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An American National Standard

Standard Test Methods for Measurement of Water Levels in Open-Water Bodies[1]

This standard is issued under the fixed designation D 5413; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 These test methods cover equipment and procedures used in obtaining water levels of rivers, lakes, and reservoirs or other water bodies. Three types of equipment are available as follows:

Test Method A—Nonrecording water-level measurement devices
Test Method B—Recording water-level measurement devices
Test Method C—Remote-interrogation water-level measurement devices

1.2 The procedures detailed in these test methods are widely used by those responsible for investigations of streams, lakes, reservoirs, and estuaries, for example, the U.S. Agricultural Research Service, the U.S. Army Corp of Engineers, and the U.S. Geological Survey.[2] The referenced ISO standard also furnishes useful information.

1.3 It is the responsibility of the user of these test methods to determine the acceptability of a specific device or procedure to meet operational requirements. Compatibility between sensors, recorders, retrieval equipment, and operational systems is necessary, and data requirements and environmental operating conditions must be considered in equipment selection.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1129 Terminology Relating to Water[3]

D 1941 Test Method for Open Channel Flow Measurement of Water with the Parshall Flume[3]

D 2777 Practice for Determination of Precision and Bias of Applicable Methods of Committee D19 on Water[3]

D 5242 Test Method for Open Channel Flow Measurement of Water with Thin-Plate Weirs[3]

2.2 *ISO Standard:*

ISO 4373 Measurement of Liquid Flow in Open Channels—Water Level Measuring Devices[4]

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, refer to Terminology D 1129.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *elevation*—the vertical distance from a datum to a point.

3.2.2 *datum*—a level plane that represents a zero or some defined elevation.

3.2.3 *gage*—a generic term that includes water level measuring devices.

3.2.4 *gage datum*—a datum whose surface is at the zero elevation of all the gages at a gaging station; this datum is often at a known elevation referenced to National Geodetic Vertical Datum of 1929 (NGVD).

3.2.5 *gage height*—the height of a water surface above an established or arbitrary datum at a particular gaging station; also termed stage.

3.2.6 *gaging station*—a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

3.2.7 *National Geodetic Vertical Datum of 1929 (NGVD)*—prior to 1973 known as mean sea level datum; a spheroidal datum in the conterminous United States and Canada that approximates mean sea level but does not necessarily agree with sea level at a specific location.

4. Significance and Use

4.1 These test methods are used to determine the gage height or elevation of a river or other body of water above a given datum.

[1] These test methods are under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.07 on Sediments, Geomorphology, and Open-Channel Flow.

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[2] Buchanan, T. J., and Somers, W. P., "Stage Measurement at Gaging Stations," Techniques of Water Resources Investigations, Book 3, Chapter A-7, U.S. Geological Survey, 1968.

[3] *Annual Book of ASTM Standards,* Vol 11.01.

[4] Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY, 10036.

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