MAINE ASSOCIATION FOR SEARCH AND RESCUE

Rescue Team Member Certification Standard
Appendix A

Training Requirements

I. Introduction

A. To be certified as a Rescue Team Member, a person must complete all of the requirements in this Appendix.

B. For the purposes of this standard, definitions of terms and examples of systems and techniques shall be similar to those shown and described in the following references:
   1. "Technical Rescue Rigger's Guide" by Rick Lipke
   2. F1768 Standard Guide for Using Whistle Signals During Rope Rescue Operations

C. Other terms, systems, and techniques shall be considered by the Standards Committee, upon written request.

II. Equipment

A. Explain the reasons for selection and reasons to carry, and demonstrate the proper use of, the following PPE:
   1. Helmet
   2. Gloves
   3. Eye protection
   4. Hearing protection
   5. Seat harness
   6. Chest harness
   7. Carabiners
   8. Personal use slings or lanyards (i.e. Prusik loops, Purcells, etc.)
   9. Personal ascender
   10. Personal descender
   11. Adequate clothing

B. List approximate breaking strengths, in pounds or kiloNewtons, for the following rescue equipment:
   1. 11mm kernmantle static or low-stretch rescue rope
   2. 8mm kernmantle accessory cord
   3. Commonly used slings and/or lanyards
   4. 1" Nylon tubular webbing
   5. Aluminum carabiners

C. Explain the advantages and disadvantages of the descent control device(s) used by the person's team

D. List the advantages and disadvantages of the rescue litter, or other patient

transport device, with which they will usually work

E. Explain the reasons for selection, the reasons to carry, and demonstrate the proper use of all unit equipment which the Rescue Team Member normally employs in rope rescue operations
F. Demonstrate the ability to inspect personal and team equipment for the purpose of identifying wear, damage, and operational readiness
G. Demonstrate the ability to perform personal and team equipment maintenance procedures, including cleaning, inspection for damage and wear, and repacking

III. Rescue Operations

A. Explain the significance of the "Golden Hour" to wilderness rescue
B. Define "rescue triage" and explain its significance to wilderness rescue
C. For a given wilderness rescue scenario in low to high angle terrain:
    1. Recommend the type of rescue needed
    2. List the number of victims, their location(s), the rescue priority for each, and the resources needed
    3. List the hazards, both immediate and potential, and explain the risk associated with each vs. the benefit of rescue
    4. Describe how to avoid the most likely risks for rescuer and victim(s)
    5. Describe how to locate and reach victim(s)
D. Define low, steep, and high angle terrain
E. List the hazards associated with the rescue system(s) employed for each terrain type, and explain the skills required for mitigating those hazards
F. Describe how the following factors affect the speed, safety, and effectiveness of a rescue operation:
    1. Time to access victim
    2. Rescue terrain, including topography and ground cover
    3. Weather, both current and forecast
    4. Time of day
    5. Environmental dangers
    6. Rescuer ability:
        i. Training
        ii. Experience
    7. Condition of rescuers
        i. Physical
        ii. Mental
    8. Condition of victim
    9. Number of victims
G. Define the functions of the following personnel in a rescue operation:
    1. IC
    2. Operations
    3. Safety

4. Medical Officer
5. Main line operator
6. Belay operator
7. Edge attendant
8. Litter attendant

H. Explain the following concepts and their effects on a rope rescue system:
1. Loads
2. Forces, including magnitude and direction
3. Fall line
4. Friction
5. Backup vs. redundant systems
6. Single and two rope systems

IV. Communications

A. Demonstrate the use of clear and concise verbal commands in a rope rescue operation (for an example see the "Technical Rescue Rigger's Guide" by Rick Lipke)

B. Demonstrate the use of whistle signals, as defined in ASTM standard F1768, in a rope rescue operation.

V. Administration

A. Demonstrate proper record keeping, including completion of the following:
1. Rope use log
2. Any relevant unit inspection logs

VI. Knots

A. Construct the following knots, hitches, and bends (note – all must be neatly tied and properly dressed)[1]
1. Bowline with tie-off
2. Interlocking long-tail bowline
3. Harness tie-off knot (figure 8 follow-through, bowline, or equal)
4. Mid-line double loop knot (Figure 8 on a bight, bowline on a bight, or equal)
5. Mid-line single loop knot (Alpine butterfly or equal)
6. Stopper knot (figure 8, overhand, or equal)
7. Ring bend (water knot) in 1" tubular webbing
8. Bend for two ropes (double overhand bend, Flemish bend, Gibbs bend, or equal)
9. Münter hitch
10. Clove hitch
11. Triple wrap Prusik hitch

[1] Alternates to these knots may be used with the agreement of the Standards Committee.

