

APPALACHIAN SEARCH AND RESCUE CONFERENCE, INC.
Allegheny Mountain Rescue Group

Outline: *The Appalachian Search and Rescue Textbook*
Version 1.5 April, 1988

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History

* This version (1.5) supersedes version 1.4, which was published during April 1988. It includes minor changes suggested by Task Group Chairmen and others. Changes from version 1.4 are noted by a double dagger (**).

Equipment Checklists and Uniforms

* Equipment checklists and information on the ASRC uniform, originally included in the ASRC Basic Member Training Course, should more properly be a part of the Operations Manual.

Limited Coverage of Some Topics

* Items with a single dagger (+) will contain only a brief review of the topic, referring the reader to other readily-available references. (E.g. for Fourth Class Climbing Techniques, we will mention some basic principles, then refer the reader to a good basic text such as Loughman's *Learning to Rock Climb*.)

A HyperText Version?

* I'd like to try an experiment with *The Appalachian Search and Rescue Textbook*: providing both a printed manual and a computer version using a HyperText format. The idea behind HyperText is that the text is indexed like data in a database, so that there is more than one path to a particular sentence or paragraph. Thus, with a HyperText version of the Manual, you could review all the sections relating to energy, in a logical order, as if they were in a single section, even though they are really spread throughout the manual. This is more for fun than anything, so we won't let work on this interfere with the real work of getting the *The Appalachian Search and Rescue Textbook*.

Distribution

Version 1.5 is being distributed in three forms:

*Loughman M. *Learning to Rock Climb*. San Francisco: Sierra Club, 1981.

(+ = brief coverage only; ** = new from last version)

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- * A form suitable for use with Broderbund Software's ForComment program*.
- * A plain ASCII text file.

(Both of these have been sent to each ASRC Group on an IBM-PC-style floppy disk, and are available from the ASRC Computer Bulletin Board System at 412-247-4488. Call with a computer, modem, and communications program set to 8-N-0, and leave a message stating why you would like privileges to use the Board.)

- * A printed version, also distributed to each of the ASRC Groups.

Comments

If you have comments for the editor-in-chief, we would prefer that you use ForComment to attach them to the outline; that way, we can integrate your suggestions directly into the word processor file that we are using. A second choice would be comments in ASCII form with carriage returns at the end of paragraphs but no line endings. We'll take handwritten notes, too, even if in Crayola crayon on brown paper. Although we are already hard at work on *The Appalachian Search and Rescue Textbook*, we still welcome any general comments and will pass them on to the appropriate Task Groups. To find out more about the project of writing *The Appalachian Search and Rescue Textbook* and how you can contribute, read the file BOD_0288.TXT, sent to each Group via Bitnet and available on the Pittsburgh ASRC BBS, and which appeared in the February 1988 Appalachian Search and Rescue Conference Board of Directors minutes.

If you would like to participate in the writing of any individual chapter, please contact the Task Group Chairman for the appropriate Chapter directly. The name of the Task Group Chairman appears in parentheses after the chapter title, and addresses and telephone numbers appear at the end of the outline.

Content Outline: The Appalachian Search and Rescue Textbook

Parts Chapters and Sections

I. Introduction

1. Introduction: the role of the ASRC Member (Keith Conover, M.D.)
2. History of Wilderness Search and Rescue and the ASRC (Keith Conover, M.D.)

II. Personal Wilderness Skills

3. Survival (Chris Ingle)

*The reviewer program, which allows the user to enter comments, may be distributed freely. The author program, which is needed to import documents into the required format, cannot be distributed and must be purchased from Broderbund. The reviewer program has been distributed to all ASRC Groups, and is available on the ASRC's Pittsburgh computer Bulletin Board System, at 412-247-4488. It requires an IBM-PC, XT, AT, or compatible computer with 256K of RAM.

