



Standard Guide for Training of Search and Rescue Personnel Operating in the Alpine Environment (Alpine Endorsement)¹

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1. Scope

1.1 This guide establishes the minimum training, including general and field knowledge, skills, and abilities, for search and rescue personnel who conduct operations in an alpine environment.

1.2 An Alpine Endorsement is intended only for those individuals capable of operating in the extreme conditions of the alpine environment, at altitudes that are likely to have a negative impact on human physiology.

1.2.1 Specifically, Alpine Endorsed individuals may, under qualified supervision, perform their normal duties safely and effectively in an alpine environment.

1.2.2 In addition, Alpine Endorsed individuals may, under qualified supervision, perform their normal duties safely and effectively in mountainous terrain alone.

1.3 An Alpine Endorsement alone is not sufficient to indicate that an individual has the knowledge, skills, and/or abilities to perform any specific duties, including search and rescue operations, other than those defined in this guide.

1.4 This guide alone does not provide the minimum training requirements for performing operations in partially or fully collapsed structures, in- or on-water, in confined spaces, or underground (such as in caves, mines, and tunnels).

1.5 Type I-IV teams (as defined in [F1993](#)) which may utilize personnel trained to this guide are Kind A (wilderness), Kind B (urban), and Kind C (mountainous), Kind D (disaster/collapse), Kind E (inland water), Kind G (cave), Kind H (mine), Kind I (avalanche), Kind J (evidence/cadaver), Kind K (aircraft), and/or Kind L (unclassified).

1.6 Alpine Endorsed SAR personnel must work under qualified supervision as deemed appropriate by the Authority Having Jurisdiction (AHJ).

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 appro-*

priate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 ASTM Standards:²

[F1773 Terminology Relating to Climbing, Mountaineering, Search and Rescue Equipment and Practices](#)

[F1993 Classification System of Human Search and Rescue Resources](#)

[F2209 Guide for Training of Level I Land Search Team Member](#)

[F2752 Guide for Training for Level I Rope Rescue \(R1\) Rescuer Endorsement](#)

2.2 Other References:

[National Wildfire Coordinating Group \(NWCG\) publication PMS 304-2, "Fitness and Work Capacity"](#)
["Mountaineering: The Freedom of the Hills," 8th ed.](#)

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *aid climbing, n*—a style of climbing in which the person ascending moves upward by means of fixed ladders, gear, or ropes.

3.1.2 *alpine environment, n*—mountainous terrain, typically above tree line, where the ability to negotiate routes rated Class 2–5³ is required and where travel is affected by any combination of altitude, extreme weather, extensive exposure to snow/ice obstacles, avalanche risk, and crevasses. In general, the alpine environment includes all mountainous terrain above 3,500 meters.

3.1.3 *alpine ice axe, n*—as defined by the UIAA (Union Internationale Des Associations D'Alpinisme), a Type B ice tool (the UIAA Basic type) with lower strength, for use in general circumstances, as on glacier for snow hiking, for ski

² 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.

³ Classification per Yosemite Decimal System in Ronald C. Eng and Julie Van Pelt, eds., *Mountaineering: The Freedom of the Hills*, 8th ed. (Seattle, WA: Mountaineers Books, 2010), p. 564.

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.

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mountaineering, etc., and which meets the requirements of UIAA 152 or CE EN 13089:2011.

3.1.4 *exposure, n*—the degree to which a person is exposed on a high, sheer, and unsheltered rock face.

3.1.5 *mountainous terrain, n*—a tract of land characterized by steep slopes and great variations in elevation, where the ability to negotiate routes rated Class 2–4⁴, and occasionally Class 5⁵, is required, and where travel is limited by steep to vertical rock, steep forested or brush-covered terrain, talus slopes, boulder fields, and occasional snow and/or ice obstacles.

3.1.6 *qualified supervisor, n*—an individual with demonstrated knowledge or competence in a task, to whom the AHJ has granted the authority to observe and oversee an individual performing that task.

