PORT INFORMATION MANUAL

Version 1.4.5

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Document Revision history

Version 1.0	**April 2019**	**Initial Version Created**
Version 1.3.1	**June 2019**	**Updated following initial comments.**
Version 1.4.4	**August 2019**	**Updated following Gothenburg meeting and feedback**
Version 1.4.5	**December 2019**	**Updated following input NP100, IMO GIA and WPCAP**

Foreword

Dear Reader,

This Port Information Manual (PIM) has been written for all parties with an interest in improving the data of ports, terminals and their berths. Ports can receive up to 55000 different ships and the global shipping industry operates in a network of up to 9000 different ports. In order to achieve optimization of both ports and shipping a minimum set of standards to connect all parties is needed. For environmental and commercial reasons both ports and shipping get more and more a sense of urgency to start using the right standards. Timing is also important as once data with non-compliant standards is implemented, it is more difficult to connect to the nautical or supply chain industry.

It is therefore important to establish a common understanding of a minimum set of data and correct standards. Ports and shipping lines have been working together since 2014 in the International Taskforce Port Call Optimization project. This collaboration has resulted in a clear requirement for a trade and port agnostic business process with a well-defined minimum scope of data required for all trades (e.g. container, bulk, tanker) and all ports.

A growing group of IMO NGO's recognize that as an absolute minimum the purpose of sharing port data should be to cover berth to berth navigation data as per IMO resolution A893(21). The International Hydrographic Organization (IHO) is the global authority to advise on existing safe navigation standards. The same group of stakeholders recognize that, as a minimum, the purpose of sharing port data should be to cover sustainable port to port and end to end supply chain logistics as per the Paris Agreement and the IMO ambition to reduce emissions both ashore and at sea. For supply chain standards GS1 is the authority to advise on these existing standards.

Using standards of robust standardization bodies with proven track records is important to ensure a return on investment when investing resources to apply international standards to existing databases.

Both standards are currently being rolled out by leading container and tanker companies globally.

This edition has been aligned with the Mariners Handbook (NP100) containing the same definitions. NP100 is a publication which sits on the shelf of most SOLAS vessels and provides guidance to seafaring and shore personnel alike. Both editions have been aligned with the publication of the Just In Time Arrival Guide of the IMO Global Industry Alliance and recognizes that data standardization is a pre-requisite to enable Just In Time Arrivals of ships as it requires frequent exchange of data.

Moving forward step by step as an industry, using existing, accepted, open, and maintained industry standards, seems to be an approach which is very welcome and much needed.

Many thanks to:

- Standard partners: UK Hydrographic Office, GS1 and Jonathan Pritchard as consultant
- Industry partners in shipping: Shell, Vopak Agents, Maersk, CMA CGM, MSC, Inchcape Shipping Services, Oldendorff Carriers
- Industry partners in ports: Ports of Gothenburg, Rotterdam, Algeciras, Busan, Singapore, Houston, Ningbo Zhoushan, Tanger Med, Auckland
- Endorsers: IHMA, IAPH, BIMCO, ICS, INTERCARGO, IHO, IALA, Marine Traffic, UK P&I, Lloyds List Intelligence, Nautical Institute, Green Award, STM

On behalf of the International Taskforce Port Call Optimization,

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1. The need to improve port information

1.1. Introduction

An improvement of port information normally requires an investment decision. Such a decision needs to be supported by arguments justifying a return on investment or improvement in performance. As every port is different, the business case per port will be different.

The subjects described in this section apply to some degree to every port and suggest potential areas of investment in port development which allow for an increase in both efficiency and safety.

1.2. Setting the scene

In 2018 the last implementation phase of the International Maritime Organization (IMO) Regulation 19, Chapter V was completed, resulting in Electronic Navigational Charts (ENC's) in use on board of most commercial SOLAS vessels. Although the systems used to navigate SOLAS vessels have progressed enormously in the last 20 years and navigational practice has developed and adopted digital methods, the data content within an ENC is fundamentally the same as within a paper chart. This still leaves mariners with large information gaps which have been present for many years during port entry or exit.

In the same timeframe the pressure to conform to environmental regulations has increased with the IMO adopting a strategy to reduce by at least 50% the greenhouse gas (GHG) emissions from the global shipping sector by 2050.

1.3. Ports as a node in the supply chain

A port is a crucial node in the supply chain. Commercially, a port should be able to connect to the supply chain of the customer to create end to end visibility of the movement of goods and the supporting infrastructure requirements. This includes data connectivity with ships and their shoreside related offices (e.g. fleet operations centre and trading floors). Commercially well over 1.500 ports operate a network with interfaces to hinterland inter-model transportation such as barges, trains and road transportation networks. To achieve this delivery of real time data which meets both nautical and supply chain standards is essential.

Data containing vessel positions is now widely and publicly available in real-time, however information about the vessels current and future activities are obscured and do not adhere to any global standards. Communication between the ship and the port is a however frequently a closed system, which can be improved.

1.4. Port efficiency

As ports try and become more efficient the easiest route to expansion is to utilise currents assets better, either in the form of allowing bigger vessels, or allowing vessels to arrive with a deeper draught, or to allow a more efficient exchange of ships at the berth.

Utilising human resources in a better fashion by automation of e.g. vessel – berth compatibility checks or better data management is another way of making the port more efficient.

1.5. Most sustainable port

Enabling “Just In Time Arrival” is key to the development of efficient shipping and cultivates sustainability by enabling more accurate steaming. On top of this it improves the planning of connected hinterland modalities like trains, barges and trucks.

1.6. Safest port

Most accidents happen in the approaches, anchorages or harbour basins of ports, as this is by far the busiest time for the mariner and vessel. The upfront exchange of nautical port information, routing, passage plans and weather information is an important risk mitigation strategy. Improvement and rationalisation of port information will free up the mariner for more essential tasks during the defined period. Today the biggest requirement of mariners, charterers or port databases is to have a common understanding of the position of the terminal and which berths are connected to that terminal. This is necessary to make an efficient and effective assessment of whether it is safe to go there. This information differs today from source to source. The upfront exchange of nautical port information, port passage plans and weather information is an important risk mitigating measure.

1.7. Legal position

Together with the legal departments of hydrographic offices, the risk of displaying data, versus the risk of not displaying data but being forced to do so after an incident, has been assessed. Based on their experience it was concluded that sharing data shows due diligence and makes the legal position of the port much stronger if an accident has happened.

Currently, when chartered vessels are involved in an incident, the clauses in the charter party can have severe consequences for the reputation of the port. In most charter parties there is a “safe port, safe berth, always afloat clause”. Meaning that a charterer may send a vessel only to a safe port and to a berth that is safe and where it can always lie afloat. In other words, the Charterer has to warrant to the Owner the safety of the place to which he or she intends to send the ship.

Based on a series of court judgements all over the world a widely accepted legal definition of a(n) (un)safe port is the following:

“A port will not be safe unless, in the relevant period of time, the particular ship can reach it, use it and return from it without, in the absence of some abnormal occurrence, being exposed to danger which cannot be avoided by good navigation and seamanship.”

The key element in this definition (and case law) is that the set-up of a port, its structure, should be okay. As to what could be regarded as an abnormal occurrence, something similar applies. Just as an example: a severe NW gale might not be an abnormal occurrence, even if such a gale would occur, on average, less than in say each two years, because such a gale is a part of the local weather system. However, a hurricane might not and may be regarded as abnormal.
The foregoing means that a charterer at the moment that he or she selects a vessel for the intended voyage(s) (i.e. prior to the conclusion of a charter party) should obtain information on the following:

- Depths and dimensions
- Specific conditions that may be relevant for the intended call
- Availability of nautical services
- Availability of information when the vessel is entering port

It has to be underlined that the above four requirements are, also according to case law, part of the general ‘safe port’ requirement. Following an incident, if a court rules that required information was not available, the port might be declared as “unsafe”, which has a big impact on the reputation of the port and its business. Because of the safe port/berth warranty that a charterer has to give to the ship owner under a charter party, a *charterer must select a load port / terminal and discharge port / terminal for the intended voyage(s) which are able to comply with these requirements.*

2. The need for a step by step approach

2.1. Introduction

How and where to start with digitization of port data might seem difficult. This publication recommends a step by step approach, doing the basics first and taking simple steps by focusing on individual areas.

2.2. Focus on vessel movements

A port is a node in the supply chain As most cargo is transhipped to other places, many modes of transportation come together in ports. Currently, the planning of most hinterland modal facilities depend on the planning of deep sea vessel movements, therefore it makes sense to focus first on this aspect of port operations.

2.3. Focus on geographical extent

The scope of port data for the deep sea vessel is restricted to operations between the Pilot Boarding Place and the fender line of the Berth including anchorage areas. Prior to the Pilot Boarding Place this data is normally the domain of the national hydrographic office, and beyond the fender line of the Berth this data is normally the domain of the Terminal.

