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SEARCH AND RESCUE TRAINING AND CERTIFICATION PROGRAM



PART 1 GROUND SEARCH AND RESCUE

**Commonwealth of Virginia
Department of Emergency Services**

SEARCH AND RESCUE
TRAINING AND CERTIFICATION PROGRAM
OF THE
COMMONWEALTH OF VIRGINIA
DEPARTMENT OF EMERGENCY SERVICES

PART I
GROUND SEARCH AND RESCUE

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INTRODUCTION

The need for standardized training has long been recognized in most areas of emergency services. For some reason, uniform standards of training and performance for search and rescue have been largely ignored by most agencies and organizations having SAR responsibility.

Several federal agencies, including the Coast Guard, have a primary SAR responsibility and train to a high level of proficiency. But most search and rescue work in the United States is not done by these federal agencies or even by professional, volunteer SAR groups. Most search and rescue is done by local volunteer and paid emergency services people in law enforcement, EMS and fire service. These people, for the most part, have little or no formal SAR training and what they do receive is often inadequate or inappropriate.

The Department of Emergency Services, in fulfilling its mandated responsibility as the state's search and rescue coordinator, has developed the Search and Rescue Training and Certification Program as a step toward insuring a uniform level of training, to a known standard, for all SAR practitioners operating within the Commonwealth of Virginia.

Part I addresses ground search and rescue, excluding specialty disciplines such as cave rescue and search dogs. There are several reasons for this. First, virtually all of the SAR work done in Virginia involves some type of ground operation. Second, the people who routinely conduct ground operations generally have the least formal training in SAR, compared to other types of SAR such as dive rescue, swift water rescue, air search, marine search, mountain rescue, etc. Third, an established, proven ground search and rescue training program was available for adaptation, eliminating the need to develop a completely new program.

The Search and Rescue Training and Certification Program will eventually include other disciplines. The goal will remain the same; to provide quality training to the statewide SAR community so they may continue to render aid to the distressed person in an effective, efficient and timely manner. "That others may live".

I. PURPOSE

Search and rescue operations in urban, rural and wilderness environments require knowledge and skills not normally taught to persons in the EMS system, in fire service, in law enforcement or in other emergency services agencies.

To effectively work and survive in these areas requires a knowledge of the environment itself, the ability to navigate, a knowledge of specialized search skills, the ability to manage the injured or distressed person away from normal care services, and the endurance to successfully move such persons safely through often hostile terrain.

The goals of the "Search and Rescue Training and Certification Program" are to establish a minimum standard of training and performance for SAR personnel, to provide a uniform level of training for those persons and organizations within the Commonwealth who find themselves with the responsibility for the prosecution of SAR events, and to provide a mechanism for the Department of Emergency Services to monitor the relative strength and distribution of the statewide SAR community.

The program is not designed to include the specifics of emergency medical care except, possibly, in those areas of specialized procedures and techniques not addressed in regular emergency medical care courses.

The primary target groups are currently established emergency services organizations such as law enforcement agencies, rescue squads and fire departments, active SAR groups and Civil Air Patrol. First priority for training is given to these groups since they are the ones most often involved in SAR events either at the local level or as first responders.

II. DEFINITIONS

Search - To identify and locate persons who are or may become distressed or injured and who are unable to return to a place of safety on their own. Search operations may occur in urban, rural, wilderness or maritime environments.

Rescue - To access, stabilize and evacuate distressed or injured persons by whatever means necessary to insure their timely transfer to appropriate care or to a familiar environment.

Wilderness - An area generally uncultivated and uninhabited and often inaccessible by road.

Rural - Country often given to farming or to woodland and sparsely to moderately populated.

Urban, suburban - Moderately to heavily populated areas given primarily to business and residential development.

SAR Incident - Any occurrence involving persons who may be lost, distressed or injured who may require the assistance of others to locate and return them to a place of safety.

III. CONCEPT OF OPERATION

The training program utilizes the existing curriculum of the Ground Search and Rescue (GSAR) College, which is owned by Search and Rescue Training Associates, Inc. (SARTA), of Richmond, Virginia. SARTA provides the state program with instructors, certain printed materials and audiovisual aids, and on-going program development and technical assistance. Additional materials and assistance are obtained from outside sources as needed.