3.1.7 *technical ice axe, n*—as defined by the Union Internationale Des Associations D’Alpinisme (UIAA), a Type T ice tool (the UIAA Technical type) with higher strength for use in all circumstances, but especially for ice climbing, dry tooling, etc., and which meets the requirements of UIAA 152 or CE EN 13089:2011.

3.1.8 *traditional, or trad, climbing, n*—a style of rock climbing in which the person ascending places all gear required to protect against falls (chocks, cams, pitons, etc.), and removes it when a route is complete.

3.2 For definitions of other terms used in this guide, see Terminology **F1773**, Guide **F2209**, and Guide **F2752**.

4. Significance and Use

4.1 This guide establishes a minimum standard for training of SAR personnel who conduct operations in an alpine environment.

4.1.1 Alpine Endorsed individuals are required to have, at a minimum, the knowledge, skills, and abilities pertaining to safe movement individually, or as a member of a team, in an alpine environment.

4.1.2 Every person who is identified as Alpine Endorsed shall meet the requirements of this guide.

4.1.3 Alpine Endorsed individuals shall be entitled to add the prefixes “Alpine Endorsed” and “Mountain Endorsed” to their current training levels.

4.2 This guide only establishes the minimum knowledge, skills, and abilities required for a person to operate in an alpine environment as a part of a larger team. No other skills are included or implied.

4.3 An Alpine Endorsement indicates that a person is qualified to operate safely and effectively in the alpine environment in his or her normal area of operations.

4.3.1 An Alpine Endorsement alone does not indicate that an individual possesses adequate field skills and knowledge to make mission-critical decisions.

4.4 This guide is an outline of the topics required for training or evaluating an Alpine Endorsed individual, and may be used to assist in the development of a training document or program.

4.5 This guide can be used to evaluate a document to determine if its content includes the topics necessary for training individuals to operate in the alpine environment. Likewise, this guide can be used to evaluate an existing training program to see if it meets the requirements in this guide.

4.6 The knowledge, skills, and abilities presented in the following sections are not in any particular order and do not represent a training sequence.

4.7 This guide does not stand alone and must be used with other ASTM Standards to identify the knowledge, skills, and abilities needed to conduct search and/or rescue in the alpine environment.

4.8 Though this guide establishes only minimum standards, it does not imply that an Alpine Endorsed individual is a “trainee,” “probationary,” or other similarly termed member of an organization.

4.8.1 The AHJ is responsible for determining the requirements and qualifications for its team member ratings.

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

4.9 Alpine Endorsed individuals shall document training by completion of a position task book or field demonstration under qualified supervision. Where proficiency in a skill or ability must be demonstrated, unless stated otherwise, it shall be demonstrated for initial qualification and as often as required by the AHJ.

5. General Knowledge

5.1 The AHJ shall verify that an Alpine Endorsed person possesses both attitude and aptitude for working in an alpine environment:

5.1.1 The individual must demonstrate the ability to function effectively in highly exposed locations at high altitude and in extreme conditions;

5.1.2 The individual must be able to move safely and effectively anywhere in the terrain and conditions normal to that environment.

5.2 Alpine Endorsed individuals shall demonstrate knowledge of the following:

5.2.1 The differences between wilderness travel, mountain travel, and alpine travel.

5.2.2 Human functional and survival needs in cold, windy, and wet environments, including:

5.2.2.1 Clothing (suitable for all four seasons);

5.2.2.2 Shelter, both emergency and extended stay;

5.2.2.3 Nutrition;

5.2.2.4 Hydration;

5.2.2.5 Hygiene;

5.2.2.6 Sanitation;

5.2.2.7 Individual and team safety issues specific to operating in an alpine environment.

⁴ Eng and Van Pelt, eds., p. 564.

⁵ Eng and Van Pelt, eds., p. 564.

