

谈履行 STCW78/95 公约对航海教育和培训的要求

肖根连 (宁波海上安全监督局)

[摘要]随着 STCW78/95 公约的全面实施,我国的航海教育和培训应如何履约,以适应公约的要求呢?本文就如何有机结合学历教育和船员培训进行了阐述,并提出了在航海教育和培训中注重模拟器的训练和强化英语教育的观点。

[关键词]STCW78/95 公约 航海教育和培训 模拟器

当今航海技术飞速发展,高科技的导航、通信、电子信息系统不断地用于船舶,这不仅提高了船舶航行的可靠性、安全性和经济性,而且在客观上提高了对船员素质的要求。为了全面提高船员的素质,国际海事组织(IMO)于一九九三年开始对 STCW 公约进行全面的修改,经过两年时间的努力,于一九九五年在 STCW 公约大会上通过了 1995 年 STCW 修正案和 STCW 规则的 1995 年 STCW 缔约国大会最终文件。该公约以全新的内容明确了船员培训、发证和值班的要求,促使船员迅速掌握新的知识和技能,加快适应科学技术的发展,全面提高船员队伍的素质。1995 年 STCW 修正案和 STCW 规则(以下简称 STCW78/95 公约)已于 1997 年 2 月 1 日生效。目前,如何使中国的航海教育和培训全面适应 STCW78/95 公约的要求,已成为履行 STCW78/95 公约的关键。

一、STCW78/95 公约的特点和对航海教育和培训的要求

STCW78/95 公约旨在强化对船员培训、发证和值班标准的要求,以提高船员的训练、技术水准,保护海上人命财产的安全和保护海洋环境。考虑到人为过失所引起的海上交通事故和污染事件日趋增多,为减少人为因素所造成的损失,新公约制定了较高的培训、发证和值班标准,与原 STCW 公约相比,除了结构,在内容上主要有以下几方面的特点:

- 1、全面、严格、多方位的遵章核实机制。
- 2、加强对海员的实际技能培养和评估,并规定海员必须接受系统的专业教育和培训。
- 3、对海员培训、考试、评估和发证,规定必须建立质量标准体系并受到连续的质量控制。
- 4、允许重组传统的船上岗位分工体系,引入适应先进自动化船舶的“职能发证”体系。
- 5、增加了模拟器训练的强制性要求。
- 6、严格并扩大对证书再有效的规定和适用范围。
- 7、集中和系统地规定了海员在各种条件下保持正常和安全值班的原则和要求。

公约第 A-1/6 节规定:缔约国应保证对按公约申请的海员的所有培训和评估是按照书面计划来组织进行的,包含适任标准、授课方法和手段、程序及教材,而且必须有合格人员来实施、监督、评估。

STCW78/95 公约好比是一根怎样提高船员素质的指挥棒,就航海教育和培训而言也应毫不例外地围绕着这一指挥棒进行调整,以适应公约的要求。

二、船员培训应与学历教育有机的结合

STCW78/95 公约首次把船上的任职的船员分为“支持级”、“操作级”和“管理级”三个级别,并明确了相应的适任标准。我国政府的主管机关在履行 STCW78/95 公约的文件中已明确规定:申请“支持级”的船员应完成认可的不少于六个月的水手(或机工)培训,或者完成认可的航海类技工学校相应专业的教育;申请“操作级”的船员应完成认可的不少于 2 年的航海职业教育和培训,或者完成认可的航海类院校船舶驾驶(或轮机管理)专业中专以上的学历教育。申请“管理级”的船员应完成认可的航海类院校船舶驾驶(或轮机管理)专业大专及以上学历的教育,对于中专学历的船员,还需要再完成认可的不少于 1 年的航海职业教育和培训。这一规定的实施,势必要求把船员培训与正规的学历教育有机地结合起

