16th MEETING OF THE IHO CAPACITY BUILDING SUB-COMMITTEE
IHO-CBSC16
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Paper for the Consideration by CBSC18

EAHC-TRDC report

Submitted by:	EAHC CB Coordinator
Executive Summary:	This document provides the outcome from the Training for Trainers (TFT) course for EAHC MSs from 2014 to 2017.
Related Documents:	CBSC-15 Action item-10, TRDC BOD-8 Decision-5, EAHC SC-5
Related Projects:	TFT – Basic courses for Hydrography and Cartography for EAHC MSs

1. Introduction / Background

The Member States in the East Asia Hydrographic Commission (EAHC) have participated in IHO Capacity Building (CB) Programmes to further enhance the capacity of their human resources and to level up Hydrographic Offices (HOs) capabilities in the region. As a number of HOs are non-English native speaking countries, some face difficulties when applying hydrographic concepts into their daily work as many of the resources and training are in English. Coupled by the turnover of technical staff, the EAHC resolved to jointly find sustainable approach to these challenges. Therefore the EAHC developed a customized training programme called "Training for Trainers (TFT)" in Basic Hydrography and Cartography to solve this challenge. .

As part of the IHO CB Work Programme under the EAHC, the TFT – Basic Cartography and Hydrography took place from 2013 to 2017. The training was organized and hosted by the Korea Hydrographic and Oceanographic Agency (KHOA) in Busan, Republic of Korea. Since 2013, 70 participants were involved: this includes 61 trainees and 9 trainers from ten EAHC Member States (MSs), with the support of the IHO CB Fund and sponsorship by the Republic of Korea. Trainees shared their training skills and cooperated to complete training syllabus. Nearly all EAHC Member States have conducted the trainings for their respective officers using these training materials. The EAHC annual meetings held this year approved the proposal by the TRDC-BOD (Training, Research and Development Centre Board of Directors) to share the experience and best practices with other IHO Member States.

2. What is TFT Programme?

The TFT programme is designed to develop and build a core group of master trainers in each MS in the areas of hydrography and cartography so that they can conduct on the training in mother tongues upon return. The TFT can be applied to all types of trainings. The master trainers were expected to hold extensive knowledge and experience in their relevant areas of expertise. As part of the TFT, they were trained in pedagogy so that they would be able good teaching deliver skills, establish able to conduct trainee performance assessment, conduct practical, and develop teaching materials. As part of the TFT programme, the master trainers had to collective draw up a common core syllabus and course content.

This is to help achieve the EAHC CB mission of leveling up capabilities by developing harmonized and standardized training modules. From the TFT Programme, master trainers have implemented the basic training in their respective offices.

3. TFT Programmes between 2013 and 2017

Year	Programme	Instructors	Participants / MSs	IHO CB Fund
2013	TFT (Carto) phase1	3	18 / 8	71,417 €
2014	TFT (Carto) phase 2	1	13 / 7	42,640 €
2016	TFT (Hydro) phase 1	3	17 / 10	60,000 €
2017	TFT (Hydro) phase 2	2	13 / 10	30,000 €

4. Future Plans for TFT

As part of continuous improvement and staying relevant to changes in technology, the EAHC TRDC plans to review the course syllabi and content for hydrography and cartography. It is planned in 2019 and 2020. In 2019 the TFT Hydrography programme will teach lecture skills and produce training materials based on the contents developed by the EAHC, and afterward trainees will be invited to submit the outcome from conducting their own trainings by the end of the year.

5. Conclusion and Remarks

The EAHC is pleased to share this TFT programme model, training course syllabi and content with other Hydrographic Commissions if they find it useful to their CB efforts, and would like to ask IHO MSs to interest and participation in the TFT programmes.

6. Actions required of CBSC:

The CBSC is invited to:

a. note the report
b. take any action considered appropriate.