DES provides administrative support, recruits students, schedules training, acquires and schedules appropriate facilities, provides advertising and direct mailing services, provides for the cost of publications and other printed program materials, reimburses the staff for travel, lodging and meal costs, and provides all or a portion of the student's expenses as funds for this purpose are available. If, from time to time, state funds are not available, training may still be offered, provided a sponsoring organization can be identified or if the students are willing to pay a tuition fee.

IV. TRAINING AND CERTIFICATION REQUIREMENTS

A. General

The initial objective is to train interested individuals in the art of search and rescue, primarily as it applies to ground operations involved with lost or distressed persons in urban, rural or wilderness areas. This includes searching for and evacuating persons who are lost, and reaching and evacuating persons involved in rough terrain accidents or illnesses, including victims of aircraft crashes. Related disciplines such as maritime, aeronautical and electronic SAR, swift water rescue, and SAR dog operations will be addressed as programs can be developed and funding sources identified.

B. Course Descriptions

1. Training and certification is accomplished in a four level system.
 - a. Level I: Entry level training in the basics of search and rescue designed to prepare personnel for participation in search and rescue events that are beyond the scope of routine, day to day, emergency situations encountered in police, fire and rescue services. Students certified in Level I should be able to demonstrate the ability to provide for their own well being in a search environment while contributing meaningful skills to a SAR effort.

This tract follows the standard Level I GSAR College course curriculum.

Level I certification: Field Team Member

- b. Level II: Intermediate level training in SAR field team management, performance of a variety of specific search tactics, handling in-field emergencies, use of technical rescue equipment, performing specialized evacuation techniques and managing the distressed or injured person in a search environment. This tract follows the standard Level II GSAR College course curriculum.

Level II certification: Field Team Leader

- c. Level III: Advanced level training in overall search management including use of resources, problem solving, mission intelligence, strategy and tactics and the Incident Command System. This tract utilizes the 40 hour NASAR "Managing the Search Function" course combined with ICS material and some additional material developed by SARTA.

Level III certification: Search Manager

- d. Level IV: The Level IV tract consists primarily of an internship for prospective instructors, combined with instructor skills training deemed necessary by the course monitor. A certified instructor will be entitled to teach Levels I through III and is expected to function as both a lead instructor and a course coordinator. In addition, instructors are expected to maintain proficiency in all areas of SAR practice.

Level IV certification: Ground Search and Rescue Instructor

2. Associate Instructor

Associate Instructors are appointed, at the discretion of the SARTA staff, to teach specific tracts. These individuals must hold a certification in the tract they wish to teach. An exception would be MSF instructors who hold no specific certification but are NASAR approved to teach the MSF course.

C. Qualifications for Program Admission

1. Age

Minimum age for Level I is 16 with parental consent.
Minimum age for Levels II, III and IV is 18.

2. Affiliation and experience

Applicants holding membership in the types of organizations listed in paragraph I will be given first consideration for admission to the program. If further application screening becomes necessary, factors such as prior experience, potential for use of training, number of SAR missions per year and other criteria may have to be considered.

3. Prerequisites

a. Level I. No prerequisites required.

b. Level II

1. Hold a valid Level I certification.

c. Level III

1. Hold a valid Level II certification.

2. Be an active and qualified member of a recognized SAR organization.

3. Level III training may be offered without prerequisite to those persons having direct, legal management responsibility for SAR events, or to members of organizations requiring this training tract as a part of the member's overall training. Individuals completing only the Level III tract will not be eligible for certification unless conditions set forth in section IV D.3 are met.

d. Level IV

1. Hold a valid Level III certification.

2. Be a certified "Managing the Search Function" course instructor.

3. Complete an interview and have an application for training approved by the SARTA Executive Committee.

D. Certification Requirements

Upon successful completion of each level of training described in IV B., a certificate will be issued to the trainee by DES. This certificate does not constitute a license to practice the skills taught in the training program, but signifies only that

the person holding the certificate has met an established standard of knowledge and performance and should be able to function in a competent manner at the level indicated on the certificate.

The following criteria must be met in order to qualify for certification:

1. Level I

- a. Attend a complete Level I training course.
- b. Pass the prescribed written and practical testing.
- c. Certification will be valid for (3) years from date of issue.

