Implementation of STCW 2010 amendments regarding ECDIS training and proposed solutions

Keywords

- International Convention on Standards of Training, Certification and Watch Keeping for Seafarers (STCW)
- Electronic Chart Display and Information System (ECDIS)
- Training
- Solutions
- AASTMT

Research problem/objective

To try to put a solution to the problem generated by the new STCW requirements that force any navigator employed on a ship equipped with an Electronic Chart Display and Information System (ECDIS), should have an adequate certified training ,the huge numbers of candidates that will be willing to attend this training course will be faced with the limited capabilities of the maritime training institutes regarding ECDIS training, exampled in the Arab Academy for Science and Technology and Maritime Transport (AASTMT).

Abstract

The new International convention on Standards of Training ,Certification and watch keeping for Seafarers (STCW) amendments forced the seafarer sailing on a ship equipped with the Electronic Charts and Display Systems (ECDIS) to have a certain (certified) training, one of the approved methods of training is the simulator training on such equipment, the AASTMT has the ability to provide such simulator training for the ECDIS , but un-fortunately this is not enough, this paper discusses the problems that will face the maritime training institutes / centers around the world in general and the Arab Academy in precise to train the expected number of trainees willing to obtain such training, and proposes solutions to such a dilemma.

Introduction

Paper charts were always the mariner first aid to navigation, without knowing the features of the area of navigation a ship could never navigate safety, the relation between navigation charts and the navigators were never broken along the years, but it has grown stronger and stronger, paper charts has evolved from simple layout of an geographical area laid out on a piece of paper, cloth, or skin, to a complete electronic equipment with amazing add-ons, and much more, all for a sole aim, safety of navigation.

This evolution in the navigation charts did not come easy; it came with complications, as well as any technological step forward. The maritime community faced a dilemma, either to hold to their sacred bond with the classical navigational methods summarized in the paper chart, or, cope with such an evolution and deal with its complications caused mainly by the old “refuse the new” principle in addition to new regulations, requirements and implementations of such requirements.

These regulations/requirements were mainly concerned with both parts in concern, human elements and the technical elements, our research is more concerned with the human elements and how are they required to qualify there selves to handle and to reach the outmost benefit of the new generation of the electronic navigational charts (ENCs), also known as electronic charts display and information systems (ECDIS).

ECDIS in definition is any equipment that fulfils the requirements stated in SOLAS 74 chapter 5 “nautical charts and nautical publications to plan and display the ship’s route for the intended voyage and to plot and monitor positions throughout the voyage, an electronic chart display and information system (ECDIS) may be accepted as meeting the chart carriage requirements of this sub graph” (*SOLAS*, 2010)

Recognising the problem that most of the mariners are not sufficiently familiar with the usage of ECDIS and its limitations, the IMO in 2010 requested a complete review of the international convention on standards of training, certification and watch keeping for seafarers (STCW) 1978 as amended 1995 and 1997. (*Facts about electronic charts, 2007*)