(+ = brief coverage only; ** = new from last version)

- A. Short-Term Survival vs. Long-Term Survival
- B. Survival Priorities
- C. Weather
 - (1) Sources of Information
 - (2) "Hypothermia Weather"
 - (3) Cyclonic Storms
 - (4) Cold and Warm Fronts
 - (5) Summer Storms
 - (6) Lightning
 - (7) Prediction of Weather in the Field
- D. Psychological Aspects of Survival
 - (1) The Role of Fear
 - (2) Panic Prevention
 - (3) The Will to Live
- E. Heat Balance and Survival
 - (1) Wind and Rain: Wetchill and Windchill
 - (2) Physics of Heat Loss
 - (3) Clothing Insulation Value
 - (a) Measuring and Evaluating Insulation Value
 - (b) Clothing Materials and Properties
 - i) Warmth
 - ii) Wet Warmth
 - iii) Water Absorption
 - iv) Wicking, Good and Bad
 - v) Compressibility
 - vi) Water Resistance
 - vii) Water Vapor Permeability
 - viii) Teaching About Outdoor Clothing: The 3 "W's"
 - (4) Physiology of Heat and Cold
 - (a) Dealing with Heat: Vasodilation, Sweating, and Their Consequences
 - (b) Dealing with Cold: Vasoconstriction, Shivering, and Their Consequences
 - (c) Effects of Tobacco and Alcohol
 - (5) Heat Illness: Recognition, Prevention, and Initial Wilderness Management*
 - (a) Dehydration*
 - (b) Heat Syncope*
 - (c) Heat Cramps*
 - (d) Heat Exhaustion*
 - (e) Heatstroke*
 - (6) Cold Illness: Recognition, Prevention, and Initial Wilderness Management*
 - (a) Frostbite
 - i) Frostnip*
 - ii) Deep Frostbite*
 - iii) Immersion Foot*
 - (b) Hypothermia
 - i) Immersion (Acute) Hypothermia*
 - ii) Mountain (Subacute, Exhaustion) Hypothermia*
 - iii) Urban (Chronic) Hypothermia*
- F. Survival Equipment

(* = brief coverage only; ** = new from last version)

- (1) The SAR Pack as a Life Support System: "The Ten Essentials"
- (2) Food
- (3) Shelter
- (4) Warmth
- G. Bivouacs and Improvised Shelters
- H. Improvised Evacuations
- 4. Wilderness Travel
 - A. Route Selection
 - B. Pace, Rest Stops, and the Rest Step
 - C. Fourth Class Climbing Principles⁺
 - D. Conditioning for Mountain Search and Rescue
 - (1) Strength
 - (2) Endurance
 - (3) Flexibility
 - E. Food, Water, Digestion, and The Wilderness Traveler
 - (1) Food Types and Caloric Needs
 - (a) Energy Values of Foods
 - (b) Digestibility of Food
 - (c) Need for Carbohydrates, Fats, and Protein
 - (2) Eating Habits and Exercise
 - (a) "Quick Energy" Food
 - (b) Easily Digestible Food
 - (c) Carbohydrate Loading
 - (d) Fat and the Winter Diet
 - (3) Foods for Field Use
 - (4) Water
 - (a) Finding Water
 - (b) Water Purification
 - (c) Water and Electrolyte Needs
- 5. Personal Equipment (Stu Carpenter)
 - A. Clothing for the Outdoors
 - (1) Materials: see under Heat Balance and Survival, above
 - (2) Raingear
 - (3) Wind Protection
 - (4) Ventilation, Layering, and Adjusting Insulation
 - B. Hand Protection
 - (1) Gloves for Ropework
 - (2) Gloves and Mittens for Cold Weather
 - C. Foot Protection
 - (1) Standard Boots
 - (2) Winter Footgear: Winter Boots and Overboots
 - (3) Socks, Boot Liners, and Insoles
 - D. Sleeping Gear
 - (1) Sleeping Bags
 - (2) Sleeping Pads
 - E. Stoves and Fires: Uses and Dangers
 - (1) Fires
 - (2) Gasoline Stoves
 - (3) Other Stoves (Solid Fuel, Alcohol, Compressed Gas)
 - F. Equipment for Winter Travel
 - (1) Winter Footgear

