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SIGNIFICANCE AND ROLE OF INTERNATIONAL STANDARDS IN DEVELOPMENT OF CROATIAN NAUTICAL TOURISM

ABSTRACT

The authors of this paper have systematically studied the trends of increasing demand in nautical tourism. The increasing demand is followed by a significant increase of threats to the environment, but also to boaters and their vessels participating in nautical activities. The authors emphasise the obligation to observe safety requirements through defined and controlled procedures in marinas and at sea and implementation of international standards during the stages of organisation of nautical economy, i. e. nautical tourism with complementary activities. The authors explicate the implementation of international standards for selecting locations for marinas, construction and equipment of marinas and vessels, training of boaters – skippers, business operations of subjects and objects of nautical tourism and promotion of their services. Special attention is given to safety standards and procedures during emergencies at sea and in the ports. Each vessel is expected to have a GPS (Global Positioning System) device and a box similar to a black box in aeroplanes which could be used for reconstructing accidents. Radar systems, AIS system (Automatic Identification System) and alarm systems will minimise the time for interventions. The intervention procedures at sea are currently being determined aimed at minimising the time, but improvements are still needed. Special attention is also given to activities related to resolving crises, analysis of the existing and the potential causes and to defining of preventive actions.

KEY WORDS

nautical tourism, international standards, crises

1. INTRODUCTION

During the last 30 years, when a more serious development of nautical tourism in Croatia began (con-

struction of marinas), nautical tourism has proved to be one of the most propulsive types of tourism. During the war (1990 – 1995), nautical tourism was almost the only type of tourism which survived, although to a restricted extent, while other types of tourism, not unexpectedly, marked a more or less considerable decrease. The number of nautical tourism visitors has been continuously growing, which also refers to the number of vessels permanently berthed in the Croatian marinas and to the number of vessels in transit.

2. ACHIEVEMENT STATISTICAL DATA

The survey conducted by the Government Statistical Office in 2006 comprised 95 nautical tourism ports in the Croatian littoral: 56 marinas (10 of which were dry marinas) and 39 other nautical tourism ports. The total area of their aquatorium is 4,274,010 m², with 1973 berths. On 31st December 2006, there were 13,794 vessels at permanent berth, which is 3.8% more than the previous year. 86.6% used a sea berth, and 13.4% used only a land place [9].

In nautical tourism ports in 2006 there were 211,782 vessels in transit, which is 6.2% more than in 2005. When analysing the type of vessels using a berth at sea, 29.4% were motor yachts, 68% sailing yachts, and 2.6% other types of vessels. The majority of vessels in transit were from Croatia (33.4%), Italy (23.7%), Germany (13.1%), Austria (8.8%) and Slovenia (4.1%), which accounts for 88.10% of all transit vessels [9].

The trend of growth indicates insufficient capacities and emphasises the problems relating to the pro-

tection of the sea and coast. Since it is not possible to establish organised accommodation, the majority of vessels chooses their anchoring locations themselves, and consequently do not pay any fees for that, which is a considerable financial loss not only for the government but also for the local community. A particular problem is the disposal of waste from vessels and discharge of tanks in inappropriate locations. It is therefore necessary to plan the construction of new marinas and reconstruction of the current nautical tourism ports in compliance with the development strategy and to determine optimal locations for their construction.

3. SIGNIFICANCE OF ADRIATIC MARITIME CORRIDOR

The Croatian coast of the Adriatic Sea is one of the most indented coasts in the Mediterranean [2]: it has numerous islands, islets, cliffs, bays, inlets, straits, and it is a supreme tourist destination, but also a demanding navigational area, especially in adverse weather conditions. Climatic conditions primarily determine the length of the season, navigational conditions and recreational activities [4]. From the aspect of weather conditions and safety of navigation, nautical vessel navigation may be divided into two areas: navigation at open sea and navigation along the coast. Navigation in these two areas is differently affected by weather conditions and hence by procedures applied during safety hazards. In terms of the size of the vessels, wind, waves and other meteorological and ocean logic factors will have a different influence on navigation, the choice of the routes and the speed of the vessels.

3.1 Maritime accidents and navigation safety

From the aspect of navigational safety nautical tourism ports provide a satisfactory level of safety in the summer period. During other seasons, when the probability of adverse weather conditions is much higher, the safety of vessels in some nautical ports, anchorages and berths may be unsafe.