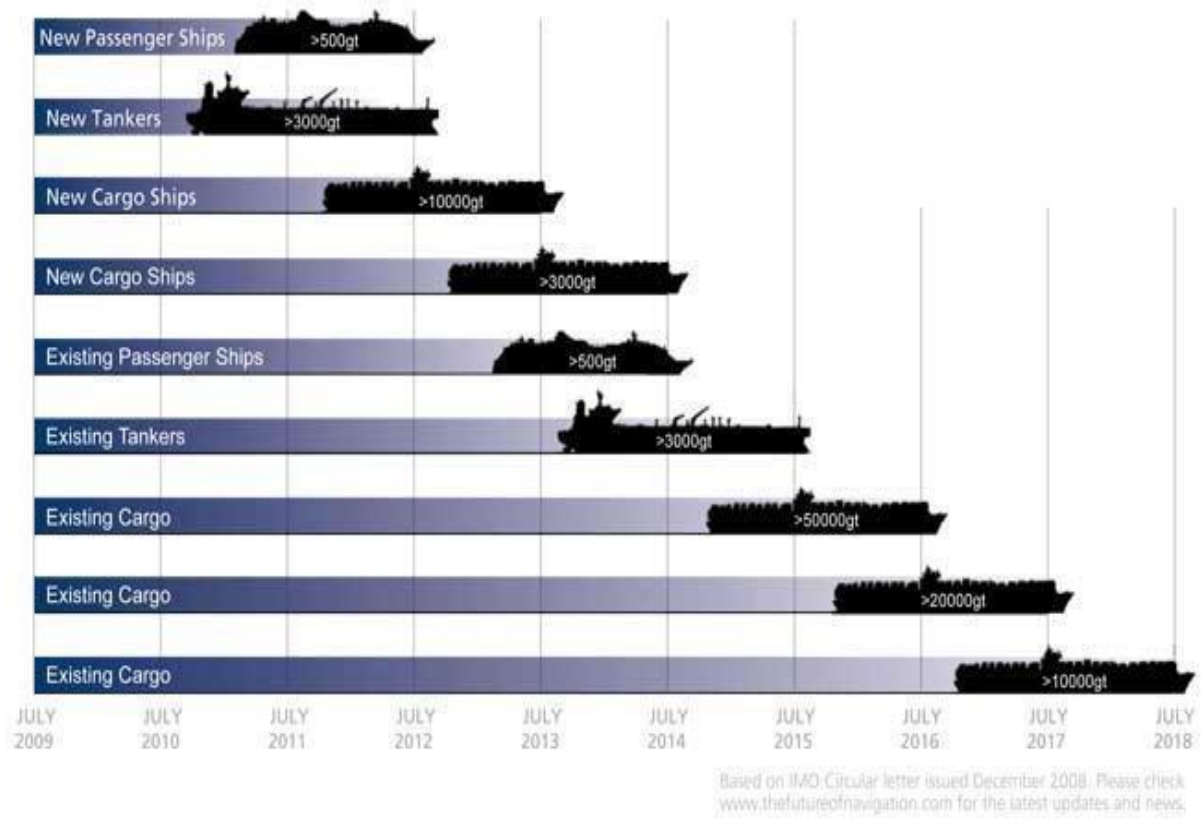
The first time ECDIS was discussed in the International Maritime Organization (IMO) was in 1986, this was faced with a worldwide objection mainly because two major reasons, one is that the ECDIS which is an electronic instrument with an unknown reliability is to replace a very dependable and proven navigational aid (paper chart); second, it was relatively an expensive tool at that time. (Norris, 2008)

After this a lot of meetings have taken place, work groups have been put together and standards have been produced. All this has led to the concept of chart display and information systems (ECDIS); it wasn’t before 1995 that the IMO produced the first performance standard for ECDIS. (Johansson & Laitakari, n.d.)

After that came the urgency of mandating ECDIS, IMO established a schedule to mandate ECDIS on all ships over 500 gross tonnage (GT), also known as SOLAS ships, referring to the ships intended in the Safety Of Life At Sea convention (SOLAS), mandating ECDIS is planned to take place during a period of 6 years, starting from June 2012 and ending on June 2018.by that date all SOLAS ships around the globe will forcefully carry and equip an electronic chart display device approved by the IMO.

The driving factors behind mandating ECDIS is to reduce workload, reduce safety drawbacks and enhance the chances of a safe navigational voyage. The following diagram show the SOLAS requirements time table for installing the ECDIS on board ships.

Figure illustrating the future plan of ECDIS mandating



(The future of navigation, 2012)

Figure 1

Brief on the STCW new requirements

According to the STCW (STCW, 2010), for individuals working on vessels with an Electronic Chart Display and Information System (ECDIS), there are the following requirements *(these apply* only to those who serve on vessels fitted with ECDIS):

I. For officers in charge of navigation watch on vessels of 500 GT or more, There must be an examination and assessment of evidence obtained from Either approved training ship experience or approved ECDIS simulator Training. (Table AII/1 of the Code)

II. For masters and chief mates on vessels of 500GT or more, either approved In-service experience, approved training ship experience, or approved ECDIS simulator training is required. (*Table AII/2 of the Code*)

III. On vessels of less than 500 GT on near-coastal voyages, for officers in Charge of a navigational watch and for masters, either approved training Ship experience or approved ECDIS simulator training is required. (*Table* AII/3 of the Code)