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- (2) Hand Protection for Winter Ropework
- (3) Crampons and Instep Crampons/"Creepers"
- (4) Deep Snow: Skis and Snowshoes
- (5) Ice: Axe and Crampons in the East
- G. Light Sources
 - (1) Headlamps and Flashlights
 - (2) Batteries and Bulbs
 - (3) Night Vision and Red Filters
- 6. Land Navigation (Keith Conover, M.D.)
 - A. Maps
 - (1) Series and Types of Maps
 - (a) Topographic
 - (b) Aeronautical
 - (c) Highway
 - (d) Others: Oreinteering, Trail, Planimetric
 - (2) Features of Topographic Maps
 - (a) Contour Lines⁺
 - (b) Edge Information
 - i) Name
 - ii) Date
 - iii) Road Clasification
 - iv) Scale
 - v) Contour Interval
 - vi) Declination
 - vii) Mapping Information
 - viii) Other Edge Information
 - ix) Keys to Adjacent Maps
 - (3) Features of Aeronautical Maps⁺
 - (a) Contour Lines
 - (b) VOR Markers
 - (c) Aerodromes
 - (d) Airways
 - (e) Declination Marks
 - (f) Latitude/Longitude Marks
 - B. Grid and Location Systems
 - (1) The ASRC Grid System
 - (2) The "Uniform Map System" (CAP/MRA)
 - (3) The Universal Transverse Mercator--Military Grid Reference System (UTM/MGRS)
 - (4) Latitude and Longitude and LORAN-C
 - (5) The "Second G in George Washington" System
 - (6) Distance and Bearing/VOR+DME
 - C. Compasses
 - (1) Basic Principle
 - (2) Declination
 - (3) Types: Orienteering, Survey, Lensatic, Other
 - D. Orienteering
 - (1) Orienteering as Sport and as SAR Training
 - (2) Point-to-Point Orienteering Courses
 - (3) Northing Lines
 - (4) Bearings (Azimuths)
 - (5) Catching Features

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- (6) Attack Points
- (7) Aiming Off
- (8) Collecting Features
- (9) Backwards Route Planning
- (10) Route Selection
- E. Determining a Bearing
 - (1) Determining a Bearing With Map, Protractor, and Strightedge
 - (2) Determining a Bearing With Map and Compass
- F. True Bearings, Magnetic Bearings, and Declination Adjustment
- G. Following a Bearing
- H. Determining Distance
- I. Determining Position
 - (1) "Thumbing" a Map
 - (2) Position by Inspection
 - (3) Position by Resection
 - (4) Position by Triangulation
 - (5) Marking Positions for Easy Location
- J. Emergency Determination of Direction

III. Wilderness Search

- 7. Search Theory (*Greg Shea*)
 - A. Search as an Emergency
 - B. Search as a Mystery
 - C. Searching for Clues vs. Subjects
 - D. Containment
 - E. Non-Thorough Search and Efficiency
 - F. Search Calculations: POA, POD, POS
- 8. Search Strategy* (*Greg Shea*)
- 9. Operations Management and Leadership (*Chris Metzler*)
 - A. Principles of Management
 - B. Leadership
- 10. The Incident Command System and the ASRC SAROP (*Chris Metzler*)
 - A. Principles of the ASRC SAROP
 - (1) Completeness
 - (2) Simplicity
 - (3) Adaptability
 - (4) Compatibility
 - (5) Clear Delineation of Authority
 - B. Wilderness Search and Rescue Operations and the Incident Command System
 - (1) Command
 - (2) Plans
 - (3) Resources
 - (4) Logistics
 - C. ASRC Alerting, Authorization, and Mobilization
 - (1) The Virginia Department of Emergency Services (DES)
 - (2) The University of Virginia Emergency Medical Communications Center (UVA MEDCOM) and Blue Ridge Mountain Rescue Group (BRMRG)
 - (3) The Alert Officer (AO)
 - (4) The Appalachian Search and Rescue Conference Incident Commander (ASRC IC)