来。

船员培训的主要目的在于通过一段时间的学习使船员更新和掌握某种知识与技能；而学历教育的根本目的在于通过对学生系统的专业理论学习和灌输来发展学生的思维，并使學生获得自我学习、自我知识更新的能力。实践证明，没有一定的系统专业理论学习，仅靠短期培训，是很难迅速适应日新月异的技术更新和发展的，如要掌握 GMDSS（全球海上遇险与安全系统）、INMARSAT（国际海事卫星通信系统）的操作技术，没有一定的计算机和英语基础是很困难的，仅靠短期强制培训也难以奏效。又如 GPS（全球定位导航系统）普及后，由于受操作人员的理论知识水平所限，在许多船上 GPS 仅作为定位仪使用，而其强大的导航功能未能发挥其应有的作用，这无疑是一种资源的浪费。

我国现任的大多数高级船员接受过学历教育，但以往的学历教育都比较注重理论知识的学习，学生很少有动手的机会，通常采用解释、描述和论证、演示的方式，导致学生动手能力相对较弱。在航运界流行着一种说法：能干的考不上，考上的干不了。当然这话不能说是绝对的，但也能说明此种现象的存在。因此，把学历教育和船员培训相结合，共同组成适任证书教学的体系，无疑是一种良好的选择。

然而，航海毕竟是一门实践性很强的学科，系统的专业知识不等于良好的操作技能。而且随着船舶向大型化、高速化、专业化方向的发展，对船员的操作技能提出了越来越高的要求。随着 STCW78/95 公约的生效，注重船员实际操作技能的培养已成为一种趋势。如电子信息技术在船舶上的广泛应用，使船舶的基本操作变得简单易行，而对设备的了解和操作提出了新的要求，如 ECDIS（电子海图显示与信息系统）与 GPS 结合，使航线设计、船舶定位变得非常容易，而对设备的操作，则远不如在传统的纸海图上画航线、陆标定位等简单；又如 ARPA 的使用，使船舶之间的避让来得容易，而 ARPA 的使用，则比普通雷达要复杂的多。这就要求对传统的强调理论知识的学习和更新培训内容进行改革，实际操作技能的培训应成为船员培训中的重要组成部分。

综上所述，履行 STCW78/95 公约，提高船员素质必须是学历教育和船员培训有机地结合，通过学历教育使船员获取专业理论知识，从培训中掌握操作技能，在实际使用中得到熟练和巩固。再通过继续教育和培训，学习新的知识和技能，再实践，再提高；通过这种“三明治”式的教育和培训，使船员适应不断变化的航海高新技术。

三、注重模拟器在航海教育和培训中的应用

国际海事组织（IMO）已注意到模拟器的作用，它具有真实感强，训练项目多，并能综合船舶航行、避碰、定位及靠泊操纵等多方面的训练，在培训时便于船员接受，模拟器训练还以大量的实际范例做为训练项目，使学员有身临其境的实操机会，提高了训练效果，对训练结果容易客观测评，还具有一些海上实际操作不能实现的功能，如船舶碰撞效果等。STCW78/95 公约提出了对模拟器的强制性使用以及模拟器的性能标准、培训和评估要求的规定。其“最低知识要求”包括模拟器用于以下方面的训练和考核：世界不同的航路设计和导航；各种条件下的船舶定位；罗经误差的确定与修正；航行值班的安排和操作程序的确定；使用雷达和 ARPA 以保证航行安全；船舶在各种情况下的操纵与操作；计划和准备货物积载；确保货物运输、装卸及堆装安全；控制吃水差、稳性及应力情况，监督和控制法定要求执行的保护海上环境的措施。

应当看到，我国的航海模拟器教学方面虽然取得了一定成绩，与世界先进水平相比，由于起步较晚，教育经费不足和模拟器专业技术人员水平不高等诸多方面的限制，还存在一定的差距。据有关资料介绍，一些航海发达的国家已开设新的模拟器训练课程，如：船舶航行中驾驶台人员的组合与协作，船舶遇特殊情况时的应急部署与方法，海上人员落水或遇难船舶及人员的搜索与救助，特定的航路设计方法与特殊外界下狭水道航行安全及海上防污等。还研制出反映最新航海技术的综合全功能模拟器，用于“船舶自动导航”、“单人驾驶台的操