It has to be stated that marinas built in areas which are not naturally sheltered from the sea may have some sections in which safe berthing is questionable. This refers primarily to marinas where the impact of waves has been minimised by breakwaters, and where, in case of their full occupancy and a stronger storm, the vessels berthed in immediate vicinity of the marina entrance might be exposed to stronger motions of waves and corresponding consequences. Further development of accommodation capacities and increased number of nautical tourism ports and of vessels will surely, from the aspect of safety, result in additional pressure to services which are engaged in nav-

igational safety activities, like Port master's offices and their branch offices, but also other services dealing with providing assistance to people at sea.

The most frequent situation related to the safety of navigation is an emergency, i. e. an event that has not been foreseen or planned by the crew and/or responsible persons on land, which is of crucial influence on how a vessel or navigation is managed [7].

In terms of volume, emergencies are divided into the events which did not cause, but could have caused detrimental consequences, and to the events which directly or indirectly caused detrimental consequences, including life losses, threats to human health, material damages to the ship, coast and other consequential damages. Hence, a maritime accident is any accident which directly or indirectly causes consequences which directly jeopardise human lives, maritime environment or property. In terms of causes, maritime accidents are further divided into sinking, fire and explosion, stranding, collision etc., and also, in terms of the kind of consequences, to loss or threat to human lives, material damages, environment pollution, consequential damages, etc. In the territory of Croatia search and rescue is organised by the National Maritime Rescue and Coordination Centre – MRCC, founded in Rijeka in 1998. The data collected during search and rescue operations clearly indicate the state of navigational safety of ships, yachts and boats in the territory of jurisdiction of the Republic of Croatia. The main characteristic of maritime accidents that happened from 1999 to 2005 is the apparent trend of an increasing number of maritime accidents in the territory of the competence of the Republic of Croatia (Diagram 1).

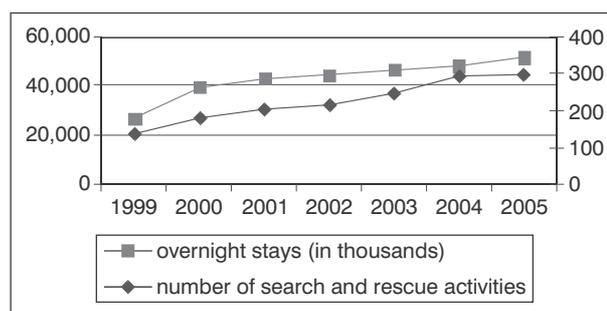


Diagram 1 - The ratio of the vessels' duration of stay and the number of search and rescue actions in the period 1999 - 2005

Source: HHI, Study of the development of nautical tourism in the Republic of Croatia, 2006

3.2 The issue of sustainable development of nautical tourism capacities on the coast and islands

Apart from a series of indisputable and evident economic and social benefits realised during the de-

velopment of nautical tourism and its outcome, such a development led, for a number of reasons, to *certain problems*. Among important direct and indirect effects and consequences, the following should be noticed:

1. Spoiling the quality of the environment

Spoiling the quality of natural environment is one of the drawbacks of (excessive) development of nautical tourism, caused by:

- *Construction of marinas* at inadequate locations in terms of natural characteristics of the landscape (e. g. marinas Žut and Piškera in the National park Kornati – for endangering the National park; marina Šimuni – due to the pollution of the bay because of insufficient exchange of sea water; marina Palmižana – for damaging the natural landscape, etc.).
- *Increased number of anchorages* in bays which are not adequately aired (e. g. Telašćica – for an excessive number of buoys in an organised anchorage and a great number of vessels during the season, especially at the end of the bay, to which daily visits of tourists from nearby coastal places should be added. All that results in excessive crowding and pollution and significant disturbing of the balance one should expect to find in a natural park; Veli Rat and Brgulje – for a great number of buoys in a protected anchorage, etc.).
- In the top season many places, famous tourist destinations, are very much jammed by anchored and moored boats, which leads to huge congestion and *reduced safety of navigation, berths, vessels and their crews* (the town of Hvar on Hvar, the Pakleni islands, areas of the national park Kornati, the town of Korčula on Korčula, etc.).

Surely, the above problems cannot be solved quickly, by building additional berths and anchorages or by adequate regulation, but it is certain that some destinations could have gradually resolved the same problematic situations and improved them in the course of time.¹

2. Pollution of the sea (and the coast)

Pollution of the sea and the coast caused by a larger number of vessels in some water areas (waste, bilge and faecal waters).