5.2.3 Medical conditions such as:

- 5.2.3.1 Acute Mountain Sickness (AMS);
- 5.2.3.2 High Altitude Pulmonary Edema (HAPE);
- 5.2.3.3 High Altitude Cerebral Edema (HACE);
- 5.2.3.4 Hypothermia;
- 5.2.3.5 Snow blindness;
- 5.2.3.6 Frostbite.

5.2.4 Risks and hazards specific to the alpine environment, and methods for avoiding or mitigating them. Such risks and hazards include:

- 5.2.4.1 Personal fall;
- 5.2.4.2 Rock fall;
- 5.2.4.3 Ice and/or snow fall;
- 5.2.4.4 Severe and rapidly changing weather;
- 5.2.4.5 Avalanches;
- 5.2.4.6 Rapidly rising water and flash floods.

5.3 Alpine Endorsed individuals shall have, at a minimum, American Institute for Avalanche Research and Education (AIARE) Level 1, National Ski Patrol (NSP) Level 1, American Avalanche Association Level 1, or equivalent avalanche safety and rescue training.

6. Skills and Abilities Specific to the Alpine Environment

6.1 Alpine Endorsed individuals shall possess and carry sufficient Personal Protective Equipment (PPE) and gear to function effectively in an alpine environment while maintaining personal safety. This PPE and gear shall include, at a minimum, the following:

- 6.1.1 Head protection (helmet);
- 6.1.2 Hand protection (gloves);
- 6.1.3 Eye protection (goggles/shield);
- 6.1.4 Sufficient clothing, appropriate to the alpine environment and terrain;
- 6.1.5 Seat harness;
- 6.1.6 Slings/lanyards (for personal use);
- 6.1.7 Ascending equipment;
- 6.1.8 Connectors/carabiners;
- 6.1.9 Descending equipment;
- 6.1.10 Head lamp;
- 6.1.11 Alpine ice axe, appropriate for terrain in the normal area of operations;
- 6.1.12 Technical ice axe, appropriate for terrain in the normal area of operations;
- 6.1.13 Ice screws, appropriate for terrain in the normal area of operations;
- 6.1.14 Snow anchors, appropriate for terrain in the normal area of operations;
- 6.1.15 Crampons, appropriate for terrain in the normal area of operations;
- 6.1.16 Avalanche transceiver, probe, and shovel, appropriate for terrain in the normal area of operations.

6.2 Each piece of PPE or gear listed in 6.1 shall be certified under a national, or international, life safety standard, if one exists, from an organization such as UIAA, CEN, ASTM, CI, or NFPA.

6.3 Alpine Endorsed individuals shall be equipped to survive in the field for up to 48 hours.

6.4 Alpine Endorsed individuals shall demonstrate the ability to survive and function effectively as part of a self-sustained team, in an alpine environment, for a minimum of 48 hours, under field supervision.

6.5 Alpine Endorsed individuals shall demonstrate proficiency in the following:

- 6.5.1 Performance of an overnight bivouac in the alpine environment in winter in the normal area of operations;
- 6.5.2 Winter survival skills, including the ability to construct an improvised shelter;
- 6.5.3 Understanding of lightning detection, avoidance and risk reduction techniques;
- 6.5.4 Safely traversing water hazards;
- 6.5.5 Basic swiftwater survival techniques;
- 6.5.6 Basic mountain weather prediction;
- 6.5.7 Traveling in an alpine environment at night;
- 6.5.8 Traveling in an alpine environment during adverse weather conditions;
- 6.5.9 Planning for, and selecting, travel routes to avoid, or minimize, avalanche risk;
- 6.5.10 Self-rescue techniques.

6.6 Alpine Endorsed individuals shall demonstrate an understanding of the concepts of mission-specific packing for individual operations, and for effective team operations and travel, in an alpine environment. Examples of this concept include reducing pack loads, sharing gear, and sharing loads among team members.

