8) is mandatory if <measure code> (3.7.2) is "REG".
11.	Forecasts for more than one <validity_period> (5.3) require individual <werm> messages.

3. XSD file (source code)

Appendix 1 Nts, XSD file (source code) (Distributed separately)

ANNEX 20
NOTICES TO SKIPPERS WEB SERVICE SPECIFICATION (WSDL)

Appendix 1 Nts, WSDL (Distributed separately)

ANNEX 21
NOTICES TO SKIPPERS REFERENCE TABLES (TAGS)

Appendix 1 Notices to Skippers reference tables (Tags) (Distributed separately)