THE TRAINING SHIP – AN OPPORTUNITY TO IMPROVE THE PRACTICAL SKILLS OF NAVAL ACADEMY STUDENTS

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Abstract: *The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (hereinafter the STCW Convention) is one of the most important international conventions in a seafarer's education and training because it sets the main requirements. Regulation II/1 states that every candidate for certification as officer in charge of a navigational watch, among other requirements, shall have approved seagoing service of not less than 12 months.*

The same requirement for Bulgarian candidates is stipulated in Ordinance No.6 on Competency of Seafarers in Republic of Bulgaria (hereinafter Ordinance No.6).

However, it is widely known amongst people involved in maritime education that the number of training berths on commercial vessels is extremely limited. This problem has only intensified further in the context of the global COVID-19 pandemic.

Therefore, one of the best solutions for students to graduate and to apply for examination before the Maritime Administration is to complete their practical education onboard a training ship.

The aim of this paper is to examine the topic, as well as present the opportunities and benefits, which the new training vessel of Nikola Vaptsarov Naval Academy can provide to students.

Keywords: *Maritime education and training, training vessel, sea practice, knowledge, practical skills*

УЧЕБНИЯТ КОРАБ – ВЪЗМОЖНОСТ ЗА ПОДОБРЯВАНЕ НА ПРАКТИЧЕСКИТЕ УМЕНИЯ НА СТУДЕНТИТЕ ОТ ВОЕННОМОРСКОТО УЧИЛИЩЕ

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***Резюме**: Международната конвенция за стандартите за обучение, освидетелстване и носене на вахта на моряците от 1978 г. (наричана по-долу Конвенцията STCW) е една от най-важните международни конвенции в образованието и обучението на моряци, тъй като определя основните изисквания за това. Правило II/I гласи, че всеки кандидат за свидетелство за вахтен офицер, наред с други изисквания, трябва да има одобрен плавателен стаж не по-малко от 12 месеца.*

Същото изискване е предвидено за българските кандидати и в Наредба № 6 за компетентността на морските лица в Република България (наричана по-нататък Наредба № 6).

Все пак сред хората, занимаващи се с морско образование, е широко известно, че броят на местата за преминаване на стаж на търговските

кораби е изключително ограничен. Този проблем само се засили допълнително в контекста на глобалната пандемия от COVID-19.

Ето защо едно от най-добрите решения за студентите да се дипломират и да кандидатстват за изпит пред Морска администрация е да завършат практическото си обучение на борда на учебен кораб.

Целта на настоящата разработка е да разгледа темата, както и да представи възможностите и ползите, които новият учебен кораб на ВВМУ „Никола Й. Вапцаров" може да предостави на студентите.

***Ключови думи**: морско образование и обучение, учебен кораб, морска практика, знания, практически умения*

1. Introduction

The final completion of education and training of all students of Navigation Department is considered obtaining a Certificate of Competency.

There are four basic documents governing this education and training in Bulgaria:

- The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978 (hereinafter the STCW Convention);
- Directive (EU) 2019/1159 of the European Parliament and of the Council of 20 June 2019 (hereinafter Directive (EU) 2019/1159);
- The IMO Model Course 7.03 "Officer in Charge of the Navigational Watch";
- Ordinance No.6 On Competency of Seafarers in Republic of Bulgaria of 17 June 2021 (hereinafter Ordinance No.6)

The International Maritime Organization (IMO) adopted the STCW Convention as a response to the calls for harmonized international minimum qualification standards for masters, officers and watchkeeping personnel of merchant ships. The STCW Convention sets the main requirements for certification. Its Regulation II/1 states that every candidate for certification as officer in charge of a navigational watch on a seagoing ship of 500 gross tonnage or more, among other requirements, shall have approved seagoing service of not less than 12 months as part of an approved training programme, which includes onboard training. During this required service, the candidate shall have performed bridge watchkeeping duties under the supervision of the master or a qualified officer for a period of not less than six months. [1, p. 34]

Directive (EU) 2019/1159 of the European Parliament and of the Council of 20 June 2019 amended Directive 2008/106/EC on the minimum level of training of seafarers and repealed Directive 2005/45/EC on the mutual recognition of seafarers' certificates issued by the Member States. Actually the conditions for training and certification of European seafarers are stated in Directive 2008/106/EC, which introduces the requirements of the STCW Convention into European legislation, so it largely repeats the provisions of the Convention. It recognizes that the minimum level of training of seafarers "should be based on already established standards of training at international level, such as the STCW Convention", giving Member States the right to set standards stricter than this minimum. [2, p. 1]. Annex I of the Directive sets out the training fundamentals laid down in the STCW Convention and the STCW Code, including the fact that each candidate for certification as a watchkeeping officer must have at least one year of approved seagoing service, during which time he must have performed the duty of keeping a watch on the bridge for a period of not less than six months. [2, p. 16]

Model Course 7.03 provides IMO guidance on the training required for certification as a watchkeeping officer. The topics of Model Course 7.03 cover the minimum of the three functions of the competence standards for the operational level of responsibility: navigation, cargo handling and stowage, controlling the operation of the ship and care for persons on board. [3] The Bachelor's degree curriculum at Nikola Vaptsarov Naval Academy is based on this Model Course, but of course the number of lessons on each topic is extended.