2.4. Focus on data content

Based on a “compliancy first” approach, the scope of the data considered in this publication is based on BIMCO contract clauses (e.g. safe port, safe berth) and IMO resolutions (e.g. berth to berth passage planning):

1. When is the berth position safe
2. When is the port passage safe
3. When is the berth position available
4. When is the port passage available

2.5. Scope on data development

Each of the following geographic areas are defined in this guide After the definitions of the areas and their components the data content for each of them is defined:

- Identification of areas and lines: port, terminal and berth
- Identification of way points: pilot boarding place and berth position
- Identification of sections from pilot boarding place to berth position: fairway, turning basin, basin, berth pocket
- Data field definitions for port, terminal and berth
- Data field definitions for pilot boarding place and berth position
- Data field definitions for fairway, turning basin, basin and berth pocket

The hierarchical relationship between the geographic areas and lines comprising a port is illustrated in the following diagram:

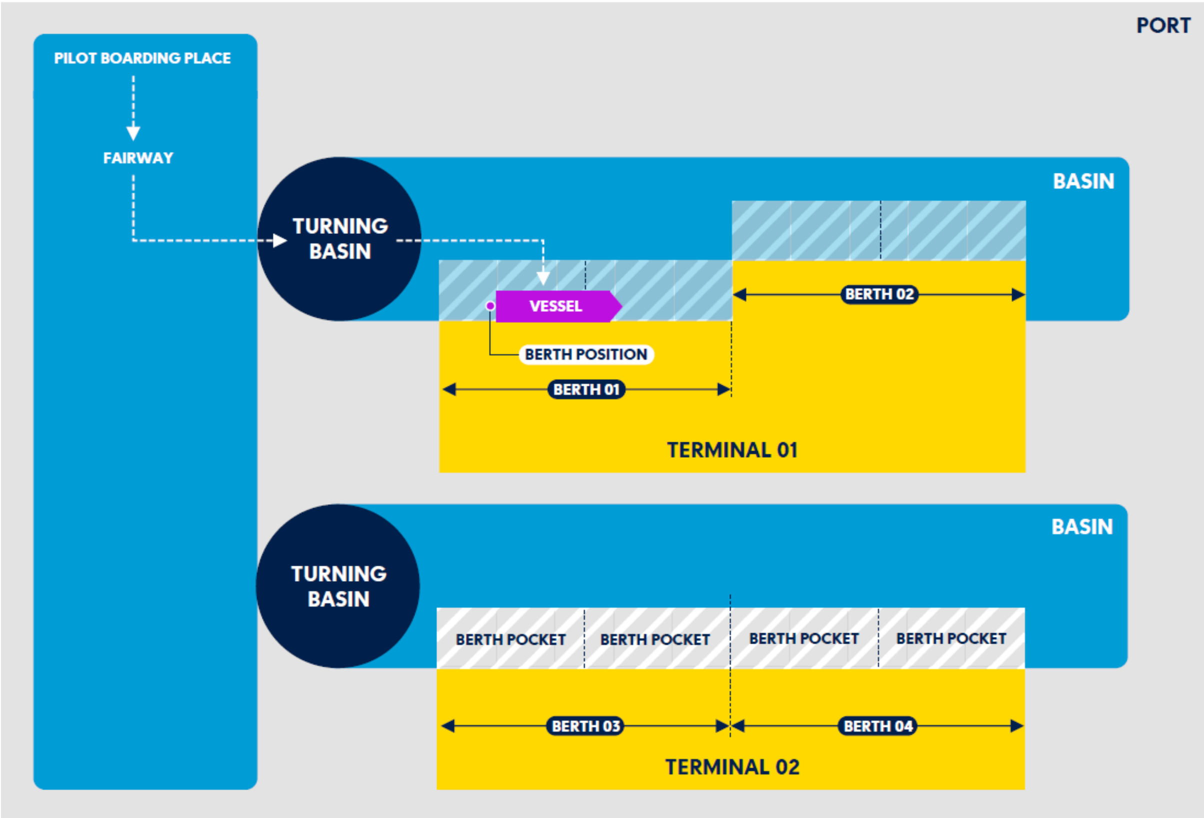


Figure 1: The Hierarchy of areas from Port to Berth. Note: some terminals may also be connected to the same berth (e.g. tanker terminals)

2.6. Data ownership and data sharing

Introduction

The ability of port authorities to organize data ownership and data sharing varies per port.
First the power of the port authority to organize data ownership and sharing depends on the power of the port authority in general. Ports may be controlled by:

- Local community or state
- National or federal authority
- A mix of local / state community and national / federal authority
- Private parties

Local community or state
There might be more focus on the local community or state needs and therefore may have more troubles to implement measures for efficient shipping. Certainly if the income generated by the port is dictated by income from real estate versus income from shipping. There might be better communication as the distance is shorter and the relationship more tight.

National or federal authority
There might be more focus on the national needs of shipping, and therefore may have less troubles to implement measures for efficient shipping. Certainly if the national or federal interest is large, e.g. if a country is an island or has no own natural resources like oil and gas. However, due to the larger distance between port and national authority the communication might be more difficult

A mix of local / state community and national / federal authority
There might be a balance between the pro’s and con’s as described before

Private parties
Normally only remote ports, with only 1 or 2 terminals, are controlled by private parties.
Data sharing and data ownership is in such instances normally no problem due to the limited size of the port, and the direct relationship between port authority, terminal, and service providers.

Second it depends on whether nautical and vessel services are private or public.
Nautical services: data sharing with e.g. tugs, pilots or linesmen is much more easy if these parties are employed by the port authority (as a public service), or if these parties are independent private parties.
Vessel services: data sharing with e.g. terminals is much more easy if the port is a public service or provide service port (the port operates the terminals) versus a landlord or tool port (the port leases land or equipment out to terminals). Other vessel services, e.g. bunker operators or waste collector, might be controlled through e.g. “License to Operate” or assignment as “Internal Operator.
At last: the data owner may be different per body of water and per data type.

For master data: the data owner of e.g. depth data may be different for the deep water route, the fairway, the harbor basin or the berth pocket. It can be e.g. the national hydrographic office, the national authority for water ways, the coast guard, the port authority or a private party.
For event data: the data owner of e.g. Requested Time of Arrival Pilot Boarding Place might be the local port authority, the national VTS, or agreed by ship agent together with pilots and tugs. It may even not be clear who accepts the responsibility of the planning at the pilot boarding place.

2.7. Data quality

Today there is not data quality system in place yet for port information. Looking at existing data quality systems (e.g. ISO 9001) and recommendations of IHO is the way forward.

3. Areas and lines

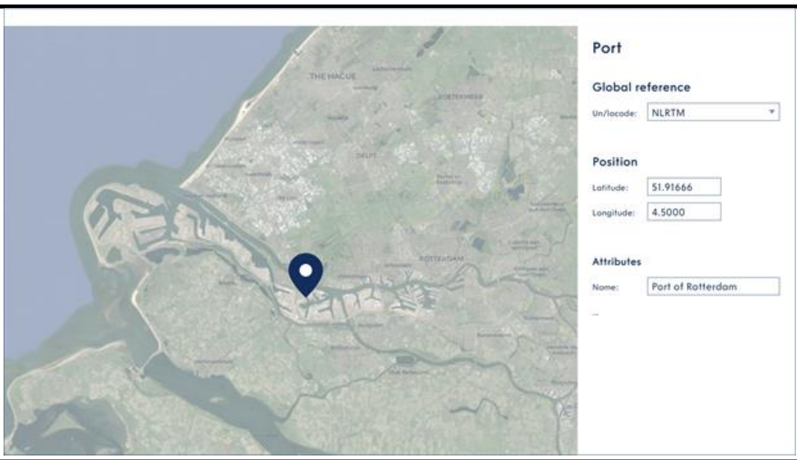
3.1. Introduction

This section describes important entities representing the area to which area the ship is going and features of those areas and lines which are represented linearly.

