

### Purpose

The moving boat software is required to control the data collection processes and to inform the operator about the progress of data collection. Further, the software should support data storage, simple validation, processing and presentation. End products are an estimate of the discharge, a velocity cross section profile and acoustic signal strength profile. The latter is an indicator for suspended sediment concentration.

A PC controls the data collection process. The moving boat software assists the operator with the planning and subsequent execution of the discharge measurement. Optionally data can be collected from one or more of the following instruments: a DGPS, an echo-sounder, a compass or an electromagnetic flow-meter. In particular the DGPS may be required if the riverbed is not stable enough for bottom tracking purposes, i.e. when the bed is 'moving' due to heavy bottom sediment transport. All collected data are recorded on PC hard disk.

### Conditions & Requirements

- The moving boat software package shall be widely accepted and adequate for preparation and execution of discharge measurements, data processing and presentation of the collected data.
- The moving boat software shall be of such a design that it operates reliably and accurately under the prevailing working conditions on board of small boat.
- The moving boat software shall be of a robust design.
- The moving boat software shall be easy to operate and maintain.
- The same or an additional standard software package shall be delivered for discharge calculation and further processing of the collected files.
- It should be possible to operate data collection and data processing software separately, on different computers.
- The moving boat software shall be supplied with the accessories as needed for effective deployment.
- All moving boat software and files shall be compatible with the PC hardware and MS-Windows95 (or its successor) environment. The software may be operated from a DOS-box.
- An operator's manual and a system manual, related to the moving boat software, shall be part of the delivery.
- The moving boat software shall support NMEA-0183 compatible devices, e.g. the DGPS, echo-sounder and compass.
- The software shall have functions to edit the collected files, in order to rectify and validate the data.
- The computer shall have a good daylight visibility.

### Specifications

The data collection software shall support following functions:

- run-line preparation
- collecting, processing and storing of data from the ADCP and the optional equipment such as the electromagnetic current meter, DGPS positioning system, the echo-sounder and the compass.
- data storage by adjustable increments.
- monitoring of data acquisition related quality indicators; in particular signal strength, velocity profiles, error velocities, depth etc.

- accurate time stamping of collected data, i.e. better than 0.05 s
- presentation of process information and providing controls to the operator

The data processing software will be executed off-line. It shall support the following functions:

- combination of survey data from different files, sessions and formats
- drafting of 'sailed track' plots
- spike/outlier/error detection and editing supported by graphics
- display and plotting of velocity, acoustic signal strength and depth profiles
- calculation of discharge, applying in-built and user models to estimate top, bottom and bank layer velocities/discharges
- contouring of cross-sectional profile data

## **Remarks**

- An A4 size jet type colour printer may be applied for normal reporting.
- A LaserJet for reporting and black-and-white graphics.

These devices are part of other procurement packages and are therefore not specified here.