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Coding system for slots

in the

container inland shipping sector

effected in consultation with the

study group BTB-Container and other parties involved

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1 INTRODUCTION

Rhine and Inland Shipping container vessels provide information on loaded containers to the European Waterway- and Port Authorities with the help of the BICS application (BICS: Dutch acronym for Inland Shipping Information and Communication System - EDI-message: ERINOT). The information received by the European Waterway- and Port Authorities is processed and stored in their Waterway management Systems (e.g. IVS90 - Dutch Information and Tracking System for Shipping). Currently skippers do not report which container has been loaded in which place on their vessels.

The Dutch Ministry of Public Works would like to know the exact location on the vessel of each container, so: in which bay in the hold, on which row broadwise and on which tier. Waterway Authorities need this information to be able to establish, if containers fall off board in a collision or other calamity, which containers loaded with what cargo, have landed in the water. Information on the cargo is of paramount importance when salvaging a container, for hazardous substances, when mixed with water, may prove a danger to salvage operators.

*In ocean shipping such a location of the cargo (consisting of a designation of the bay, the row and the tier) is called a **slot**. In this document the location of the cargo in which a container has been stowed is therefore also called a **slot**.*

The skipper can report the slot for each container to Waterway- and Port Authorities by means of the so-called ERI-notification. The current notation of the slots used on board is ambiguous. To be able to process and interpret the information received Waterway- and Port Authorities need to know which notation is used on board which vessel. In view of the current ambiguity it would be an endless task for Waterway- and Port Authorities to record for each vessel which notation is used. A standardized notation is therefore necessary. This standardized notation can also be used to pass on slots to loading and unloading terminals.

In this document a proposal is made for a standardized coding system (notation). This inland shipping coding system strongly resembles the coding system used in ocean shipping.

This document contains the final inland shipping coding system for slots. Over the past few months its structure has been discussed with a number of people who are directly involved. Their reactions have been incorporated and in the course of the third quarter of 2007 this inland shipping coding system for slots will be published. You can read more about this in chapter 4.

2 DESCRIPTION OF THE CURRENT SITUATION

Container vessels in Rhine and inland shipping load the containers behind each other, next to each other and stacked on top of each other. It is customary to divide the vessels´ holds lengthwise into 20' bays. Depending on the width of the hold containers are loaded in two, three, four, five and six rows alongside each other. The height, too, varies from one tier up to and including 5 tiers. Skippers employ their own codes to designate the exact slot of a container which is to be loaded or has been loaded.

Numbering of the bays along the length of the vessels

In principle numbering of the 20' bays of the holds always starts at the front of the vessel with **bay 1** and ends, depending on the length of the hold, with a higher number. Designating a bay for a 20' container appears easy for a 20' container fits into a 20' bay. But this only applies if the 20' container is loaded into one particular 20' bay. It may happen, however, that the container is loaded in two 20' bays for 20' and 40' containers are not the only type of containers used. In such a case different codes are employed. Some skippers agree on board that the front side of the container determines the designation of the bay in which a container is loaded. Others specify that a container is loaded in two different bays by stating the numbers of both bays. There are also skippers who use letters to indicate that a container is loaded in the front or in the back of a certain bay.

An example

Type of container	Notation of bay Vessel 1	Explanation	Notation of bay Vessel 2	Explanation
20' container	2	Container is in bay 2	2	Container is in bay 2
20' container	2/3	One half of the container is in bay 2 and the other half is in bay 3	2A(rear)	One half of the container is in bay 2 and the other half is in bay 3
30' container	2/3*	1/3 of the container is in bay 2 and 2/3 is in bay 3	2A(rear)	1/3 of the container is in bay 2 and 2/3 is in bay 3

* In this notation of the bays it must be indicated precisely where the container is located for there are several possibilities.

Numbering of the rows along the width of the vessels

In actual practice different notations are also used when numbering the rows widthwise. Some skippers indicate on which side – starboard outside, starboard centre, centre, port centre or port outside - a container has been loaded. Others prefer using numbers.

Numbering of the tiers

Generally speaking, the tiers have been designated with the numbers 1 up to and including 5. In some stowage plan calculations a tier numbered **zero** is used.

Conclusion

The notation of slots in the Rhine and Inland Shipping Sector are not uniform on every vessel. Providing information to parties on shore – for instance to the Waterway- and Port Authorities and the terminals – including the non- uniform information on the slot in which a container is loaded is pointless since those parties can and must be expected to interpret the information received. Interpretation of non-standardized slot notations would be an endless task; a uniform code is therefore necessary.