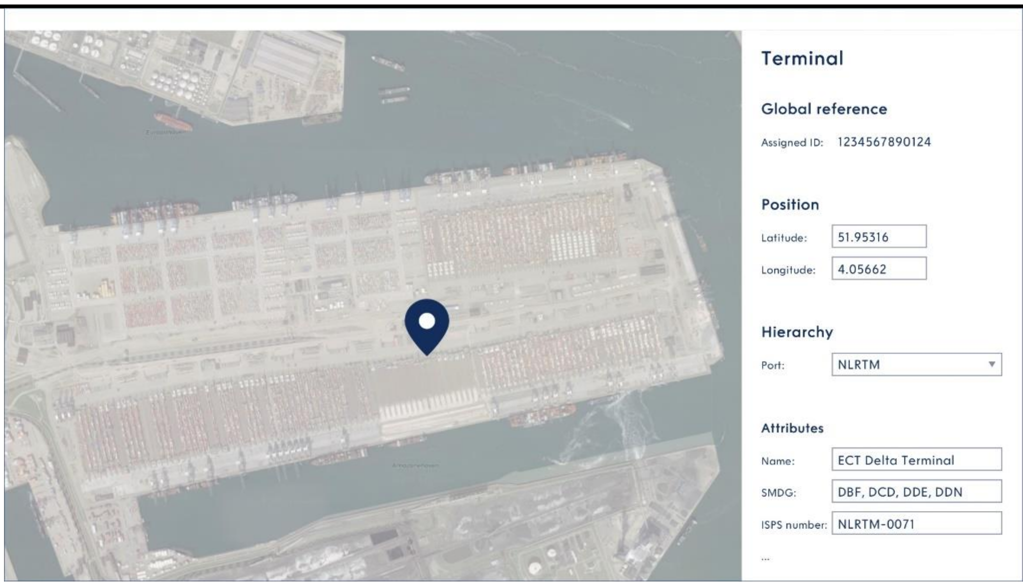
A vessel receives many locations during its port approach. In order of granularity the most important area and line features for the vessel’s port passage plan are:

1. Port
2. Terminal
3. Berth

3.2. Port

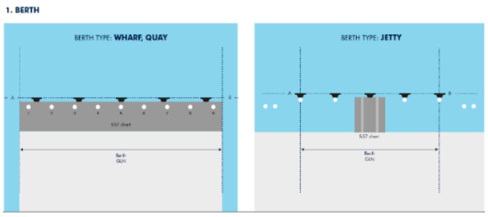
<table>
<tr><td>Name</td><td colspan="2">Port</td><td>Source</td></tr>
<tr><td>Definition</td><td colspan="2">Any port, terminal, offshore terminal, ship and repair yard or roadstead which is normally used for the loading, unloading, repair and anchoring of ships, or any other place at which a ship can call.
The word “port” also embraces geographically , a city or borough which serves shipping interests. Other national standards and frameworks may describe such administrative entities already.</td><td>NP100
IHO S-32</td></tr>
<tr><td>Location</td><td colspan="3">A single position which represents the port as a whole. Generally a centre of gravity position is chosen to represent the port’s location. This is aligned with the airline industry.</td></tr>
<tr><td colspan="2">Indirect reference</td><td colspan="2">Direct reference</td></tr>
<tr><td colspan="2">UN/LOCODE
E.g.: NLRTM for Port of Rotterdam</td><td colspan="2">Datum: WGS 84. Held in decimal degrees to a defined precision, (minus to indicate South and West)
E.g.: 51.9166666, 4.5000000 for Port of Rotterdam</td></tr>
<tr><td>Attribute(s)</td><td colspan="3">1. Name of the port, e.g.: Port of Rotterdam
2. General port data - see chapter 6</td></tr>
<tr><td>Example image</td><td colspan="3">
</td></tr>
</table>

3.3. Terminal

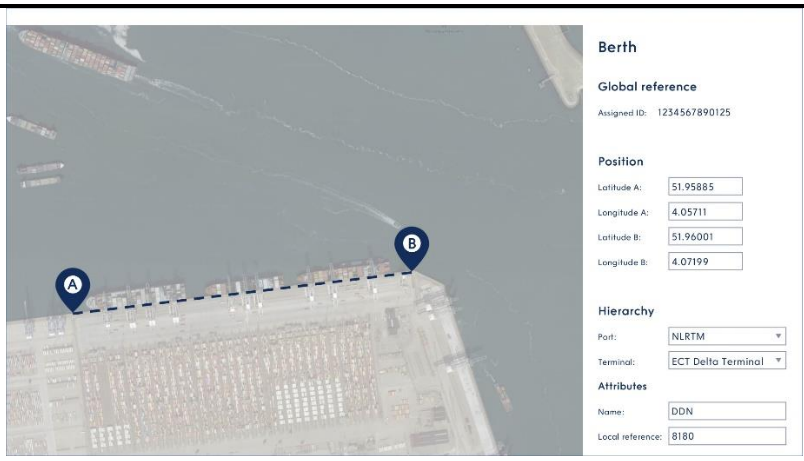
<table>
<tr><td>Name</td><td colspan="2">Terminal</td><td>Source</td></tr>
<tr><td>Definition</td><td colspan="2">A number of berths grouped together and provided with facilities for handling a particular form of cargo, e.g. oil terminal, container terminal</td><td>IHO S-32</td></tr>
<tr><td>Location</td><td colspan="3">A single position which represents the terminal as a whole. Generally a centre of gravity position is chosen to represent the terminal’s location.</td></tr>
<tr><td colspan="2">Indirect reference</td><td colspan="2">Direct reference</td></tr>
<tr><td colspan="2">Global Location Number (GLN) (ISO/IEC 6523)
E.g. 1234567890124 for ECT Delta Terminal</td><td colspan="2">Datum: WGS 84. Held in decimal degrees to a defined precision, (minus to indicate South and West)
E.g.: 51.95316, 4.05662 for ECT Delta Terminal</td></tr>
<tr><td>Attribute(s)</td><td colspan="3">1. Name of the terminal
2. ISPS number
3. SMDG code (for container / ro-ro sector only)
4. General terminal data – see chapter 6</td></tr>
<tr><td>Example Image</td><td colspan="3">
</td></tr>
</table>

3.4. Berth

Name	Berth	Source
Definition	The space assigned to or taken up by a vessel when anchored or when lying alongside a wharf, jetty, or other structure	NP100
Location	Quay walls, berth or jetty: The berth's extent is between its two extremities as shown in the diagram below, measured in a straight line, indicated by A and B. Every point should be named and/or numbered. Orientation is not important. Letters are normally used over numbers.	
Indirect reference	Direct reference	
Global Location Number (GLN) (ISO/IEC 6523) E.g.: 1234567890125 for ECT Delta Terminal DDN	Datum: WGS 84. Held in decimal degrees to a defined precision, (minus to indicate South and West) E.g.: A: 51.95885, 4.05711 B: 51.96001, 4.07199 For ECT Delta Terminal DDN	
Attribute(s)	1. Name of the berth 2. Local reference 3. General berth data – see chapter 6	



