

## **Policy on the Reforms and Improvements of Maritime Education in China**

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### **ABSTRACT**

This paper provides an overview of the current status of maritime education in China and discusses the reforms and improvements of Chinese maritime education for the future. The author also discusses further possible reforms in the administration of MET in China; given the opportunity of administrative system changes in MET institutions, the Chinese maritime education system shall meet the demands of national economic development and international shipping. Some critical issues are here presented in depth, including the key role the Chinese government plays in maritime education, optimizing the utilization of resources in maritime education, the MET administrative system, funds and financing, the training of MET instructors, on board and simulator training for students, regimental management of students and enrollment and employment of students.

### **1. Introduction**

Urgent necessity requires that the policy of reform and improvement of Chinese MET shall be undertaken and adopted. Our economic development needs the support of maritime transport. Statistics indicated that in 2000 85% of Chinese foreign trade was conducted through ocean shipping. Thus as one of the major means, maritime transportation continues to play an essential role in the process of China's emerging into economic globalization.

The core of the shipping industry, as in other industries, is its qualified professionals, and the responsibility of training and educating maritime professionals rests with MET institutions. These have made great contributions to the shipping industry in the last 50 years or so. The Chinese MET has made great achievements through efforts over several generations, and has ensured the provision of qualified manpower to the maritime industry in China. With our entrance into the World Trade Organization (WTO) and the acceleration of economic globalization, Chinese MET will need, in order to be in a better competing position, to adjust and adapt to the trends of development in both the international shipping industry as a whole and in its manpower market in particular.

### **2. Maritime Education and Training in China**

The overall regulatory control of the shipping industry in respect of safety and environment protection in China lies with the Ministry of Communications (MOC). The Ministry's responsibility for ensuring compliance with all the national and international maritime regulations is achieved through the Bureau of Maritime Safety Administration (BMSA). The

regulatory functions pertaining to maritime education and training (MET) are controlled jointly by the MOC and the BMSA.

## **2.1 The Organization and Functioning of Chinese MET**

The authority for implementation of international maritime conventions, including the provisions of STCW 95, rests with the BMSA. The organizational chart shows the relationship of the MET system and maritime administration.

## **2.2 MET Institutions in China**

Chinese MET has a concrete foundation. China is one of the major MET countries, there being five maritime universities and colleges for the higher degree levels nationwide, 18 vocational/technical colleges and 43 maritime training centers. At present, about 4,000 academic staff are involved in conducting maritime education and training of which more than half are professors, associate professors and lecturers. Some of these academics hold COCs with practical sea experience. More and more investment is being made on the updating of training facilities, simulators and real equipment for hands-on training.

These higher level institutions are Dalian Maritime University (DMU), Shanghai Maritime University (SMU), Jimei University (Maritime College), Wuhan Polytechnic University (Marine and Inland Water College), Ningbo University (Marine College). Among the five MET universities, only Dalian Maritime University is directly under the Ministry of Communications; two others are subordinated to the Ministry of Education and the remainder, to local governments.

## **2.3 MET Systems in China**

Two types of systems for MET exist: Higher Maritime Education and Vocational Maritime Education. The 1<sup>st</sup> is at university level, a four year course leading to a degree; the 2<sup>nd</sup> is a vocational education type. The students educated and trained through either system can obtain the highest certificate of competence (COC) for officers, i.e. Master or Chief Engineer COC.

The entry to different levels is based on the grades obtained by students in the National College Entrance Examination (NCEE) governing university admissions. Students with higher grades are admitted to universities while the others pursue MET at vocational institutions.

In higher maritime education, the students enter after completing their 12 years of schooling and according to their results in the NCEE. During their subsequent four years at these MET institutions, seven months are dedicated to shipboard training. Upon graduation, the students have to pass the national seafarers' examination for COCs and are required to complete one year of training on board ship. The national seafarers<sup>1</sup> examination is controlled, administered and conducted by the BMSA.

In vocational maritime education, the vocational maritime institutions are divided into three levels: higher vocational colleges, intermediate vocational schools, and maritime technical schools.

### **3. Project on Policy of the Reforms and Improvements of Maritime Education in China**

One of the tasks that Chinese MET faces is to make a study of the policy governing reforms and improvements in maritime education (PRIME) in China and to adopt such a policy. It contains objective requirements for sustainable development of the economy in general and of the shipping industry in particular, both in China and abroad; it entails improvement of the quality of MET institutions and promotion and enhancement of maritime education.

