



Designation: F2209 – 10

Standard Guide for Training of Level I Land Search Team Member¹

This standard is issued under the fixed designation F2209; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This guide establishes the minimum training standard for Level I land search team members as it relates to their general, field, and search specific knowledge and skills.

1.2 A Level I land search team member searches on the surface of the land only. This guide does not provide the minimum training requirements for searching in partially or fully collapsed structures, in or on water, in confined spaces, or underground (such as caves, mines, and tunnels.)

1.2.1 A Level I searcher may be used, with the above limitations, in remote areas including urban or disaster areas that may be isolated or have lost their infrastructure.

1.3 A Level I land search team member is required to have only an overview level of knowledge of rescue as it pertains to “search and rescue.” No knots, rope, litter, or other rescue skills are required of a Level I land search team member.

1.3.1 Basic rescue skills and knowledge are found in Guide [F2751](#).

1.4 Level I land search team members must work under direct supervision of Level II searchers (Guide [F2685](#)) or other experienced search personnel.

1.5 Level I land search team members are eligible to be members of Type II search teams or crews as defined in Classification [F1993](#).

1.5.1 Type II teams which may utilize personnel trained to this guide are Kind A (wilderness), Kind B (urban), and Kind C (mountainous) Kind J (evidence/cadaver) and Kind K (missing aircraft).

1.6 Further training may be required before a Level I land search team member can actually participate on a particular kind of search team, depending on authority having jurisdiction regulations or policies.

1.7 Training and performance standards developed in the F32 committee refer to levels. Level one (I) is the basic or entrance level and numbers increase with increasing skills and knowledge.

¹ This guide 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 May 1, 2010. Published June 2010. Originally approved in 2003. Last previous edition approved in 2003 as F2209-03. DOI: 10.1520/F2209-10.

1.7.1 Levels are based on training and do not correspond to Incident Command System typing, which is based on capability.

1.8 *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 requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[F1422 Guide for Using the Incident Command System Framework in Managing Search and Rescue Operations](#)
[F1490 Terminology Relating to Search and Rescue](#) (Withdrawn 2011)³

[F1591 Practice for Visual Signals Between Persons on the Ground and in Aircraft During Ground Emergencies](#)

[F1633 Guide for Techniques in Land Search](#)

[F1767 Guide for Forms Used for Search and Rescue](#) (Withdrawn 2014)³

[F1993 Classification System of Human Search and Rescue Resources](#) (Withdrawn 2014)³

[F2047 Practice for Workers' Compensation Coverage of Emergency Services Volunteers](#)

[F2685 Guide for Training of a Level II Land Search Team Member](#)

[F2751 Guide for Training of Support Level Land Rescue Team Member \(LRT-Support\) Member](#)

3. Terminology

3.1 For definitions of terms used in this guide, see Terminology [F1490](#), Guide [F1633](#), Classification [F1993](#), Practice [F2047](#), and other references within this guide.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *authority having jurisdiction (AHJ), n—(1) the team, organization, agency, or other entity which is using this guide; (2) The team, organization, agency, or other entity to which a*

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 The last approved version of this historical standard is referenced on www.astm.org.

person being trained, tested, or evaluated belongs, if the instructor, evaluator, or tester is not a member of the same organization.

3.2.2 *field, n*—the location, away from the base or command post, in which a land search team member is searching or performing other tasks.

3.2.3 *field operations, n*—searches and other tasks being performed away from the base or command post.

3.2.4 *land search team, n*—a group of individuals searching on the surface of the earth.

3.2.5 *land search team member Level I, n*—a member of a land search team who, as a minimum, meets the requirements of this guide. These requirements define the basic, entry, awareness, or similar term level of land search knowledge and skills.

3.2.6 *normal area of operation, n*—the area(s) where an authority having jurisdiction performs its search operations on a regular basis and area(s) of other organizations where the authority having jurisdiction is frequently called to assist with search operations.

4. Significance and Use

4.1 This guide establishes the minimum standard for training land search team members as it relates to their general, field, and search specific knowledge and skills. A person trained to this guide is a Level I land search team member.

4.2 Every person who is identified as a Level I land search team member shall have met the requirements of this guide.

4.3 This guide is to be used by individuals and agencies having jurisdiction that wish to identify the minimum training standards for Level I land search team members.