2. Level II

- a. Attend a complete Level II training course.
- b. Pass the prescribed written and practical testing.
- c. Hold an Advanced First Aid or equivalent or higher rating.
- d. Certification will be valid for (3) years from date of issue.

3. Level III

- a. Successfully complete the "Managing the Search Function" course.
- b. Successfully complete the balance of the Level III course material including the written and practical testing.
- c. Serve in a staff management position on at least one extended search mission.
- d. Hold an Advanced First Aid or equivalent or higher rating.
- e. Complete the "Level III Application for Certification".
- f. Certification will be valid for (3) years from date of issue.

4. Level IV

- a. Complete the specified internship and any additional training that may be required as part of the internship.
- b. Be recommended for certification by the Level IV course monitor.
- c. Hold an Advanced First Aid or equivalent or higher rating.
- d. Complete the "Level IV Application for Certification".
- e. Certification will be valid for (3) years from date of issue.

5. Equivalent training and/or experience.

Those individuals who, by virtue of past training and experience, possess the necessary knowledge and skills, may be permitted to challenge the written and practical exams at any given level and be certified at that level, provided all prerequisite requirements are met.

Members of recognized search and rescue organizations who receive their training from that organization and who hold a valid organizational certification may apply for DES certification at any given level, provided the organization's training standards meet or exceed the DES program standards for the level in which certification is requested. These applications will be reviewed individually and either approved or disapproved on a case by case basis.

V. RECERTIFICATION REQUIREMENTS

A. Level I

1. Complete an "Application for Recertification" and submit to DES.

B. Level II

1. Maintain emergency medical rating as described in Part IV D.2 and present evidence thereof.
2. Complete an "Application for Recertification" and submit to DES.
3. Pass the Level II recertification test.

C. Level III

1. Maintain affiliation as described in Part IV C.3 and emergency medical rating as described in Part IV D.3 and present evidence thereof.
2. Serve in a staff management position on at least (2) extended search missions during the effective period of the certification and present evidence thereof.
3. Complete an "Application for Recertification" and submit to DES.
4. Pass the Level III recertification test.

D. Level IV

1. Maintain affiliation as described in Part IV C.3 and emergency medical rating as described in Part IV D.3 and present evidence thereof.

2. Complete an "Application for Recertification" and submit to DES.
3. During the effective period of the certification, serve as an instructor for at least two (2) of the training courses offered under this program.
4. Successfully complete the "Instructor Recertification Course".
5. Be approved for recertification by the SARTA Executive Committee.

APPENDIX A

CERTIFICATION STANDARDS

LEVEL I

FIELD TEAM MEMBER

I. Qualifications

- A. Attend at least one complete Level I training course.
 - 1. Individuals who can demonstrate equivalent training or experience, as set forth under section IV D.5 of the "Search and Rescue Training and Certification Program", may be entitled to waive Part A.
- B. Pass the GSAR Level I written test with a score of at least 80%.
- C. Pass the GSAR Level I practical test within the limits defined for each station.

II. Equipment Requirements

- A. Possess proper equipment as outlined in the "Level I Minimum Personal Equipment" list.

III. Knowledge and Performance Expectations.

- A. SAR Operations.
 - 1. Describe areas of responsibility for search and rescue as defined by the National SAR Plan.
 - 2. Describe areas of responsibility at the state level.
 - 3. List several resources that might be utilized during a SAR event.
 - 4. List several factors that may result in an aircraft being listed as missing.
 - 5. Describe the basic principles of the ICS system and define the major staff position.
- B. Legal Aspects of SAR Operations.
 - 1. Outline the provisions of the "Good Samaritan" law.
 - 2. Define the terms "implied consent", "expressed consent", "informed consent" and "abandonment".
 - 3. Define the (4) facts necessary to prove negligence.

4. Describe several methods of reducing liability exposure.
5. Describe the circumstances when entry upon private property may be justified.
 - a. Define the problems involved with this action and possible solutions.

C. Personal Equipment

1. Explain these principles of clothing selection.
 - a. Choice of clothing material.
 - b. Wetproof/windproof.
 - c. Layering.
 - d. Loft.
2. Describe several ways to prevent excessive body heat loss.
3. Explain the selection principles for these items.
 - a. Boots.
 - b. Sleeping bag.
 - c. Ground protection and insulation.
 - d. Backpack/daypack.
 - e. Tent.
 - f. Personal safety items.
 - g. Fire starting aids.
 - h. Items for signalling and navigation.
 - i. Light sources and batteries.
 - j. Emergency shelters.