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EAHC CB Coordinator

Annex 1: Summary of the TFT courses conducted

Annex 2: Programme of the TFT course

Annex 3: Syllabus for Basic Hydrography

Annex 4: Syllabus for Basic Cartography

ANNEX 1

Summary of the TFT courses conducted

Year	Programme / Period	Instructors	Participants / MSs
2013	TFT (Carto) phase1 / 18- 29 Nov.	3: UK (2), CA (1)	18 / 8 ID (1), CN (5), KR (6), JP (1), PH (1), TH (1), MY (2), SG (1)
2014	TFT (Carto) phase 2 / 27 Oct. – 7 Nov.	1: UK (1)	13 / 7 ID (2), CN (1), KR (2), MY (2), SG (2) TH (2), PH (2)
2016	TFT (Hydro) phase 1 / 24 Oct – 4 Nov	3: MY (2), KR (1)	17 / 10 BN (2), CN (1), KR (1), ID (2), MY (2), PH (2), SG (2), TH (2), JP (1), VN (2)
2017	TFT (Hydro) phase 2 / 4 – 15 Dec.	2: MY (2)	13 / 10 BN (1), CN (3), KR (1), ID (1), MY (1), PH (1), SG (2), TH (1), JP (1), VN (1)

ANNEX 2

Programme of the TFT course

WEEK ONE		
Date	Event	Remarks
Day 1	Introduction / domestics Aims and Objectives of course 5 minute presentations Overview of Theory of Training Overview of the Training cycle Overview of teaching and learning styles Trainer Qualities The theory of lesson structure	Students to inform of progress/experience Test (your learning style) & group exercise Revision & example
Day 2	Question techniques Training Aids Managing the lesson Skills analysis Review, evaluation, assessment Giving and receiving feedback	Revision – explore preferences Revision – explore preferences Discuss trainer experiences Revision and exercise Revision Exercise + discuss trainer experiences
Day 3	Summary of the Theory of Training EAHC CAT C Modules Module management for EAHC – Allocation of further reviews	Explain Folder structure Discussion.
Day 3	Review of Modules by Students	Discuss which modules could be demonstrated by Trainer
Day 4	Demonstration by Trainer on how to deliver more complex modules	Advise to students
Day 5	Demonstration by Trainer on how to deliver more complex modules End of week review	Advice to students Discuss preferred format for following week

WEEK TWO		
Date	Event	Remarks
Day 6	Review of Modules by Students and/or Demonstration by Trainer on how to deliver more complex modules	Flexible depending of requirement
Day 7	Review of Modules by Students and/or Demonstration by Trainer on how to deliver more complex modules	Flexible depending of requirement
Day 8	Complete review of Modules by Students Practice Module delivery Allocation of more complex Modules (teams of 2 from same country) Preparation for lesson delivery	Students to select a more complex Module for practice
Day 9	Lesson deliveries by Students	To include exercises
Day 10	Lesson deliveries by Students (continued) Presentations End of Course Review	To include exercises

ANNEX 3

Syllabus for Basic Hydrography

Subject	Session content
Introduction of Hydrographic Surveying	· General Introduction · Hydrographic Surveying General Aspect · Framework of Hydrographic Survey · Introduction of Nautical Chart
Geodesy / Positioning	· Basic of Geodesy (Geoid/Spheroid/Ellipsoid · Geographical position Projections and Grids · WGS 84 Description · GNSS/Positioning
Water Levels and Flow	· Introduction of Tidal Levels and Datum · Basic of Tide, Tidal Stream and Current · Tidal Observation / Tide Gauges
Bathymetry / Depth Determination	· Basic of Underwater Acoustic · Depth Measurements · Basic of SBES & MBES · Calibration of Echo Sounder · Basic of SSS
Hydrographic practice	· Survey Planning and Reconnaissance · Horizontal Control · Levelling · Coast lining · Seabed Sampling/ Investigation · Survey Standards /Specification
Hydrographic Data Handling / Management	· Introduction of Processing Software & Application · Bathymetric Data Processing · Data Quality Control / Evaluation · Fair Sheet/Data Presentation
Application of Software	· Data acquisition and post processing. · Real-time data acquisition, exporting and processing. · Software Post-processing · Workflow (depth cleaning, applying tide and sound velocity, merging and export.
Practical on Survey Activity	· Practical exercise on boards survey platform

