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EUROPEAN UNIQUE HULL IDENTIFICATION NUMBER FOR INLAND NAVIGATION

ABSTRACT

To enable efficient management of inland navigation processes, specialized information systems should be developed through the application of modern information and communication technology (ICT). For this purpose, individual European waterway and port authorities have developed their own local information systems and databases. Due to the non-conformity of these databases, their integration at the European level is confronted with serious problems (COMPRIS, 2003). One of the major problems is the lack of a common European unique identification number for inland barges. For this reason, in some locally managed databases several different identification numbers are attributed to one and the same inland barge or certain identification numbers are not available. The same problem occurs in the communication between waterway authorities and between waterway and port authorities. Therefore, a unique identification number for all floating objects on the European waterways should be introduced. At the moment there are only two official numbers for vessels. The first, the IMO number, introduced in 1978, is only used by maritime vessels. The second, the OFS number (Official Ship Number), is used only for vessels that have a Rhine patent (issued by the CCNR). The OFS number cannot satisfy all the requirements of RIS Directive 2005/44/EC and the amendment to Directive 82/714/EEC on technical requirements for inland navigation vessels in the enlarged European Union. The fact is that only 20% of the ranges of codes are reserved for the non-Rhine countries. A special Electronic Reporting International group (ERI) was appointed to formulate a new system for unique identification of inland vessels and also define a database model for vessel characteristics. The initial suggestion of ERI was to add one character in front of the OFS number in order to increase its coding capacity. The intention was to make as few as possible differences/modifications to the system currently used under the regime of the Rhine Vessel Inspection Regulations in order to minimize the administrative efforts of harmonization. As members of the ERI group, we made a proposal for such a new identification number (the so called ERN), which was discussed by the ERI expert group taking into account the input from the Joint Working Group of CCNR and EC. In this paper, we will describe our proposal to ERI, which was later slightly modified within a special ERI expert group.

KEYWORDS

CCNR, Electronic Reporting International, ERN number, IMO number, inland navigation, OFS number, River Information Services (RIS), UNECE, unique hull identification number

1. INTRODUCTION

As a result of the non-conformity of databases operated by the respective European waterway and port authorities, developers of information and communication technology (ICT) systems are confronted with serious problems [1]. One of the major obstructions of River Information Services (RIS) is the lack of a commonly used European unique identification number for inland barges. The reasons behind the current situation are, for example:

- Some identification numbers are not always awarded to all inland barges;
- Waterway and port authorities introduce local identification numbers.

Due to this situation, waterway and port authorities stick to their own in-house defined primary keys or combine a number of existing identification numbers in their databases. This implies that in some locally managed databases several different identification numbers are attributed to one and the same inland barge. Nevertheless, it is still possible that a skipper or a barge operator who announced their vessel to a waterway or port authority under a certain identification number is unknown because this specific number is not included in the database. The same problem occurs in the communication between waterway authorities and between waterway and port authorities.

Therefore, a unique identification number should be introduced for all floating objects (inland barges, push barges, coasters, pontoons, repairing boats, yachts, pleasure boats, etc.) on the European water-

ways. Such an identification number would facilitate the use of a single voyage announcement in an international context. Whenever this tool is provided, the most important precondition is fulfilled for the official inland navigation in the multimodal logistic chain.

At the moment, there are only two official numbers for vessels. The first, the IMO number, only used by maritime vessels, was introduced in 1978. It consists of the IMO character stream followed by seven numbers representing the Lloyd Register Ship Fairplay [2]. The known Maritime Mobile Service Identity (MMSI) number is used only for identifying communication equipment on board a ship. More than one MMSI numbers may be assigned to a single ship. The second, the OFS number (Official Ship Number), is used only for vessels that have a Rhine patent (issued by the CCNR) [3]. It consists of two numbers representing the range of codes assigned to an individual country (01-99), followed by five numbers to identify a ship. In Table 1, the range of codes is shown that has been assigned by CCNR to individual Rhine countries.

Table 1 - Comparison of the range of codes assigned to individual Rhine countries within OFS and ERN numbers

	Name of the Rhine Country	First Two Digits of the OFS Number*	First Three Digits of the ERN Number**
1	France	01-19	001-019
2	the Netherlands	20-39	020-039
3	Germany	40-59	040-059
4	Belgium	60-69	060-069
5	Switzerland	70-79	070-079
6	Other needs	80-99	080-099

Source: * PIANC [3], ** Ružić, Pečar-Ilić [7]

Obviously, the OFS number cannot be sufficient to cover all the requirements relating to the RIS Directive [4] and to the amendment of Directive 82/714/EEC on technical requirements for inland navigation vessels in the enlarged European Union [5], because the seven-digit number leaves only the range of codes 80-99 for non-Rhine countries. A special Electronic Reporting International group (ERI) was appointed to formulate a new system for unique identification of inland vessels as well as to define a database model for vessel characteristics. As members of the ERI group, we made a proposal for such a new identification number (the so called ERN), which was later discussed by the ERI expert group taking into account the input from the Joint Working Group of CCNR and EC [6].