3. Inadequate level of system manageability

Considering the main characteristics of nautical tourism as a dynamic system (free movement of boaters, beautiful nature, limited capacities, uncoordinated actions and activities, etc.), it is reasonable not to expect *full manageability of nautical tourism system*. Even if that were possible, it would likely have a negative effect on boaters and urge them to avoid the Croatian Adriatic because of (possibly) too restrictive measures which might be applied. Hence, it is neces-

sary to see to which level the manageability could be increased while not affecting those attributes which refer to nautical tourism.

4. INTERDEPENDENCE OF PLANNING NAUTICAL TOURISM DEVELOPMENT AND STANDARD OF QUALITY

Good planning of the development of nautical tourism should be in compliance with the main standards of quality management. The control therefore has a special role; it is part of the function and obligation of the state, a partner included in the development of the community of the Mediterranean countries.

4.1 Planning the locations of nautical tourism ports

Most attention should be paid to selecting potential locations of nautical tourism ports, because, once the construction at a micro location has begun, it will not be possible to alter any inappropriate decisions. Inadequate locations render future efforts about establishing the quality management and service process in the nautical tourism port almost hopeless and useless. It is therefore necessary to follow the selection procedure which will minimise any wrong estimations about the suitability of construction. The aspect of safety of the future marina is important, and before the final decision and production of the Master design, the area needs to be studied in every detail [8].

It may be concluded that in the process of planning, the method of multi-criteria analysis of the littoral nautical tourism development should be applied, in view of: geographic and meteorological characteristics of the locality, environmental values, maritime and navigational characteristics, current influences on the environment and potential risks, infrastructure (electricity network, water supply network, telecommunications, traffic connections), spatial definitions, market demands (areas of intensive nautical tourism), and the possibility of development of complementary activities.

4.2 The importance of international standards implementation

The preparation period in business operations of a new nautical tourism port, especially of a marina, requires its operations to be in compliance with the international standards. The implementation of international standards in the categorisation of marinas is a necessity. Hence, it is important to develop and categorise the quality and the level of communication sys-

tem among marinas. Supervising the quality implementation of the established standards may be performed through certificates issued by the competent international institutions (certification houses), and through the existing national inspection bodies. All nautical tourism ports should satisfy the requirements and obtain the following ISO certificates (International Organization for Standardization), ISO 14000 Environmental management system, ISO 9000 Environmental management system and ISO 9001 Quality management system (organisation and control of the organisational level of operations). In this way the level of services of a subject is controlled, including the control of environmental impacts. *Care about the environment* is necessary if one is to ensure long-term management of nautical tourism ports and a continuous increase of the quality of service. The main criterion to be applied when selecting the locality and planning the construction at the designing stage is to determine the sustainability conditions and preservation of the current state of the locality. Thus, the investments become easily recognised by the boaters and are directly and indirectly paid back, whereas an ecological system once destroyed, is most frequently irretrievably lost. It is therefore necessary to establish permanent control of the locality done by eco-patrols. Such patrols may be professional and financed by tourist boards from tourist taxes. For a better efficiency, eco-patrols will communicate with Coast guard, and together with Port Master's offices, will guarantee better safety of navigation along the Adriatic and the Mediterranean.

Cooperation among nautical tourism ports will contribute to the increased quality of their services that will be categorised and controlled through their joint marketing activities. Good and efficient marketing activities may require considerable financial means that could be decreased, having the same effect, if a marketing presentation (where possible) is organised at the level of an association of nautical tourism ports (similar to the Italian "Associazione Italiana Porti Turistici dell'Adriatico"). Therefore, through incentives given by the competent Ministry, Croatia should support associations of nautical tourism ports. Such national associations should further be associated into a Mediterranean organisation. Joint marketing promotion will increase positive international competitiveness and ensure the improvement of services of all its members at a national or Mediterranean level.

4.3 Quality system of nautical tourism ports

The concept of quality can be defined as the sum of properties of an entity that make it capable of satisfying expressed or assumed needs. The quality system

presumes total quality management (TQM) and is not only an operational activity but rather a strategic action [1]. A nautical port should be observed as an integrated system and not only as a series of services whose quality has to be controlled. Management is oriented to causes and not to consequences, which significantly increases the efficiency of a nautical port. The basis for the implementation of the system and quality management is the ISO standard which allows for the optimum organisation, maximum competitiveness and continuous development at minimum costs.