China has a very comprehensive MET system to promote the value of its institutions. Through years of operation and with the increase of student enrollment, some drawbacks and difficulties have surfaced. It is therefore timely that research staff at Dalian Maritime University is undertaking the project of examining the policy on reforms and improvements of maritime education in China, which is sponsored and supported by the Ministry of Communications.

The project's purpose is to complete a thorough study on a policy of Chinese maritime education within a valid scientific framework: administrative system, funds and financing, training of instructors, onboard, simulator and workshop training, regimental management, enrollment and maximization of human resources.

#### **3.1 Chinese MET – its Characteristics and Appropriate Status**

Chinese MET has celebrated 93 years of history since its foundation in 1909. Through years of growth and correction, China has built a very comprehensive MET system from higher maritime education and training to intermediate MET and from academic education to vocational training. Chinese MET displays several distinct characteristics concerning deployment of manpower, internationalization, national defense, and compliance with international conventions and national regulations.

MET in China is in the form of pre-sea courses, though seven months are dedicated to onboard training for students during their four years of university study. Most Chinese MET institutions have quality assurance systems in place; both internal and external audit schemes are followed in order to ascertain the standards of maritime education.

The goals and aims of MET in China need to be modified to meet the challenges and opportunities in the international shipping world. The BIMCO/ISF Manpower Update 2000 report predicts that by the year 2010 the shortage of ship officers worldwide will be 46,000. The officers and seafarers from the OECD countries in the next decade will become advanced in years and a shortage will follow.

The requirements for Chinese MET consist of both quality and quantity considerations: quality means educating seafarers qualified to pass muster in international competition;

quantity means educating and training a number of seafarers sufficient to meet the demand of domestic shipping companies.

### **3.2 The Administrative Scheme and System of Chinese MET**

Chinese MET commenced in July 1909. Nowadays MET institutions are subordinated either to the central government or to local governments. In 1999 the Chinese Government effected an important reform decentralizing the control of educational institutions. Provincial governments therefore are more fully authorized to administer some universities and colleges that used to answer to the central government alone. Most MET universities have been placed under local governments; two MET institutions were merged with other universities under the administration of the Ministry of Education, viz. the former Wuhan Transportation University, for one; only one maritime university, i.e. Dalian Maritime University, retains the same status under direct administration of the MOC. To date, all MET institutions are state run and government owned, no private MET institutions existing at all in China.

Due to the fact that most MET institutions are now answerable to local governments, it is of the utmost necessity that follow up of this change in the MET administrative structure be tailored to cope with these MET reforms. The responsibilities, rights, functions and duties must be made clear to the central and local governments, MET institutions themselves, and other departments concerned. The adjustment to and clarification of these policies shall be undertaken as soon as possible.

The administrative development for Chinese MET in the 21st century shall be government dominated albeit with diversified infrastructure. The principal avenue is through a state run MET system, but MET diversity is encouraged. MET is a costly education and training undertaking and consequently needs considerably more investment than do other types of education.

MET institutions require external auditing, and it is the Maritime Safety Administration (MSA) which is accountable for this. For further enhancement of the Chinese MET, the legal framework will assure quality. Indeed, at the present the Quality Control Code of MET for Seafarers, issued by the MSA, sets out in detail the responsibilities of MET institutions, the MET mandate and any remaining fundamental requirements for MET institutions.

### **3.3 The Funds and Financing of Chinese MET**

Educational funds in China come mainly from the government. The sources of funds for MET institutions in China are:

- the educational budget by the central or local government;
- donations by corporations or enterprises;
- revenue through enterprises that MET institutions run;
- students' tuition fees;
- and some other sources.

With the unfolding of the last 20 years, the Chinese government has embarked on many efforts and reforms for MET institutions, including boosting education through ampler funding and bigger budgets. They continue, however, to face difficulties in funding and financing and struggle with shortfalls caused by the following:

- lack of a policy for MET financing;
- minimal corporate investment;
- lack of individuals' personal investment towards professional development;

The proposals for more funds to be directed to MET are as follows:

- increased financing from government;
- financing from banks;
- investment from shipping companies;
- creation of scholarships by shipping companies;
- receipt of profits from certain investments as well as loans from banks;
- tuition fees from students.

