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## Vocational training in retaining of LRC competences

## Kształcenie zawodowe z zachowaniem kompetencji LRC

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**Key words:** distance learning, GMDSS, VET education, LdV poroject

### Abstract

International Maritime Organization is looking forward for modern methods of learning in marine field. The training of seafarers may be allowed by distance learning and e-learning methods in accordance with the standards of training and assessment set in STCW convention. For that purpose the web based course for competences related to the LRC certificate and learning management system, that is able to support any GMDSS E-learning material, are being developed. This is the aim of European Leonardo da Vinci project numbered: 142173-LPP-1-2008-1-SI-LEONARDO-LMP (2008–2010) and titled: E-Learning system for GMDSS VET. The article presents the results of current works.

**Słowa kluczowe:** nauczanie na odległość, GMDSS, nauczanie ustawiczne, projekt LdV

### Abstrakt

Międzynarodowa Organizacja Morska poszukuje nowoczesnych metod kształcenia dla sfery morskiej. Dopuszcza się szkolenie marynarzy na odległość w zgodzie ze standardami kształcenia i oceny przyjętymi w konwencji STCW. Do realizacji tego celu jest opracowywany internetowy kurs wraz z systemem dydaktycznym wspomagającym szkolenie GMDSS, spełniający wymagania na certyfikat LRC. Jest to zarazem zadanie europejskiego projektu Leonardo da Vinci o numerze: 142173-LPP-1-2008-1-SI-LEONARDO-LMP (2008–2010) i tytule: E-Learning system for GMDSS VET. W artykule zaprezentowano rezultaty obecnych prac.

### Distance learning in the STCW Convention

The distance education is offered by more and more educational institutions. It allows the “home conditions” to become a full participant in training courses. Initially, this method of training so called “e-learning” was used just as a container for traditional teaching materials. Hence many persons associate it with such service only. Nowadays we can observe the appearance of complete courses offered by the centers, schools and universities. Complete where the educational process (providing the knowledge, evaluation of results, examination, etc.) is carried out remotely. We are talking about the distance learning. Most training in this form does not apply to full training program, but

a certain part. In this way, universities improve the visual quality and they can reach wider audience. In countries where e-learning has been introduced widely traditional classroom hours were reduced up to 50% (for instance in Malaysia at Singapore Maritime Academy).

Can e-learning be applied for seafarers training? Currently undergoing revision of the STCW Convention provides recommendations for distance learning. Those are only recommendations, which the various administrations of the member states may introduce in their maritime education systems. The most important provision proposed for the introduction to Chapter I, Section B I/6 following guidance regarding training and assessment: Parties may allow the training of seafarers to distance

learning and e-learning, according to the standards of training and assessment contained in the conventions in section A I/6 [1]. Additionally Convention defines a set of detailed guidelines for this form of education.

It seems that there is no escape from this form of education. Each center for maritime education should offer distance learning. What is e-learning? It is the method of education which utilizes computer technology and media for learning and transfer of programs. Following technologies are used: media, Internet, Intranet, wireless networks (wireless) mobile technology (mobile networks), KMS (Knowledge Management System). The method of distance learning was called: learning through the Internet (Internet-based training), based on the training web pages (Web-based training), online learning (online training) and finally e-learning and distance learning. The advantages of distance education are: the ability to learn anywhere (house, aboard), the availability of materials, personalized course of learning (speed adjusted to the needs of individuals rather than groups), efficiency, arbitrary arrangement of classes, contact with the operator (moderator), the use simulations and simulators, verification of progress, documentation, etc. The training activity using e-learning may be more effective than traditional learning methods as: knowledge is delivered to the right people (those who want to learn) in the appropriate place and time, the message is personalized, interactive, current. Of course, with distance education are related some risks associated with securing data, unauthorized access to systems, procedures for examination, sharing, etc. Although we must assume that these are merely technical problems.

### The use of simulators in training

The STCW Convention allows the use of simulators in the training, skills assessment and validation of competence (and regulation I/12, Section A I/12) stating, inter alia, that the simulators should have sufficient behavioral realism to allow a trainee to acquire the appropriate skills training to the given objectives. Actually simulators require the physical presence of students during specified hours. Often the number of seats is limited, as well as time spent in training posts. They are relatively expensive and costly in use (operation). Therefore, they are increasingly being replaced by computer applications imitating ship operation equipment or processes during operation of the vessel. Such applications may be replicated or just some of their functions. In addition, there is often a remote

possibility of their running and maintenance. In such applications, learners can practice in advance selected tasks. With that approach they can have better understanding of function of real equipment and be able to for directly execution of exercises.