The capabilities of the Marine Simulators Department in the AASTMT

AASTMT – Integrated Simulators Complex (ISC), ECDIS simulator

(Picture by Author, 2011)

Figure 2

The Marine Simulators Systems department (MSS) in the AASTMT has recently installed the most advanced ECDIS simulator laboratory (Kelvin Hughes Manta Digital ECDIS System) in the world for marine electronic charts systems with the cooperation of Kelvin Hughes limited, consisting of ,10 stations providing training for masters, officers and basic studies students, and in accordance with the new requirements of STCW 2010 and to achieve all the future requirements of international regulations planned to enter into force in 2012. (ISC-AASTMT, 2012).

According to the ISC annual report for 2011, the integrated simulators complex in the AASTMT has trained a total number of 642 candidates on the ECDIS equipment in the period from January 2008 to October 2011, but this figure is no close to the number of candidates expected to show up in the very near future to obtain the ECDIS training course. (ISC-AASTMT Annual report, 2011).

Number of expected candidates of ECDIS training course and estimated time table

Table showing the expected number of candidates to undertake the ECDIS course

Rank	Egyptians	Non Egyptians
Master	741	312
First officer	398	648
Second officer	693	417
Third officer	133	768
Total	1965	2145
	4130	

(Based on data from IMO Examination Center (IMOEC), in AASTMT, 2011&Egyptian Maritime Transport Sector (EMTS) in the Ministry of Transport (MOT), 2009)

Figure 3

The above table shows the expected numbers of officers and masters of Egyptian nationality in a period up to march 2009 and non-Egyptian nationalities on the period from January 2008 to July 2011, According to these round figures and according to the limited AASTMT capabilities shown before (500 trainee per year), the estimated time required to train the expected number of officers is from 8 to 10 years. (EMTS, 2009) (IMOEC, 2011)

The main point of discussion (research problem)

The new STCW amendments gave us three different methods for obtaining an approved ECDIS training:

I. **Approved training ship experience method**

II. **In-service Experience method**

III. **Approved ECDIS simulator training method**

Our research is more concerned in the Approved ECDIS simulator Training method, this research see's that due to the spread of ECDIS usage due to various reasons (ECDIS entry into force 2012-2018 – (STCW amendments, January 2010), there will be an enormous number of cadets, officers and masters seeking the ECDIS training course through The Simulator Training method, and because the current infrastructure in the AASTMT is limited to 10 trainees per week (as discussed before) which equals more or less 500 trainees per year if working around the year. This research suggests other methods for obtaining a certified and approved ECDIS training.

The recommended solutions of the problem

1. The simulator ECDIS laboratories

This is the primary and the most effective and qualified method to obtain a certified ECDIS training course, carried out by certified and well trained instructors using the advanced facilities available in the AASTMT, but due to the reasons mentioned before, this method will be limited to 500 trainee per year, which is not enough taking into consideration the period of entry 2012-2018. (ISC-AASTMT, 2011)

By Adding one or more similar ECDIS laboratory to the training power of the Marine Simulators Complex (MSC), the 500 trainees per year for every ECDIS simulator laboratory could be doubled or tripled to 1500 trainee per year, which according to our round figures could be achieved in less than three years and is still inside the six years window of application of the new requirements 2012-2018.

In addition, by using the extra instruments newly installed, the Academy can train its undergraduates on ECDIS and issue the certificates while they are still in basic studies period, in that way we decrease the load that will face us if they graduated without obtaining the certificate.

Unfortunately, this is a high valued and an expensive solution, the one and only ECDIS laboratory in the Marine Simulators Department containing ten individual ECDIS devices, coasted around 100,000 us dollars back in 2008, and the expenses is more likely to increase nowadays, if our objective is to build up two more laboratories then we are talking about a lump sum of 250,000 us dollars.

Another miss-advantage is that after the transitional period of the implementation of the new requirements (around 5 years period), the academy will have an excessive ECDIS laboratory that exceeds the market requirements, after the transitional period the normal enquiry for such a certificate will be limited to fresh graduates, junior officers and revalidation of expired certificates.