B. Construct an improvised seat harness
C. Construct an improvised chest harness
D. Demonstrate an understanding of the factors involved in choosing a suitable knot, including the following:
    1. Application
    2. Ease of tying and untying
    3. Security
    4. Ease of identification
    5. Adjustability
    6. Effect on rope strength

VII. Patient Care

A. For a given scenario, perform triage of multiple victims
B. Demonstrate the performance of basic patient emergency care, including the following:
    1. Clear airway
    2. Ensure proper ventilation
    3. Check circulation and resolve issues affecting it
    4. Control bleeding
    5. Protect spine from further injury
    6. Mitigate the effects of shock
C. Demonstrate the use of personal protective equipment, including:
    1. Gloves
    2. Face mask
    3. Eye protection
D. Demonstrate body fluid isolation methods for a patient, including patient PPE
E. Explain the effects of extended transport on patient care
F. Describe how to mitigate the effects of extended transport on a patient's condition
G. Describe the legal requirements, and practical considerations, for transferring patient care to local EMS personnel

VIII. Patient Packaging

A. Package a patient in a litter, providing for the following:
    1. Spinal immobilization
    2. Patient protection (thermal, environmental, physical)
    3. Patient immobilization, including allowing for patient care
    4. Access to injuries
    5. Access to patient care equipment, e.g. BP cuff, etc.
    6. Patient restraint and attachment to the litter
        i. Patient without a harness
        ii. Patient with a harness

IX. Anchor Selection and Construction

A. List natural anchors that are suitable for a rescue load, including the following:
   1. Appropriateness for the location
   2. Risks and benefits

B. Explain the effects of the following on anchor system design:
   1. Interior angles
   2. Alignment
   3. Anchor material strength and applicability

C. Perform the following:
   1. Create a non-slip anchor loop (wrap 3 pull 2 or equal)
   2. Create an alternate anchor loop (basket hitch or equal)
   3. Create a full strength anchor with a rope end (high strength tie-off/ tensionless hitch or equal)
   4. Create a distributive anchor
   5. Back tie an anchor
   6. Use a vehicle as an anchor

X. Litter Rigging

A. Rig a litter for a steep angle rescue
B. Rig a litter for a high angle rescue

XI. Steep Angle Litter Carry

Perform as a bearer in a three or four person steep angle litter carry, demonstrating the following during the operation:

A. Use of an effective primary attachment
B. Use of an effective belay attachment
C. Control of the litter
D. Clear and effective communications with all of those involved in the operation

XII. Belay Line Rigging and Operation for Low, Steep and High Angle Rescue

A. Explain the purpose and function of the belay system in a rescue operation
B. Build a belay system for raising and lowering a 2-person rescue package, including the following:
   1. Explain the risks inherent to the system
   2. List advantages and disadvantages of the Tandem Prusik Belay
   3. List the advantages and disadvantages of an alternative to the Tandem Prusik belay

C. Operate a system during a litter raise and lower operation. Demonstrate the following during the procedure:
   1. Primary attention on belay operation
   2. Maintain clear and effective communications with all of those involved in the operation

3. Lock the belay
4. Tie off the belay to leave it unattended
5. Release a locked belay while maintaining control of the rope
6. Pass a knot through the system

XIII. Main Line Rigging and Operation for Steep and High Angle Rescue

A. Explain the purpose and function of the main line system in a rescue operation
B. Construct the following mechanical advantage systems correctly and clearly, with no twists in system ropes:
    1. Simple 3:1
    2. Simple 3:1 with CD (Change of Direction)
    3. Simple 5:1
    4. Compound 9:1
C. Build a safe and effective main line system[2] for lowering and raising a 2-person rescue package, including the following:
    1. Explain the risks inherent to the system
    2. Explain the reason for selection of the components and technique used
D. Operate a main line system during a raise and lower operation, demonstrating the following:
    1. Perform safety check of system before beginning operation
    2. Primary attention on main line operation
    3. Maintain clear and effective communications with all of those involved in the operation
    4. Tie-off descent control device to leave it unattended
    5. During the raise, maintain clear and effective control of the haul team
    6. Convert system from raise to lower
        i. Ensure minimum rope loss during maneuver
    7. Convert system from lower to raise
        i. Ensure minimum rope loss during maneuver
E. Pass a knot through the system during raise and lower

XIV. Ascending and Descending Ropes

A. Ascend a rope with a belay
B. Descend a rope by rappelling
    1. Demonstrate use of a self belay
    2. Tie off rappel device mid-rappel, then continue descent
C. Demonstrate conversion from descending to ascending, and reverse

[2] Any system shown in reference 1 is acceptable. Alternate systems may be used with the prior agreement of the Standards Committee.

XVI. Edge Attendant

A. Demonstrate the construction and use of a safe and effective edge restraint
B. Explain the purpose of vectoring for edge transition
C. Demonstrate the use of vectoring during raise and lower
D. Demonstrate the use of the "Pike and Pivot" or an equivalent maneuver for simplifying the edge transition during a litter raise operation

XVII. Patient Access Skills

A. Demonstrate the ability to locate and access a patient in the normal area of operations.
B. Demonstrate the ability to select and maintain the access point for a patient, including construction of safe and effective edge protection