D. Wilderness Survival

1. Define short term vs long term survival.
2. Describe several problems commonly encountered on SAR missions that may lead to a survival situation.
3. Describe the psychological factors that may affect survival ability.
4. Explain the "energy reserve" concept.
5. Describe the body's physiologic response to both cold and heat stress.
6. Define the following temperature related diseases and their recognition, treatment and prevention.

- a. Hypothermia.
 - b. Frostbite.
 - c. Trench foot (immersion foot)
 - d. Heat stroke.
 - e. Heat exhaustion.
 - f. Dehydration.
7. Be able to develop an "action plan" based on the STOP rule for a given wilderness emergency scenerio.
 8. Demonstrate the ability to bivouac in any type weather conditions, without significantly affecting functional ability.
 9. Define average daily food and water requirements.
- E. Land Navigation and Orienteering
1. Identify and define the following terms or concepts.
 - a. Latitude and longitude.
 - b. Degrees, minutes and seconds.
 - c. True north and magnetic north.
 - d. Declination.
 2. Demonstrate the ability to read and interpret topographic map border information, colors and symbols.
 3. Describe the various parts of the compass and demonstrate the ability to use it to plot a course on a map, including northing and declination correction.
 4. Define the following plotting methods or grid systems and demonstrate the ability to use them to determine the coordinates for a given point.
 - a. Latitude - Longitude.
 - b. UMS.
 - c. UTM.
 - d. ASRC.
 - e. LORAN, using a topo map.
 5. Demonstrate the ability to perform the following navigational functions.
 - a. Obtain and follow a simple compass bearing.
 - b. Determine a reciprocal.
 - c. Move around obstacles.
 - d. Find a position by triangulation and by resection.
 - e. Measure distance by pacing.
 - f. Determine position by terrain feature identification.

6. Describe the significance and use of these orienteering concepts.
 - a. Catching features.
 - b. Collecting features.
 - c. Attack points.
 - d. Aiming off.

F. Search Skills

1. Identify the most basic tenet of search and rescue, the one that should govern all SAR activity.
2. Identify the primary goal of all SAR activity.
3. Identify and define (4) key points of search theory.
4. Describe the standard techniques for these search tactics.
 - a. Attraction.
 - b. Containment.
 - c. Survey search.
 - d. Hasty search (Scratch search).
 - e. Sweep search (Open grid search).
 - f. Line search (Closed grid search).
 - g. Route search.
5. Describe standard procedures for working with search dogs, tracking/trailing dogs and mantrackers.
6. Define the (4) core elements of tactical operations.
7. Briefly describe the (5) phases of a SAR event.

G. Incident Site Procedures and Disciplines

1. Describe several hazards commonly associated with an aircraft crash site.
 - a. List additional hazards that may be present if the crash involves a military aircraft.
2. Define the proper approach to an aircraft crash site.
3. Explain the importance of the accurate documentation of events at an incident site.
4. Describe the proper methods to use to adequately secure an incident site.
5. Explain the importance of clue preservation at both an aircraft crash site and a possible crime scene.

H. Ropes and Technical Hardware

1. Describe the several types of rope commonly used in wilderness rescue work, their construction, use and care.
2. Describe the use and care of the carabiner, the Figure 8 and the brake bar rack.
3. Demonstrate the ability to correctly tie these knots.
 - a. Figure 8 loop
 - b. Figure 8 bend (follow through).
 - c. Square knot.
 - d. Water knot (overhand bend).
 - e. Prusik.
 - f. Double fisherman or barrel bend.
4. Demonstrate these rope handling techniques.
 - a. Uncoiling and stacking.
 - b. Inspection.
 - c. Throwing.

I. Litter Techniques

1. Demonstrate these litter techniques.
 - a. Patient loading.
 - b. Lift, lower and carry.
 - c. Rotation.
 - d. Laddering, including toe nailing.
 - e. Calls.