作”、“海上人工智能系统的应用”等新的模拟器训练课程。随着电子技术和仿真技术的发展，模拟器的仿真性能越来越符合实际。无论在我国还是在外国，模拟器具有的真实、灵活、高效和经济等特点被广泛认可。因此，化大力气开发研制新型的航海教育模拟器用于船员培训是今后我国培养船员的发展方向，如用于遇险通信的 GMDSS 模拟器，用于油轮装卸与原油洗舱训练的液货操作模拟器，用于集装箱和大型货物及散货吊装的模拟器，用于轮机方面的自动化机舱模拟器，用于船舶操纵模拟器等的研制成功都是提高船员的训练水平，保证船员素质的提高的一个重要的措施。

在模拟器训练中还应注意模拟器教学人员的培训和水平的提高更为重要，有一支具有海上实践经验和专业教学经验的模拟器教师队伍，才能充分发挥模拟器的作用和功能。

当然，也应看到模拟器培训的缺陷。如：不能完全模拟海上的各种环境，特别是恶劣天气的气象条件的影响，紧迫局面的紧张心情对操作技能的影响等。因此，在履约过程中，船员培训不能过分轻信模拟器的训练，应该把模拟器训练和海上实践有机地结合起来。

四、强化英语的教学的设想

我国是一个非英语官方语言的国家，日常生活和工作中很少用到英语，学校的英语教学中存在着注重“应试教育”的倾向，致使学生的考试通过率较高，但英语的应用能力较差。而且航海专业英语与基础英语脱节。对基础英语较重视，对专业英语只侧重于阅读训练，缺乏同步训练，语言、交际能力不强。航海是一个集船舶操纵、货运、气象、法律、商务、贸易、管理和外交等多种的职业于一身的职业，需要同诸多行业 and 人员进行交流和沟通，英语的听、说、写尤为重要。改正英语教学也是我国航海教育和培训适应 STCW78/95 公约的要求，提高船员素质的一个重要手段。如学校使用的教材应是全英语的教材，教师用英语上课，同时在上课时多提问学生，师生之间用英语交流和沟通，在布置作业时也用英语答题，这样使英语教学始终贯穿于“听—说—写”之中。给学生有一个压力，逼学生学好英语。又如给学生创造一个良好的英语学习的生活环境，开设 CAPTAIN BAR，模仿船舶上的生活环境，使学生在日常生活中就好象生活在一艘远洋巨轮上，潜移默化地学习英语。通过这些方法能使我国的船员在英语水平有一个质的飞跃。

五、结束语

船员素质的提高除了上述措施外，还有更多的因素，如主管机关对船员的适任考试标准的把握，适任考试的方式、港口国管理和监督的力度等。STCW78/95 公约已于一九九八年八月一日全面实施，提高船员素质的目标任重而道远，还需要更多的热衷于航海教育和培训等有关人士共同关心。

On the Requirements of Maritime Education and Training (MET) During the Implementation of STCW78/95 Convention

Xiao Genlian

(Ningbo Maritime Safety Administration of the PRC)

Abstract: With the full implementation of STCW78/95 Convention, how does China's MET suit the requirements of the Convention? This paper gives a detailed description of the problem and offers proposals for emphasis on simulator training and English teaching.

Key words: STCW78/95 Convention, maritime education and training, simulator.

With the great development of the modern navigational technology, high-tech such as navigation, communications and electronic information systems is widely utilized on board ships, which enhances ship's sailing safety, liability and economy, requires that seafarers should have high quality. So IMO began to amend STCW Convention fully, and after two-year work, adopted in 1995 the final act of STCW Conference. The Convention stipulates the requirements of training, certification and watchkeeping for seafarers, and impels seafarers to quickly master new knowledge and techniques in order to suit the development of science and technology and improve their quality. The 1995 amendments and STCW Code, hereinafter referred as STCW78/95 Convention, entered into force on 1 February, 1997. How can China's MET completely suit the requirements of the Convention?

