Designation: F3071 – 14

Standard Guide for Basic Wilderness GPS/GNSS Use (GPS/GNSS-IW) Endorsement[1]

This standard is issued under the fixed designation F3071; 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 This guide establishes the minimum knowledge, skills, and abilities required to use a GPS/GNSS[2] receiver to determine one's position, and collect location data, in the wilderness.

1.2 This guide applies to the use of a GPS/GNSS receiver on land, on and off roads, and on small bodies of water, wherever GPS/GNSS signals can be received.

1.3 This guide applies to the use of a GPS/GNSS receiver in disaster areas where local positioning aids or references may be lost or damaged.

1.4 This guide does not apply to the use of a GPS/GNSS receiver on large bodies of water, at sea, or in the air.

1.5 A person who meets the requirements in this guide is only prepared to operate a GPS/GNSS receiver to determine his or her location, and collect position and movement information, in a wilderness environment.

1.6 This guide does not imply that a GPS/GNSS receiver is a replacement for a map and compass. Use of the latter is strongly recommended as a backup for GPS/GNSS navigation.

1.7 *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:*[3]

F1633 Guide for Techniques in Land Search

F1773 Terminology Relating to Climbing, Mountaineering, Search and Rescue Equipment and Practices

F2209 Guide for Training of Level I Land Search Team Member

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *Galileo, n*—a GNSS currently under development by the European Union.

3.1.2 *GLONASS (Globalnaya navigatsionnaya sputnikovaya sistema), n*—the GNSS owned and operated by the Russian Aerospace Defense Forces.

3.1.3 *GNSS (Global Navigation Satellite System), n*—a navigation system utilizing a constellation of dedicated satellites to determine a location on or above the earth's surface.

3.1.4 *GNSS receiver, n*—a radio receiver that uses satellite signals to fix its location on or above the earth's surface.

3.1.5 *GPS (Global Positioning System), n*—the GNSS owned and operated by the United States government.

3.1.6 *map datum, n*—the set of values used to define a particular geodetic model used by a GPS/GNSS receiver to determine its location.

3.2 Definitions of terms not defined in this standard can be found in ASTM Guide F1633, Guide F1773, and Guide F2209.

4. Significance and Use

4.1 This guide establishes the minimum knowledge, skills, and abilities required to use a GPS/GNSS receiver to determine a position and collect navigational data in the wilderness. A

[1] This test method is under the jurisdiction of ASTM Committee F32 on Search and Rescue and is the direct responsibility of Subcommittee F32.03 on Personnel, Training and Education.

Current edition approved March 1, 2014. Published April 2014. DOI: 10.1520/F3071-14.

[2] This guide refers to GPS/GNSS, rather than GPS, receivers, due to the increasing number of global satellite navigation systems worldwide. Currently, only GPS and GLONASS are in operation and provide global satellite coverage. However, satellite navigation receivers are now manufactured which are capable of utilizing GPS, GLONASS, and Galileo satellites to determine a position on or above the earth's surface.

[3] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States

person trained to this guide shall be endorsed for Basic Wilderness GPS/GNSS Use (GPS/GNSS-IW Endorsed).

4.1.1 Every person who is endorsed for Basic Wilderness GPS/GNSS Use shall have met the requirements of this guide.

4.2 This guide is only the first level of training for wilderness GPS/GNSS use, and only establishes the minimum knowledge, skills, and abilities required for a person to use a GPS/GNSS receiver to determine his or her location and collect navigational data in a wilderness environment. No other skills are included or implied.

4.3 In addition to meeting the requirements of this guide, a person endorsed for Basic Wilderness GPS/GNSS Use shall also be adequately trained to travel and work in a wilderness environment.

4.4 Depending on the regulations or policies of the AHJ, additional knowledge, skills, or abilities may be required before a person who meets the requirements in this guide may use a GPS/GNSS receiver in a wilderness environment.

4.4.1 Nothing in this guide precludes an AHJ from adding additional requirements for its own members.

4.5 This guide by itself is not a complete training document. It only specifies the knowledge, skills, and abilities required for an individual to be endorsed for Basic Wilderness GPS/GNSS Use. This guide may, however, be used in the development of, or as part of, a complete training document or program.

4.6 Though this guide establishes only minimum training, it does not imply that a person endorsed for Basic Wilderness GPS/GNSS Use is a "trainee," "probationary," or other similar term member of an organization. The AHJ is responsible for determining the requirements and qualifications for member or employee ratings.

4.7 This guide can be used to evaluate a document to determine if its content includes the necessary topics for training a person to be endorsed for Basic Wilderness GPS/GNSS Use. Likewise, the guide can be used to evaluate an existing training program to see if it meets the requirements of this guide.

4.8 The information in the following sections is not presented in any particular order and does not represent a training sequence.

4.9 Except where a physical skill or ability must be shown, the AHJ is responsible for determining the best way to evaluate a person's knowledge, skill, and ability. This may be by written exam, oral exam, demonstration, or some combination of the three.

5. General Knowledge of a GPS/GNSS Receiver

5.1 A person endorsed for Basic Wilderness GPS/GNSS Use shall demonstrate knowledge of the following:

5.1.1 How a GPS/GNSS receiver may be used;

5.1.2 In general how a GPS/GNSS receiver determines a location;

5.1.3 Limitations of a GPS/GNSS receiver in the wilderness, including sources of signal errors;

5.1.4 The advantages and disadvantages of navigating by GPS/GNSS receiver versus navigating by map and compass;

5.1.5 How the user's movements and location can be documented by a GPS/GNSS receiver; and

5.1.6 The importance of having the GPS/GNSS datum match the map datum.

6. Basic Wilderness GPS/GNSS Use Skills and Abilities

6.1 A person endorsed for Basic Wilderness GPS/GNSS Use shall demonstrate the following with a GPS/GNSS receiver:

6.1.1 Basic receiver functions:

6.1.1.1 Turn unit on and off;

6.1.1.2 Check battery charge;

6.1.1.3 Change batteries.

6.1.2 Establish receiver settings:

6.1.2.1 Set map datum;

6.1.2.2 Set units for distance;

6.1.2.3 Set location data type, e.g., Lat/Long, UTM, etc.;

6.1.2.4 Set units for location coordinate readout.

6.1.3 Prepare unit to collect navigational data:

6.1.3.1 Clear track log;

6.1.3.2 Turn track log on;

6.1.3.3 Turn track log off.

6.2 A person endorsed for Basic Wilderness GPS/GNSS Use shall demonstrate in the field the ability to:

6.2.1 State his or her location in the format specified by the AHJ;

6.2.2 Recognize when the GPS/GNSS receiver is not operating properly;

6.2.3 Recognize that satellite coverage is adequate for recording usable data in accordance with policies of the AHJ;

6.2.4 Determine the current location;

6.2.5 Obtain location information from a GPS/GNSS receiver and correlate it to a topographic map.

7. Keywords

7.1 GNSS; GPS; navigation; wilderness

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the ASTM website (www.astm.org/COPYRIGHT/).