J. Belaying

1. Demonstrate proper belay techniques including:
 - a. Anchorage.
 - b. Belay tie-in.
 - c. Stance.
 - d. Aim.
 - e. Uphill and downhill travel.
 - f. Calls.
 - g. Tree wrap and mechanical brakes.

K. Field Team Organization

1. Define "field team".
2. Describe at least (5) types of search teams.
3. Describe at least (4) types of rescue teams.
4. Define the functions of these field team positions.
 - a. Field Team Leader.
 - b. Medical Officer.

- c. Rescue Specialist.
- d. Radio Operator.

L. Helicopter Operations

- 1. Describe the hazards to ground personnel working around a helicopter.
- 2. Describe standard protocols for helicopter operations.
- 3. Explain proper procedures for hoist operations.
- 4. Describe the considerations for selecting and preparing an LZ.

M. Field Communications

- 1. Describe the use and dangers of these signalling devices.
 - a. Aerial flares.
 - b. Smoke.
 - c. Signal mirrors.
 - d. Fires.
 - e. Panels and paulins.
 - f. Hand and body signals.
- 2. Define the special problems associated with the field use of portable radios and list some possible solutions.
- 3. Briefly describe basic radio procedures including courtesy, security, brevity and the use of the phonetic alphabet and 10 codes.

CERTIFICATION STANDARDS

LEVEL II

FIELD TEAM LEADER

I. Qualifications

- A. Hold a valid Advanced First Aid or equivalent or higher rating.
- B. Hold a current GSAR Level I certification.
- C. Attend at least one complete Level II training course.
 - 1. Individuals who can demonstrate equivalent training, experience and other qualifications, as set forth under section IV D.5 of the "Search and Rescue Training and Certification Program", may be entitled to waive Part B and/or Part C.
- D. Pass the GSAR Level II written test with a score of at least 80%.
- E. Pass the GSAR Level II practical test within the limits defined for each station.

II. Equipment Requirements

- A. Possess proper equipment as outlined in the "Level II Minimum Personal Equipment" list.

III. Knowledge and Performance Expectations.

- A. Field Team Leaders are expected to fully meet the expectations of Part III of the Level I Standards. The items listed here are additional.
- B. SAR Operations.
 - 1. Define the role of the field team for these types of missions.
 - a. Lost person search.
 - b. Downed aircraft.
 - c. Natural disaster assistance.

2. List the various types of resources in each of the following categories that may be utilized in a typical SAR event.
 - a. Ground search.
 - b. Air search.
 - c. Logistics.
 - d. Communications.
 - e. Command.

C. Search Tactics

1. Describe in detail the responsibilities of the field team leader when carrying out a field task.
2. Explain the execution of these search tactics using an average size and properly equipped field team.
 - a. Containment.
 - b. Attraction.
 - c. Survey search.
 - d. Hasty search (scratch search).
 - e. Sweep search (open grid search).
 - f. Line search (closed grid search).
3. Describe in detail the tasks that must be completed once the field team returns to base camp.

D. Search Management

1. Outline standard search strategy for:
 - a. Downed aircraft.
 - b. Lost person, wilderness.
 - c. Lost person, rural.
 - d. Lost person, urban.
2. Describe the (5) phases of a search mission and the primary activities that occur during each phase.

E. Rescue Operations

1. Describe how to formulate a rescue plan.
2. List the (4) phases of a rescue mission.
3. Describe the major factors a team leader must consider once a victim is located.
4. Describe the manpower and equipment requirements and the team organizational structure necessary to accomplish an advanced semi-technical rescue operation.

F. Equipment

1. Describe basic team equipment, other than required personal gear, for a wilderness SAR team.
2. Define a preplan for insuring immediate availability of team equipment in the event of a call-out.
3. Define an equipment inspection and maintenance program that includes member's personal equipment, team equipment and the team vehicle.

G. Mission Performance

1. Demonstrate the ability to travel cross country on foot, in any weather conditions, navigating by map and compass, and to establish an emergency bivouac, all without compromising the assigned task.
2. Demonstrate the ability to organize and execute the (6) tactics listed under Part III, C, 2.
3. Demonstrate the ability to properly secure a scene, extricate and treat a patient and evacuate the patient using the method most appropriate for a given situation.