4.4 This guide is only the first level of training for land search personnel and as such, only establishes the minimum knowledge and skills required for a person to perform land search.

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 training document. It is only an outline of the topics required for training or evaluating a Level I land search team member, but it can be used to develop a training document or program.

4.6 It is up to the AHJ to determine the depth or detail of training to meet its needs.

4.7 This guide does not stand alone and must be used with the referenced documents to provide the specific information needed by a Level I land search team member or AHJ.

4.8 Though this guide establishes the minimum standards, it does not imply that a Level I land search team member is a “trainee,” “probationary,” or other similar term member of an AHJ. It is up to the AHJ to determine the requirements and qualifications for member ratings.

4.9 This guide can be used to evaluate a book or other document to determine if its content meets the necessary topics for training a Level I land search team member. Likewise, the

guide can be used to evaluate an existing training program to see if it meets the requirements of this guide.

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

4.11 Except where a physical skill needs to be shown, it is up to the AHJ, instructor, evaluator, or tester to determine the best way to evaluate a person’s knowledge. This may be by written exam, oral exam, demonstration, or by some combination of the three.

5. General Knowledge and Skills

A Level I land search team member shall:

5.1 Explain AHJ regulations, policies, procedures, guidelines, and so forth, with regards to:

- 5.1.1 Callout or dispatch to an incident.
- 5.1.2 Checking in at an incident.
- 5.1.3 Team mission briefing.
- 5.1.4 Team mission debriefing.
- 5.1.5 Demobilization and departing the incident.
- 5.1.6 Member interface with the media.
- 5.1.7 Working with other agencies or organizations.
- 5.1.8 Insurance coverage.
- 5.1.9 Driving procedures and safety.

5.2 Explain the legal aspects of SAR with respect to the AHJ for:

- 5.2.1 Entering private property.
- 5.2.2 Emergency response.
- 5.2.3 Finding deceased individuals.
- 5.2.4 Crime scenes.
- 5.2.5 Subject, victim, witness, or patient confidentiality requirements, including, but not limited to, the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule.

5.3 Describe the purposes of critical incident stress management and debriefing.

5.4 Incident Command System:

5.4.1 The Incident Command System (ICS) is used for managing non-emergency and emergency incidents; Guide F1422 recommends the use of ICS for managing SAR operations.

5.4.2 Level I land search team members shall complete National Incident Management System (NIMS) compliant introductory training in ICS such as the National Wildfire Coordinating Group (NWCG) I-100 Introduction to ICS,⁴ United States Fire Administration—National Fire Academy (NFA) Q-462/ICS-100 Introduction to ICS for Operational First Responders,⁵ or Federal Emergency Management Agency

⁴ National Wildfire Coordinating Group, National Interagency Fire Center, 3833 S. Development Avenue, Boise, ID 83705, <http://training.nwcg.gov/courses/i100.html>

⁵ Federal Emergency Management Agency, U.S. Fire Administration, 16825 S. Seton Ave., Emmitsburg, MD 21727 <http://www.nfaonline.dhs.gov/browse/index.shtm>

(FEMA) Emergency Management Institute (EMI) IS-100—Introduction to the Incident Command System.⁶

5.5 *Personal Safety and Survival:*

5.5.1 Explain what the basic needs for survival are and prioritize them.

5.5.2 Describe the five ways in which the body loses heat, the concerns with these losses, and the ways to prevent them.

5.5.3 Describe the principles of layered clothing, the function of each layer, and the advantages and disadvantages of materials used in each layer.

5.5.4 Describe considerations for choosing socks and footwear.

5.5.5 Explain the basic considerations for emergency shelter.

5.5.5.1 Build an emergency shelter using only personal field equipment and materials found in the field.

5.5.6 Build a sustainable fire using only personal field equipment and materials found in the field.

5.5.7 Describe two methods of water purification.

5.5.8 Discuss the considerations for types and quantity of food to be carried in the field.

5.5.9 Describe personal hygiene and sanitation considerations and techniques used in the field.

5.5.10 Describe types of emergency signaling devices and the advantages and disadvantages of each.

5.5.10.1 Air-to-ground and ground-to-air signals are shown in Practice **F1591**.

5.5.11 Describe the safety precautions for working around helicopters.

5.5.11.1 Describe AHJ required safety procedures for flying as a passenger or crew member on helicopters and other aircraft.