3 CODING SYSTEM

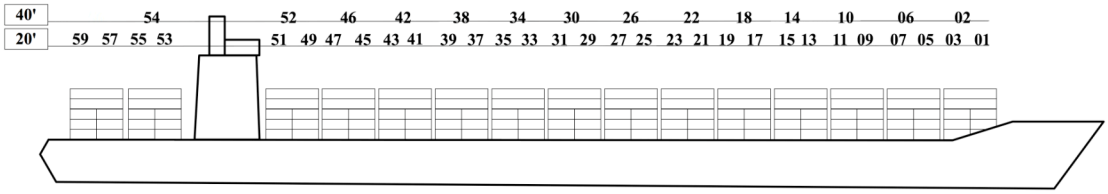
3.1 MARITIME STANDARD

On board deep sea ships a coding system (Bay - Row - Tier) is used to designate in which slot a 20' or a 40' container is loaded. A coding system (ISO 9711-1 (1990)) has been developed which allows the type of container (20' of 40') (to be) loaded to be designated in the notation. The numbering of the Bay is odd for 20' containers and even for 40' containers.

3.1.1 The bays

An example

A container with slot notation Bay: 17 is a 20' container loaded in 20' Bay with number 17.
A container with slot notation Bay: 18 is a 40' container loaded in 40' Bay with number 18 (consists of 20' bay with numbers 17+19).



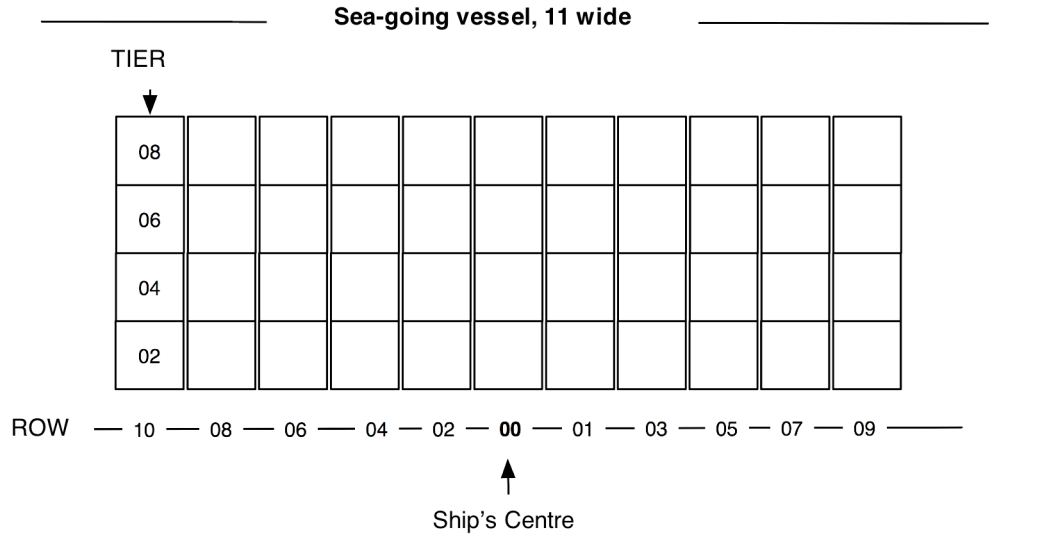
The maritime standard, however, does not provide for an easy notation that can also be used to designate where 30' and 45' containers are or must be stowed. In theory it is possible to adapt this standard, so that it can be specified that a 30' and a 45' container is loaded, but this would make the coding system very complicated.