Example image



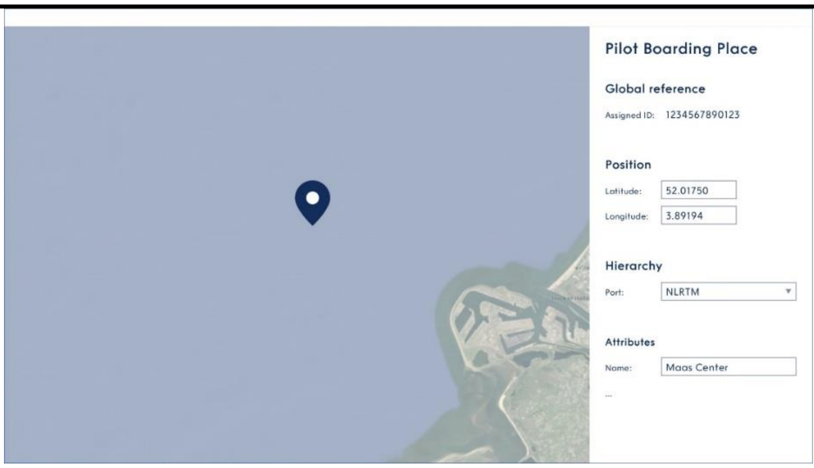
4. Waypoints

4.1. Introduction

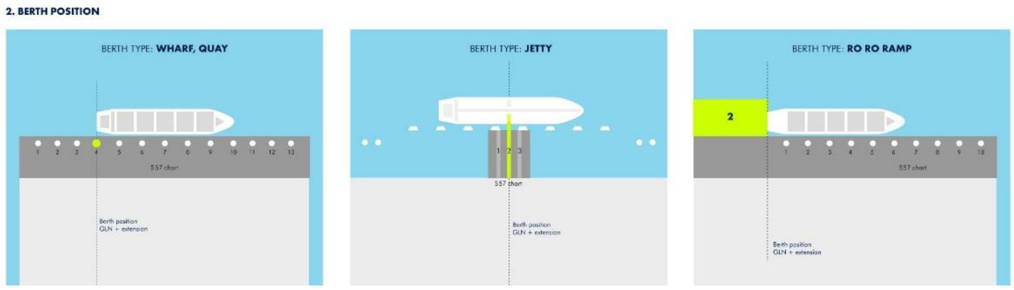
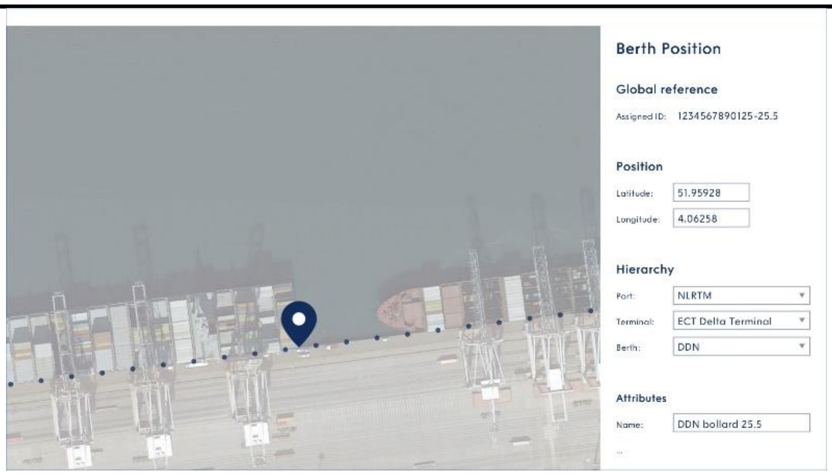
This section defines important waypoints which describe individual locations indicating the positions to which the ship may be navigating. Normally the ship receives the following waypoints in order of granularity:

1. The Pilot Boarding Place position
2. The Berth Position

4.2. Pilot Boarding Place

<table>
<tr><td>Name</td><td colspan="2">Pilot Boarding Place</td><td>Source</td></tr>
<tr><td>Definition</td><td colspan="2">In voyage planning, a point on the vessel's route where a pilot is intended to be embarked / disembarked.
At sea, the meeting place to which the pilot comes out.
Also known as Pilot point.</td><td>IHO S-57
IHO S-4</td></tr>
<tr><td>Location</td><td colspan="3">A single position which represents the pilot boarding place</td></tr>
<tr><td colspan="2">Indirect reference</td><td colspan="2">Direct reference</td></tr>
<tr><td colspan="2">Global Location Number (GLN) (ISO/IEC 6523)
E.g. 1234567890123 for Maas Center</td><td colspan="2">Datum: WGS 84. Held in decimal degrees to a defined precision, (minus to indicate South and West)
E.g.: 52.01750, 3.89194 for Maas Center</td></tr>
<tr><td>Attribute(s)</td><td colspan="3">1. Name of the pilot boarding place e.g. “Maas Center”
2. Times – see chapter 7</td></tr>
<tr><td>Example image</td><td colspan="3">
</td></tr>
</table>

4.3. Berth Position

<table>
<tr><td>Name</td><td colspan="2">Berth Position</td><td>Source</td></tr>
<tr><td>Definition</td><td colspan="2">The position along the line of a berth, specified by one point (e.g. bollard, meter mark number, manifold or ramp number), allowing the vessel to berth in the correct position along the berth.</td><td>IHO S-32</td></tr>
<tr><td>Location</td><td colspan="3">A single point</td></tr>
<tr><td colspan="2">Indirect reference</td><td colspan="2">Direct reference</td></tr>
<tr><td colspan="2">Global Location Number of Berth (ISO/IEC 6523) with extension (for bollard/meter mark, manifold or ramp number)
E.g.: 1234567890125-25.5</td><td colspan="2">Datum: WGS 84. Held in decimal degrees to a defined precision, (minus to indicate South and West)
Example: 51.887190, 4.284030</td></tr>
<tr><td>Attribute(s)</td><td colspan="3">1. Name of berth and bollard number or meter mark number (some ports)
2. Times – see chapter 7</td></tr>
<tr><td colspan="4">
</td></tr>
<tr><td>Example image.</td><td colspan="3">
</td></tr>
</table>

5. Sections

5.1. Introduction

Port sections are bodies of water through which the ship is navigating from pilot boarding place to berth position. Each body of water has its restrictions, e.g. maximum sizes, conditions or regulations. Normally the ship navigates in the following sections, in order of granularity:

1. Fairway
2. Turning Basin
3. Basin
4. Berth pocket

5.2. Fairway, Turning Basin, Basin, Berth Pocket

<table>
<tr><td>Name</td><td colspan="2">1. Fairway
2. Turning basin
3. Basin
4. Berth pocket</td><td>Source</td></tr>
<tr><td>Definition</td><td colspan="2">Fairway : The main navigable channel in the approaches to, or within, a river or harbor. Sometimes called the Ship Channel.

Turning basin : An area of water or enlargement of a channel in a port, where vessels are enabled to turn, and which is kept clear of obstructions such as buoys for that purpose

Basin : A sheltered body of water available for port operations connecting either with the sea, with an outer port or with another basin. Generally an almost land locked area leading off an in inlet, firth or sound. Also, an area of water limited in extent and nearly enclosed by structures alongside which vessels can lie.

Berth Pocket : Body of water at the berth or anchor berth with sufficient footprint to allow the vessel to make fast to the shore or mooring buoys or to anchor.</td><td>NP100

NP100

IHO S-32

NP100</td></tr>
<tr><td>Location</td><td colspan="3">Named bodies of water or delimited sections</td></tr>
<tr><td colspan="2">Indirect reference</td><td colspan="2">Direct reference</td></tr>
<tr><td colspan="2">Global Location Number (GLN) (ISO/IEC 6523)</td><td colspan="2">Datum: WGS 84. Held in decimal degrees to a defined precision, (minus to indicate South and West)
E.g.: 51.9200000, 4.5000000 for Waalhaven</td></tr>
<tr><td>Attribute(s)</td><td colspan="3">1. Name of the port section</td></tr>
</table>

6. Data fields for areas and lines

6.1. Introduction

This section defines a number of data fields for each individual feature. These features can either be area based or line based.

6.2. Data fields for ports

General port information

General information about the port

General information

General, introductory information about the port. This should be confined to information not contained in any other definitions

Format:

- Free text

Developments

Details of any active development affecting traffic in the port. Long term development plans should not be covered here but reference can be made to a section on the port website

Format:

- Free text

Limits description

Description of the area covered by the information specified

Format:

- Free text

General information

General, introductory information about the port. This should be confined to information not contained in any other definitions

Format:

- Free text

Developments

Details of any active development affecting traffic in the port. Long term development plans should not be covered here but reference can be made to a section on the port website

Format:

- Free text

Limits description

Description of the area covered by the information specified

Format:

- Free text

ISPS security level

Current security level of the port. Defined by The International Ship and Port Facility Security Code[1]:

Format:

- IPS Security Level: Level 1,2 or 3
- Qualifying remarks: free text

Load Line Zone

The load line zone in which the port is located. Defined by the IMO's International Convention on Load Lines

Format:

- Free text according to the IMO Load line convention with respect to the seasonal zones: Summer Winter, Tropical,, Winter North Atlantic, Fresh, Tropical Fresh

Maximum vessel sizes

Any size constraints on vessels using the port as a whole. It is not intended to capture constraints that may exist within an individual berth or port section as each section may have its own limits such as channel widths, swinging areas dimensions etc – these should be captured in the appropriate section

Format:

- Maximum length: in decimal metres
- Maximum beam: in decimal metres
- Maximum (air) draught: in decimal metres
- Supplementary information: free text

Time Zone

Time zone in which the port is located

Format:

- Standard Time: UTC +/- xx hrs
- Daylight Saving Time: UTC +/- xx hrs
- DST Start: date
- DST End: date

[1] http://www.imo.org/

Local holidays

Dates and names of any local or national holidays that may affect the working of the port

Format:

- Name: free text
- Start Date: date
- End Date: date

Working hours

Working days and hours for the Port Authority, i.e. the times when they are contactable. It does not define the specific working times of various port services or terminals: these should be recorded as individual services

Format:

- Start Day: date
- End Date: date
- Week Day Start: free text
- Week Day End: free text

Cargo

Types of cargo handled by the port

Format:

- Cargo type: free text
- Weight of goods: weight of goods or number of containers per calendar year in tonnes
- Supplementary information: free text

Charts

Charts and Navigational Publications such as tide tables that can be used to navigate the port approaches and port basins and waterways

Format (per chart or publication):

- Chart number: free text
- Title: free text
- Identifier: free text
- Publisher: free text

Shipping announcements

Local shipping announcements relevant to port users (including hyperlinks to local notices and advisories to mariners or sounding survey publications)

Format:

- Free text

Legal disclaimer

Any additional legal disclaimers that a port wish to make

Format:

- Free text

Website

Hyperlink to the official port website

Format:

- Free text

Contact information

This section defines the content of contact details.