5.5.12 Describe the safety precautions and procedures for hazardous materials, including illegal drug labs, that may be encountered during a search.

5.5.13 Describe safety precautions and procedures when working around still and swift water in the normal area of operations.

5.5.14 The AHJ shall determine what physical performance requirements are required for Level I land search team members and develop appropriate performance measurements.

5.6 *Environmental Concerns:*

5.6.1 Describe the signs, symptoms, and preventative measures for the following:

5.6.1.1 Cold related problems.

5.6.1.2 Heat related problems.

5.6.1.3 Dehydration.

5.6.1.4 Fatigue and exhaustion.

5.6.1.5 Blisters.

5.6.1.6 Sunburn.

5.6.1.7 Hazards in the normal area of operations.

(1) Plants (for example, adverse reactions to, encounters with).

(2) Wild and domestic animals (for example, bites, stings, encounters with).

(3) Other (for example, snow blindness, altitude related problems).

5.6.2 Describe terrain hazards in the normal area of operation.

5.6.3 Discuss the additional hazards of searching at night.

5.6.4 Describe weather patterns and conditions that may affect a search in the normal area of operations.

5.6.5 Describe the safety rules for lightning protection.

5.6.6 Describe general and AHJ specific procedures to be followed when searching in hazardous areas and conditions.

5.7 *First Aid and Medical:*

5.7.1 Explain blood-borne pathogens and body substance isolation procedures.

5.7.2 A Level I land search team member shall have medical or first aid training.

5.7.2.1 The AHJ shall determine the required level of medical or first aid training.

5.7.2.2 As a minimum, the medical or first aid training shall include:

(1) Basic treatment for compromised airway, breathing, and circulation.

(2) Basic treatment for common injuries experienced in the field.

(3) Basic treatment for the conditions listed in **5.6.1**.

5.8 *Personal Equipment:*

5.8.1 Personal equipment necessary for a Level I land search team member to safely participate on a search varies by type of search, team assignment, season, environment, and terrain. A Level I land search team member shall:

5.8.1.1 Have appropriate clothing, outerwear, footwear, and personal field equipment based on these factors and AHJ requirements.

5.8.1.2 Have a durable, hands-free method of carrying personal and team equipment into the field.

5.8.1.3 Explain the reasons to carry, and explain or demonstrate the use of, all equipment the AHJ requires.

5.8.2 To assist the AHJ or Level I land search team member with personal equipment decisions, Appendix 1 contains equipment lists.

5.8.2.1 **Table X1.1** is a list of items to be considered for personal equipment.

5.8.2.2 **Table X1.2** is a list of suggested items for a personal first aid kit.

5.8.2.3 **Table X1.3** is a list of suggested items for a personal base camp kit.

5.9 *Map, Compass, and Land Navigation:*

5.9.1 Explain the advantages and disadvantages between using a large scale topographic map and a highway or street map which does not show topographic features.

5.9.2 Identify and describe the meaning of five topographic map symbols.

5.9.3 Describe legend information and its use.

5.9.4 Explain the significance of the following:

5.9.4.1 Contour lines and their spacing.

5.9.4.2 True north, magnetic North, and declination.

⁶ Federal Emergency Management Agency, Emergency Management Institute, 16825 S. Seton Ave., Emmitsburg, MD 21727, <http://training.fema.gov/EMIWeb/IS/IS100A.asp>

5.9.5 Explain the advantages and disadvantages of the following when used to determine a position:

- 5.9.5.1 Latitude/Longitude.
- 5.9.5.2 Universal Transverse Mercator (UTM) Grid System.
- 5.9.5.3 United States National Grid (USNG)
- 5.9.5.4 References to features on a map.
- 5.9.5.5 Any AHJ specified methods.
- 5.9.6 Demonstrate the following navigational skills:
 - 5.9.6.1 Orient a map to North using terrain or a compass.
 - 5.9.6.2 Follow a compass heading (azimuth, bearing).
 - 5.9.6.3 Ability to estimate distance traveled in the field.
 - 5.9.6.4 Obtain an azimuth (bearing) in the field and plot it correctly on a map.