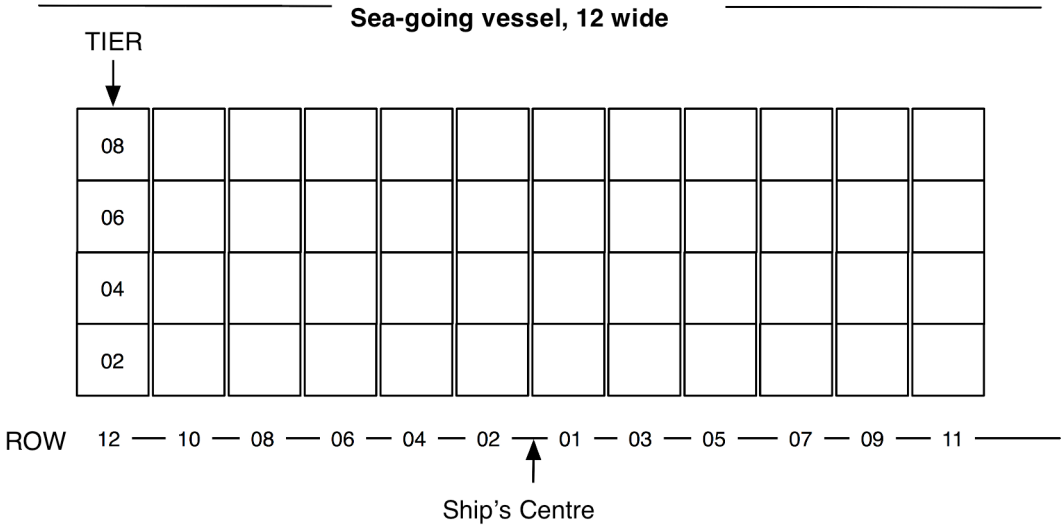
3.1.2 The rows and tiers

The rows in which the containers are loaded next to each other are also numbered. A distinction is made between vessels with an even number of rows and those with an odd number of rows.
The rows are numbered with even numbers port of he centre and odd numbers are used on starboard of the centre. On vessels with an odd number of rows the middle row is designated with the code 00. The first row from the middle to starboard has number 01, the next row has code 03, etc.
For port the numbers 02 and higher are used.

Of course, the tiers are also coded. A distinction is made between containers that are loaded below deck (below the hatch covers) and containers that are loaded on deck (above the hatch covers). Tiers on deck are coded from 80 onwards. The coding consists of even numbers. At the bottom of the ship is tier 02. The following tiers have numbers 04 and higher.

By way of illustration two outlines of sea-going vessels; one sea-going vessel with an even number of rows and one with an odd number of rows.





3.2 CODING SYSTEM FOR SLOTS IN THE RHINE AND INLAND SHIPPING SECTOR

In consultation with a number of barge operators in the Rhine and Inland Shipping Sector and with suppliers of stowage plan applications it has been decided to investigate whether a coding system for the Rhine and Inland Shipping Sector can be developed. This coding system must result in a standard which is based (as much as possible) on the maritime standard and which allows the most common slots in the Rhine and Inland Shipping Sector to be coded. It is vital that the coding of the slots can be used for *every container vessel*.

The biggest deviation compared to ocean shipping is that only a small part of the vessels in the Rhine and Inland Shipping Sector consists of *cellular* vessels. These cellular vessels have a fixed lay-out. It is often possible, however, to load containers having different dimensions behind each other. The majority of the vessels in the Rhine and Inland Shipping Sector that carry containers have one big hold. These holds are often provided with bracket frames and sometimes with low partitions to carry ballast water.

Containers of different dimensions are stowed behind each other in one row. The mix of the containers to be transported (20', 30', 40' and 45') makes it necessary to abandon the maritime standard coding system since this is based on a TEU (20' equivalent) .

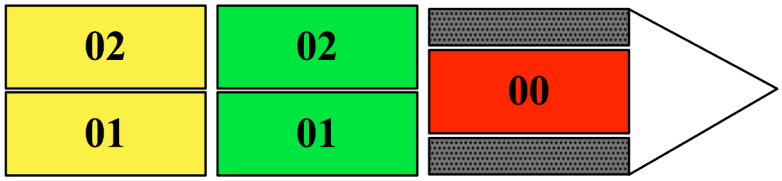
As 45' containers are also often transported in the inland shipping sector, the standard is based on a division of a 20' bay in the hold of a vessel into four 5' bays. A 20' container takes up four 5' bays, a 30' container takes up six 5' bays, a 40' container eight 5' bays and a 45' container nine 5' bays.

Part of the coding system is the agreement that the front of the container determines the coding of the 5' bay (slot) into which the container is (to be) loaded. Contrary to the maritime standard it is therefore necessary to supply the coding of the slot with information on the size and type of container. The EDI-messages used in the Inland Shipping Sector have a separate sheet for each container on which the size and type of container can be reported.

The maritime coding for the rows and tiers can be maintained without changes.

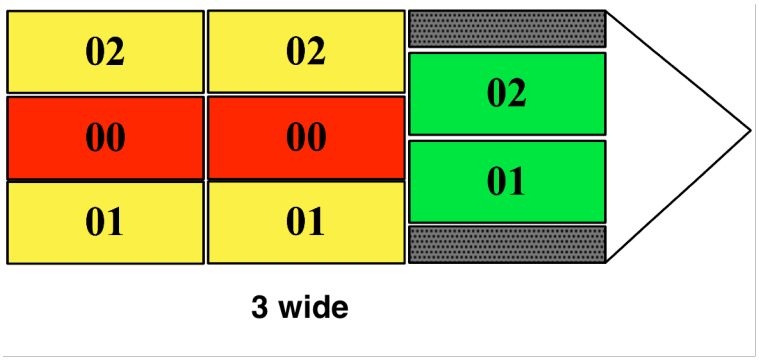
Sometimes the bays of container vessels cannot be used in hold 1 on the outside on the bottom tier. The place of a container has then been taken by a steel casing, part of the vessel (in this document called ***dummy***). However, on the second tier a container can sometimes be stowed on top of this dummy. Depending on the width one or more containers can be stowed between the two dummies. The coding system can also be used to designate the positions of the containers to be placed between and above those dummies. The following different situation may arise, among other things:

- If the dummies on starboard hand and on port hand on the bottom tier take up the space of one 20' container each, the same coding can be used for the entire vessel.
- If the dummies occupy a smaller space, so that one container can be stowed in 'the centre strake' in the front bay of a two-wide vessel, the vessel does have a location at the **centre** of the vessel in the front bay. In order to code this location width coding **00** should be used.



