



Standard Guide for Measuring Horizontal Positioning During Measurements of Surface Water Depths¹

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1. Scope

1.1 This guide covers the selection of procedures commonly used to establish a measurement of horizontal position during investigations of surface water bodies that are as follows:

	Sections
Procedure A—Manual Measurement	7 to 12
Procedure B—Optical Measurement	13 to 17
Procedure C—Electronic Measurement	18 to 27

1.1.1 The narrative specifies horizontal positioning terminology and describes manual, optical, and electronic measuring equipment and techniques.

1.2 The references cited contain information that may help in the design of a high quality measurement program.

1.3 The information provided on horizontal positioning is descriptive in nature and not intended to endorse any particular item of manufactured equipment or procedure.

1.4 This guide pertains to determining horizontal position of a depth measurement in quiescent or low velocity flow.

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

1.6 *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 Water²

D 3858 Test Method for Open-Channel Flow Measurement of Water by Velocity Area Method²

D 4410 Terminology for Fluvial Sediment²

D 4581 Guide for Measurement of Morphologic Characteristics of Surface Water Bodies²

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² Annual Book of ASTM Standards, Vol. 11.01.

D 5073 Practice for Depth Measurement of Surface Water³

3. Terminology

3.1 **Definitions:** For definitions of terms used in this guide, refer to Terminology D 1129.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 **accuracy**—refers to how close a measurement is to the true or actual value. (See Terminology D 1129.)

3.2.2 **baseline**—the primary reference line for use in measuring azimuth angles and positioning distances.

3.2.3 **continuous wave system**—an electronic positioning system in which the signal transmitted between the transmitter and responder stations travels as a wave having constant frequency and amplitude.

3.2.4 **electronic distance measurement (EDM)**—measurement of distance using pulsing or phase comparison systems.

3.2.5 **electronic positioning system (EPS)**—a system that receives two or more EDM to obtain a position.

3.2.6 **global positioning system (GPS)**—a global positioning system (GPS) is a satellite-based EDM system used in determining Cartesian coordinates (x, y, z) of a position by means of radio signals from NAVSTAR satellites.

3.2.7 **horizontal control**—a series of connected lines whose azimuths and lengths have been determined by triangulation, trilateration, and traversing.

3.2.8 **line of position (LOP)**—locus of points established along a rangeline.

3.2.9 **precision**—refers to how close a set of measurements can be repeated. (See Terminology D 1129.)

3.2.10 **pulsed wave system**—an electronic positioning system in which the signal from the transmitting station to the reflecting station travels in an electromagnetic wave pulse.

3.2.11 **range**—distance to a point measured by physical, optical, or electronic means.

3.2.12 **range line**—an imaginary, straight line extending across a body of water between fixed shore markings.

3.2.13 **range line markers**—site poles or other identifiable objects used for positioning alignment on a range line.

³ Annual Book of ASTM Standards, Vol. 11.02.

