

Training for Hydrographic Surveyors at the Centre for Hydrographic Studies, Universiti Teknologi Malaysia

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Abstract

The Centre for Hydrographic Studies (CHS) established at the Faculty of Surveying and Real Estate, Universiti Teknologi Malaysia, is the only academic institution in the country presently focusing its effort toward the development of hydrographic surveying. One of the main objectives of the centre is to provide an education and training for hydrographic surveyors to cater for the increasing need of the country. This paper presents an overview of the establishment of the centre. However, the focus of this paper is to discuss on the design and development of the Hydrographic Surveying I (HYDRO I) course offered by the CHS to the hydrographic surveying community in Malaysia and the region.

1.0 INTRODUCTION

Malaysia is a maritime country. The Hydrographic Directorate of the Royal Malaysian Navy (RMN) is the government agency responsible for hydrographic survey and charting of the Malaysian waters covering a total area of about 500000 km². Besides the RMN, other government agencies such as port authorities (e.g. Port Klang) and private sectors (e.g. ESSO) only play a limited role in the hydrographic surveying activities. Since 1980 there has been a remarkable increase in offshore activities such as the fishing and shipping industries, and the most important of all is the economic development of the oil and gas industry. In order to support the continues development of these industries, the relevant organizations placed a high demand for various types of hydrographic surveying output.

The production of the various types of hydrographic surveying products, such as the hydrographic chart and seabed profile map, have been very slow due to (i) the shortage of skilled and qualified personnel (professional and semi-professional) in the surveying profession especially in the RMN hydrographic service; (ii) the utilization of old techniques and methods and unsophisticated equipments; and (iii) the non-availability of proper hydrographic surveying training centre in Malaysia.

The Centre for Hydrographic Studies (CHS) established at the Faculty of Surveying and Real Estate, Universiti Teknologi Malaysia, is the only academic institution in the country currently focusing its effort toward the development of hydrographic surveying. One of the main objectives of the centre is to provide an education and training for hydrographic surveyors to cater for the increasing need of the country. This paper presents an overview of the establishment of the centre. However, the focus of this paper is to discuss on the design and development of the Hydrographic Surveying I (HYDRO I) course offered by the CHS to hydrographic surveying community in Malaysia and the region.

2.0 CENTRE FOR HYDROGRAPHIC STUDIES (CHS)

The Centre for Hydrographic Studies (CHS) was established at the Faculty of Surveying and Real Estate, Universiti Teknologi Malaysia (UTM), in 1992. The centre started as a Hydrographic Unit under the supervision of the Department of Land Surveying, Faculty of Surveying and Real Estate, Universiti Teknologi Malaysia.

Administratively, the centre is managed by the Faculty of Surveying and Real Estate. However, it received a strong support (expertise and facilities) from other units, departments and faculties within the

University. Two faculties and an institute have had a close cooperation with the centre. The Faculty of Civil Engineering has always provided expertise in areas such as marine geology, hydraulic and hydrology. Likewise, the Faculty of Mechanical Engineering provides expertise in the areas of marine engineering, naval architecture, ship building and ship management, while the Institute of Coastal and Offshore Engineering cooperated with the centre in term of consultancy activities. Outside the university, the establishment of the centre was supported by the Royal Malaysian Navy, the Marine Department of Johor and recognized by the National Hydrographic Committee.

The objectives of the establishment of the centre are: (i) to provide education and training in hydrographic surveying; (ii) to undertake research and development in related areas in hydrographic studies and (iii) to offer consultancy services to various government and private agencies. To achieve these objectives, the centre is well supported by other laboratories within the faculty.

CHS is currently staffed with eight lecturers, a technician and a laboratory assistant. The academic staff possess M.Sc. qualifications and they received hydrographic surveys training in Canada, Australia or United Kingdom. At present, one of the lecturers is studying for his Ph.D. in the United Kingdom. The centre is also well supported by over 50 academic staff of the faculty.

3.0 TRAINING FOR HYDROGRAPHIC SURVEYORS

3.1 Recognized Courses Worldwide

Currently, there are 24 courses in hydrographic surveying available around the world for the hydrographic community. The courses offered are either the FIG/IHO Category A or Category B. The list of courses recognized by the FIG/IHO International Advisory Board on Standard of Competence for Hydrographic Surveyors is shown in Appendix A (Mills and Wells, 1994). From the 24 listed courses, only ten (10) courses are taught in English, the rest of the courses are taught in the respective language of the host country. The following is the list of hydrographic surveying training programs conducted in English for the FIG/IHO Category A (see Table 1) and Category B (see Table 2):

Table 1
The List of Hydrographic Surveying
Training Program for the FIG/IHO Category A

1	Basic plus Long Hydrographic Courses at the Royal Hydrographic School, HMS Drake, United Kingdom
2	Basic/Long Hydrographic Specialist Course at the Indian Naval Hydrographic School, Goa.
3	Diploma in Hydrographic Surveying at the University of Plymouth, United Kingdom.
4	Post Graduate Diploma Course at the Australian Maritime College, Tasmania.
5	Hydrographic Specialist Programme at the Canadian Hydrographic Service.
6	Hydrographic Surveyor Training Programme at the University of New Brunswick, Canada.