5.9.6.5 Obtain an azimuth (bearing) from a map and transfer it correctly to the field.

5.9.6.6 Determine and correctly give the coordinates of a point on a map in:

- (1) Latitude/Longitude.
- (2) Universal Transverse Mercator (UTM).
- (3) United States National Grid (USNG)
- (4) References to features on the map.
- (5) Any AHJ specified methods.

5.9.6.7 Plot on a map coordinates given in:

- (1) Latitude/Longitude.
- (2) Universal Transverse Mercator (UTM).
- (3) United States National Grid (USNG)
- (4) References to features on the map.
- (5) Any AHJ specified methods.

5.9.6.8 Determine the distance between two points on a map.

5.9.7 If Global Positioning Satellite (GPS) receivers are used, discuss:

5.9.7.1 The advantages and disadvantages between GPS receivers and map and compass for land navigation.

5.9.7.2 The importance of having the GPS datum match the map datum.

5.10 *Communications:*

5.10.1 Explain AHJ radio procedures, protocols, and systems.

5.10.2 Demonstrate how to operate radio equipment of the AHJ.

5.10.3 The AHJ shall determine what radio procedures, protocols, and systems a Level I land search team member needs to know, and what radio equipment operation needs to be demonstrated.

5.10.4 Correctly send a set of position coordinates by radio.

5.10.5 Correctly receive a set of position coordinates by radio.

6. Basic Search and Rescue Knowledge

A Level I land search team member shall:

6.1 Define the following general aspects of search and rescue operations:

- 6.1.1 Search.
- 6.1.2 Rescue.
- 6.1.3 Recovery.
- 6.1.4 LAST—Locate, Access, Stabilize, Transport.

6.2 Describe the six phases of SAR operations:

- 6.2.1 Preplanning.
- 6.2.2 Notification.
- 6.2.3 Planning/Strategy.
- 6.2.4 Tactics/Techniques.
- 6.2.5 Suspension.
- 6.2.6 Critique.

6.3 Describe the roles of other agencies or organizations, at the following levels, that coordinate, provide resources, services, or other functions in search and rescue for the AHJ. The AHJ shall determine which other agencies and organizations the Level I land search team member needs to be familiar with.

- 6.3.1 National.
- 6.3.2 State or Provincial.
- 6.3.3 Local.
- 6.3.4 Other SAR teams.

7. Search Specific Knowledge and Skills

A Level I land search team member shall:

7.1 *Search Principles:*

7.1.1 Explain the following basic search principles.

7.1.1.1 That search is an emergency.

(1) Understand search urgency factors. Examples of search urgency rating forms are shown in Guides **F1633** and **F1767**, and other references.

7.1.1.2 Searching for clues, not just subjects.

7.1.1.3 Clue consciousness.

7.1.1.4 Perform hasty search before thorough/tight grid search.

7.2 *Lost Person Behavior:*

7.2.1 Discuss the basics of lost person behavior.

7.2.1.1 Factors that affect lost person behavior.

7.2.1.2 Be aware of the general classifications of lost persons and the statistical studies of their behavior.

7.2.1.3 Explain the function and importance of lost/missing person questionnaires. A variety of questionnaires are shown in Guide **F1767**.

7.3 *Search Theory:*

7.3.1 Define the following terms and understand their significance to a members of a land search team:

7.3.1.1 Point Last Seen (PLS).

7.3.1.2 Last Known Point (LKP).

7.3.1.3 Search segment or area.

7.3.1.4 Probability of Area (POA).

7.3.1.5 Probability of Detection (POD).

7.3.1.6 Probability of Success (POS).

7.3.1.7 Coverage.

7.3.2 Explain the factors that affect POD.

7.3.2.1 Searcher speed.

7.3.2.2 Searcher spacing.

7.3.2.3 Terrain.

7.3.2.4 Vegetation and ground cover.

7.3.2.5 Weather.

7.3.2.6 Time of day.

7.3.2.7 Searcher condition.

7.3.2.8 Subject condition.

7.4 *Search Techniques:*