The quality system implementation requires higher costs, but low quality causes even higher costs and the loss of the market, since the quality is an important long-term criterion for the presence on the market. In 1996, the first ISO 14000 was published and EU adopted it as EMAS (Eco Management and Audit Scheme) and it refers to the system of environmental management defined as a "set of organisational structure, procedures, habits and sources for company management from the aspect of the environment". Here, the ecological standards are based on assumptions such as: generality, effectiveness, possibility for development, voluntarism and systematism. In order to implement ecological standards the following has to be ensured [3]:

- successful management of environmental protection,
- promotion of broader public interests in environmental protection,
- more efficient business operations of nautical tourism ports,
- interdisciplinary approach.

Managing the environment is an integral part of managing a nautical port. It is a continuous and interactive process that has to be linked and coordinated with other activities of a nautical port. Integral managing allows for clearly determined and distributed competences and responsibilities of employees, based on the Company labour and procedures code, all aimed at increasing the management efficiency [5].

If a nautical port plans to operate as a company which organises business in conformity with ISO 9002 quality standard and be present in the nautical market, it has to perform its business operations according to the relevant legal regulations and conditions on the market. A port could obtain a quality certificate if it has defined the policy and the procedure for each of the twenty main areas that affect business operations. The procedure is a set of recommended actions in situations that will appear in future operations. The procedures are presented in chronological order and are in fact precise guidelines to be followed when performing a part or a whole of a business operation.

The rules are obligatory code of conduct applied when an operation is to be performed. The most im-

portant procedures which have to be defined in business operations of a nautical port refer to [3]:

- organisation and process of work in preparation and sale of services,
- procedures related to the quality and offer of services, and behaviour towards visitors,
- procedures related to dealing with cash money received for sold services,
- procedures related to safety of vessels taken for keeping,
- procedures related to procurement and storing of materials and raw materials,
- procedures related to the control of individual parts of a business process,
- procedures and standards of reporting at various management levels.

The activities determined by the policy and procedures stipulated by the quality standard ISO 9002 are implemented at some Croatian marinas and refer to:

- responsibility of the management board of a marina for defining the objectives and the quality policy defining the organisational scheme and competences, systematisation of jobs, etc.,
- policy of the marina management presented in documents and deeds,
- quality system which is realised in the quality plans and defined in the documents or procedures,
- contracting marina services,
- managing documents and data,
- procurement,
- managing objects received by the users, i. e. procedures related to the maintenance and keeping of vessels,
- managing processes; this relates to all business processes. Each process performed in the port is regulated by a special document called a Set of Procedures,
- various forms of control, testing and inspection regulated by the documents (instructions etc.),
- manipulation, storing, parking, keeping and delivering vessels, as described in the documents,
- training, regulated by the Company Labour and Procedures Code containing corresponding procedures,
- other jobs, procedures, quality assessments, services etc. regulated by specific rule books in which the particular procedure is defined.

Hence, the organisation of nautical tourism ports needs to be oriented towards establishing an integral system of managing, which will allow for managing quality and the environment – one of the strategic objectives of business policy. Modern operations of nautical tourism ports need an organisation which presents intended, continuous and practical activity of the management aimed at coordinating the elements of a

work process and at achieving optimal business results. Computer technology and higher standards will be introduced in the business process, preparation activities and providing services of the majority of the nautical ports.

5. IMPORTANCE OF SAFETY SYSTEM IMPLEMENTATION IN BUSINESS OPERATIONS OF NAUTICAL PORTS

Considering the European experiences, Croatia is engaged in implementing the safety system in all marinas. The system includes risk assessment, level of safety, insurance policies, implementation of policy and procedures and managing.

5.1 Managing system in the function of safety

It is necessary to point out that managers and employees in marinas may be charged for a serious offence relating to health and safety regulations, most of which is treated as criminal offence, rather than a minor violation of responsibility.