Contact details will generally be supplied for:

- All people and service providers who are the recipients or reports under the “reports and documentation” section
- The emergency coordination centre
- The service provides referenced under “nautical services” and “vessel services”

General contact information

Introductory text or high level, nonspecific information for contacting people in the port. This does not contain specific name, address or other contact details for any individual or service (these are defined as individual “point of contact”)

Format:

- Free text

Point of contact

Detailed contact information for an official point of contact within the port

Format:

- Individual name: free text
- Department name: free text
- Role: free text
- Hours of service: fee text
- Contact instructions: free text
- Voice number: free text
- Fax number: free text
- VHF channel: free text
- E-mail: free text
- Delivery point: free text
- City: free text

- Administrative area: free text
- Postal code: free text
- Country: free text

Inter ship communication

Specification of a communication channel for vessels in the port or a port section

Format:

- VHF usage: fee text
- VHF channel: free text
- Remarks: free text

Weather and tidal Information

Weather and tide information for the port

Real time weather and tidal information

Links to any official real-time weather or tidal information provided by the port

Format:

- Free text or reference to a port website

Local weather and tidal phenomena

Details of any important local weather of tidal conditions within the port

Format:

- Phenomena: free text
- Details: free text
- Location: free text

Reports and documentation

Defines the various reports (e.g. notification, declarations, reports) and documentation that a visiting vessel will be expected to send to the port either before arrival, during its stay in port or before and after departure. Port's reports will be in fixed formats and will require completion. Documentation are standardized documents which need to be presented to the port authorities. The exact requirements will vary per port

Pre arrival reports

Detailed requirements for each report that needs to be sent to the port before arrival

Format:

- Report category: free text
- Who: fee text
- What: free text
- To: free text
- How: free text
- When: free text
- Remarks: fee text

In port Reports

Detailed requirements for each report that needs to be sent to the port whilst in port

Format:

- Report Category: free text
- Who: fee text
- What: free text
- To: free text
- How: free text
- When: free text
- Remarks: fee text

Pre departure reports

Detailed requirements for each report that needs to be sent to the port prior to departure

Format:

- Report category: free text
- Who: fee text
- What: free text
- To: free text
- How: free text
- When: free text
- Remarks: fee text

Documentation requirements

Details of any documentation that vessels will be required to provided to authorities in port

Format:

- Vessel type: free text
- Document: free text

Regulations and exemptions

Details of any relevant local regulations that apply in the port such as bunkering procedures, use of linesmen or Pilot Exemption Certificate (PEC). This does not include national or international regulations which may be documented elsewhere.

Regulation

Details of any local regulations that apply in the port or its surrounding water

Format:

- Free text or reference to a port website

Exemptions

Any exemptions that may apply to classes of vessel or suitably qualified people

Format:

- Free text or reference to a port website

Port safety

Identification of equipment, procedures and points of contact that should be used in case of an emergency within the port

Emergency coordination centre

The Emergency Coordination Centre information for the port. Individuals should be entered as a "Point of Contact" and referenced within this information

Format:

- Free text

Emergency response equipment

Types, locations and availability of emergency response equipment

Format:

- Equipment type: free text
- Equipment availability: free text

Emergency procedures

Relevant emergency response procedures

Format:

- Category of emergency: free text
- Emergency procedure: fee text

Services

This section defines the individual services that are available in the port

Nautical services

Services related to the safe passage and berthing of the vessel: VTS, Pilotage, Towage/Tugs, Lines

Format:

- Nautical service type: free text
- Service name: free text
- Service location description: free text
- Service area description: free text
- Service hours: free text
- Working hours: free text
- Service details: free text

Vessel services

Services related to the vessel and her cargo: Bunkers. Lube Oil, Potable Water, Provisions, Stores, Waste per IMO class, Repairs, Lashing, Cargo Survey, Draught Survey, Vetting

Format:

- Vessel nautical service type: free text
- Service name: free text
- Service location description: free text
- Service area description: free text
- Service hours: free text
- Working hours: free text
- Service details: free text
- Working hours: free text
    - Start Day: free text
    - End Day: free text
    - Week Day Start: free text
    - Week Day End: free text

6.3. Data fields for terminals

General terminal information

This is normally the domain of the terminal. Especially oil and LNG terminals might have specified terminal information templates, as per OCIMF (oil industry) or SIGTTO (gas industry)

6.4. Data fields for berths

General berth information

This is normally the domain of the terminal. Especially oil and LNG terminals might have specified terminal information templates, as per OCIMF or SIGTTO.

7. Data fields for waypoints

7.1. Introduction

Often the most important information is at what time the vessel arrives at or departs from a certain waypoint. This section details the typical sequence of times for a particular vessel and defines the formatted content for each waypoint.

The general sequence of times is:

1. Estimated Time of Arrival
2. Requested Time of Arrival
3. Planned Time of Arrival
4. Actual Time of Arrival
5. Estimated time of Departure
6. Requested Time of Departure
7. Planned Time of Departure
8. Actual Time of Departure

All times are according IMO FAL and specified using formats standardized in ISO8601

7.2. Arrival times

Estimated Time of Arrival (ETA)

When a vessel estimates it will arrive at specified location.

Format: yyyy-mm-ddThh:mm:ssZ

Requested Time of Arrival (RTA)

When a vessel is requested to arrive at a specified location.

Format: yyyy-mm-ddThh:mm:ssZ

Planned Time of Arrival (PTA)

When a vessel plans to arrive at a specified location.

Format: yyyy-mm-ddThh:mm:ssZ

Actual Time of Arrival (ATA)

When a vessel arrives at a specified location.

Format: yyyy-mm-ddThh:mm:ssZ

7.3. Departure times

Estimated Time of Departure (ETD)

When a vessel estimates it departs from a specified location.

Format: yyyy-mm-ddThh:mm:ssZ

Requested Time of Departure (RTD)

When a vessel is requested to depart from a specified location.

Format: yyyy-mm-ddThh:mm:ssZ

Planned Time of Departure (PTD)

When a vessel plans to depart from a specified location.

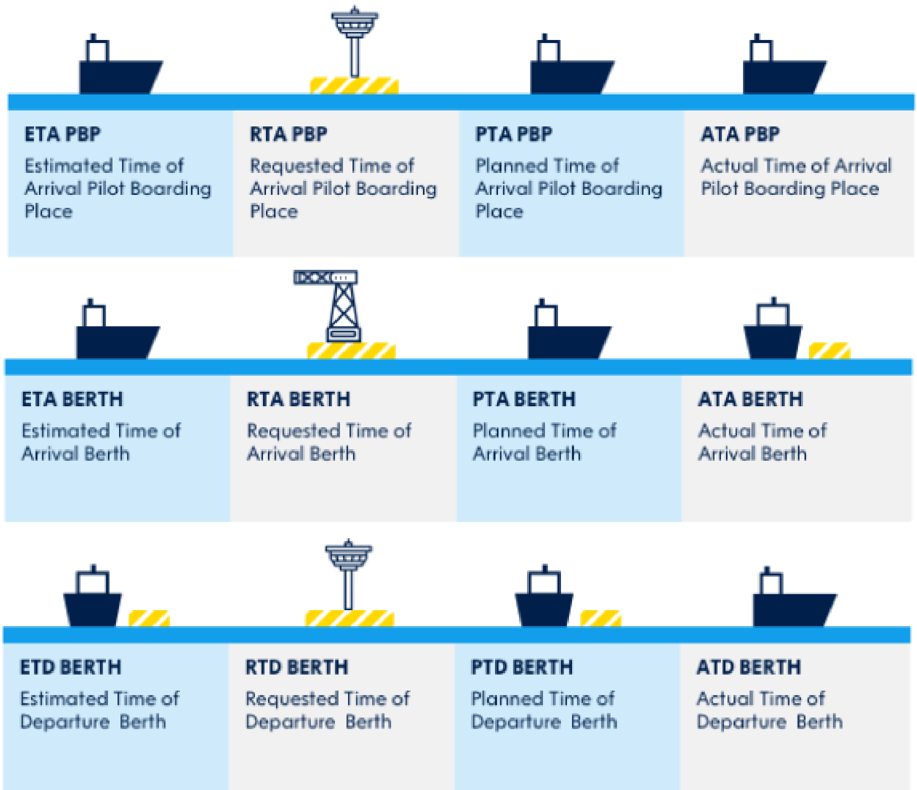
Format: yyyy-mm-ddThh:mm:ssZ

Actual Time of Departure (ATD)

When a vessel departs from a specified location.

Format: yyyy-mm-ddThh:mm:ssZ

7.4. Image of times



7.5. Relation of arrival and departure times to logbook entries

Some arrival times and departure times are related to logbook entries (see chapter 10), e.g:

Actual Time of Arrival Berth = First Line Secured

Actual Time of Departure Berth = Last Line Released

8. Data fields for sections

8.1. Introduction

The most important information for sections is the maximum size restriction of a vessel for a particular section, both horizontally and vertically.