### **3.4 The Recruitment Reform to Attract More Students**

The Ministry of Education (MOE) in China regulates national higher education. The MOE establishes and issues all regulations and requirements for the national college entrance examination and recruitment. To ensure a fair competition, all the candidates for each year must sit the same examination at the same time. The MOE decides on and prepares the examination papers, sets the same time for enrollment and then applies the same grading system. The special policy of recruitment for MET students was formulated in 1990 by the MOE. The authority for selecting MET candidates is given to maritime universities and colleges. The criteria for entering MET institutions include successful examination results for entry (the minimum total score being set by provincial authorities) and candidates' indication of MET institutions as their first post-secondary choice.

Some weaknesses in the recruiting policy also exist for potential MET students. First, there is lack of encouragement to continue professional development, which makes it difficult for seafarers to pursue further university education while on the job. Also, the physical criteria for Chinese MET institutions differ from the requirements of STCW 95 as far as the optical color-blindness test is concerned. Furthermore, the special system for recruiting MET students cannot be fully applied in certain provinces. Finally, but not least in importance, the current recruiting policy fails to vigorously attract more candidates of excellence for MET courses of study.

It is recommended that:

- a policy be devised and adopted to enable MET graduates to continue their professional formation through on-the-job studies. A nationwide network shall be formed to provide continuing study options, customer oriented, by means of distance learning;
- more authority should be accorded MET institutions in recruiting students;
- other reforms in recruiting MET students are to be embarked upon;
- MET students are to be exempted from any tuition fee and other general fees;
- concerning eyesight standards, the national criterion must become compliant with the international one and the requirements of STCW 95.

### **3.5 Standards and Qualification Levels for MET Instructors and Assessors**

Instructors' and assessors' qualifications are very important for quality in education. The Teachers' Law of the People's Republic of China and the Higher Education Law of the People's Republic of China have both prescribed and clarified teachers' qualifications required for Chinese universities and colleges. A teacher at such an institution must possess a master's or bachelor's degree. For maritime instructors, MSA requirements stipulate the instructor is to have at least five years of teaching experience and 12 months ocean-going experience in his or her area of instruction. Assessors for MET courses shall also have similar experience, both academically and at sea.

The establishment of a Chinese MET institution law is urgently required to ensure sound development of maritime education and training. In such an MET law, further specific qualification requirements for MET instructors should be particularized. For employment of instructors for MET institutions, competence-based qualifications and practical sea experience shall be taken into account. The ratio of staff holding COCs to those without COCs should be raised to a reasonable level. MET institutions should also make use of more part-time staff and visiting staff from the industry.

It is essential that:

- the concept of MET be changed;
- a scheme of MET instructors' professional development be established;
- better conditions be offered to attract more excellent and qualified MET instructors;
- qualifications and practical skills for MET instructors be improved;
- exchange of instructors at different MET institutions be encouraged;
- MET instructors' salary be increased.

### **3.6 Regimental Management to Improve the Safety and Security of Shipping**

In October 1963, the Chinese State Council issued an order to approve a management regime for MET students at Dalian Maritime University (formerly Dalian Marine College). Shortly after this, the PRC Ministry of Defense officially informed the University that the Navy would be responsible for sending training officers and providing training textbooks, materials and uniforms, as well as equipment and facilities necessary for military training. In 1988, the MOC decided to implement such regimented management in the rest of the MET institutions, i.e. Shanghai Maritime University, Jimei Institute of Navigation and Wuhan Transportation University. The other four MET colleges, of a vocational training type, also have implemented this system.

Thus all MET institutions in China have effectively established this regimented system as concerns management, teamwork, training and other aspects of its advantages.

In the twenty-first century, China has become a member of the World Trade Organization (WTO). Following the dreadful terrorist attacks in the United States, the regimented system needs to be adjusted to meet the new challenges. Future MET students shall have special training for tackling such emergency situations to ensure safety and security at sea. The students must be aware of the enormous uncertainty prevailing while international

terrorists circulate. Wide-ranging comprehensive measures and strategies to combat them are allotted priority on the training program list.

As the IMO Secretary General, Mr. W. O'Neill, said in this context, shipping and maritime structures are clearly vulnerable. I therefore initiated steps to prepare a resolution on measures and procedures to avert acts of terrorism. The security of passengers and crews and the safety of ships must not be threatened. Such issues necessitated a prompt response from the IMO.

### **3.7 Better Facilities for Competence-Based Training**

Practical training is an important part of MET. Recently more and more investment has been made in Chinese MET training facilities at our institutions, which still have been unable to cope with the increase in MET student numbers and the rapid development of modern technology. Only sufficient, state-of-the-art training facilities for MET students can ensure competence-based training.

