

From: Steve Blanchard, Chief, OSW
Date: May 4, 2010
Subject: Status of OSW Testing of new ADCPs and their use in Water Programs

The purpose of this email is to provide updated information regarding the ongoing evaluation of the SonTek/YSI RiverSurveyor M9 and Teledyne RD Instruments (TRDI) RiverRay ADCPs and interim guidance about their use in both data and interpretive Water Discipline programs. This email is a follow-up to my email of February 1, 2010 to all WSC Directors, Data Chiefs, and Surface Water Specialists.

The contract for delivery of the SonTek/YSI M9's and S5's purchased under the ARRA program has been awarded and the first batch of instruments has arrived at the HIF. Additional shipments will be forthcoming. As you know, during OSW field testing, a problem was discovered with the SonTek/YSI profilers. SonTek/YSI has corrected the manufacturing process that led to the problem and added an additional test/calibration procedure to improve the accuracy of the narrowband incoherent data at low velocities. However, the OSW has not been able to collect data in a sufficiently wide range of conditions with a reasonable sample of instruments to evaluate the performance of the instrument for general application.

Teledyne RD Instruments (TRDI) has introduced a new ADCP called the RiverRay. The OSW has been testing the RiverRay for about 18 months, both as a prototype and a released product. We have provided results of our tests to TRDI and they have been implementing changes and improvements to both firmware and software. Results of tests conducted to date have been generally favorable. However, we have determined that additional improvements are needed for certain discharge measurement conditions.

OSW has placed a high priority on completing testing of these new ADCPs. However, we are dependent on the manufacturers, obtaining suitable flow conditions, and other factors to complete our field testing. When sufficient data have been collected and analyses have been completed, the OSW will issue a Technical Memo and a technical report or journal article summarizing the results. In the interim, if the SonTek/YSI M9's / S5's and the TRDI RiverRay are used in WSC programs we request that the following guidelines be adhered to:

1. Comparison measurements should be made with some other independent discharge measurement method such as Price AA conventional, Rio Grande ADCP, or a Streampro ADCP for the range of conditions for which the instrument will be used. The range of conditions would include such things as water velocities, boat velocities, streambed type, flow depths, turbulence, sediment concentrations, and GPS quality. Comparison measurements should be well-documented using detailed field notes. For more information on what is expected for comparison measurements, please see the ADCP Testing Web page <http://hydroacoustics.usgs.gov/testing/adcptesting.shtml>.
2. After making an adequate number of comparison measurements, the WSC can use the ADCP in making routine measurements. However, if future measurements made with the new ADCP significantly deviate from the current rating (or current shifted rating), a check measurement

must be made with other equipment as per current OSW policy specified in Techniques and Methods report Chapter 22 of Book 3, Section A, page 24 (<http://pubs.usgs.gov/tm/3a22/>).

3. Submit comparison measurements (all electronic files) along with documentation and photographs of the sites to the USGS. Please follow the procedures specified at <http://hydroacoustics.usgs.gov/testing/adcptesting.shtml> for submitting the measurements.

We value your input to the evaluation process, and will do our best to provide further updates as warranted. In the meantime, if you have questions about the procurement status for the RiverSurveyor M9s and S5s, please contact Frank Henry (228-688-3304 – fshenry@usgs.gov). If you have questions about the testing program and current status of OSW testing, please contact Kevin Oberg (217-328-9739 – kaoberg@usgs.gov) or David Mueller (502-493-1935 – dmueller@usgs.gov).

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