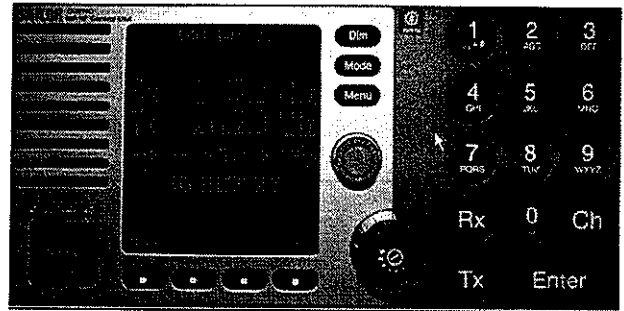


Fig. 1. Interface of MF/HF simulator ([www.egmdss.com](http://www.egmdss.com))  
Rys. 1. Interfejs symulatora MF/HF ([www.egmdss.com](http://www.egmdss.com))

The increasing mobility of people is causing alternative methods of education and learning. We can distinguish several reasons stimulating demand for knowledge as the need, competition, increased awareness, fun, obligation. Technological progress is rapidly altering and expiring the acquired knowledge. This applies particularly to devices, their operation, especially the automation of tasks they performed. In this respect, may be appear loss of understanding of the processes occurring in them. In such a situation we had to deal in case of collision of m/v "Gdynia" and m/v "Fhu San Hai" in which the officer (by declaration) tried to establish radio contact with other ship [2]. While at the same time he was too much focused on indications of automatic anti-collision systems during decisions making process. Automization brings two problems: one concerning the inadequacy of existing seafarers' education and training [3] in using of alternative systems. Second [1] The case concerns the lack of understanding of processes occurring in the devices (systems), their limitations, which may be the cause of many accidents. In this situation, nowadays there is an especially big need / demand for introducing of vocational education. The possibility of such training should be offered to everyone who completes training in any MET institution. Lifelong Learning Service available as distance learning may be more effective in maintaining competences. This in turn will probably allows to maintain safety of navigation at the required level. In the case of communication systems in distress (GMDSS) is crucial. Statistically speaking, the proportion of navigators have conducted the correspondence in distress (for example, calls for help, SOS, Mayday) is very small. In case of real risk they should do so accurately and effectively.

Procedures for correspondence in distress situation, therefore, should exercise practically often. In the training centers it is possible in case of refreshment courses (if given administration requires that) in the five-year interval. Those are long periods of time. They can be reduced to any period through the provision of distance learning methods (online simulators). With that approach the LRC vocational course has been elaborated for requirements specified by LRC certificate.

### The internet based course for Long Range Communication Operator

The SOLAS convention specifies mandatory equipment outfit of ships. In case of radio equipment it is related with operation area of the vessel. For that purposes GMDSS world was divided into four marine areas: A1, A2, A3 and A4. This division results from the different range of effective communication of radio equipment fitted on ships.

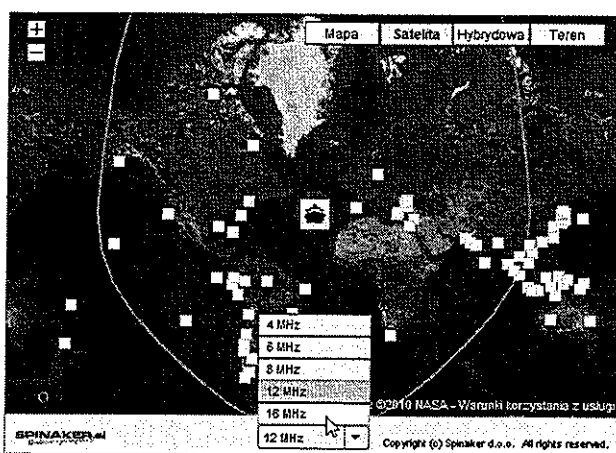


Fig. 2. Visualization station coverage MF/HF – [www.egmdss.com](http://www.egmdss.com)  
Rys. 2. Wizualizacja zasięgu stacji MF/HF – [www.egmdss.com](http://www.egmdss.com)