2 wide

- If the dummies occupy a smaller space than the space of 1 container, so that in the front bay of a three-wide vessel two containers can be stowed, the coding for an even number of rows of containers should be used. The width coding **00** should not be used for the slots in the front bays, usually 20' long at most.



- If the dummies on wider vessels are not identical with a 20' slot, so that the containers cannot be stowed in one row behind each other, the coding as described behind the previous bullet should be applied.

The aft hold of a container vessel can also be provided with dummies. The coding of slots of containers which are to be stowed in such an aft hold is done in analogy with the coding for 20' hold 1.

Transversely placed containers
Sporadically it happens that containers are stowed transversely in a vessel. Terminals state that this way of loading often seriously hinders the cargo-handling process. Possible transverse stowage of a container must be specified as a stowage instruction in a so-called 'free text'. In a unloading instruction it should be specified with the help of text that a container has been stowed transversely.

Containers with overwidth and overlength
The coding system does not provide in the possibility to code the holds in five feet broadwise because this would deviate too much from the maritime standard. If it is necessary to stow a container in a location which deviates from the standard, this deviation must be given as a stowage instruction in a so-called 'free text'. An unloading instruction must also contain a text stating that a container has not been stowed in a standard slot.

3.2.1 Will the designations of slots currently used on board now change?
In principle skippers can continue to employ the current designation of slots. But in the *electronic communication with third parties*, for instance the Waterway Authority, other fairway authorities and the terminals, the *standardized coding* is used; the stowage plan software translates the designations currently used into the standardized new coding. Current software, incidentally, is already based on spaces of five feet or less for calculations. The result of this may be that in the course of time the new notation will be used more and more.

3.2.2 Format for ERINOT messages
Since ERINOT messages are based on the following input instruction: "BBBRRTT" for Bay / Row / Tier, the following input applies to ERINOT messages:

Description	Bay(n3)	Row(n2)	Tier(n2)
Example	001	02	04

Code : 0010204

4 FOLLOW-UP STEPS

This description of the standard for slots in the container inland shipping sector has been discussed with a representative of a deep sea terminal, software developers, skippers and barge operators.
This standard has been discussed with the members of the study group BTB containers. The response given by these parties has been incorporated in the standard.

The coding system will be submitted to:

- the Dutch Ministry of Public Works and other managers of reporting and tracking systems
- The *Arbeitsgruppe Telematik* in Duisburg and other organisations abroad
- The ERI Expert group
- Inland shipping and deep sea terminals

It is a fact that Dutch Waterway- and Port Authorities intend to use the coding system. An instruction for the users, on shore as well as on board, will be drawn up, for it must be possible for a coding system to be interpreted by everybody as a three-dimensional image of a container vessel.

4.1 LIST OF ACTIONS

Action	By	By P.Nefkens	Status
Reading this document and responding to it	Members of the study group BTB containers		finished
Incorporating reactions		√	finished
Discussing with skippers and barge operators	Skippers and barge operators	√	finished
Incorporating reactions		√	finished
Discussing with the suppliers of the software	Suppliers	√	finished
Drawing up the final version of this document		√	finished
Discussing the coding system with inland and deep sea terminal representatives	Inland and deep sea terminals	√	Partly finished
Reporting reactions to the members of the BTB containers		√	finished
Discussing the coding system with representatives of industrial organisations in Belgium and Germany	BTB		being worked on
Drawing up a coding manual, including 3D-illustrations		√	being worked on
Submitting the standardized coding system to waterway- and port authorities and other interested parties	Members of the study group BTB containers, RWS and others		being worked on
Submitting the standardized coding system to the ERI expert group	BTB		being worked on
Publishing the coding system on the website	BTB		finished
Possible maintenance	BTB		being worked on

5 EXAMPLES

By way of illustration a few concrete examples have been elaborated for different ship's dimensions, see the table below and the appendices with this electronic document.

Length in m	20' bays	Rows (wide)	Tiers	Max. Total TEU
60	6	2	3	36
90	10	3	3	90
110	13	4	4	208
135	17	4	4	272
135	17	5	5	425
135	17	6	5	510
60	6	5x2+1x1	3	33
90	10	9x3+2x1	3	88
90	10	9x3+1x1	3	84