

Short Course on Tides for Hydrography

Attached you will find the description of the short course that was developed by TWSWG2 as requested by the Capacity Building Sub-Committee (CBSC).

This text was also included at Annex H to the report of TWLWG2 (Document TWLWG2/8).

There have been no requests as yet for the delivery of this course.

DRAFT OUTLINE
BASIC TRAINING PROGRAM IN TIDES AND WATER LEVELS FOR APPLICATION TO
HYDROGRAPHIC SURVEYS

Purpose: To provide a short course (5-day) in the basics the application of tides and water levels to hydrographic survey operations. The training material will be targeted towards providing basic information to countries wishing to establish hydrographic survey capabilities. This course is envisioned as one of the critical modules of an overall structured course in fundamentals of hydrographic surveying. Much of the course will be at the overview level showing the flow and linkages of the material and the purpose of the material. References and referenced material will be provided through-out.

Section 1. Overview and Background.

- Overview of tides and tide producing forces with focus on tidal characteristics of coastal area of targeted country
- Basics of tide and water level correctors to soundings
- Definitions and determination of vertical reference surfaces, hydrographic survey reference and Chart Datums (LAT and other National Datums)
- Positive and negative surges
- Overview of harmonic analysis and tidal prediction

Section 2. Planning requirements for tide and water level control for hydrographic survey operations

- IHO S-44 requirements and error budget (Orders: Special, 1A, 1B and 2)
- Types of Survey: Classical, GPS, Laser and their corresponding requirement (or otherwise) for the observation of tides.
- Determination of tidal characteristics and water level variations within a given survey area
- Determination of the number and duration of operation of tide and water level gauges required for a survey area
- Construction of tidal zoning extrapolation and interpolation parameters based on the tidal characteristics
- Obtaining predicted tides for preliminary zoning during survey operations

Section 3. Survey Operations

- Types of sensors and their application.
- Establishment and operation of tide poles and gauges, bench mark networks and leveling requirements, GPS heighting
- Data collection, data quality control, data processing requirements
- Application of preliminary tidal zoning and predicted tides

- Cross-line checks for preliminary tides

Section 4. Post-survey Operations

- Tabulation of the tide from tide gauge records
- Fundamentals of harmonic analysis
- Determination of tidal datums, water level datums and Chart Datum references from tide gauge records
- Determination of final tidal zoning parameters from tide gauge observations
- Development of final tide reducer files and final quality control checks
- Estimation of final error budget.

Section 5. Case study. The last section of the training will be a group exercise in using a simulated survey area for which the class will determine tidal characteristics and plan requirements for tide gauges and tidal zoning. Logistics and scheduling for tide gauge installations will be planned. Simulated tidal datums, final tidal zoning, and tide reducer files will be developed.