Managing marinas has to include the following processes:

- defining and recording sufficient amounts of data about risk assessment, covering all the areas where boaters might find themselves at risk while staying at a marina, and making distinction between danger and minor risks;
- determining the job posts, measures of precaution and recommending the system of risk control;
- insurance policy which determines and defines:
 - the responsibility of the president, the crew and managers, giving importance to cooperation of the management and the staff with personnel and the crew,
 - equipment maintenance,
 - appointing a manager for health and safety issues,
 - fire protection measures and first aid,
 - recording and reporting accidents,
 - training of personnel.
- control and monitoring risk control procedures. Marinas have clear instructions to implement safety measures which include:
 - health and safety responsibility,
 - adequate organisation,
 - planning,
 - training policy and training programme,
 - evaluation of safety activities by managers and the use of the Manual for procedures in case of accidents,

- evaluation of the stated activities in view of useful experience.
- B. M. F., health and safety manual for ship constructors and servicing staff is a useful guidebook about health and safety regulations and is a good reference for organising courses about risk assessment and other safety regulations.

5.2 Safety rescue of human lives

Safety equipment and the protocol should normally be included in the procedure of life rescue, provided they are not limited only to the following:

- Evacuation route from the aquatorium of the marina has to be provided through fixed stairs in the passage, 1 set of stairs per 30 berths. Such stairs have to be placed at a minimum of 1 meter under the water level. Appropriate handholds may be placed as an additional safety measure.
- Movable stairs may be used in addition, but should not occupy more than 50% of the recommended area.

It is especially important to shorten the extensions of ropes, wires, chains and electrical devices which are potentially hazardous in pontoons and passages. It is also necessary to:

- train the personnel for handling ropes, wires and chains that might cause scratches, especially on hands and fingers;
- place life buoys fixed in 10m floating where necessary, in the ratio of 1 buoy to 30 berths as the minimum;
- pave all the access areas in order to prevent accidents and reduce risk;
- continuously remove bulk fuel, fish oil, fungi and algae and other similar dangerous materials. Sand, pebbles and salt have to be used in cold weather, and warning signs should be clearly positioned.
- install adequate and sufficient lighting along roads leading to pontoons, access roads, moles, piers and coast;
- equip service vessels with:
 - life belts for each person aboard,
 - life buoy for line rescue,
 - 3kg of fire extinguishing powder,
 - anchor fixed to a rope,
 - VHF radio and cell phone,
 - motor pump or mobile pump,
 - a clearly labelled telephone.
- properly train the personnel for providing help and to be available;
- supply First aid kits that contain proper contents, and are easily accessible in pontoons or offices;
- have life vests available in offices and properly marked.

Special importance should be given to the control of dangerous materials and information about health-related regulations. It is therefore necessary to keep records about medications and various hazardous materials and their expiry dates, available to personnel.

Marinas in Croatia provide better safety than anchorages. This is important data for potential clients to know. It has to be emphasised that safety procedures need to be carefully considered at the stage of planning the construction of a nautical tourism port. The standards of building fences and access points require careful analysis. High safety standards also require 24-hour control, if possible. Therefore, staff accommodation near a marina is important. Appropriate lighting within the marina increases safety and is also pleasant for the users. Fluorescent lighting could also be installed in the servicing modules. Important information is also the data about the volume of criminal acts in the area, as well as particular safety recommendations. Video cameras and radio alarm systems suitable for vessels and buildings are ancillary equipment for improving safety.

Special recommendation refers to amending a contract about the use of a berth, in which clients will be required to include their insurance agent and the number of insurance policy. It is further recommended that the third party in the insurance covers a minimum of GBP2000. Yachts in transit need an insurance policy for the period of temporary short berthing. Boaters should be advised on that on special notice boards or brochures including details relating to the marina regulations about insurance of their vessels.

6. AIS SYSTEM - AUTOMATIC IDENTIFICATION SYSTEM

The AIS system provides automatic and continuous emitting and receiving of identification data and other important static and dynamic data about the navigation of the ships, done between ships, and between ships and coastal authorities in the range of ship radio station at all VHF frequencies. The system is very important for automatic receiving of all relevant data about ships navigating in a particular area [6]. The requirement is that the AIS system equipment is installed on the coast which will receive and process data from the ships and in this way provide full information about maritime traffic in a particular area. According to the Croatian regulations and in compliance with the provisions of the SOLAS Convention (Safety of Life at Sea), AIS has to be located on ships built after 1 July 2002, or precisely on:

- passenger ships of 150GT and above,
- cargo ships of 500GT and above,
- all other ships of 500GT and above.

AIS is also required onboard ships built before 1 July 2002, precisely on:

- ships designed for international voyages:
 - passenger ships of 150GT and above,
 - tankers of 300GT and above,
 - ships which are neither passenger nor cargo ships of 5000GT and above
 - ships which are neither passenger nor cargo ships of 300 – 5000GT.
- ships which are not designed for international voyages (only navigational area 5), passenger ships of 500GT and above, and cargo ships of 500GT and above (not later than 1 July 2008).