In this paper, we will describe our proposal submitted to ERI, which was later slightly modified within a special ERI expert group [1]. The initial suggestion of ERI was to add one character in front of the OFS

number, i. e. ERN would have eight characters. The intention was to make as few as possible differences/modifications to the system currently used under the regime of the Rhine Vessel Inspection Regulations, in order to minimize administrative efforts. According to our proposal, ERN would consist of three numbers representing the range of codes assigned to an individual country (001-999) followed by five numbers to identify a ship. According to our proposal, the range of codes for Rhine countries would be created so that the digit "0" is added in front of the existing OFS number of CCNR (see Table 1). The range of codes for the rest of the European countries would then be defined according to the catchment areas of the corresponding waterways.

2. INVENTORY OF UNIQUE IDENTIFICATION NUMBERS

2.1. IMO number

The IMO number is the unique ship identification number introduced in 1987 as a measure to enhance ship safety and security. It was aimed at assigning a permanent number to each ship for identification purposes, but only valid for seagoing vessels and not for inland barges. The number would remain unchanged upon transfer of the ship to other flag(s) and would be inserted in the ship's certificates. Following adoption of the new SOLAS Convention (of January 1, 1996), the use of the IMO number became mandatory [8]. It consists of three letters "IMO" followed by a seven-digit number provided by Lloyd's Register Service, as shown in Table 2.

Table 2 - Structure of IMO number

1	2	3	4	5	6	7	8	9	10
I	M	O	X	X	X	X	X	X	X
			Lloyd Register Ship Fairplay, X = 0-9*						

* According to IMO, the first digit cannot be "0".

2.2. Call sign and MMSI

The call sign is assigned to a radio communication station by the International Telecommunication Union (ITU, UN body), unique for the entire world and not transferable from one owner to another. It represents the broadcasting code, the Automatic Terminal Information Service code (ATIS code). It consists of three parts: the prefix (one or two characters denoting the licence issuing administration or country), one to three letters uniquely identifying the radio station and the suffix (to indicate, for example, a mobile station "M" or temporary location "A"). ATIS is for use in in-

land shipping while the so called MMSI is used for marine shipping. MMSI consists of the three-digit country code (Maritime Identification Digits, MID) followed by a six-digit serial number. Some countries may have more than one MID number. For example, the United Kingdom and Malta have four different MID numbers each. Most European countries have only one MID number. Both of these codes are used for equipment and not for vessels.

2.3. Fishing mark

The fishing mark is used only to identify fishing boats by a unique identification system for the relevant vessels by the national authority. It consists of two parts. The first part indicates the port of registry and the second part indicates the serial number.

2.4. OFS number

A Community certificate proves that the vessel complies with the technical regulations from Directive 82/714/EG. The equivalent on the Rhine is the so-called "Schiffsattest". To all vessels for which this certificate is provided by a member state of the Central Commission for Navigation on the Rhine (CCNR), an official OFS number (the so called Europe number) is awarded (3). To improve the identification of vessels, OFS is extended to ships sailing in the other European waterway network (divided into four zones). However, the OFS number itself is awarded only to ships sailing on the Rhine. The OFS number consists of 7 digits, of which the first two indicate the range of codes reserved for the country where the certificate is issued and the second part is the serial number (see Table 3).

Table 3 - Structure of the official OFS number of CCNR

1	2	3	4	5	6	7
C	C	X	X	X	X	X
Range of country codes*		Serial number, X = 0-9				

* Range of CCNR country codes is given in Table 1

The OFS number is not changed during the life span of the vessel. Floating objects such as yachts, pontoons, repairing boats, etc., are not granted an OFS number.

2.5. FD number

The port authority of Antwerp distributes a local serial number to seagoing vessels, inland barges, yachts, pontoons, repairing boats, etc., the so called Financial Department (FD) number. FD is therefore

the unique identification number valid only in the port of Antwerp.

2.6. Tonnage certificate

In each country, a special department is authorized to measure officially the dimensions of each vessel and its corresponding tonnage capacity. Each tonnage certificate is accompanied by a number, which is awarded by the authority of the state where the vessel is registered. This certificate has limited validity. Unfortunately, there is at present no standard describing the content of this certificate, and the corresponding number cannot be used for unique identification of the vessel.