The basis for maximum sizes can vary for individual sections:

- Fairways: normally the maximum draught is the limiting factor
- Turning basins: normally the maximum length is the limiting factor, based on the turning basin diameter
- Basins: normally the entrance to the basin is the limiting factor. This can be both length and beam
- Berthing pockets: normally the maximum length is dictated by the length of the berth. The maximum beam is often dictated by the minimum required clearance for other ships to pass the safely. Therefore the maximum beam could be exceeded after a cross check with the local authorities confirm no other traffic is scheduled

8.2. Horizontal restrictions

Maximum length

Maximum permitted length overall (LOA)

Units: decimal metres

Minimum Parallel Mid-Body alongside

The minimum PMB requirement for the berth during time alongside, including both arriving and departing the berth

Units: decimal metres

Maximum beam

Maximum permitted beam

Units: decimal metres

Maximum Arrival Displacement

The maximum displacement of the vessel on arrival at the berth

Units: Tonnes (1000 kg) or Tons (2240lb)

Maximum Displacement Alongside

The maximum displacement of the vessel whilst alongside the berth

Units: Tonnes (1000 kg) or Tons (2240lb)

8.3. Vertical restrictions

Maximum draught

Maximum vertical distance from the bottom of the keel to the waterline (NP100)

Units: decimal metres to a defined water density measured in kg/m3

Maximum air draught

Maximum distance from the surface of the water to the highest point on a vessel

Units: decimal metres

Maximum draught (including air draught) is the most discussed value within shipping. It should be provided together with the following data elements to ensure all actors have the same understanding of the safety margins:

Maintained depth

The Depth at which a channel is kept by human influence, usually by dredging (NP100)

Units: decimal metres with reference to a specific Sounding Datum

Sounding

Measured or charted depth of water or the measurement of such a depth (IHO S-32)

Units: decimal metres with reference to a specific Sounding Datum

Overdredge

An additional depth margin provided by a dredging operation to ensure that the depth at a specific location is never less than the pre-determined maintained depth over the interval between programmed dredging operations (NP100)

Units: decimal metres

Height of tide

The vertical distance from the chart datum to the level of the water at a particular time (IHO S-32)

Units: decimal metres with reference to a specific Sounding Datum

Observed depth

The vertical distance from the sea surface to the sea floor, at any state of the tide

Minimum Water Density

The minimum water density value within a particular area. (NP100)

Units: kg/m3

Fresh Water Allowance (FWA)

The change in draught of a vessel due to the difference between salt and fresh water (NP100)
Units: decimal metres

Under Keel Clearance (UKC)

The difference between the draught of a vessel and the available depth of water. This is usually the distance between the lowest point of the ship's hull, normally some point on the keel, and the sea bed but consideration must also be given to possible obstructions on the sea bed (IHO S-32)
Units: a defined value in decimal metres or a percentage of draught and/or beam

Under Keel Clearance (UKC) policy

A restriction imposed by an authority on a vessel to ensure the depth below the keel meets an acceptable (usually minimum) single or range of values. May apply to a specific area, type of vessel on arrival, alongside or departure
Units: decimal metres or a percentage of draught and/or beam

Nature of bottom

The feature of the bottom including the material of which it is composed and its physical characteristics (IHO S-57)
Format: Fixed format text according to IHO S-4 and IHO S-57 values. E.g. Sand, Mud, Clay, Silt, Stones, Gravel, Pebbles, Cobbles, Rock, Boulder, Coral

9. Port passage planning

9.1. Introduction

This part of the guide contains definitions which relate to passage planning. Definitions have been sourced primarily from IMO Resolution A.893 (21), IMO STCW Code section A-VIII/2 part 2, Solas Ch. 5 Reg 34, IMO MSC.232(82) and nomenclature widely used by stakeholders (e.g. NP100 and ECDIS manufacturers).

9.2. Explanation of elements.

Voyage plan

Consists of a sea passage plan and a port passage plan

Sea passage plan

Covers the intended navigation route from pilot disembarkation point at the departure port to the pilot embarkation point at the arrival port

Port passage plan

Section of the Voyage Plan from the Berth Position (or Anchor Berth) to the Pilot Boarding Place at the departure port or from the Pilot Boarding Place to the Berth Position (or Anchor Berth) at the arrival port. It consists out of a route plan, manoeuvring plan, and berthing plan

Route plan

Consists of a track, waypoints, legs, corridors, no go areas, safety contour, safe speed, speed limit, safety margin and commit point

Manoeuvring plan

Is the plan for the dynamic positioning phase of the voyage, i.e. for the final approach to the berth or anchor berth

Berthing plan

The intended static positioning of the vessel once at berth position or anchor berth

Track

The path followed, or to be followed, between one position and another. This path may be the ground track, over the ground, or the water track, through the water. Used in the sense of ground track in the term recommended track

Waypoint

A geographical positions which , together with berth points and pilot points, define the legs that comprise a passage. There may be a turn radius associated with the way point, especially in confined waters.

Legs

The basic component of a passage. Each leg is terminated by two points which may be waypoints, berth points or pilot points

Corridor

The areas on each side of the track that represent the planned navigable area for a specific vessel. A corridor is associated to a leg and it is defined by its starboard width and port width (in meters) from the track

No go area

Non-navigable geographical areas (polygons) defined by a safety contour or by fixed man-made structures (breakwaters, berths)

Safety contour

Is the bathymetric line (in meters with 1 decimal) referred to the chart datum and defined by e.g. the vessel maximum draught plus the expected reduction of UKC due to the motion in the water

Safe speed

An interval of expected speeds over ground per individual leg (minimum and maximum decimal knots)

Speed limit

Any speed restriction (in decimal knots) associated to any leg, either in due to regulations or safety of navigation

Safety margin

The additional area between the edges of the corridors and the no go areas available as reserve in case of unplanned circumstances. The safety margin can also be the reserve speed over ground between the speed limit and the maximum planned speed

Commitment point

The geographic point of no return located on the track, beyond which the vessel is committed to enter a fairway (either inbound or outbound) or committed to a course of action

10. Service times

10.1. Introduction

Often the most important information for ships is at what time services will start and will be completed, specified per service provider. The same discipline is used as for arrival and departure times.

The general sequence of service times is:

1. Estimated Time of Start
2. Requested Time of Start
3. Planned Time of Start
4. Actual Time of Start
5. Estimated time of Completion
6. Requested Time of Completion
7. Planned Time of Completion
8. Actual Time of Completion

All times are according IMO FAL and specified using formats standardized in ISO8601

10.2. Starting times

Estimated Time of Start (ETS)

When a service provider estimates a specified service will start.

Format: yyyy-mm-ddThh:mm:ssZ

Requested Time of Start (RTS)

When a service provider is requested to start a specified service.

Format: yyyy-mm-ddThh:mm:ssZ

Planned Time of Start (PTS)

When a service provider plans to start a specified service.

Format: yyyy-mm-ddThh:mm:ssZ

Actual Time of Start (ATS)

When a service provider starts a specified service.

Format: yyyy-mm-ddThh:mm:ssZ

10.3. Completion times

Estimated Time of Completion (ETC)

When a service provider estimates a specified service will be completed.

Format: yyyy-mm-ddThh:mm:ssZ

Requested Time of Completion (RTC)

When a service provicer is requested to complete a specified service.

Format: yyyy-mm-ddThh:mm:ssZ

Planned Time of Completion (PTC)

When a service provider plans to complete a specified service.

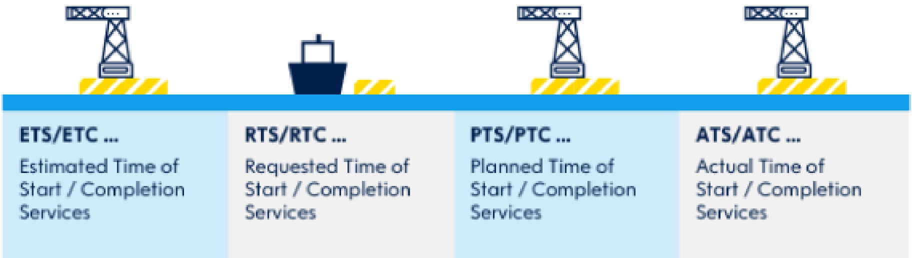
Format: yyyy-mm-ddThh:mm:ssZ

Actual Time of Completion (ATC)

When a service provider completes a specified service.

Format: yyyy-mm-ddThh:mm:ssZ

10.4. Image of times



10.5. Nautical services

Nautical service times often have a connection to the arrival or departure times at/from e.g. pilot boarding place or berth – but can of course be different.