Installing AIS bases on the coast and their linking to the control centre ensures to each maritime country identification of ships, surveillance and control of maritime traffic in the area under its competence, which is of great importance as it contributes to improvement of navigational safety, more efficient search and rescue actions and quality protection of the sea environment. The competent Ministry of the Republic of Croatia has made a conceptual design and the final design of the AIS system with four base stations.

During 2004 and 2005, the Ministry of Maritime Affairs, Transport and Communications completed the first stage and purchased the equipment and installed 4 AIS base stations on Vis, Savudrija, Susak and Brijuni and connected them to the MRCC control centre in Rijeka. The control centre collects the data from all AIS base stations, analyses them, displays them in the electronic chart on the monitor and monitors the position and navigation of ships and yachts and other data about them (only those equipped with AIS). If necessary, the control centre may send text messages to ships and yachts. In 2008, the second stage will be realised: purchasing and installation of 13 new base stations which will provide control and surveillance of ships and yachts (equipped with AIS) on the whole territory of the internal sea waters and territorial sea of the Republic of Croatia.

7. CONCLUSION

Integral managing of nautical tourism ports is a continuous and interactive process which has to be related and coordinated to other activities of a nautical port. Integral managing allows for clearly determined and distributed competences and responsibilities of employees, based on the Company Labour and Procedures Code, all aimed at increasing the management efficiency.

Observing ecological standards is becoming a trend in nautical market demand. The return to nature and healthy food and the use of natural material is a worldwide trend which affects nautical tourism as

well. If we consider the preservation of coastal and sea environment as a requirement for the development of nautical tourism in relation to a tourist offer, the result will be market and ecological balance.

In view of European experiences, Croatia is engaged in implementing the safety system in all marinas. The system includes risk assessment, level of safety, insurance policies, implementation of policy and procedures and process management. The implementation of the safety system and international standards will significantly contribute to the development of nautical tourism. Of great importance for the boaters and their vessels is the AIS system which allows for automatic and continuous emitting and receiving of identification data and other important data about the vessels. In this way the competent services on the coast may trace the radio stations at VHF radio frequencies. Once the AIS system is installed at the remaining bases, it will be possible to control and monitor ships and yachts (equipped with AIS) in the whole area of the internal sea waters and the territorial sea of the Republic of Croatia.

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SAŽETAK

ULOGA I ZNAČAJ MEĐUNARODNIH STANDARDA U RAZVOJU NAUČKOG TURIZMA HRVATSKE

Autori rada sustavno istražuju trendove povećane potražnje u nautičkom turizmu. Povećanu potražnju prati značajno povećanje opasnosti ugrožavanja okoliša, ali i samih nautičara i njihovih plovila kao sudionika u nautičkim aktivnostima. Ukazuje se na obvezu poštivanja sigurnosnih zahtijeva kroz definirane i kontrolirane postupke u marinama i na moru i primjenu međunarodnih standarda u fazama organizacije nautičkog gospodarstva tj. nautičkog turizma s komplementarnim djelatnostima. U radu se obrazlaže primjena međunarodnih standarda kod odabira lokacije marine, gradnje i opremanja marina i plovila, izobrazbe nautičara - skipera, poslovanja gospodarskih subjekata i objekata nautičkog turizma i promocije njihovih usluga. Posebno se obrazlažu sigurnosni standardi u svezi s plovidbom i postupci tijekom izvanrednih situacija na moru i u luci. Za očekivati je da će svaki plovni objekt biti opremljen GPS-om i kutijom sličnoj crnoj kutiji u zrakoplovima, pomoću koje će biti moguće rekonstruirati nezgode. Sustav radara, AIS sustav (Automatic Identification System) i sustavi

uzbunjivanja, skratit će vrijeme intervencije na minimum. Već danas se razrađuju postupci intervencija na moru, da bi se vrijeme skratilo na minimum, a poboljšanja su i nadalje potrebna. Posebnu pozornost autori daju aktivnostima u rješavanju kriznih situacija, analizi postojećih i potencijalnih uzroka, kao i definiranju preventivnih radnji za njihovo sprječavanje.

KLJUČNE RIJEČI

nautički turizam, međunarodni standardi, sigurnosni sustav, krizne situacije

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