The IMO, as an intergovernmental organization, has no jurisdiction to apply laws at national level. Therefore the requirements of STCW Convention are implemented in Bulgarian legislation by Ordinance No.6. The Ordinance basically stipulates almost the same requirements for Bulgarian candidates for certification, just a bit stricter. Article 33, point 6 [4, p. 14] requires applicants for certification as a watchkeeping deck officer with university education to have fulfilled 12 months of seagoing service, of which not less than 6 months (after completion of theoretical education) as an assistant deck officer on a ship of more than 500 GT on an international voyage. It has to be recorded in a Training book, approved by respective Maritime Administration Directorate. The whole practical training has to be carried out on board ships, while Regulation II/1 requires that it shall "include onboard training" [1, p. 34].

Nevertheless, all people involved in maritime education are deeply aware of the existing problem with the number of training berths on commercial vessels and the difficulties for students to conduct their required sea service time. This trend has especially intensified in the context of the global COVID-19 pandemic which, along with the entire world economy, has seriously affected shipping. Due to travel restrictions, it is difficult even for the regular crews to travel to join a ship or be repatriated after the end of their contract. Another issue is that many companies had to reduce or even cancel their cadet programs due to economical crisis.

2. Benefits of training ships

According to international, as well as national regulations, all students have to gain at least 12 months of practical experience during their education and upon its completion. Bulgarian maritime law requires the whole practice to be carried out on board ships.

Brindel describes on board training not as a replacement for the lecture room ashore but as a possibility to broaden students' knowledge, to provide the familiarity necessary to achieve efficiency, to add refreshment and piquancy to shipboard knowledge and ability. [5]

There are two options for graduating students to carry out their seagoing practice. The first one is on board specialized training ship and the second one – on board commercial ship-in-service, belonging to different companies.

In his Masters dissertation, Yutaka Emi [6] compares both options and points out the advantages and disadvantages of each one of them.

2.1. Training ship

Training ships need to meet several conditions for the onboard practice to be approved by Maritime Administration:

a) Vessel has to be in operation and engaged in navigation;

b) To be of 500 gross tonnage or more (for navigators – STCW Code A-II/1); and

c) To have main propulsion machinery of 750 kW or more (for engineering cadets – STCW Code A-III/1).

Advantages:

- The practice onboard a training ship combines academic learning with sea experience. Cadets onboard such ships have traditional classrooms for learning the maritime subjects, as well as demonstrations by trainers for these subjects. At same

time, cadets are working in environment similar to a commercial ship, as the lessons are combined with maintenance tasks, safety trainings, keeping watch, etc.;

- Training ships provide an opportunity for standardized education and uniform practical training of large number of cadets at once – deck and engine students simultaneously;

- The training is supervised by experienced teachers and trained instructors, while on board commercial vessels it is done by officers who keep watch and have many other duties;

- Tasks are performed in risk-free environment – normally there will be a training bridge;

- Usually, during a sea passage cadets are able to implement practical actions on the watch under the supervision of the Officer of the Watch (OOW). Long sea passage is a difficult period to utilize the time for all cadets, but there are training vessels with a full mission ship-handling simulator on the training bridge with the same equipment. This enhances the training and gives cadets the chance to compare their actions with these on the real bridge.

- The vessel's schedule is not under commercial pressure but is determined from an educational point of view, there are neither time nor route constraints. This could allow cadets to commit real mistakes – for instance a "blackout" or main engine emergency slow-down. In such scenarios, cadets on the bridge have to deal with nearby traffic and collision regulations to avoid accidents, while at the same time cadets in the engine room have to cope with restoring electrical power or with main engine running at low mode of load implications [8].

Disadvantages:

- main disadvantage for a maritime institution to have a vessel solely for training purposes is that it is very costly – not only for buying the ship, but also for the maintenance and implementation of the voyages thereafter. The best solution is

for the vessel to also perform commercial tasks while she is not engaged with training or even during it (as it was the case with training-commercial vessel "Nikola Vaptsarov").

- practical training on a special ship usually is lacking the commercial part of the experience – loading, unloading and securing of cargoes.