Nautical service times are normally recorded in logbooks. Typical entries are:

- Pilot on board – ATS pilot service
- Pilot disembarked – ATC pilot service
- Tug(s) standby & ready to assist – ATS tug service
- Tug(s) dismissed – ATC tug service
- First line ashore / First line released – ATS mooring service
- Last line secured / Last line released – ATC mooring service

10.6. Vessel services

Vessel service times often have a connection to the arrival or departure times at/from the berth – but can of course be different.

Vessel service times are also often recorded in logbooks. However, on the starting and completion times there is often discussion what the exact starting or completion time of a particular service is.

In general:

A service starts when interaction with the ship starts, e.g. when the barge comes alongside and needs the assistance of the crew to tie up, leading to a reliable rest hour planning of the crew.

A service is completed when the interaction with the ship stops and allows the ship to sail, leading to a reliable Estimated Time of Departure Berth.

Some examples:

Container sector:

- Terminal service is completed after last move. However, if it is necessary to boom up cranes or to move cranes midships to allow the ship to depart, then the time when booms are up and cranes are midship is the defined completion time of the terminal.
- Lashing service is normally offered by a different party than the terminal, and has then a separate completion time or even no completion time6+ if such service is taken care off by the ship's crew

Tanker sector:

- Terminal service is completed after disconnecting the last hose. Cleaning lines might be included in the terminal service, but if it's not impacting the departure time, then it is not part of it
- Cargo survey service is normally offered by a different party than the terminal, and has then a separate completion time

All shipping sectors:

- Bunker service by barge is completed after let go last line of the barge
- Buner service by truck is completed after disconnecting last hose and signing documents

10.7. Time stamps not related to a service

- Safe Access to Shore open: gangway in position as per applicable regulations (e.g. safety in place)
- Safe Access to Shore closed: gangway not accessible as per applicable regulations (e.g. safety has been removed)
- All Fast – All lines tight and secured, ETOPS secured if applicable
- All Clear – All lines clear of propellers and thrusters

11. Appendix 1 – Determining standards for port information

11.1. Standards within ports

For official declarations, notifications and to facilitate international trade, ports use existing global standards (FAL documents, WCO standards, UNCEFACT). However for real time day to day operations ports generally use national or local standards, and a migration to common, globally defined standards requires both investment and culture change.

Therefore, together with the wider marine industry stakeholders, including ports, shipping, their agents, standardization bodies (www.portcalloptimization.org) only robust, global, cross industry standards within the shipping industry and beyond (e.g. World Meteorological Office, International Standardization Organization) have been selected, ensuring a sustainable investment of money and hours. That content was then cross checked with numerous international bodies including The International Harbour Master Association (IHMA), International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), United Kingdom Hydrographic Office (UKHO), International Hydrographic Organization (IHO), BIMCO , Oil Companies International Marine Forum (OCIMF), GS1, International Standardization Organization (ISO).

Because ports act as a node in the supply chain, and their customers need more and more end to end visibility, connectivity to supply chain standards is important. Therefore GS1 has been adopted in this publication as the most global and robust standardization body spanning the broader supply chain.

Similarly, as ports are part of a global network for commercial vessels, standardized terms from the nautical domain have been used for master and event data descriptions. IHO and UKHO publications have been referred to as the most global and robust standardization body for nautical standards.

Long term maintenance of standards is as critical as the selection of the individual standards themselves, and, having learnt from other industries that robust maintenance from the outset by a robust organization saves time and money, ISO standards have been selected as a framework where possible. Maintenance of some standards might be delegated to related organizations such as GS1 or UNCEFACT.

Because the common interpretation of the information by different actors is crucial, the focus of development was first on the functional definitions to ensure adoption of common semantics. For real time data exchange the overall requirement is for interoperability, so a data format has been proposed, based on existing supply chain standards. Interfaces are possible, although the number of interfaces is ideally limited.

11.2. Direct or indirect references

This publication makes the distinction between locations determined directly (positions and names) and indirectly (unique numbers). Indirect references have the advantage over direct references as they do not change after updates of infrastructure or ownership. Generally direct references are referenced to a particular datum and are used in navigational charts and other publications.

11.3. Standards for indirect location references

Many indirect references for ports exist. UNLOCODE[2] is an existing ISO standard (ISO 3166), and is used today in many documents like Bill of Lading. It is not perfect and is undergoing a process of revision currently, but is the best combination of global footprint and level of detail available to the stakeholder community.

For indirect refences of port areas and lines, waypoints and sections the Global Location Number (GLN)) is an existing ISO standard (ISO/IEC 6523), which has global governance and is used 6 billion times on a daily basis in the supply chain industry. It is the only guaranteed globally secure, unique number and can be used in combination with local identification numbers. GLNs are purchased through a national GS1 office, which is available in every country. GLNs can be assigned by the port authority so the number does not change after change of owner ship of the berth (like the IMO number of the vessel).

Other identifiers within port areas also exist and have been evaluated. The Inland ECDIS ISRS number has not been selected as they are specific to inland waters only. ISPS numbers have not been used as they are specific to the terminal only, and only for terminals with ISPS. Similarly UN/LOCODE's with SMDG extension have not been used, as they only apply to the container and roro terminals. They also do not apply to berths. These codes are only unique if used together with the UN/LOCODE, and change after change of ownership. Local numbers (e.g. shore site numbers) used in e.g. Marine Resource Numbers may have multiple numbers per berth and may be assigned by multiple parties per UN/LOCODE area and therefore not per se unique.

11.4. Standards for direct location references

Direct references are almost always defined as positions in relation to some kind of defined global, local or regional datum. Decimal degrees is preferred with a negative value signifying (by convention) a hemisphere of South and West. There is a distinction between the storage of direct location references and their representation in digital systems. Use of the representation format for display avoids any ambiguity and, although not as user friendly as traditional display formats such as degrees, minutes and seconds, can mitigate any risks of conversion. IHO standards for positioning within electronic charts

[2] UNLOCODE – United Nations Code for Trade and Transport locations from United Nations Economic Commission for Europe https://www.unece.org/cefact/locode/service/location.html

use decimal degrees (although navigation systems such as ECDIS may have different display formats for positions). IHO S-57 and IHO S-100 both use a fixed level of precision (usually 7 decimal places) for direct position references in charts.

It is left to the data producer to establish an appropriate number of decimal places for positional representation and to establish and publicise appropriate information concerning positional accuracy. IHO S-57, S-4 and S-32 define terms associated with these concepts and accepted custom and practice in this area. Other standards bodies such as ISO have similar mechanisms for representing positions and use decimal numbers to represent coordinates within a fixed coordinate reference system (CRS). The ISO19100 provides a comprehensive framework for the representation of all geospatial data and is the common ancestor of the IHO standards.

11.5. Horizontal datum

Positions should always be referenced with respect to a defined horizontal and vertical geodetic datum as part of a defined Coordinate Reference System (CRS). For horizontal datums WGS 84 is preferred as it is the mandated standard for positions within electronic navigational charts[3], replacing the variety of datums used in global paper charts prior to the standardisation of navigational materials. A large series of datums is defined within the global geospatial community, the most notable of which are the EPSG codes defined by the International Association of Oil and Gas Producers[4]. ISO19111[5] (Geographic Referencing by Spatial Coordinates) uses EPSG codes. WGS84 is represented as EPSG:4326 and many legacy CRSs can (and should) be transformed to WGS84 for harmonised portrayal and planning. Future adoption of the International Terrestrial Reference Frame (ITRF[6] which differs from WGS84 by only a few centimetres) within the IHO community may be proposed in the future as the basis of a global reference frame.

11.6. Vertical datum

Similar to Horizontal Datums, standardisation of vertical datums for direct location references are important and used for specification of both heights (elevation) and depths. Used on navigational charts the choice of vertical datum is referred to as Chart Datum (IHO S-32). These are largely based on tidal datums such as Lowest Astronomical tide or Low Water. IHO defines many terms relating to tidal height and tidal reference surfaces and makes recommendations as to best practice for vertical datum standards to be followed by marine stakeholders. While the exact choice of vertical datum used for soundings, drying heights and heights/elevations is made by the data producer, the IHO specifies best practice for elevations as a High Water datum and a Low Water datum for depths. The exact choice is a local one, however, due to seasonal and hydrological considerations. In areas of negligible tidal variation Mean Sea Level (MSL) is generally used as a vertical datum.

