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REPORT

EIGHTH MEETING OF THE FIG/IHO INTERNATIONAL ADVISORY BOARD ON
THE STANDARDS OF COMPETENCE FOR HYDROGRAPHIC SURVEYORS

Bedford Institute of Oceanography
Dartmouth, Canada, 22-26 April 1985

REPORT

Eighth Meeting of the FIG/IHO International Advisory Board on the Standards of Competence for Hydrographic Surveyors

Dartmouth, Canada
22-26 April 1985

Attendance : The VIIIth Meeting of the Advisory Board was held at the Office of the Regional Director, Hydrography, Atlantic Region, CHS, at the Bedford Institute of Oceanography, Dartmouth, Nova Scotia, Canada, 22-26 April 1985. The following were present :

Lt. Cdr. C. Don, R. Neth. N. (Retd), FIG (Netherlands) - Chairman
Ing. Gén. J. Bourgoïn, FIG (France)
Mr. Suk Woo Lee, FIG (Rep. of Korea)
Mr. Peter Guy Odling-Smee, FIG (UK)
Mr. Adam J. Kerr, IHO (Canada)
Cdr. L.L. de Oliveira, BN, IHO (Brazil)
Mr. Shoichi Oshima, MSA, IHO (Japan)
Cdr. N.N. Sathaye, HRS (Retd), IHB (Secretary of the Board).

Also in attendance was Cdr. Eugenio José Ferreira Neiva, BN, as observer and when their respective course submissions were reviewed by the Board, were Mr. George Goldsteen, of the Australian Maritime College, Captain José Luiz Paz Llamas and Captain Federico Bermejo Baco of the Spanish Institute of Hydrography, Mr. G. Yeaton and Mr. P. Richards of the Canadian Hydrographic Service and Professor D. Wells of the University of New Brunswick, Canada.

No communication was received from Commander D. Sengupta, I.N. (IHO) India.

1. OPENING OF THE MEETING

Mr. S.B. MacPhee, Director General of the Canadian Hydrographic Service, welcomed all participants and wished them a successful and fruitful meeting. He emphasized the need for adequate standards for education in the field of hydrography in this age of rapidly changing technology and appreciated the onerous task of the Board.

Lt. Cdr. C. Don, Chairman of the Board, thanked Mr. S.B. MacPhee for hosting the meeting, his kind hospitality and the excellent arrangements for the meeting. The Chairman welcomed Messrs. Suk Woo Lee and Peter Guy Odling-Smee, who were recently nominated by FIG as Members of the Board in place of Messrs. Bosun Ayinde and Lt. Cdr. A.E. Ingham, RN (Retd), and asked them to formally introduce themselves to the Board and give a brief account of their hydrographic background. Messrs. Lee and Odling-Smee gave a brief background of their career.

The Chairman then read out the FIG procedure for nominating FIG members of the Board, which was similar to the procedure adopted by the IHO a year earlier.

Cdr. de Oliveira then introduced Cdr. Neiva, BN, to the meeting and requested that the latter be allowed to sit in as an observer. He added that the Brazilian Hydrographic Directorate would shortly submit their course programme for recognition of the Board and that Cdr. Neiva would be closely associated with this task and that his attendance as an observer would facilitate his task. Cdr. de Oliveira also announced that he would soon cease

to be a member of the Board as he would be transferred to another post. He handed over a copy of a letter from the Brazilian Hydrographer to the IHB, to the Chairman. The letter stated that Cdr. Neiva's name was proposed to replace Cdr. de Oliveira. The meeting agreed to allow Cdr. Neiva to attend the meeting as an observer but the Chairman pointed out that he would appreciate receiving from the IHB a formal letter on this subject and about the replacement.

2. ADMINISTRATIVE ARRANGEMENTS

Mr. Adam J. Kerr, Regional Director, Hydrography, CHS, Atlantic Region explained transport arrangements made for the participants and the programme drawn up which included a cocktail reception at his residence on 25 April 1985, dinner hosted by Mr. MacPhee on 22 April 1985 and a technical tour of the Bedford Institute of Oceanography.

3. ADOPTION OF AGENDA

The Provisional Agenda circulated earlier by the Secretary was adopted with some alteration in the order of items taken up for discussion.

4. REVIEW OF GENERAL PROBLEMS ASSOCIATED WITH THE STANDARDS AND ACCREDITATION

The Chairman informed the Board of the concern of the industry in adopting and implementing the Standards. He referred to letters received from the Hydrographer RAN, Cdr. Whitmore RAN (Retd), Mr. G.L. Haskins, Mr. Stirling and the Hydrographic Society. It was recognized that industry had a large number of surveyors, specialized in certain aspects of surveying, but who could not cover all subjects listed in the Standards. It was also appreciated that educational institutions did not have adequate facilities to impart practical training in various field operations, generally encountered in hydrography.