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- (5) The Dispatch Officer (DO)
- (6) Group Alerting and Coordination
- D. The First Response Phase
 - (1) Quick Response Team (QR Team) Organization
 - (a) The Quick Response Team Leader (QR Team Leader)
 - (b) The Assistant Team Leader (ATL)
 - (c) The Medical Specialist (MEDIC)
 - (d) The Rescue Specialist (RS)
 - (e) The Radio Operator (RO)
 - (f) The Base Officer (BO)
 - (g) The Safety Officer (SO)
 - (2) Overhead Team Organization
 - (a) The Dispatch Officer (DO)
 - (b) The ASRC Incident Commander (ASRC IC)
- E. The Scratch Search Phase
 - (1) The ASRC Command and General Staff
 - (a) The ASRC Incident Commander (ASRC IC)
 - (b) The Dispatch Officer (DO)
 - (c) The Plans Chief
 - (d) The Resources Unit Leader
 - (e) The Operations Chief
 - (f) The Logistics Chief
 - (g) The Communications Unit Leader
 - (2) The National Interagency Incident Management System (NIIMS) and Incident Command System (ICS)
 - (3) The Field Team
 - (4) Operational Problems
 - (a) Intelligence-Gathering and Interviewing
 - (b) Coordination with Other Organizations
 - (c) Task Assignment
 - (d) Briefing and Debriefing
 - (e) Planning
 - (f) Operating with Inadequate Staff
 - (g) Relief
 - (h) Safety
 - (i) Communications
 - (j) Position Information
 - (k) Public Relations
 - (l) Dealing with a "Find"
 - (m) Medical Care and Evacuations
 - (n) Mission Suspension
 - (o) Dealing with Relatives and Friends of the Subject
- F. The Saturation Search Phase
- G. The Withdrawal Phase
 - (1) Withdrawal of Non-ASRC Searchers
 - (2) Withdrawal of ASRC Searchers
 - (3) Withdrawal of ASRC Command and General Staff
- H. Interviewing
- 11. Communications (Gene Harrison)
 - A. Principles of effective communications
 - B. Legal and administrative background
 - (1) Radio frequencies and bands

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- (2) Communications law and regulation
- (3) Licensing and interoperability agreements
- (4) Security and codes
- C. Technical background
 - (1) Modes and frequencies
 - (2) Radio propagation and attenuation
 - (3) Repeaters (including field-portable units)
 - (4) Antennas
 - (5) Power and batteries
 - (6) Squelch, tone squelch and "private line"
 - (7) Handheld vs. Mobile vs. Base Radios
- D. Communications management
 - (1) Principles: planning the communications nets
 - (a) Tactical Nets
 - (b) Command Nets
 - (c) Medical Command Net
 - (d) Interoperability Nets and Links
 - (2) Net discipline
 - (3) Radio operator discipline
 - (4) Base Camp Communication Center procedures
 - (5) Field Radio Operator procedures
 - (6) Medical Command Communications and Control
- E. Non-radio communications
 - (1) Field telephones
 - (2) Signaling
- 12. Lost Person Search
 - A. Resources and Tactics
 - (1) Trained searchers
 - (a) Hasty search
 - (b) Scratch search
 - (c) Sweep search
 - (d) Cutting for Sign
 - (2) Untrained searchers
 - (a) Line search
 - (b) Containment
 - (c) Managing untrained searchers on skilled search tasks
 - (3) Man-trackers and Man-tracking Skills for Searchers
 - (a) Advantages and Limitations of Man-tracking
 - (b) The Step-by-Step Method
 - (c) Track Identification and Description
 - (d) Sign
 - (e) Lighting, Sun Angle, Slope, and Ground Cover
 - (f) Aging
 - (g) Cutting for Sign
 - (4) Dogs⁺
 - (a) Tracking and trailing dogs⁺
 - (b) Air scenting dogs⁺
 - (5) Aircraft
 - (a) Fixed-Wing
 - (b) Helicopters
 - 1) Uses in Search

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- ii) Safety
- iii) Landing Zones
- iv) General Procedures: Entering and Leaving,
and Loading Patients
- (4) Passive Search
- 13. Downed Aircraft Search*
 - A. Interviewing
 - B. Visual Search
 - C. Electronic Search
- 14. Legal Aspects of Wilderness Search and Rescue
 - A. General
 - B. Authority and Responsibility for Search and Rescue
 - C. Authorization for ASRC Participation in a Search
 - D. Medico-Legal Considerations
 - (1) Aid to Persons in Distress and "Good Samaritan Laws"
 - (2) Levels of Training and Negligence
 - (3) Abandonment
 - (4) Consent: Express, Implied, and Informed
 - (5) Patient Data and Public Information
 - E. Crime Scenes and Crash Sites
 - F. Entry on Private Property

IV. Wilderness Emergency Medicine**

- 15. Wilderness First Aid, Emergency Medicine, and Emergency Medical Services: Background (Bob Koester)
- 16. Wilderness First Aid** (Bob Koester)
- 17. Primary Care in the Wilderness*** (Bob Koester)

*Most of the comments show support for a large and strong medical section, but we don't want to duplicate the Wilderness Emergency Medical Technician Textbook. We will integrate the material that Keith and Bob Koester have already developed with that developed in the course of the Wilderness Emergency Medical Technician Project. See the footnotes for each of the Chapters in this Part.