ANNEX 4

Syllabus for Basic Cartography

Subject	Session content
1. An Introduction to Charts and ENCs	
The Use of Nautical Charts and Publications	· The evolution of nautical charting · Different types of chart: purpose, scale and content · The differences between charts and maps · Paper versus digital: has the race been won? · How charts are used for navigation: voyage planning and making passage
	· Exercise: Voyage Planning using charts and publications
The International Framework, Standards and Specifications	· The IHO: its structure and role in hydrography · IMO: its role in navigation and standards · IALA: standardization for Nav aids · GEBCO: ocean mapping · INT chart schemes: harmonizing charting for international shipping · IHO standards and specifications: finding your way round
	· Exercise: symbols and abbreviations
ENCs, ECS and ECDIS	· Defining an Electronic Navigational Chart · Digital charts: Vector and Raster · Equipment types: ECDIS, ECS and IBS
	· Exercise - Using ENCs: navigation on the ECDIS simulator
The Design of Charts and ENCS	· Design considerations for ENCs: cell based structure and the division into scale bands · Design considerations for Charts: considering purpose, geography and source material · IHO rules and guidance for INT charts
Source Material for Charts and ENCs	· Introducing the main types of source material encountered when compiling nautical charts and ENCs: - graphical sources: surveys and charts - non-graphical: textual reports, books and websites - official: identifying reliable sources - non-official: sifting the credible from the unreliable
	· Exercise: researching source material for use in a Port ENC
2. Chart Compilation Concepts	
How Charts are Constructed	· Planning a chart compilation: understanding how charts are constructed · The main components of charts and ENCs: meta data and data content. · Introducing symbology for charts and encoding for ENCs: the IHO guidance in S-57, S-4 and INT 1 · Software familiarisation: setting up parameters and meta data

Practical Geodesy for Charts and ENCs	· Commonly encountered projections in charting · Grids and graticules · Horizontal Datums: WGS and local datums · Vertical datums: introducing tidal regimes and the differing vertical references planes · Exercise: plotting datum shifts · Exercise: geo referencing
Evaluation of Bathymetric Surveys	· The development of hydrographic survey and the survey eras characterised by different techniques · How changes to survey techniques impact the chart compiler · IHO survey standards (S-44) and survey categorisation · Checklist for issues to check when using hydrographic source material to compile charts and ENCS
Sounding selection and contouring	· The principles behind the way bathymetry is shown on charts and ENCs · Sounding selection rules and guidance: rounding, placement and shoal bias · Introducing generalization concepts: contouring · Introducing generalization concepts: sounding selection · Exercise: sounding selection and contouring
3. ENC Data Concepts	
Introducing S57	· The object catalog and basic encoding of line, area and point features · A seminar that introduces example features and allows students to find their way round the catalog and undertake encoding
Data Creation and Editing	· Practical (guided exercises): software familiarisation based around data creation exercise of a simple sample of hydrographic material
Validating ENC data	· Practical (guided exercises): application of validation software · Interpreting the results and error messages · Correcting the errors through editing
4. Product Maintenance – Ways of Updating	
Methods of Updating	· The importance of updating of navigational products · IHO Guidance on promulgating critical change · Radio Navigational Warnings: when to use them and the system for issue · Notice to Mariners: when to use them and how to provide the information · When to use Preliminary and Temporary Notice to Mariners · Notice to Mariners "Block" corrections and urgent New Editions · How ENC and paper updates relate to each other
Notice to Mariners	· Setting criteria for selecting changes for issue · Standards for drafting Notices
	· Exercises: selecting and drafting Notice to Mariners
Notice to Mariners Block Exercise	· Exercise: compiling a block Notice to Mariners and its digital equivalent
5. Assessed Assignment & Examination	
Revision Assessed Assignment Examination	Quality control of a NM Block