Newsletter – *September 2015*

ASB Systems Pvt. Ltd.

Channelmaster – Recharge the Discharge

Water is precious, and there are no two ways about this. As we know, only 3% of the world's water resource is fresh water. Of this, 1.75 – 2% is frozen in glaciers, ice and snow. 0.5 – 0.75% forms fresh groundwater and soil moisture. Less than 0.01% is available as surface water in lakes and rivers! That is the reason Hydrology projects world-wide are being viewed seriously, and considerable efforts are being done by Governments to conserve water.

Given the above facts, it is important to quantify surface water at every stage. Water is lost due to evaporation, percolation, seepage, run-off in drains, and….water theft! One effective method of quantifying water is by measuring discharge continuously at regular "checkpoints" along the open channels. Horizontal ADCP or "Channelmaster" as it is popularly known, offers an effective way to achieve this.

The Channelmaster can do discharge measurements 24 x 7 and in near real-time. It can run unmanned, and without too much instrumentation. Remote monitoring can be done from a centralized location, including data acquisition.

With ADCPs becoming more and more widely accepted on the Indian Hydrology scene, we attempt to debunk some myths associated with Currents and discharge measurements using the Channelmaster H-ADCP (Horizontal ADCP).

That's what we say about the Channelmaster: Don't Side-line it, just Side-mount it!!!

In this issue…

- ***Myth 1: The Channelmaster ADCP needs to be connected to and controlled by a PC/Laptop at all times***
  Once the Channelmaster is initially configured using its software, it can be disconnected from its PC. It will now output the data autonomously "forever", regardless of "if anybody is listening".

- ***Myth 2: A complex data network(SCADA) is required for data transmission to a central site***
  With Myth1 debunked, all you would need is a GPRS modem (one with a Data SIM card) to be connected to the Channelmaster, in order to receive data at a central station. Meaning, a one way communication would be sufficient.

- ***Myth 3: Changing flow conditions will require frequent calibration of the ADCP***
  Calibration is required seasonally, if there is significant change in water level between high season and low. The values can then be recorded for use in subsequent years.

- ***Myth 4: It is a complicated task to install the Channelmaster***
  Not at all. A basic site recce to ensure conditions such as a stable cross section, free of obstructions, free of aquatic vegetation, linear without bends & slopes, and no turbulence. Mounting is equally simple, and a variety of mount arrangements have been tried out. Pictures on the next page.

- ***Myth 5: Measured discharge is not accurate since there are "shadow zones" where there is no coverage of ADCP beams***
  The ADCP software allows an accurate cross section to be designed. Once a proper site has been selected and the setup is complete, the ADCP algorithm takes care of the rest to deliver proven and accurate measurements.

- ***Myth 6: The ADCP's profiling range HAS to cater for the entire channel width***
  When using Index-velocity method, it is not necessary that the H-ADCP's profiling range covers the majority of channel cross-section. Therefore it can be used for either small streams or large rivers with the width much greater than the H-ADCP profiling range.

- ***Myth 7: Channelmaster should not be installed in channels suffering from sedimentation***
  Whilst care has to be taken to install the Channelmaster in a location where "eddies" won't form and worsen the sediment "kick-up", the discharge measurement capability will not be affected. It is a well known fact that ADCP data is used as a surrogate for measuring Suspended Sediment Concentrations using software such as AquaVision.

- ***Myth 8: Debris is the water will damage the channelmaster and cause it to malfunction***
  A host of mounting arrangements are available, as shown in pictures on the next page. Channelmasters have been tried out in high flows, locations with sedimentation and debris, and found to be effective.

- ***Myth 9: You will need an additional ADCP to calibrate the channelmaster***
  No. If the ADCP is configured to use the numerical method for discharge calculation, then no calibration is required.

- ***Myth 10: Changing the ADCP mounting position warrants re-calibration of the ADCP***
  No. If the Numerical method is used for discharge calculation, ADCP mounting position can be changed.

Different mounting arrangements with the Channelmaster: Fixed, Vertically adjustable, with protective caging, portable, permanent. The possibilities are endless.








H-ADCPs can be mounted on minimal infrastructure, minimising the impact and maintenance from flood flows.

- Underwater battery packs eradicate the need for external (cabled) power systems.
- Velocity can be directly measured.
- Cost is significantly reduced with only 1 instrument required to determine stage, velocity and flow.
- The installation is reasonably mobile.
- Construction easily undertaken by Hydrographic staff.
- Need for costly structures built by contractors negated.
- Installation unobtrusive and simplifies environmental and cultural permit requirements.

H-ADCP is an effective tool for real-time river discharge monitoring, and can operate 24x7 remotely, and unmanned.

Hypack seminar India

With a growing number of users in the industry year after year, Hypack reaches out by visiting different countries once every year. Hypack seminars are a low cost opportunity for users to learn about the latest version and a great opportunity to meet with the Hypack Team. The 3-day training seminar covers all the aspects of single beam and multibeam hydrographic surveying and dredge management using Hypack, Hysweep, and Dredgepack packages.

Pat Sanders, Chairman of HYPACK, Inc., visited Goa last month for the seminar. The one-on-one sessions gave the attendees an opportunity to discuss any project specific questions.

A dedicated Volume computations session has also become a standard part of the tour, covering Hypack methodologies for computing volumes, and is of great help for the Dredging community.