H. Ropes and Technical Hardware

1. Demonstrate the ability to correctly tie these knots:
(In addition to those listed in the Level I Standards)
 - a. Butterfly.
 - b. Bowline-on-a-coil.
 - c. One-way knot.
 - d. Sheet bend.
 - e. Frost knot.
 - f. ASRC seat harness.
2. Assemble and use a single line rappel system that includes a belay.
3. Demonstrate the ability to safely direct a six person litter team in moving a litter up and down a 45 degree slope, using a proper belay system.
4. Demonstrate the ability to safely direct a six person litter team in rigging a Z-haul system, a 4:1 hauling system, a "brute force" hauling system, and using the systems, to move a litter a minimum of 100 feet up a 45 degree slope.

CERTIFICATION STANDARDS

LEVEL III

SEARCH MANAGER

I. Qualifications

- A. Hold a current GSAR Level II certification.
- B. Be an active and qualified member of a recognized SAR organization.
- C. Attend at least one complete Level III training course.
 - 1. Individuals who can demonstrate equivalent training, experience and other qualifications, as set forth under section IV D.5 of the "Search and Rescue Training and Certification Program" may be entitled to waive Part A and/or Part C.
- D. Pass the GSAR Level III written test with a score of at least 80%.

II. Equipment Requirements

- A. Possess the following equipment in addition to that listed in the Level I and Level II "Minimum Personal Equipment List".
 - 1. A SAR mission kit to include items 2 through 7 and sufficient clerical supplies to support a small mission base operation in the initial stages of a mission.
 - 2. A map board suitable for mounting a standard topo map.
 - 3. Complete set of ICS (SAR) forms.
 - 4. MSF Field Coordinator's Guide.
 - 5. ICS Field Operations Guide (ICS-420-1).
 - 6. Maps: (1) gridded state road map, (1) gridded VFR Virginia aeronautical chart, and a complete set of county road maps.
 - 7. A notebook containing phone listings, organizational listings, charts, protocols and other such information necessary to establish and operate a small mission base in the initial stages of a mission.

III. Knowledge and Performance Expectations

- A. Search Managers are expected to fully meet the expectations of Part III of the Level I and Level II Standards. The items listed here are additional.
- B. Search Operations
 - 1. Have a comprehensive working knowledge of the ICS system and be able to adapt the system to a typical SAR mission.
 - 2. Be able to function in all command and general staff positions except those that may require a particular expertise not normally utilized in SAR operations.
- C. Rescue Operations
 - 1. List various rescue resources and describe how each is activated and how each could interface with the SAR field team.
- D. Mission Performance
 - 1. Demonstrate the ability to plot the following:
 - a. The most expeditious route between two points.
 - b. Bearings, headings, and intercepts.
 - c. Coordinates: LORAN-C, Lat-Long, UTM.
 - d. Search data: Tasks, clues, boundaries.
 - 2. Demonstrate the ability to make appropriate tactical decisions for a given situation.
 - a. Demonstrate appropriate choice and use of resources.
 - b. Demonstrate conservation of resources.
 - 3. Demonstrate the ability to coordinate ground activities with air search resources.
 - a. Demonstrate the use of aeronautical charts, including plotting VOR intercepts.
 - b. Demonstrate the appropriate choice and tasking of air search resources.
 - 4. Demonstrate the ability to determine POA and POD for each segmented area of a search.

CERTIFICATION STANDARDS

LEVEL IV

GROUND SEARCH AND RESCUE INSTRUCTOR

I. Qualifications

- A. Hold a current Level III certification.
- B. Be an active and qualified member of a recognized SAR organization.
- C. Hold a NASAR "Managing the Search Function" Course Instructor rating.
- D. Successfully complete the Level IV internship program.
 - 1. Individuals who can demonstrate equivalent training, experience and other qualifications, as set forth under section IV D.5 of the "Search and Rescue Training and Certification Program", may be entitled to waive Part A and/or Part D.

II. Other Requirements

- A. Level IV certification requires essentially the same equipment and the same knowledge and performance expectations as Level I through Level III, inclusive. In addition, demonstrated ability as a classroom and a field instructor is required.