2.7. IVR certificate

The IVR certificate is awarded by the "International Association for Rhine Ships Register". It proves that the vessel meets the internationally set and approved standards for cargo protection. The IVR database contains data of all member states and Belgium. IVR is a private company and makes data (for more than 20000 vessels) available to the market. This certificate has limited validity as well.

3. ERI NUMBER, ERN

3.1. New proposal

The purpose of the ERN code is to identify ships that do not have an OFS or IMO number (6). It consists of 8 digits, which offers more space for coding ships. Therefore, the ERN code could be designed so as to include all the European countries. The intention is to

Table 4 - Structure of the ERN number

1	2	3	4	5	6	7	8
A*	B	B	X	X	X	X	X
Range of ERN country codes**		Serial number, X = 0-9					
OFS number of CCNR							

* The first digit representing different catchment areas

** Range of ERN codes for the Rhine countries is given in Table 1

design a system that would be as similar to the OFS of the CCNR as possible, so that the member states can use the new system with minimum changes. The structure of the ERN number is presented in Table 4. The first digit of the ERN number represents a different catchment area. As members of the ERI group [7], we proposed the use of digit A as "1" for the Rhine coun-

Table 5 - Proposal of a new coding system for ERN based on the IHO 23-4th ed. codes for oceans and seas as well as the corresponding ECLAC codes

Proposed First Digit of ERN Code	Name of the Catchment Area	IHO 23-4 th ed. Code	ECLAC Code	Remarks
Original first version of the proposal				
0	Rhine basin (North Sea)	1.2	4	Atlantic 1 *
1	Atlantic Ocean	-	1	
	North Atlantic, Iberian Coast & Bay of Biscay	1, 1.8	-	Atlantic 1 *
	Great Britain & Ireland	from 1.3 to 1.7	-	
2	Baltic Sea	2	5	
3	Danube River Basin	-	-	
4	Black Sea	3.3	7	
5	Aegean Sea	3.1.2.4	-	Mediterr. 6, ECLAC
	Adriatic & Ionian Seas	3.1.2.1 & 3.1.2.3	-	"
	East Mediterranean	3.1.2	-	"
6	West Mediterranean	3.1.1	-	"
Added later on the basis of discussions in ERI Expert Group				
7	Other and non-European countries	-	-	
8	Caspian Sea basin	-	-	UNECE proposal
9	Other needs			

*Both IHO 23-4th ed. and ECLAC, IHO= International Hydrographic Organization
ECLAC= Economic Community of Latin America and the Caribbean
Source: IHO 23-4th [9], UN/ECE [10]

tries, but after a discussion within the ERI expert group this was changed to "0" (see Table 1).

3.2. Coding of the first digit in ERN (A)

If we reserve the first digit of the ERN ship code "0" for CCRN countries, all other countries will have the range of 900 different numbers available in the first three digits of the ERN ship code (as opposed to 20 in the OFS code). If we offer to all of them an average of about 10 numbers in the first three digits of the ERN ship code, we could accommodate the needs of about 90 additional countries (more than they will ever need). At the same time, the OFS number could satisfy the needs of only two additional countries with 10 numbers each.

In a similar way, the first digit of the ERN ship code could be used to specify the different larger river basin areas [7]. For example, in Table 5 we propose such a coding system and compare it with the IHO 23-4th ed. codes for oceans and seas as well as the corresponding ECLAC codes. In Figure 1, the original first version of our proposal is illustrated on the map

of Europe. This version was later slightly modified within the ERI Expert Group. For example, the information was obtained that Luxembourg, which was initially treated as a Rhine country, had earlier reserved for itself the range of codes between 200 and 219. This made the list of reserved codes for Baltic countries short. The solution was found by transferring Sweden to the range of codes between 700 and 719, at that moment not awarded to any other country yet. In addition, it was proposed to accommodate also some non-European countries that may be interested in registering their ships in Europe. Such countries are, for example, the USA, Canada and Israel (within the range of codes 720-799).

Later on, a suggestion came from the UN/ECE to accommodate countries from the Caspian Sea catchment area, which are UN/ECE members and which could be connected to the Black Sea basin via Russian waterways (within the range of codes 800-899). The new version of the coding system is being discussed by the CCNR working group and the Joint group of CCNR and EC so the final version could be approved in the near future.

3.3. Application for the Danube River Basin

In the case of the Danube River Basin we proposed the use of the coding system as presented in Fig. 2. Unlike the Danube countries, countries on the coast of the Black Sea are assigned codes within the range of codes for other countries of the region (Romania 460-469 and Bulgaria 470-479). Slovenia was accommodated within the range of codes for East Mediterranean (570-579). Range of codes from 380 and 399 are reserved for other needs (7). We also proposed a similar range of codes for all countries in different catchment areas of Europe.