4.1 Nautical Experience

The Board recognized that, in certain occupations within the field of surveying, nautical experience and/or marine background was not essential but concluded that all those engaged in surveying at sea required an understanding of navigation, seamanship and meteorology.

4.2 Practical Experience

4.2.1 The Board was concerned that requirements for an aggregate period of at least two years' field experience in hydrographic surveying. (para. 1.3.1) seriously inhibits the ability of private institutions to obtain accreditation at either Category A or B. It believes that the requirement is essential to obtain the Categories A and B, as defined in paragraphs 1.2.1 and 1.2.2 of the Guide Notes.

4.2.2 To alleviate the problem the Board decided to introduce a new Academic accreditation which may be obtained at either the A or B level. It would then be possible for a national organization to consider the granting of individual certifications for graduates of an academically accredited course by adding a requirement that the graduates complete afterwards two years of practical experience following the general guidelines which will be provided in an amendment to the Standards. A refinement of this procedure could also include a Test of Practical Competence on completion of the practical experience and similar to the system utilized in the UK by the RICS.

4.2.3 The Board set down the following essential guidelines for practical experience. The period of two years shall include :

- a) Sea Experience - for 50% of the total duration
- b) Precise Positioning
- c) Tidal Measurements
- d) Bathymetric and sonar measurements and
- e) Terrestrial surveys.

4.3 Standardization of Review Procedure

As decided at the VIIth Meeting, the Secretary had carried out analyses of course programmes already recognized by the Board. These analyses were sent to NFPs concerned for their confirmation. Only three NFPs had replied and but for some minor changes the analyses were realistic. A comparative table of these analyses was tabled by Mr. Shoichi Oshima and it was found that the number of hours devoted to lectures, practical, etc. to various subjects differed considerably between courses. It was recognized that this was partly due to different pre-entry requirements of students. Nevertheless this comparative statement gave the Board some idea of the number of hours required to teach various subjects. The Secretary was asked by the Board to re-address all NFPs concerned on the subject requesting them to give the required information subject wise on existing Review Forms, so that a more realistic comparison could be made. On receipt of responses from NFPs a comparative table would be made and circulated to members of the Board.

5. REVIEW OF COURSE SUBMISSIONS

5.1 Submission of Australian Maritime College, Graduate Diploma in Hydrographic Surveying

The Board discussed the assessment of the Hydrographer of RAN before reviewing the AMC submission with Mr. G. Goldsteen who represented the AMC.

The Board, after a detailed examination of the course syllabi, concluded that the AMC course did not satisfy all the requirements of the Standards for Category A certification. It was explained to the AMC representative that even after strengthening subjects which did not conform to the Standards, the Board could only consider granting an Academic recognition to the AMC course as two years' practical supervised experience was not included in the programme. The Board's decision together with its recommendations would be conveyed to the AMC through the Australian NFP.

5.2 Hydrographic Surveyors Officers Course of the Spanish Institute of Hydrography

Captain José Luiz Paz Llamas and Captain Federico Bermejo Bado formally presented the Spanish Course Programme and clarified queries raised by the Board Members when the programme was reviewed. The programme is specially designed for Spanish Naval Officers, who after graduating from the Naval Academy serve another four years at sea. The one-year programme includes four months' nautical experience during the course and a further year's experience aboard Survey Vessels. The Board found that the course content conformed to the Standards for Category A certification but decided that another year's practical experience should be built in before individuals successfully completing both the academic course and the mandatory practical experience could be given Category A certificates. This was agreed by the representatives of the Spanish Hydrographic Institute. The Board therefore decided to grant full recognition to the course when the Spanish Hydrographer confirms including another year's practical experience within the programme.

5.3 Hydrographic Surveyor Training Programme Submitted by the University of New Brunswick, Canada

Professor D. Wells of the UNB presented the course to the Board and greatly facilitated the review by the Board by clarifying points raised by members. The Board found the general level of the one-year course to be very high but having weaknesses in certain subjects. The Board also felt that the two-week field training was insufficient. The Board therefore decided that purely academic recognition at Category A level would be granted to the course provided however certain subjects were further strengthened and the period of practical training was increased from two to four weeks. The Board's decision would be conveyed to the University of New Brunswick through the Canadian NFP and the UNB would be asked to confirm that the Board's recommendations would be implemented.