APPENDIX B

MINIMUM PERSONAL EQUIPMENT

LEVEL I

1. Windshell jacket with hood.
2. Waterproof jacket or parka with hood. A Gore-Tex or similar jacket can serve for both items 1 and 2.
3. Rain chaps or rain pants. Add gaitors for winter.
4. Heavy wool shirts or sweaters as required.
5. Wool pants.
6. Long underwear of wool, silk, polypro or other suitable synthetic material. Cotton thermal underwear is not acceptable.
7. Wool stocking cap or balaclava. A scarf is recommended if a stocking cap is used.
8. Heavy wool socks with lighter weight liner socks.
9. Leather gloves with wool liners. Mittens required for extremely cold weather.
10. Heavy weight backpacking or mountaineering boots with a suitable lug sole recommended. Combat type boots are acceptable.
11. Backpack large enough for day pack use.
12. One quart minimum canteen or water bottle.
13. Pocket knife.
14. Whistle
15. Orienteering type compass.
16. Flashlight or headlamp with alkaline batteries, spare batteries and spare bulb. Headlamp preferred.
17. Waterproof matches or disposable lighter.
18. Personal first aid kit.
19. Storm shelter: Tube tent, space blanket, lightweight tarp.
20. At least (1) 30 gallon leaf bag.

Notes:

A sleeping bag and an Ensolite or similar sleeping pad will be needed for overnight stays away from home.

Always carry at least a one day supply of quick energy food.

MINIMUM PERSONAL EQUIPMENT

LEVEL II

1. All equipment listed on the "Level I Minimum Personal Equipment" list.
2. 20 feet of 1 inch nylon tubular webbing or a commercial seat harness.
3. 2 pieces of 6mm or 7mm climbing grade nylon rope for making slings. Each piece should be 5 feet long.
4. 2 locking-D carabiners.
5. Climbing helmet or hardhat with chin strap.
6. An acceptable rappel device.
7. Electric headlamp.

SUGGESTED ADDITIONAL PACK ITEMS

Zip-lock bags
Parachute cord
Toilet paper
Wet wipes
Moleskin
Disposable space blanket
Backpacking stove
Mess kit
Signal mirror
Signal smokes
Aerial flares
Small note book and pen
Insect repellent
Iodine-type water purification tablets

APPENDIX C

SUGGESTED EQUIPMENT LIST FOR A
WILDERNESS SEARCH AND RESCUE TEAM

The following equipment should be considered the minimum required to do a wilderness rescue involving one patient in terrain up to and including semi-technical. Rescues of greater technical difficulty should be left to a specialized mountain rescue team.

This list also assumes that the individual team members are each carrying adequate personal gear as defined in the Minimum Personal Equipment Lists.

Specialty equipment needed to adapt a team to a particular environment or to allow the team to perform specialized SAR tasks will not be addressed. Examples include snowmobiles, cross country ski equipment, equipment for mounted patrols, etc. Coastal areas and swamplands can also present unique SAR problems requiring vehicles and equipment adapted to that type environment. However, basic requirements still remain the same. Each team will need to decide how sophisticated they wish to be and determine additional needs accordingly.

I. Vehicle

- A. Transportation of team members from their homes to the mission base is usually accomplished by private vehicle. A roster of member's mission available vehicles listed by type and capability (station wagon, 4 WD, etc.) is suggested.
- B. A dedicated, multipurpose team vehicle is highly desirable. It should be large enough to carry six or more personnel with their gear and should be outfitted to operate as a mobile operations and communications base. 4 WD ex-military field ambulances are ideal for this application and can sometimes be obtained by volunteer groups at no cost through government excess property programs. Restoring and outfitting the vehicle can be an interesting and challenging team project.
- C. Suggested vehicle equipment
 - 1. Dual battery system. Interior lights and radios should be on a separate circuit from the starting system.
 - 2. Adequate lighting for off-roading. Side lights and spot lights recommended.
 - 3. Emergency lights and siren, if permitted by state and local regulations.
 - 4. Support equipment including jack (2 hydraulic jacks recommended), jumper cables, tire chains, tow chains or tow straps, tool kit, spare parts kit, fire extinguisher, flares, axe, portable spot light, first aid kit.

II. Mission Kit

- A. Complete set of forms as required by local protocols.
- B. Miscellaneous kit including stapler and staples, pens, pencils, transparency markers, rubber bands, paper clips, carbon paper, file folders, etc.
- C. State and county road maps, area topo maps, aeronautical charts.
- D. Map overlay kit.
- E. Portable map boards.