2.2. Ship-in-service

Advantages:

- The entire training is conducted in real-world environment – students can gain real experience: cargo operations, cargo care, berthing and unberthing, commercial pressure

- Trainees are passing their practical training amongst ship's crew and are getting familiar with actual relationships on board and with life and work at sea

Disadvantages:

- Opportunities for training on board ship-in-service are limited to a very small number of trainees – maximum to 2-3 persons on every ship. These vessels do no possess sufficient berths and life-saving appliances for extra people in order to accommodate more cadets or even an instructor.

- There aren't any instructors on board such ships. Training is supervised by appointed officers, but they are with increased workload under commercial pressure – keeping watch, performing additional duties. All this reduces their time available for supervising, assessing and training cadets.

3. Features and planned use of m/v "Sv. Sv. Kiril i Metodii"

In its 140-year history, the Nikola Vaptsarov Naval Academy has had over 25 training ships, boats and yachts. Some of them were Navy ships or commercial and passenger vessels, used partially also for training of cadets, some of them were solely training ships. For the last 50 years on m/v "Petar Beron", m/v "N.Y.

Vaptsarov", m/v "Nikola Vaptsarov", m/v "Georgi Dimitrov", m/v "Dimitar Blagoev" (later "No.421") and sailing vessel "Kaliakra" thousands of cadets (students and pupils) have passed their practical training to become highly skilled professional captains, engineers and able seamen. [7]

After the decommissioning of training ship "No. 421" in 2010 (it remained as a floating training base until 2019, when she was scrapped), there was a serious lack of such a ship where cadets could conduct part of their sailing practice. Fortunately, the m/v "Sv. Sv. Kiril i Metodii" recently acquired by the Naval Academy will fill this void.

The ship was built in 1984 at Flekkefjord, Norway, under Det Norske Veritas (DNV) supervision as Offshore Supply Vessel. Initially she was owned by A/S Ivarans Rederi, named "Stad Sleipner" (later changed to "Far Sleipner") and was sailing under Norwegian flag. In 2011 the vessel was acquired by SUBSEA SURVEY SOLUTIONS, renamed as "Iskatel" and re-flagged under flag of Russia.

Fig.1 RSV "Sv. Sv. Kiril i Metodii". Source: https://www.monitor.bg

On July 27th 2021 with special ceremony held at Varna Naval Base, the ship was christened and named after the Bulgarian saints “Sv. Sv. Kiril i Metodii”. The name was chosen from more than 250 suggestions by a special committee, chaired by the Naval Academy Commandant-rector Flotilla admiral professor Boyan Mednikarov. The godmother of the ship was the Oscar-nominated Bulgarian actress Maria Bakalova.

In addition to the name, the vessel was assigned the traditional for Naval Academy training ships number 421 of the Bulgarian Navy.

Fig.2 Christening of RSV “Sv. Sv. Kiril i Metodii”. Source: https://parallel43.bg

Main ship’s particulars of RSV “Sv. Sv. Kiril i Metodii” (information from ship’s documents) are:

Type: Research/Survey Vessel

IMO № 8112586

Flag: Bulgaria

Call Sign: LZBQ

Gross Tonnage: 2194

Net tonnage: 658

Displacement: 3076 t

Summer DWT: 1103 t

Length overall: 67.48 m

Length between perpendiculars: 60,0 m

Breadth: 16.82 m

Max. summer draft: 4,5 m

Freeboard (max): 4,3 m

Speed (max): 14 knots

SHIP POWER PLANT

Fig.3 Engine Control Room. Source: Authors

Type: Diesel-Electric

Type of fuel: MDO Fuel

Main engine number, power: 3 * 1265 kW

Propellers: 2 Controllable pitch propeller Azimuthing Podded Drives (Azipods)

Bow Thrusters - 2

Fig.4 Azipod and thrusters controller. Source: Authors

The vessel is equipped with DGPS-positioning system located on the aft part of the Bridge which can control its location with accuracy of vessel position 0,1 m.

Fig.5 DGPS-positioning system. Source: Authors

The bridge is equipped with 2 radars, Electronic Chart Display and Information System (ECDIS), GLONAS/GPS Receiver, full GMDSS station.

Fig.6 Bridge. Source: Authors

There are 2 laboratories on board, as well as a hospital with 4 bunks for treating or isolating sick persons – during expeditions and voyages with cadets there will be a medical specialist together with the crew.

The main tasks that the vessel will perform are to undertake the Bulgarian national Antarctic expeditions and to carry out research activities conducted mainly by Sofia University and Bulgarian Academy of Sciences. The ship was built to cope with the harsh conditions of the Norwegian Sea; her hull is made of high quality steel. Despite her age of 38 years, measurements show that the wear in many places is below 10%, which is a good characteristic for such a ship.

