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July 20, 2010

OFFICE OF SURFACE WATER TECHNICAL MEMORANDUM 2010.06

SUBJECT: FlowTracker Diagnostic Test Policy

The purpose of this memorandum is to announce a change in policy regarding the required diagnostics tests when using the FlowTracker ADV for velocity and discharge measurements. The new policy is to complete the built-in Quality Control Test (QCTest) with each FlowTracker measurement. A BeamCheck is required only when (1) a new instrument is received, (2) if physical damage (e.g., dropping) may have occurred, (3) a firmware upgrade or repair was made, and (4) after any QCTest failures.

A previous Office of Surface Water (OSW) technical memorandum (OSW Technical Memorandum 2007.01) required that a BeamCheck be completed in a bucket of water prior to each week of use even when QCTests were done. At the time Technical Memorandum 2007.01 was published, the QCTest diagnostics capability was new and unproven. The built-in QCTest was found to be as reliable as the BeamCheck in detecting potential issues. Nevertheless, a BeamCheck stores more system performance data and still may be needed to evaluate the performance of the Flowtracker ADV in more detail when a potential issue is encountered.

A summary of the policy regarding QCTests and BeamChecks for Flowtracker ADVs is:

- A QCTest must be performed and stored with each measurement. When a QCTest is completed as part of a measurement it is included in the measurement summary (Figure 1).
- A QCTest must be completed in flowing water with the sample volume at least 0.3 ft away from any boundaries (both horizontally and vertically), if possible. Improper placement during a QCTest may cause a test failure. If there is a failure during the initial QCTest, verify proper sample volume location and rerun the test.
- A BeamCheck must be performed in a bucket of water (OSW Technical Memorandum 2007.01) when (1) any possible physical damage occurs (e.g., dropping the instrument), (2) there is a firmware upgrade, and (3) any failures in the QCTest are observed that cannot be explained by improper placement or test environment. All new FlowTrackers purchased directly from SonTek/YSI[1] and/or meters sent to the Hydrologic Instrumentation Facility (HIF) Hydraulics Lab (HIF-HL) or to SonTek/YSI for repair, must pass HIF-HL's QA check[2] before being placed into service for the first time or back

[1] Any use of trade, product, or firm names in this document is for descriptive purposes only and does not imply endorsement by the U. S. Government.

[2] The HIF-HL QA check is a series of procedures discussed in OSW Technical Memorandum 2010.02 and is different from the QCTest and a BeamCheck. The QCTest is a built-in test available with every Flowtrack; the BeamCheck is a check of the ADV beams typically performed in a bucket, per OSW Technical Memorandum 2007.01, Attachment C.

into service (OSW Technical Memorandum 2010.02). Meters purchased through the HIF will be QA checked as part of the HIF's standard QA/QC process.

- If QCTest failures cannot be explained, the ADV should not be used until it is checked by the manufacturer or the HIF.

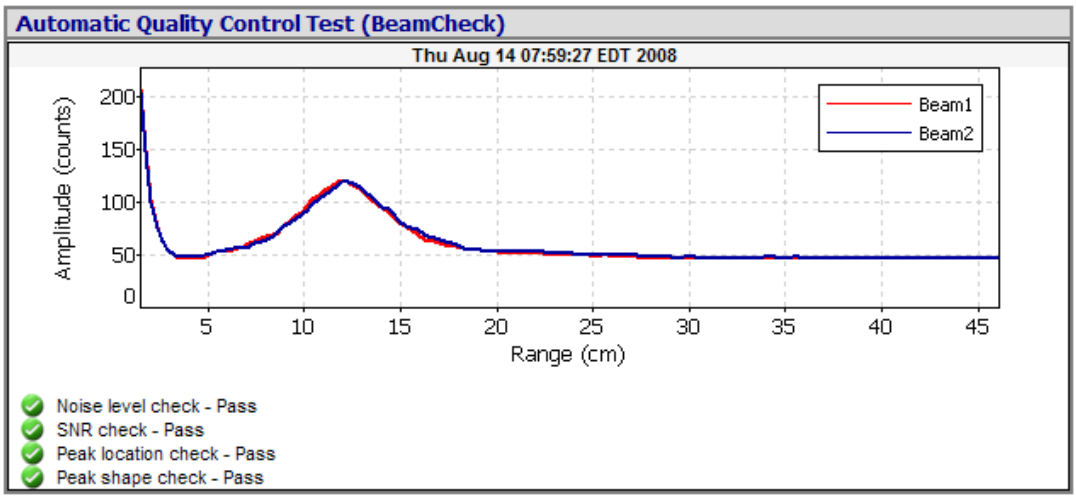

Figure 1.--Results of a QCTest from the Discharge Measurement Summary created by the FlowTracker ADV software.

If you have any questions or comments about the policies and guidance in this memorandum, please contact Mike Rehmel (msrehmel@usgs.gov) or the OSW Hydroacoustics Work Group (hawg@simon.er.usgs.gov).