[3] IHO S-57 (http://www.iho.int) standard defines WGS84 as the horizontal datum for ENC charts
[4] EPSG codes are defined at http://www.epsg.org/
[5] https://www.iso.org/standard/41126.html
[6] Maintained by the International Earth rotation and Reference Systems service https://www.iers.org/IERS/EN/Home/home_node.html

11.7. Times

Representations of times are derived from IMO FAL, BIMCO Statement Of Facts (SOF) forms, Logbooks, and clauses of charter parties. The format "Year-month-day-hours-minutes-second Zulu" is from ISO standard (ISO 8601), already widely used in the supply chain industry. Various time dependent definition sources are listed below:

ETA: Aligned with the IMO FAL definition, enhanced by adding the "specified location" for more accuracy. This is calculated based on current speed to next waypoint and planned speed for the remaining route including speed limitations and other known parameters, such as wind, current, waves.

RTA: Currently used within ports with "Just In Time" procedures to maximize protection of anchorages and to optimize lock and speed planning. This is now being implemented in contract clauses to enable Just In Time arrivals. The requested time is received on ship from either port (for Pilot Boarding Place) or terminal (for Berth).

PTA: Is used today in some Electronic Display Information Systems (ECDIS) and is often the arrival time agreed in contract, according to a timetable or based on a time received from port. Normally shared by ship in route plan. Planned Time of Arrival (PTA) does not change, as propulsion is subsequently adjusted to meet this time, based on Speed To Maintain (STM). The STM is calculated based on a defined Distance To Go (DTG) and hours to go to the Planned Time of Arrival and is expressed as a Speed Over Ground (SOG).

ATA: In current use in the maritime industry. The time stamp is set when a waypoint is reached.

ETD: Aligned with the IMO FAL definition, enhanced by adding the "specified location" for more accuracy. ETD is calculated based on current speed to next waypoint, planned speed on the remaining route including speed limitations and other known parameters. The estimate can also be based on calculation of the estimated time of completion of cargo or vessel services (e.g. bunkers) or other non-navigational matters.

RTD: Also used today in ports with "Just In Time" procedures. Now being implemented in clauses of contracts to enable Just In Time arrivals. The requested time is received on ship usually from ports (for Berth)

PTD: Is used today in some Electronic Display Information Systems (ECDIS) and is often the departure time agreed in contract, according to a timetable or based on a time received from port.

ATD: Used today in the maritime industry. A time stamp is defined after departing from a specified location.

Relation between arrival times and departure times versus service times (e.g. actual time of arrival berth is first line ashore, actual time of departure berth is last line released) has been aligned with the definition within The International Regulations for Preventing Collisions at Sea (1972), Rule 3 – General definitions – paragraph (i)

11.8. Formats for times

The overall definitions and unique identifiers of locations are the most important elements of data to agree upon. The encoding format of the data is a second priority, as interfaces are possible between different encodings as required.

EPCIS is encapsulated in an existing ISO standard (ISO/IEC 19987:2017) and is a global GS1 standard which has been used for over a decade in global supply chains for representation of events. Events may be recorded for any location and any object or entity. EPCIS uses non-significant ID keys where available insulating against future changes to attributes. Ports may use any EPCIS element as needed, with no obligation to use irrelevant elements. EPCIS has a rich pre-existing vocabulary with extensions possible for mode, sector or trade specifics.

12. Technical documentation for event data

The description below is based on the use of the EPCIS standard (ISO/IEC ISO /IEC 19987:2017).

EPCIS provides a lean and yet very powerful way to exchange event data among large numbers of disparate stakeholders in the end-to-end Supply Chain.

12.1. Standard

The EPCIS standard already exists for more than 15 years. Identification keys used in the EPCIS context are scanned about 10 billion times per day all over the world. About 2 million companies worldwide use these identification keys and associated standards. GS1 maintains these standards and are present in over 150 countries all over the globe. GS1 is a neutral and not-for-profit organisation that has been developing and maintaining standards (as well as supporting implementations) for over 40 years.

Please see the video how EPCIS leads to decentralized and authorized data:
https://www.youtube.com/watch?reload=9&v=2aIAV88U6F4

An EPCIS event data exchange (or message for short) is always structured based on the following five main building blocks:

- Action: Restricted list; within the context of this PIM the only relevant one is “OBSERVE”.
- What: An object or entity identified using a globally unique unambiguous ID Key. The standard currently recognises a number of ID Keys from various standardisation organisations such as IMO, BIC and GS1.
- Where: Physical business location identified using a globally unique unambiguous identifier. Currently restricted to Global Location Number, ISO / IEC 6523
- When: Date and time stamp compliant with ISO 8601
- Why: structured data/information regarding the business context of the EPCIS event. To be aligned with IMO FAL standards

Technical note:

The EPCIS standard supports a number of Event types. For the context of this manual, the only relevant event type is the ObjectEvent.

Example:

Vessel departing from a berth at a given date and time.

- Action: "OBSERVE".
- What: IMO vessel number (the 7-digit numerical part)
- Where: Global Location Number for the berth
- When: 9th May 2019 at 7:13 PM UTC (Coordinated Universal Time)
- Why: Departing from berth (in line with definitions and standards in this PIM)

The building blocks expressed in technical (XML) terms compliant with the EPCIS standard:

- Action: OBSERVE
- What: urn:epc:id:imovn:9176187
- Where: <bizlocation><id>urn:epc:id:sgln: 87193310.14014.0</id></bizlocation>
- When: 2019-05-09T19:13:47:00Z
- Why: <bizstep>urn:epcglobal:cbv:bizstep:departing</bizstep>

Common business steps such as "arrival", "departing", "loading", "unloading", "in transit" are part of the EPCIS standards set more specifically the Core Business Vocabulary (CBV).

The TDS (Tag Data Standard) describes how each of the above data elements are to be encoded technically within the EPCIS messages.

The EPCIS currently supports all ATA and ATD events that meet the following criteria:

1. The object that the event relates to must be identifiable using an ID Key recognised in the EPCIS standards. The above example shows events related to vessels with IMO numbers can be exchanged using EPCIS
2. The business location related to the event must be identifiable with a Global Location Number (GLN). This manual indicates a number of business locations that GLN may be applied to

Note: Global Locations Numbers (GLN) are used worldwide for a very wide range of location types (see also paragraph 12.4). GLN may be linked to a geo-position (a single point), a line or a closed geographical area as needed for the type of business location that is related to the event.

12.2. Relation to ships

Ships use the Electronic Chart Display Information System (ECDIS) to navigate. Time stamps should be formatted identically from port to port to allow the ECDIS to receive the information regarding Requested Time of Arrival Pilot Boarding Place or Berth to allow the ship to arrive Just In Time.

Therefore, timestamps exchanged with ECDIS systems (both sent and received from them) should comply with ISO 8601. If available, the IMO vessel number should be part of the timestamp information exchanges.

If available, the timestamp information exchange should also include the Global Location Number for the business location related to the event/timestamp.

12.3. Relation to terminals

Terminals need same format of time stamps to allow an accurate berth planning, ensuring berth occupancy and efficient planning of labour.

To ensure unambiguous interpretation of the timestamp information exchanged, all stakeholders should comply with these two basic rules:

1. Use the ISO 8601 standard to format the timestamp.
2. Use the definitions and standards described in this PIM to determine the exact value (date and time) that needs to be included in the timestamp exchange.

If available, the business location (terminal, berth or berth-position) should be included in the timestamp exchange using the appropriate Global Location Number.

12.4. Relation to hinterland

Planners of hinterland modalities need very similar updates to enable choosing the right options for hinterland modality (e.g. barge, train or truck) for onward transportation to the next destination after the port or all the way to the final delivery location. They would also need these updates for planning the onward transport movements and resource planning in locations such as warehouses, distribution centres, manufacturing sites and so on.

Here too, we need unambiguous and consistent interpretation of the timestamps exchange. Therefore, the timestamp format must be compliant with ISO 8601.

Where applicable, the definitions for timestamps in this PIM should also be used for the hinterland operations. It may be necessary to develop additional guidelines for hinterland operations and locations for unambiguous definitions and agreement on hinterland timestamps.

If available, a Global Location Number must be used to identify the business location

12.5. Future developments

The current version of EPCIS has been developed for the exchange of events (timestamps) that have actually occurred such as the ATA and ATD at any business location anywhere in the world (also in the hinterland).

There is now no standard way in EPCIS to exchange timestamps that will occur at some moment in the future (“future timestamps”). In the context of this manual this is related to the Estimated, Requested and Planned timestamps.

Work is ongoing within the GS1 community (also involving hinterland carriers and beneficial cargo owners) to determine how these “future timestamps” may be exchanged using global standards.

Maritime and port stakeholders are welcome to join those development efforts.

Results of these efforts will be available to all stakeholders (including beneficial cargo owners) across all transport modalities and may be included in future version of this manual.

13. Publication and promotion of standards

These standards will be promoted via this publication and via a tight alignment with the glossary of NP100, The UKHO's Mariners Handbook. This publication is most frequently available on the bridge of all SOLAS (UN / IMO Safety Of Life At Sea Convention) vessels and in all global port offices.