In order to comply with the training requirements of STCW 95, Chinese MSA has published a series of regulations governing seafarers' training, certification and watchkeeping. Specific practical training requirements are made in these regulations, including simulator and shipboard training.

Chinese MSA issued an MET Quality Control Code to furnish an external audit scheme for all MET institutions in China. The training facilities include real equipment in the laboratory, simulators, the survival training center and training vessels. Some Chinese MET institutions, as required by STCW 95 and national regulations, have purchased a certain number of training facilities and equipment. For financial reasons these facilities could not be kept updated. Other MET institutions, being short of funds, could not buy new equipment and simulators, resulting in inability of practical training in their own institutions. A general survey of MET institutions in China indicated that definite problems exist in terms of training facilities, including an insufficient number of and outmoded facilities, shortages of funds and lack of training vessels.

STCW 95 clarifies the standards of competence required and introduces qualification requirements for trainers and assessors. The competence-based training requires Chinese MET to place more emphasis on the following:

- training students for creativity and practical skills;
- investing more in MET training facilities of the latest technology;
- improving MET quality by upgrading quality control standards;
- providing regular training to keep abreast of the latest technology;
- making the best use of the training vessels among MET institutions.

### **3.8 Employment of MET Graduates**

Employment for MET graduates works by way of "mutual selection". Before 1982, it used to be through a government controlled package, i.e. the companies and MET institutions reached an agreement on the number of graduates to be placed with each individual company. From 1983 to 1997, it was through "pre-employment", i.e. MET graduates were

engaged by shipping companies six months prior to their graduation. Since 1998, it has operated through “mutual selection”, i.e. shipping companies interview the MET graduating students and both can freely decide to offer or accept employment.

An employment encouragement policy for MET graduates shall be worked out to broaden their career opportunities. This employment policy shall take into account the following:

- the actuality that China has joined the WTO;
- meeting the demand of the new socialist marketing economy;
- meeting the demand of the national shipping industry;
- the mechanism of motivation;
- encouragement of graduates to enter the international competitive market;

It is therefore recommended that a new employment system be used: graduates will be encouraged to work on board ship directly upon graduation, including with foreign shipping companies.

#### **4. Conclusions and Recommendations**

Chinese MET institutions need to improve their quality of education. It is time to completely revise the policy for Chinese MET. Although China is one of the major maritime countries, it is not a nation of maritime power. With a very long history, MET in China is well developed in its comprehensive infrastructure. Its administrative system and quality assurance are securely in place. For most MET institutions in China, funding insufficiency is very common. Difficulties exist in recruiting top students for pursuing MET programs and in the lack of encouragement policies for graduates<sup>1</sup> employment. The training facilities cannot be kept updated due to the financial difficulties. There needs to be a policy to motivate MET trainers and instructors to refresh and upgrade their knowledge.

Several changing factors must be taken into account when making a study of the policy on reforms and improvements of Chinese maritime education and training: regulations, society, technology and economics. Regulation changes are dictated by new international requirements of the STCW 95 Convention and the ISM Code. The changes in society are reflected in the attitude of young people to seafaring, which has the greatest impact on MET: decline of interest in seafaring can be clearly observed in most cities of China. As for technology, modernizing on ships and in maritime transport as a whole continues to develop; it has already led to a change in work conditions and content for shipboard staff; the social use of IT can also be extended to educational use by making distance learning programs available on board. In terms of economics, MET is considerably influenced by the globalization of shipping.

The PRIME project only serves to stimulate improvement of MET standards. Well qualified ship officers will make MET more competitive and its graduates will be able to contribute even further to a quality shipping industry. It will make the seafaring career more attractive.

In summary:

- maritime education and training in China functions significantly in providing qualified ship officers for the industry;
- reforms in the administrative scheme and system for MET institutions in China shall be made to cope with the change of status of those institutions in relation to the MOC, local governments and MSA;
- the government shall provide sufficient funds for MET institutions;
- an improved recruitment policy shall be made to attract young people to seafaring;
- a motivation policy for MET instructors/assessors shall be drawn up for MET institutions in order to attract and retain instructors of excellence;
- the military management system shall be improved to adapt to new requirements, especially concerning the safety and security of shipping;
- more investment shall be made in new equipment and upgrading of training facilities;
- a motivation mechanism shall be inaugurated to encourage MET graduates to work on board ship at least several years for the industry before moving ashore;
- a legal framework for MET in China shall be approved and established.

The best result of reforms and improvements of MET in China is to come to a comprehensive understanding, to get MET institutions involved in national activities and to make MET heard and known in meetings at national level.

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