6.7 Alpine Endorsed individuals shall demonstrate annually the ability to safely and efficiently travel over ice and snow (to include steep snow and ice travel) in the normal area of operations, using safe solo and team travel techniques, (per requirements of the AHJ), including:

- 6.7.1 Use of skis and/or snowshoes, as appropriate for the terrain in the normal area of operations;
- 6.7.2 Operation of snow machines per AHJ requirements;
- 6.7.3 Use of crampons and ice axes per AHJ requirements;
- 6.7.4 Use of ice and snow anchors per AHJ requirements.

6.8 Alpine Endorsed individuals shall demonstrate an understanding of helicopter operations in an alpine environment, including:

- 6.8.1 Safety around helicopters on sloping ground;
- 6.8.2 Traveling in helicopters, including passenger entry, equipment stowage, passenger seating, and exit skills;
- 6.8.3 Passenger actions in the event of an emergency;
 - 6.8.3.1 Completion of the Department of Interior, Office of Aviation Management (DOI OAM), course A101–Aviation Safety, or equivalent training, is recommended;
- 6.8.4 Ability to identify a safe and functional helicopter Landing Zone (LZ) in the alpine environment;
- 6.8.5 Alpine Endorsed individuals shall demonstrate annually that they meet the requirements of the Arduous Work Capacity fitness level defined in the National Wildfire Coordinating Group (NWCG) publication PMS 304-2, “Fitness and Work Capacity,” or equivalent.

6.9 Alpine Endorsed individuals shall demonstrate annually that they meet the requirements of a medical fitness standard selected by the AHJ.

6.10 Alpine Endorsed individuals shall demonstrate annually the ability to safely negotiate vertical rock and/or ice faces at the following levels of difficulty:

6.10.1 Lead traditional climbs at 5.7⁶ or follow at 5.8;

6.10.2 Lead ice climbs at NEI 2⁷ and M2⁸, or follow at NEI 3 and M3;

6.10.3 Lead aid climbs at A1⁹ and C1¹⁰, or follow at A2 and C2.

7. Search and Rescue Skills and Abilities Specific to the Alpine Environment

7.1 Alpine Endorsed individuals shall demonstrate the ability to perform a thorough risk assessment before engaging in SAR activities in an alpine environment. This assessment shall take into consideration applicable and appropriate national, federal, state, tribal, provincial, and local safety standards.

⁶ Eng and Van Pelt, eds., p. 564.

⁷ Classification per New England Ice (NEI) Climbing Rating System; Eng and Van Pelt, eds., p. 568.

⁸ Classification per Modern Mixed Climbing Grading System; Eng and Van Pelt, eds., pp. 568-569.

⁹ Classification per Aid Climbing Grading System; Eng and Van Pelt, eds., p. 566.

¹⁰ Classification per Clean Aid Climbing Grading System; Eng and Van Pelt, eds., p. 566.

7.2 Alpine Endorsed individuals shall demonstrate an understanding of how search operations are affected by an alpine environment in mountainous terrain, including:

7.2.1 Lost person behavior;

7.2.2 Appropriate navigation tools and techniques;

7.2.3 Application of avalanche search techniques;

7.2.4 Personal Locator Beacon (PLB) detection and location.

7.3 Alpine Endorsed individuals shall demonstrate the following, including the use of PPE and rescue equipment specific to each:

7.3.1 Create anchors on steep and vertical terrain, from rock, snow, and/or ice, capable of supporting a rescue load, using natural and artificial protection (per AHJ requirements);

7.3.2 Set bolts in rock for anchors (per AHJ requirements);

7.3.3 Safely and effectively move an injured subject in an alpine environment;

7.3.4 Crevasse rescue, as appropriate for terrain in the normal area of operations;

7.3.5 Employ small rescue team tactics for operations in an alpine environment.

8. Keywords

8.1 alpine; avalanche; helicopter; ice; mountain; rescue; rock; rope; search; snow

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