III. Search Pack

- A. Surveyor's tape and rolls of heavy duty string.
- B. Instant camera and spare film.
- C. Appropriate warning signs for scene control.
- D. Signal panel set.
- E. Smoke.
- F. Aerial flare kit.
- G. Signal mirror.
- H. Binoculars.

IV. Communications and Electronic Equipment

- A. Vehicle mobile radio, ideally multiple frequency.
- B. Compatible portables.
- C. Scanner.
- D. ELT-DF equipment if missing aircraft search is anticipated.

V. Medical Pack

- A. Back-packable trauma kit. The contents should be determined by the team medic and governed by local medical protocols. Multiple patient treatment capability desirable.
- B. Back-up vehicle medical kit.
- C. Portable oxygen system with warmer and humidifier.
- D. Triage tags.
- E. Patient assessment and report forms.

VI. Evacuation Kit

- A. Stokes litter with yoke, tie-ins and sling system. A back-up D-ring litter is desirable.
- B. Patient packaging
 - 1. Center zip sleeping bag
 - 2. (2) wool blankets
 - 3. Rain cover for the Stokes
 - 4. Ensolite pad
 - 5. Short backboard
 - 6. Patient helmet with face shield
- C. (1) 300 ft. nylon rope, 1/2" climbing grade, static.
 - 1. (1) or more 150 ft. sections and (1) or more 50 ft. sections of the same grade rope are recommended.
 - 2. Rope and webbing sling assortment.
- D. Technical hardware
 - 1. (10) locking-D carabiners.
 - 2. (1) brake bar rack
 - 3. (4) rescue pulleys
 - 4. (2) figure 8's

VII. Extrication Kit

- A. This is a field portable kit. A come-along with chains as part of the vehicle equipment may be desirable.
 - 1. (1) 24" pry bar
 - 2. (1) leaf spring cutting tool
 - 3. (1) fiberglass mallet
 - 4. (1) screwdriver set
 - 5. (1) pr. soft metal shears
 - 6. (1) pr. Vise-Grip type pliers
 - 7. (1) hacksaw

APPENDIX D

SEARCH AND RESCUE TRAINING AND CERTIFICATION PROGRAM

SAMPLE SCHEDULE FOR A LEVEL I

GROUND SEARCH AND RESCUE COLLEGE

(TWO WEEKEND FORMAT)

DAY ONE FRIDAY

1200-1230 Registration
1230-1300 Plenary Session
1300-1400 Pretest
1400-1430 Legal Aspects of SAR Operations
1430-1600 SAR Operations
1600-1630 Introduction to ICS
1630-1830 Break, Dinner
1830-2000 Personal Equipment

DAY TWO SATURDAY

0800-0830 Incident Site Procedures
0830-0900 Hazardous Materials
0900-1100 Wilderness Survival
1100-1200 Field Team Organization
1200-1300 Lunch
1300-1430 Search Strategy and Tactics, Part I
1430-1600 Field Demonstration of Search Tactics
1600-1700 Search Strategy and Tactics, Part II
1700-1900 Break, Dinner
1900-2030 Map Problem

DAY THREE SUNDAY

0800-0900 Communications and Signalling
0900-1000 Helicopter Operations
1000-1100 Helicopter Demonstration
1100-1130 Interviewing
1130-1200 Aircraft Extrication
1200-1300 Lunch
1300-1500 ELT-DF Search

DAY FOUR FRIDAY

1200-1400 Land Navigation
1400-1600 Orienteering
1600-1700 Dinner, Prepare for Orienteering Course
1700-2100 Orienteering Course
2100 Bivouac

DAY FIVE SATURDAY

0830-0900 Debriefing, Critique
0900-1000 Ropes and Technical Hardware
1000-1130 Knot Tying
1130-1200 Introduction to Litter Handling and Belaying
1200-1300 Lunch
1300-1400 Rigging the Stokes and D-Ring Litters
1400-1530 Litter Handling
1530-1800 Belaying

DAY SIX SUNDAY

0800-1200 Practical Testing Stations
1200-1300 Lunch
1300-1430 Written Test
1430-1500 Critique and Evaluation
1500-1530 Graduation