Commandant-Rector of Naval Academy Flotilla admiral prof. Mednikarov proudly announced: "This ship is a realization of generations of Bulgarian scientists' dreams – to have an opportunity to explore the secrets of the World Ocean and the continent of Antarctica… Never before has a Bulgarian Navy vessel crossed the Equator, nor has the flag of Bulgarian Navy been flown in the South

Atlantic Ocean.” The President of the Bulgarian Antarctic Institute prof. Hristo Pimpirev commented: “With this ship for the first time Bulgaria took a serious step, balancing the great powers in the exploration of Antarctica.” [7]

In the next few months, the ship will be docked, all technical systems of the ship will be inspected and repaired if necessary, and the plan is to be ready, certified and sailed for Antarctica by the end of October.

As part of the vessel's preparations for the expedition, the ship's captain underwent special training in Argentina for extreme navigation and polar navigation, as navigating in ice conditions and protecting the ship from icing are some of the main difficulties.

However, the main purpose of this paper is to show the benefits which RSV “Sv. Sv. Kiril i Metodii” will bring to Naval Academy students.

The ship will provide service to Antarctic scientists in their expedition from October until March-April. Thanks to this timeline, during the summer months she will be used for conducting sea practical training of students majoring in Navigation, Ship Power Plants and Electrical Engineering.

Except for the 20 crewmembers, the vessel can accommodate additionally 38 persons (instructors and cadets) in double cabins, each one with its own bathroom.

Fig.7 Double cabin for cadets. Source: Authors

In the forthcoming repairs, a classroom with 7 working places – for 6 cadets and 1 for instructor will be built on the main deck. The existing laboratories will be used by students as classrooms too. During sea passages deck cadets will take turns in pairs keeping watch on the real bridge together with the duty officer, but the rest of them will plot the ship's route and determine the ship's position in the classrooms, comparing their results with real ones. The training vessel will not have a full mission simulator for utilizing long sea passages, but she is not supposed to do such. Students' voyages are planned to be conducted in the Black and Mediterranean Seas. Engine and electrical cadets will assist watchkeeping in the Engine Room and will take part in maintenance jobs there.

Conducting sea service on board SRV "Sv. Sv. Kiril i Metodii" would be very challenging, interesting and valuable for all types of cadets:

- For navigators – manoeuvring the ship by Azipods – most vessels are conventional types with common propellers

- For future engineers and electrical engineers – there are not many vessels with diesel-electrical propulsion system

4. Conclusions

In order to be certified as Officer of the Watch, each candidate shall prove that he/she has had 12-months of approved sea service.

Seafaring students may conduct this sea service as cadets either onboard training vessels, or onboard cargo vessels in different shipping companies. However, the best way is to combine both options – first to gain some knowledge and skills on board a training ship, followed by apprenticeship on board commercial vessels. As a result, they will get a complete and fruitful practical training.

The newly acquired training ship "Sv. Sv. Kiril i Metodii" will provide such opportunity to part of Nikola Vaptsarov Naval Academy graduates. She completely covers certification requirements for over 500 GT and propulsion over 750 kW.

5. References

1. International Maritime Organization, International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, (STCW) 1978, as amended in 1995/2010, London, United Kingdom, 2017 Edition.

2. European Union, Directive (EU) 2019/1159 of the European Parliament and of the Council of 20 June 2019, 12.7.2019, Official Journal of the European Union.

3. IMO, Officer in charge of the navigational watch (Model Course 7.03), London, United Kingdom, 2014 Edition

4. Ministry of Transport, Information Technology and Communications, Ordinance No.6 on competency of seafarers in Republic of Bulgaria of 17 June 2021, Published in State Gazette, no. 54 of 29 June 2021 [in Bulgarian]

5. Brindle, C. A., Practical training at sea: On board training. Paper presented at the second International Manning and The training Conference, The Lloyd's ship manager, Singapore, October 1992.

6. Yutaka Emi, An approach to the optimum utilization of training vessels in order to carry out the most suitable practical training, Master's thesis, World Maritime University, Malmo, Sweden, 2007.

7. Atanas Panayotov, "The training ships, boats and yachts of the Maritime School". 2021. Published by Nikola Vaptsarov Naval Academy. ISBN 978-619-7428-69-8 [in Bulgarian]

8. Hristov, D., Peculiarities of technical operation of main engines at low modes of load, 135 years of maritime education, Vol. 2, pp. 61 -75, 2016/5, ISSN 1310-9278 [in Bulgarian]

9. Mednikarov, B., et al, Current trends in the maritime profession and their implications for the maritime education, Proceedings of the International Association of Maritime Universities (IAMU), 20th Annual General Assembly, Tokyo, Japan, 2020