4. CONCLUSIONS

The system of using a unique number for ship identification should fulfil the following conditions:

- Minimum possible differences/modifications to the system currently used under the regime of the Rhine Vessel Inspection Regulations in order to minimize administrative efforts of harmonization.
- Usability for RIS-applications ("Unique ID"), i. e. the official number (or at least parts of it) should remain invariable throughout the existence of the vessel.
- Within RIS, Unique IDs will have to be assigned to vessels outside the scope of the relevant EU Directive as well (e. g. craft from non-EU-countries, vessels of authorities). The official number should be discernible from these Unique IDs.

Advantages of the proposed system:

- Easy transition of the current numbering system of the Rhine Vessel Inspection Regulations to the new system only by introducing an additional digit.
- Unique ID for RIS applications remains invariable throughout the existence of the vessel.
- The operator still has the free choice of the authority for inspection of his vessel.
- Assignment of identification numbers is necessary for RIS applications as well as for the requirements of the relevant EU Directive. The proposed system makes it possible to use one single system for both purposes, thus avoiding unnecessary and confusing duplicity and parallelism of structures.

For various reasons extra information may be needed on the outside of the ship:

- It would be useful to mark the authority that issued the currently valid certificate.
- It would be also useful to mark the category of the certificate issued.

Successful amendments and extensions of our original proposal for creation of the unique ship identification numbers, made later within the ERI expert group, prove the quality of the proposal. A special ad-

vantage of the proposal is the significant number of reserved ranges of codes for future use (for example, in the case of appearance of new independent states, provided they are officially recognized by the UN and UNECE).

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EUROPSKI JEDINSTVENI IDENTIFIKACIJSKI BROJ PLOVILA UNUTARNJE PLOVIDBE

SAŽETAK

Za potrebe učinkovitog upravljanja procesima unutarnje plovidbe neophodan je razvoj specijaliziranih informacijskih sustava primjenjujući suvremene informacijske i komunikacijske tehnologije (ICT). U tu svrhu pojedine mjerodavne europske uprave za vodotoke i luke dosada su razvijale vlastite informacijske sustave i baze podataka. Zbog neusuglašenosti dolazi do značajnih problema u objedinjavanju takvih sustava na europskoj razini (COMPRIS, 2003). Jedna od najvećih prepreka je nedostatak zajedničkog europskog jedinstvenog identifikacijskog broja za plovila unutarnje plovidbe. Zbog toga neke lokalne baze podataka sadrže nekoliko različitih identifikacijskih brojeva za jedno te isto plovilo unutarnje plovidbe ili neki identifikacijski brojevi nisu dostupni. Do istog problema dolazi i u komunikaciji između nadležnih uprava za vodotoke ili između nadležnih uprava za vodotoke i luke. Zbog toga je neophodno provesti uvođenje jedinstvenog identifikacijskog broja za sve plovne objekte na europskim vodotocima. Do sada su u upotrebi samo dva službena broja za brodove. Prvi je tzv. IMO broj koji se koristi samo za pomorske brodove, a uveden je još 1978. godine. Drugi je tzv. OFS broj (službeni broj broda), a koristi se za brodove koji posjeduju Rajnski certifikat (izdan od strane CCNR). Međutim, utvrđeno je da postojeći OFS broj ne može zadovoljiti sve potrebe koje proizlaze iz RIS Direktive 2005/44/EC i nadopune Direktive 82/714/EEC o tehničkim potrebama za brodove unutarnje plovidbe. To proizlazi iz činjenice da samo 20% raspoloživih kodova mogu biti korišteni za zemlje izvan sliva rijeke Rajne. Posebna grupa Electronic Reporting International (ERI) dobila je zadatak izraditi novi sustav za jedinstvenu identifikaciju brodova unutarnje plovidbe i također definirati model baze podataka o karakteristikama brodova. Početni prijedlog ERI grupe bio je da se na početak OFS-broja doda još jedna znamenka. Namjera je da razlike/promjene u ERN budu što manje u odnosu na postojeći sustav koji se koristi u režimu Rhine Vessel Inspection Regulations kako bi se što više smanjili neophodni administrativni poslovi kod harmonizacije.

Kao članovi ERI grupe priredili smo prijedlog za novu strukturu identifikacijskog broja (tzv. ERN). U ovom radu opisali smo naš prijedlog koji je kasnije raspravljan od strane posebne ERI ekspertne grupe i zajedničke radne grupe koju su uspostavili CCNR i EC.

KLJUČNE RIJEČI

CCNR, *Electronic Reporting International*, ERN broj, IMO broj, unutarnja plovidba, OFS broj, Riječne informacijske usluge (RIS), UNECE, jedinstveni identifikacijski broj plovila.

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