5.4 Hydrographic Specialist Programme of the Canadian Hydrographic Service (CHS)

Messrs. G. Yeaton and P. Richards presented the CHS programme to the Board and clarified various points raised by the Board during its review of the CHS course programme. The CHS training programme, designed for CHS officers, who join the service on completion of a three-year diploma course in surveying, comprises two separate courses, CHS I and CHS II, with about three-four years' practical experience in the field between the two courses. The general level of the total course was found to be high. However certain subjects were apparently not treated in depth as required by the Standards. The Board therefore decided to grant full recognition to the course provided however the course programme was modified as recommended by the Board. The Director General of the Canadian Hydrographic Service would be informed of the Board's decision.

6. AMENDMENTS TO STANDARDS

6.1 The Board recognised the need to restructure the Standards with a view to catering to the needs of three types of hydrographic surveyors, viz

- (i) those working for National Hydrographic Offices for charting purposes.
- (ii) port hydrographic surveyors and
- (iii) those working in the industry.

However, due to lack of any input from the industry and because of a very full agenda, it was decided to defer such amendments to the Standards until the next meeting of the Board. The Board however developed a concept whereby certain common subjects albeit to varying levels of knowledge appropriate to the classification of hydrographic surveyors would constitute common core subjects and others as optional subjects appropriate to the type of surveying occupations. This concept would be given wide circulation not only amongst the NFPs but also within FIG bodies with a view to receiving comments and criticism before the Board meets again in 1986.

6.2 Report of the Working Group set up in 1984 (Reference Para. 9 of the final Report of the VIth Meeting held in Brest, France).

The WG (comprising Ing. Gén. Bourgoin, Mr. Adam Kerr and Mr. Shoichi Oshima) experienced difficulty in partitioning the syllabus into elements applicable to different specializations of hydrographic surveyors. Ing. Gén. Bourgoin and Mr. Shoichi Oshima presented their respective suggestions on the subject. After due discussion, the Board thought that a system of essential courses combined with modular optional courses might be a solution to meet the

requirements of various specializations in hydrographic surveying.

The following concept was developed :

Essential Basic - Mathematics and Statistics
General Physics

Essential Specialization - Applied Physics including Acoustics
Measurement Science
Tides
Precise Positioning
Sounding, Sonar and Sweeping
Automated Data Gathering and Processing
Geodesy and Terrestrial Surveys

Background - Nautical Science

Optional Specializations - At least 2 of the following to be taken

- Cartography
- Oceanography
- Geology and Geophysics
- NO Astronomy
- Coastal Engineering
- NO Photogrammetry
- NO Law of the sea
- Offshore Engineering

6.3 Academic recognition of a course will require all up to background subjects plus two of the optional modules with a 4 week supervised practical training in marine surveys. Full recognition will require a further 2 years of practical experience as given in paragraph 4.2.1 of this report.

6.4 Nevertheless the Board considered it incumbent to redefine the levels of knowledge and amend the standards only to the extent which was affected by such re-definition.

The Board approved the suggestions of Ing. Gén. Bourgoin on the definition of three levels of knowledge viz : Basic, Practical and Detailed. These were as follows :

- Basic - General knowledge of the subject, normally not permitting the candidate to apply it in actual hydrographic work, except in the simplest of cases or under close supervision.
- Practical - Knowledge of the subject as far as theory and principles are concerned, but sufficient to enable their application in practice in all normal hydrographic tasks.
- Detailed - Thorough knowledge of the subject in all its aspects to enable its application in all hydrographic activities including the most difficult areas.

6.5 The Board amended paragraph 1.3.1 of the Guide notes to reflect its decision as regards experience. Paragraph 3.4 under Procedure for Submission was amended to reflect the Board's decision that course submission together with NFPs comments must reach the Board Secretariat not less than four months prior to the next meeting. A similar amendment was made to Para. 4.1 under Documentation. Minor amendments were made to the syllabus in the Standards.

6. The Preamble to the Guide notes was rewritten to reflect the Board's decision to grant a full or academic recognition.

7. REVISION OF PART II OF THE STANDARDS - BIBLIOGRAPHY

Mr. W.K. MacDonald, CHS, Atlantic Region, who had kindly agreed to revise Part II of the Standards - Bibliography - attended the meeting at the request of the Board, when this matter was discussed. He presented the work done so far in re-compilation of the Bibliography. The Reading List of Hydrographic Society had not been received. He explained that works submitted for inclusion in the Bibliography were sometimes difficult to verify and in order to correctly enter such submissions and to ensure that the citations were correct, it would be very useful to have English translations of titles and the subjects (related to the Standards) these should be entered under. He also suggested that citations should include author (person or an organization), full title, name of the publisher, place and year of publication and an ISBN (International Standard Bibliography Number) if possible. The Board greatly appreciated the excellent work done by Mr. MacDonald and thanked him for his co-operation. The revised Bibliography would be made available to the Board's Secretariat at the IHB in October/November 1985.

