



United States Department of the Interior
U.S. GEOLOGICAL SURVEY
Reston, Virginia 20192

In Reply Refer To:
Mail Stop 415

April 25, 2014

MEMORANDUM

OFFICE OF SURFACE WATER TECHNICAL MEMORANDUM 2014.05

SUBJECT: Publication of Version 2, December 2013 of the Techniques and Methods Report Book 3–Section A22 “Measuring Discharge with Acoustic Doppler Current Profilers from a Moving Boat” and associated policy and guidance for moving boat discharge measurements.

This memorandum announces the availability of Version 2, December 2013 of Techniques and Methods, 3–A22, Measuring Discharge with Acoustic Doppler Current Profilers from a Moving Boat. This report supersedes policy and guidance provided in Version 1, 2009 and supersedes or duplicates the policy and procedures of memoranda focused on hydroacoustics prior to and including Office of Surface Water Technical Memorandum 2012.01. A list of these memoranda is provided in the Forward of TM 3–A22. Thus, Version 2 of TM 3–A22 should be referenced for policy and guidance, rather than earlier memoranda. The development of new and improved ADCPs is ongoing, as is research and knowledge gained from practical field experience. Therefore, it is likely that guidance on the application of ADCPs will change and future revisions to USGS policy and guidance will be necessary. ADCP users are encouraged to log onto the USGS Office of Surface Water Web site [<http://hydroacoustics.usgs.gov/>] for the latest guidance and technical memoranda to ensure that the best techniques are being used in collecting and processing ADCP discharge measurements.

Summary of Changes and Updates

The list below contains information on the important updates and changes in this revision when compared to the original publication (2009). The list is not exhaustive, but is intended to highlight differences of interest to the majority of those that perform moving-boat ADCP discharge measurements. A more comprehensive list with associated page numbers is provided in the section Significant Updates and Changes in the front portion of TM 3–A22.

- Descriptions, configuration characteristics, procedures, and data review examples have been updated to include new ADCPs (SonTek M9/S5 and Teledyne RD Instruments RiverRay).

- The blanking distance requirements for all ADCPs have been updated to include the effects of flow disturbance in addition to ringing (consistent with OSW Technical Memo 2014.02).
- Quality-assurance requirements for ADCPs have been updated and clarified. These requirements include such things as the frequency of comparison measurements, when a beam-alignment test must be completed, when a transformation matrix check must be done, and the importance of an instrument history log. *NOTE: The policy presented in OSW Technical Memorandum 2014.04, Quality Assurance Checks of Acoustic Doppler Current Profilers, is consistent with and satisfies the beam-alignment test requirements described in TM 3-A22.*
- The requirements for GPS receivers have been specifically defined.
- Additional discussion regarding the proper and safe use of tethered boats has been provided.
- Information on the use of electronic field notes has been added.
- The requirements for external measurements that affect the speed of sound (temperature and salinity) have been modified and clarified.
- The 720-second measurement duration (exposure time) requirement has been added (consistent with OSW Technical Memo 2011.08).
- A discussion on the collection of data in rapidly-changing and tidal-flow situations and the appropriate procedures for making moving-bed measurements in such conditions has been added.
- Discussion on data collection in common difficult measurement conditions identifying potential problems and solutions.
- The policy regarding edge discharge estimates (see OSW Technical Memo 2012.01) has been added and additional guidance on edge discharges is presented.
- Requirements and procedures for on-site measurement review and check measurements are discussed.
- Measurement processing procedures were completely revised with expanded discussion and examples for both RiverSurveyor Live and WinRiver II.

/signed/

Shaun Wicklein

Acting Deputy Chief, Office of Surface Water

Distribution: GS-W All