**This Chapter will not provide a comprehensive text or reference on wilderness first aid, as such texts already exist. Instead, it will point out the differences of wilderness first aid from routine first aid, as taught by the Red Cross in the "Standard First Aid and Personal Safety" class, the established standard at the most basic level.

***This Chapter should provide members with an EMT or equivalent background the basic information (without specifying any protocols) to understand and manage simple common medical and surgical problems with minimal equipment and some over the counter or prescription medications. This Chapter should not go into the pharmacology and background that will appear in the Wilderness Emergency Medical Technician Textbook.

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14. Emergency Medical Services in the Wilderness* (Keith Conover, M.D.)
 - A. Cold Injury: Hypothermia and Frostbite
 - B. Snakebite
 - C. Fractures and Dislocations
 - D. Cardio-Pulmonary Resuscitation
 - E. Allergic Reactions
 - F. Trauma
 - G. Altitude Illness*
 - H. Soft Tissue Injury*
 - I. Heat Injury*

IV. Wilderness Rescue

15. Principles of Wilderness Rescue
16. Ropework (Cady Soukup)
 - A. Ropes, Knots, and Technical Equipment
 - (1) Rope and webbing
 - (a) General Care
 - i) Chemicals
 - ii) Radiation Damage
 - iii) Thermal Damage
 - i) Mechanical Damage
 - a) Abrasion and other junk just to see the line wrap
 - b) Direct Trauma
 - (h) Materials
 - (i) Management
 - i) Stacking
 - ii) Coiling
 - a) Speed Coil
 - b) Arm Coil
 - c) Knee Coil
 - d) Lap Coil
 - e) Chain-coiling
 - f) Reverse-twist coil
 - g) "Rescue" Coils
 - h) Rope Bags
 - i) Tie-offs
 - iii) Casting
 - (4) Knots and hitches
 - (a) Principles
 - i) Strength

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- a) Strength of Knot
 - b) Contouring
 - c) Standing Ends to the Outside
 - ii) Security
 - a) Knot Creep and Securing Ends
 - b) Overhands
 - c) Barrel Knots
 - iii) Jamming
 - (b) Basic Knots and Hitches
 - i) Overhand Knot
 - ii) Overhand Bend (Water Knot, Overhand Follow-through Knot)
 - iii) Figure Eight Knot
 - iv) Figure Eight Loop (Figure Eight on a Bight)
 - v) Figure Eight Bend (Figure Eight Follow-through Knot)
 - vi) Bowline
 - vii) Butterfly Knot
 - viii) Square Knot
 - ix) Barrel Knot
 - x) Barrel Bend (Grapevine Knot, Double Fisherman's Knot)
 - xi) Clove hitch
 - (c) Advanced Knots and Hitches
 - i) "Double Strength" Bowline
 - ii) Bowline-on-a-coil
 - iii) Bowline-on-a-coil Around Anchors
 - iv) Bowline-on-a-bight
 - v) Three-loop Bowline
 - vi) Sheet Bend and Double Sheet Bend
 - vii) Anchor Hitch
 - (d) Esoteric Knots and Hitches
 - i) Load-releasing Hitches
 - (e) Basic Tied Harnesses
 - i) Harnesses: General Considerations
 - ii) the ASRC Seat Harness
 - (f) Advanced and Emergency-use Tied Harnesses
 - i) the ASRC Seat Harness: Variants
 - ii) the Diaper Seat*
 - iii) the Crossed-loop Chest Harness
 - iv) the Parisian Buadriér Chest Harness
 - v) the "Rescue Harness"***
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- (5) Equipment
 - (a) Basic Personal Equipment
 - i) Gloves and Mittens
 - ii) Helmets
 - iii) Sewn Harnesses
 - (b) Basic Technical Equipment
 - i) Carabiners
 - ii) Pulleys
 - iii) Natural Anchors and Slings
 - (c) Advanced Technical Equipment
 - i) Chocks
 - ii) Camming Devices
 - iii) Pitons
 - iv) Bolts
 - v) Edge Rollers
 - vi) A-Frames
- B. Belaying
 - (1) Basic Belay Device: Hips and Gloved Hands
 - (2) Advanced Belay Devices
 - (a) Mnter Hitch
 - (b) Belay Plate
 - (c) Figure 8 descender
 - (3) Stance
 - (a) Physical Stance
 - i) Sitting Hip Belay
 - ii) Mechanical Belay on Harness
 - iii) Standing Hip Belay
 - iv) Mechanical Belay on Anchor
 - v) Tree Belay
 - (b) Tie-in
 - (c) Aim
 - (4) Technique
 - (a) Basic Technique
 - i) Up-rope
 - ii) Slack
 - iii) Catching Falls
 - (b) Sitting Hip Belay
 - (c) Mechanical Belay on Harness
 - (d) Standing Hip Belay
 - (e) Mechanical Belay on Anchor
 - (f) Tree Belay
 - (g) Tying Off Belay and Leaving Stance
 - (5) Calls
- C. Rappelling
 - (1) Basic Rappel Devices
 - (a) Dulfersitz Body Rappel
 - (b) Arm Rappel
 - (c) Figure 8 Descender (single and double wrap)
 - (d) Rappel Rack