8. ANY OTHER BUSINESS

8.1 The Board deeply appreciated the kind co-operation of the Directing Committee of the IHB in providing secretariat services and printing of Board documents including the Standards. The Secretary was requested to explore the possibility of printing future edition of the Standards (after the 1986 meeting) in loose-leaf format as this would be convenient to amend the Standards by printing only the corrected pages rather than the whole booklet.

8.2 The Board requests the Directing Committee of the IHB, to invite comments from IHO Member States on the concept of amendments to 'Standards' given in paragraph 6.2 of this report as also on the Guidelines for Practical Experience given in paragraph 4.2.3 of this report.

8.3 The Board decided that Mr. Adam Kerr would take over Chairmanship of the Board after the conclusion of the IXth Meeting in Tokyo. It was also decided that a new Vice-Chairman would be elected from amongst the FIG members of the Board at the next meeting and that the member so elected would take over as Chairman in 1989.

8.4 Application for Recognition

Mr. Lee suggested prescribing an Application Form to be submitted by organizers of training courses which wish to submit their course programmes for the Board's recognition. The form would consist of all relevant details excluding the syllabus itself but including a Review Form where hours devoted to each subject would be shown. The Board decided to consider this matter at the next meeting.

8.5 Amendments to Review Form

Ing. Gén. Bourgoïn suggested changes to Review Form to reflect the level of knowledge for each subject and a column for hours devoted which would have to be completed by the institution submitting a course programme for its review by the Board. The Board accepted this proposal and requested the Secretary to develop a revised Review Form.

9. CONFIRMATION OF VENUE OF IXth MEETING AND DATE

9.1 Mr. Shoichi Oshima confirmed his earlier invitation to host the IXth Meeting of the Board at the Hydrographic Department of the Maritime Safety Agency of Japan at Tokyo. He proposed 12 to 17 May 1986 as the most suitable dates. The meeting schedule will include a visit to the Training School of Maritime Safety Agency in Mizuru City, 50 km north of Kyoto City and informed the Board that a round trip train fare - Tokyo-Kyoto-Mizuru - would be about US \$200. The Board accepted the proposal and decided that the IXth Meeting of the Board would be held at MSA Hydrographic Dept. at Tokyo, 12-17 May 1986 and that the Board would visit the Japanese Training School in Mizuru City.

9.2 The Board also considered the venue and dates for the Xth Meeting. It was decided that the Board should meet before the XIIIth International Hydrographic Conference scheduled for May 1987 in Monaco.

Rear Admiral G.S. Ritchie who happened to be at Dartmouth, suggested that the Board should meet at Aberdeen. The Board therefore accepted the proposal subject to further confirmation and decided to meet in the first of April 1987.

10. CLOSE OF THE MEETING

The Chairman thanked the Canadian Hydrographic Service and particularly Mr. Adam Kerr for hosting the meeting and the excellent arrangements, including secretarial support which greatly facilitated the Board's work.

He also thanked all the Members present for their hard work and very constructive suggestions. He realized that the Meeting had a very full agenda and it would have been difficult to complete the agenda without the co-operation of all participants. He regretted Cdr. Sengupta's inability to attend the Meeting.

The Chairman appreciated attendance of the Meeting by representatives of the Australian Maritime College, the Spanish Institute of Hydrography, the University of New Brunswick and the Canadian Hydrographic Service when their course submissions were considered by the Board.

The Meeting was closed at 1530, Friday, 26 April 1985.

EIGHTH MEETING OF THE FIG/IHO INTERNATIONAL ADVISORY BOARD ON
THE STANDARDS OF COMPETENCE FOR HYDROGRAPHIC SURVEYORS

Bedford Institute of Oceanography
Dartmouth, Canada, 22-26 April 1985

A G E N D A

1. Opening of the Meeting
 2. Administrative Arrangements
 3. Adoption of Agenda
 4. Review of general problems associated with Standards and Accreditation
 5. Review of Course Submissions
 - 1) Graduate Diploma Course of the Australian Maritime College
 - 2) Hydrographic Surveyors Officers Course of the Spanish Institute of Hydrography
 - 3) Hydrographic Surveyor Training Programme of the University of New Brunswick, Canada
 - 4) Hydrographic Specialist Programme of the Canadian Hydrographic Service
 6. Amendments to Standards
 7. Revision of Part II of the Standards - Bibliography
 8. Any other business
 9. Confirmation of venue of IXth Meeting and date
 10. Close of the Meeting.
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