1. The Characteristics of STCW78/95 Convention and its Requirements of MET

STCW78/95 Convention aims at strengthening the requirements of training, certification and watchkeeping for seafarers to improve their training technical quality, ensure the safety of life and property at sea, protect marine environment and decrease traffic accidents and oil pollution at sea caused by human errors or elements. Compared with STCW78 Convention, the 1995 amendments have the following characteristics, i.e. they stipulates:

- 1) there shall be complete, strict and overall observance review mechanism of the regulations;
- 2) seafarers' actual skills shall be strictly cultivated, developed and assessed. They shall receive systematic and professional education and training;
- 3) quality standard system shall be established for seafarers' training, examination, assessment and certification under continuous quality control;
- 4) it is permitted to introduce "functional certification" system for modern automatic ships into traditional division systems of posts on board;

- 5) mandatory simulator-based training shall be added;
- 6) the management and application of certificate revalidation shall be rigorously enforced;
- 7) seafarers shall strictly observe the principles and requirements for maintaining a proper and safe watchkeeping in all conditions.

The Convention stipulates in section A-1/6 that each party shall ensure that all training and assessment of seafarers for certification under the Convention is structured in accordance with written programmes, including such standards of competence, methods and means of delivery, procedures, and course material; and which should be conducted, monitored, evaluated and supported by qualified persons.

The Convention provides guidance to help improve seafarers' quality. So those involved in educating, training and assessing the competence of seafarers shall apply the provisions of STCW Convention.

2. Combination of education for degrees and maritime training

The seafarers' responsibility on board is divided for the first time into 3 levels in STCW78/95, i.e. management level, operational level and support level; and appropriate standards of competence are also stipulated. China authority's documentation for implementation of the Convention stipulates clearly that candidates for support level shall complete approved special training not less than 6 months for sailors or motormen, or complete appropriate professional education in a maritime technical school. Candidates for operational level shall accomplish approved maritime professional education and training not less 2 years, or accomplish approved maritime education of ship's navigation or engineering management at least in a technical secondary school. Candidates for management level shall have at least associate degrees of ship's navigation or engineering management at maritime institutions of higher learning; those who have received secondary maritime education shall complete approved professional maritime education and training not less than 1 year. So the above stipulations require that maritime education for degrees should be combined harmoniously with maritime training.

The main purpose for maritime training is to help seafarers update and master a particular knowledge or skill; while the fundamental aim of education for degrees is to teach students systematic and professional knowledge and develop their thinking ability in order that they can teach themselves new knowledge. Facts have fully proved that it is very difficult for seafarers to suit the modern development of science and technology only through short-term training without any systematic study of professional theory. To master GMDSS and INMARSAT operational techniques, for instance, requires the basic knowledge of computer and English while short-term compulsory training will produce little effects. Another example is the use of GPS, which is very useful to navigation, but the system is used only as position-fixing equipment on board many ships due to operators' limited theoretical knowledge, which is actually a waste of resources.

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demonstration ,and make students have little opportunity for practice . There is a prevalent saying in the shipping world that “Those who are very capable cannot go through the seafars’ examination of competence while those who can go through the seafars’ examination of competence are not capable.” The saying is not absolutely right, but such phenomenon actually exists . So it is undoubtedly a good choice to combine education for degrees with maritime training and establish the teaching system of competence certificate .

Navigation is a science that needs the combination of systematic and professional knowledge and good seamanship. Large, high-speed and dedicated ships require seafarers should have more and more operational skills. After STCW78/95 Convention’s entry into force, it has become a tendency to lay stress on the training of operational skills. Electronic information technology has been widely used on board, which makes ship’s basic manoeuvring and handling quite easy. Combination of ECDIS and GPS, for example, makes routing and position-fixing very convenient, but the operation of the equipment is not simpler than the plotting on traditional paper charts and position-fixing according to landmarks. Another example is the use of ARPA that can help ships easily avoid collision, but is more complicated than the use of traditional radar. So the traditional theoretical study and updating training must be reformed and seafarers’ operational skills should be stressed in the maritime training .