For example, sea area A2 is the area of sea which is within range of at least one MF coastal station (medium frequency), providing effective communications on the DSC frequency 2187.5 kHz, with the exception of the A1 area (approximately 150 – 200 NM from shore based stations). Vessels operating in this area should be equipped with equipment required for the area A1 and MF/HF DSC radio station. Radio operators in above area are required to hold an appropriate certificate of competency. In the case of non-SOLAS vessels, this should be at least certificate of long range communications operator – LRC. This certificate is proof of possession of theoretical

knowledge and practical skills in handling the following devices:

- VHF radio with DSC,
- radio MF/HF DSC,
- Navtex receiver,
- radiobuoy EPIRBs,
- transponder SART.

The elaborated LRC course consists of nine chapters supplemented by appendix and glossary. The first one contains a general knowledge of the GMDSS. While others procedures used in marine communications and discuss marine radio equipment required in the area A2, their service and supplies. Each chapter contains test that allows you to check the degree of assimilation of the material in question. For course participants four online simulators were prepared, respectively VHF DSC, MF/HF DSC (Fig. 2), Navtex and Inmarsat C (Fig. 3).

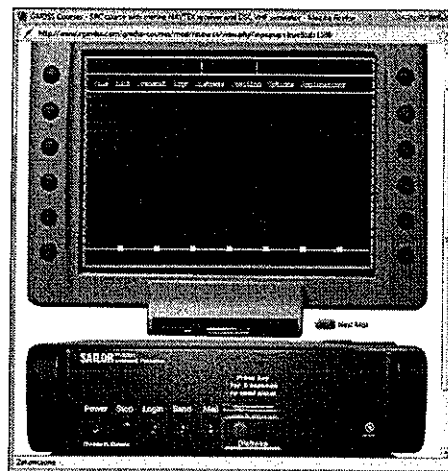


Fig. 3. Interface of Inmarsat C simulator  
Rys. 3. Interfejs symulatora Inmarsat

### Purpose of LRC course

The LRC course is formally dedicated to all applicants who want to obtain LRC certificate or maintain previously acquired skills. However, any person who wants to possess knowledge of the global communication distress and safety system may undertake this course. Content of the course, especially animations may be very helpful in understanding its functions (Fig. 4). In a graphic way they present some basis of GMDSS system operation, functions such as communication range MF/HF, Navtex messages etc. It should be underlined that every operator of the ship or yacht following the departure for the sea must have adequate training confirmed by a GMDSS certificate. However, from the point of view of safety of

navigation, every member of the crew should be aware of the distress communications system and its purpose and have the ability just to call for assistance.

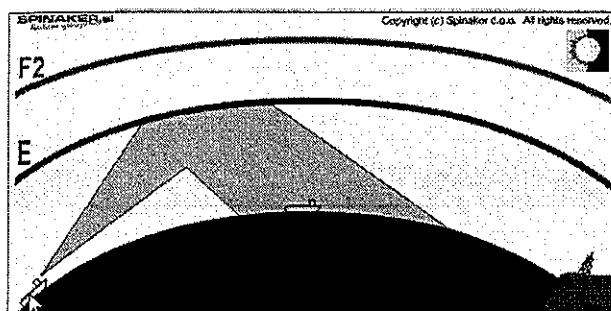


Fig. 4. Animation of effective range of communications MF/HF

Rys. 4. Animacja skutecznego zasięgu łączności MF/HF

Availability of LRC Course on the Internet, in the form of distance learning allows its widespread use. Also, it can benefit for training centers offering vocational learning. The form of the course is consistent with recent recommendations of IMO. Although IMO deals with professional sailors but the authors recommend to encourage of learning the basis of GMDSS also other people (those who don't work at sea). However those who are somehow connected with maritime industry, like: stevedores, ship agents, shipowners, crisis centers, service workers (coastguard, police, fire brigades, ambulance, rescue squads, users of inland waterways, etc.). Listed service employees may find

themselves in situations where during their duties they shall be required to establish communication with ship. Therefore, they should have at least a basic knowledge of communication systems and maritime English language [4].

One of the world's most dramatic and successful rescue operation, when all 571 passengers were saved from passengers ship m/v Oceanos on 4 of August 1991, was possible because help was called by accidental individual ... guitarist Moss Hills [5]!

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