2. On board training

Some shipping companies requires in addition to the STCW requirement regarding ECDIS training, they require a special training on their models of ECDIS equipment, this kind of training is possible by two means, first to obtain the model required by the company and install it on the simulators complex equipment, but this solution is illogical because it means that the academy should buy several models of the same equipment for one time use which is not economical wise.

The on board training could be done on board ships as required from ship owners or major companies, this on board training will be carried out by sending a certified trainer from the Marine Simulators Department to the officers of a certain ship on board the ship, and in the end of the course an evaluation will be done on board by the trainer and a certificate could be issued in the administration office and send back to the trainees on board, this is more quicker method, increases the number of trainees and give the chance to use the ships and companies capabilities. But again we face the problem of the lack of certified instructors and will face some administrative problems, which lead us to the third method.

3. Certified trainers and distance E-evaluation

IMO has established an IMO module course 6.09 “Train the trainer”; (According to the marine simulators department team in the Academy) they are able with the aid of this course module to establish a more advanced course (ECDIS trainer course).

Instead of building up more ECDIS laboratories or sending certified trainers from the academy (which we lack in the first place), the major shipping companies may present to the academy one or more of their office employees (a designated person/persons), these representatives can attend the train the trainer course for ECDIS , as to have in each company its own certified trainer/trainers, after obtaining this certificated, he should be able to carry out ECDIS training to his fellow employees in the same company.

When it comes to evaluation, and because these designated persons are only certified as trainers and cannot issue a certificate, a distance evaluation system should be established in the Academy to evaluate trainees and issue the certificate.

The Marine Simulators Department has established an online training facility for ECDIS simulation, this online E-learning module is capable of training the trainees online, so with the aid of the certified trainer and the online e-learning ECDIS module, evaluation tasks may be submitted to the Marine Simulators Department by the trainer under the supervision of the company to ensure that examinations in not manipulated. The same method of issuing certain certificate has been used before through major training institutes and companies like VEDIOTELL and SEAGULL.

This is a numerical example of a number of shipping companies that have candidates qualified to attend the ECDIS training course using distance trainers, distance learning and distance evaluation. Based on the number of ships the company owns or operates, the ship has four officers and every ship has two sets of officers.

Table showing the number of candidates qualified to undertake the ECDIS course

Navigational Company	Number of ships in Fleet	Officers employed (theoretically)
Kuwait Oil Tanker Company (KOTC)	24	192
United Arab Shipping Company (UASC)	55	440
Abu Dhabi National Tanker Company (ADNATCO)	21	168
Villa Marine	20	160
Natural Gas Shipping Company (NGSCO)	8	64
Arab Maritime Petroleum Transport Company (AMPTC)	10	80
Egyptian Navigation Company	12	96
National Navigation Company	18	144
Total	168	1344

(Based on data from internet sites for above mentioned companies, 2011)

Figure 4

As the table (above) shows, this method of obtaining the ECDIS training course not only reduces the number of officers coming to the Marine Simulator Department in the AAASTMT for obtaining a certified certificate, but also opens a new market to compete with international training organizations and compete in areas far beyond the local infrastructure of the AASTMT.

How to implement these solution

1. Increase the academy facilities regarding more ECDIS laboratories as to accommodate more than the current number of trainees (500 per year), every extra laboratory will shorten the period needed for the same number of trainees.
2. Increase the number of certified trainers in the academy to have more on board training courses.
3. Establish an on-board training administrative arrangement
4. Establish an ECDIS trainer course for company representatives with the aid of IMO module course 6.09 "train the trainer".
5. Contact the major companies to agree on the concept of having their own trainers and examination centres.

Conclusion

During the next 6 years the Arab Academy For Science And Technology And Maritime Transport (AASTMT) represented in the Marine Simulator Systems Department (MSS) will face a burst of officers requiring Electronic Chart Display and Information Systems (ECDIS) training due to the implementation of SOLAS and STCW requirements, this research presents solutions to the AASTMT management to face such a problem, these solutions in brief are:

1. **An additional ECDIS simulator laboratory.**
2. **On board ships training carried out by the AASTMT Certified trainers.**
3. **Certified trainers from within the company ,and distance E-evaluation**

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