To sum up, implementation of STCW78/95 Convention and improvement of seafarers’ quality require the harmonious combination of education for degrees and maritime training , which enables seafarers to master professional theory and operational skills. Seafarers will become proficient in what they have learned through practice and continuing education or training to suit the modern development of navigational technology.

3. The use of simulators should be stressed in MET

IMO has noted the great importance of simulators which can give trainees good sense of reality and many training programmes such as ship’s navigation, collision avoidance, position-fixing and berthing manoeuvre, etc. Trainees can have much opportunity for practice in simulator training, and easily achieve good results. Moreover, simulators can provide some function such as collision avoidance that can not be realized at sea STCW78/95 stipulates the mandatory use of simulators, performance standards of the equipment and requirements of training and assessment. The minimum requirements of knowledge in the Convention include the following items of training and assessment in the use of simulators: voyage planning and navigation for all conditions in the world, position determination in all conditions, determination and correction of compass errors, assignments of navigational watches and determination of operational procedures, the use of radar and ARPA to maintain safety navigation, ship’s manoeuvring and handling in all conditions, planning of and preparations for cargo stowage, safety of transport carriage and stowage of cargoes, control of trim, stability and stress, monitoring and controlling compliance with legislative requirements and measures to ensure the protection of the marine environment.

It should be recognized that China has made considerable headway in the maritime simulator teaching , but we have lagged behind the modern development of the world due to later start, financial reasons and technicians’ limited

knowledge. It is reported that several developed shipping countries have begun to offer new courses for simulator training, e.g. officers' coordination on bridge in navigation, ship's emergency plans and procedures in special conditions, search and rescue of men overboard or ships and/or persons in distress, particular routing and navigational safety in narrow channels and marine pollution, etc. Meanwhile, all-purpose simulators have been developed that stand for modern navigational technology. They are used in the new simulator training courses such as ship's automatic pilot, one-man bridge operation and the application of marine artificial intelligence system. With the development of electronic and emulation technology, simulators' emulation property has gradually conformed to reality. So simulators are widely accepted both at home and abroad for such characteristics as reality, adaptability, economy and efficiency. Of course, efforts should be made to develop new types of simulators for MET in China, e.g. GMDSS simulators for distress communications, liquid cargo handling simulators for tanker loading/discharging operations and crude oil washing training, simulators for the lifting of containers, heavy cargoes or cargoes in bulk, and engineering simulators in the automatic engine rooms. The successful development and manufacture of ship's manoeuvring simulators is undoubtedly a very important measure to improve maritime training and seafarers' quality.

It is appreciated that the improvement of instructors' knowledge and training is very important in simulator training. The teaching staff with sea-going service and teaching experience can make full use of simulators. However, the drawbacks of simulator training should be noted, e.g. it cannot simulate all the conditions at sea, especially the effects of bad weather, how a seafarer's nervous heart affects his handling skills in close-quarters situations. So during the implementation of the Convention, seafarers training should not readily believe simulator training, and should attach importance to both simulator training and sea-going service.

4. Consolidation of English teaching

China is not an English-speaking country in which English is seldom used in daily life and work. English teaching is only for the purpose of examination. So many students can pass the examination, but have little communicative ability. In addition, maritime English teaching is not combined with basic English teaching. Generally people pay great attention to basic English and reading comprehension in maritime English, and do not have any synchronous training in listening, speaking, reading, writing and translating. The profession of working on board is a career composed of ship's manoeuvring, cargo-handling, meteorology, law, commerce, trade, management and diplomacy, etc. Seafarers must make contact with persons of many trades in English. So English teaching must be reformed to suit the modern MET requirements, e.g. English textbooks must be compiled and adopted and instructors must give lectures in English and trainees must practise more English. A good environment of studying English is very important, e.g. students can establish a Captain Bar and practise and improve their English there.

5. Conclusion

There are many other measures besides the above-mentioned to improve seafarers' quality, e.g. the competence standards of the authorities, the means of examination, port state control, etc. The STCW78/95 Convention came into full effect on August 1, 1998. Those who are interested in and concerned about MET are expected to make more efforts to

improve seafarers' quality.

(The End)