Table 2

The List of Hydrographic Surveying
Training Program for FIG/IHO Category B

1	Basic Hydrographic Course at the Royal Naval Hydrographic School, HMS Drake, United Kingdom
2	Hydrographic Training Programme at the US Naval Oceanographic Office, USA
3	The Royal Australian Navy's Course for 4th. Class Hydrographic Surveyor, Australia
4	Group Training Course in Hydrographic Survey, Japan.

3.2 Training at UTM

The Faculty of Surveying and Real Estate, UTM, began a Bachelor's Degree program in Land Surveying in 1973 and the first batch of students graduated in 1978. Hydrographic surveying course was introduced to the curriculum of Land Surveying degree program to provide the students with some knowledge and skill of the field. In order to enhance the practical skills, all students must undergo a one month long field training at the Hydrographic Section of the Department of Marine, Port Klang.

Initially, the education and training for hydrographic surveying was design to cater for the B.Surveying (Land) program. With the increasing need for trained and qualified hydrographic surveyors by the country, the faculty has reassess its role. Hydrographic Unit was set up following the availability of qualified academic staff. The university also has played its role by giving strong support toward the move.

The main objective of the establishment of the unit was to provide training in hydrographic surveying in term of short courses and workshops for personnel from both the public and private sectors.

4.0 THE HYDROGRAPHIC SURVEYING I (HYDRO I)

The design and development of the Hydrographic Surveying I (HYDRO I) was initiated following the recommendation and advice by McCulloch (1992). He made a proposal to the Universiti Teknologi Malaysia to offer a long hydrographic surveying course equivalent to that of the FIG/IHO Category B. The course should be conducted for a total duration of six months in order to incorporate the curriculum and syllabus as recommended by the FIG/IHO International Advisory Board on Standards of Competence for Hydrographic Surveyors. With the course recognized to be equivalent to the FIG/IHO Category B, he is optimistic that the course will able to attract a great number of students from Malaysia and the region.

4.1 The Objective of the Course

The aim of the course is to provide the participants with a comprehensive knowledge and skill of hydrographic surveying. The main objective is, at the end of the course, each participant should be able to undertake any hydrographic surveying project professionally and efficiently.

4.2 The Course Structure

The total duration of the course is six months including a field practice involving hydrographic surveying projects for a period of four (4) weeks. The course structure consists of a total of 640 teaching hours. Teaching hours include lecture, tutorials and practical. Table 3 presents the list of subjects to be taken by each participant to fulfill the requirement of the course.

Table 3
List of Subjects for the Course

SUBJECTS	HOURS
Mathematics	25
Computer Programming	34
Physics Theory	31
Applied Physics	25
Geodesy	37
Geodetic Surveys	75
Tides: Theory and Practice	49
Photogrammetry	21
Electronic Positioning Systems	58
Hydrographic Survey	95
Hydrographic Information	24
Dynamic Oceanography & Sedimentology	35
Port and Coastal Engineering	30
Marine Meteorology	18
Seamanship and Navigation	34
Law of the Sea	17

In order to support the teaching and learning activities for the course, the CHS is equipped with many facilities. CHS has also received advanced hydrographic equipments and softwares funded by the Canadian International Development Agency (CIDA). Appendix B provides the inventories of facilities available at the centre.

4.3 Entry Requirements

The following are the minimum entry qualification required for this course :

- I) At least a Certificate or Diploma in Land Surveying/
Civil Engineering or other related fields,
- OR
- ii) At least two years working experience in the field of
land/hydrographic surveying or other related fields.

4.4 International Recognition

The idea to set-up the course has received an encouraging support from many agencies and this include the Royal Malaysian Navy; Department of Survey and Mapping Malaysia; Maritime Academy of Malaysia; Johor Marine Department; Institution of Surveyors Malaysia; and Canadian Hydrographic Association.

The HYDRO I course has been submitted to the committee of the FIG/IHO International Advisory Board on Standards of Competence for Hydrographic Surveyors, for the international recognition to be equivalent to that of the Category B (specialising in Coastal Zones Management Survey). CHS has made the presentations to the committee at a meeting held at UTM on 25 March 1995.

5.0 CONCLUSION

CHS will continue to offer short and long courses in hydrographic surveying to the hydrographic community. Courses such as HYDRO I will give the opportunity for a proper training and qualification in hydrography which previously could only be provided overseas. However these courses require the support from the surveying community especially the related government agencies and private sectors involved in hydrographic surveying. They should take the opportunity to train or update the knowledge of their personnels by attending the courses offered at CHS which is at a much lower cost as compared to a similar course offered overseas. The opportunity to further the hydrographic knowledge and services will always be provided at CHS. With the present set up of CHS, and hopefully with the support from the surveying community in the country, CHS will continue to progress and becomes a centre for the development and dissemination of knowledge in hydrographic surveying in Malaysia and the South-East Asia region.

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