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- (2) Emergency Rappel Devices*
 - (a) Mnter hitch
 - (b) Carabiner Wrap
 - (c) Carabiner-Brake Bar
 - (d) Six-carabiner Rappel
 - (3) Basic Rappel Technique
 - (a) Basic Technique
 - (b) Tying Off
 - (c) Edges
 - (d) Recovering from a Jammed Rig
 - (e) Switching to Ascend
 - (4) Advanced Rappel Technique
 - (a) Multiple-step Pull-down Rappels
 - (b) Self-Belays: Spelean Shunt, Spiral Knot, etc.
 - (5) Calls
 - (6) Belaying a Rappeller
 - (a) Bottom-belays
 - (b) Top Belays
 - D. Ascending
 - (1) Basic Ascending Devices
 - (a) Prusik Knot
 - (b) Headden Knot
 - (c) Cam Ascenders (e.g. Gibbs Ascenders)
 - (d) Spring Ascenders (e.g. Jumars, Clog Ascenders)
 - (e) Taut-line Hitch
 - (2) Advanced Ascending Devices
 - (a) Bachmann Knot
 - (b) French Prusik
 - (c) Friction Hitch
 - (3) Basic Ascending Systems
 - (a) Two-knot "Texas" rig and Texas "Y" rig
 - (4) Advanced Ascending Systems
 - (a) classic three-knot rig
 - (b) three-cam "ropewalker" rig
 - (c) modified climber's Jumar-etrier rig
 - (d) Mitchell system
 - E. Hauling
 - (1) Principles of Mechanical Hauling System
 - (2) Z-hauls
 - (3) Piggyback Hauls
 - F. High-tension lines
 - (1) Principles of High-Tension Lines
 - (2) Anchors for High-Tension Lines
 - (3) Tensioning High-Tension Lines
 - (4) Passing Personnel and Equipment across High-tension Lines
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- G. Anchorage
 - (1) Natural Anchors
 - (a) Looped Runner
 - (b) Girth Hitch
 - (c) Doubled Runner
 - (d) Tree-Wrap
 - 17. Patient Packaging (*Dorothy Antis*)
 - 18. Non-Technical Evacuations and Basic Litter Handling
 - 19. Semi-Technical Evacuations
 - 20. Technical (Vertical) Rescue
 - A. Basic Technical Rescue
 - (1) Sending Litters Across High-Tension Lines
 - (2) Vertical Lowering
 - (3) Solo Rescue
 - B. Advanced Technical Rescue
 - (1) Vertical Raises
 - (2) Third-Man Techniques
 - (3) Special Rigging
 - V. Disasters and Special Rescue Operations****
 - 21. Cave Search and Rescue
 - A. The National Cave Rescue Commission and the Role of the ASRC in Cave Rescue
 - B. The Cave Environment*
 - C. Management Issues*
 - D. Patient Transportation*
 - E. Vertical Cave Rescue*
 - F. Hazardous Atmospheres*
 - G. Water Problems*
 - 22. Downed Aircraft Extrication and Rescue
 - A. Military Aircraft*
 - B. Common Carrier Aircraft*
 - C. Light Civil Aircraft
 - (1) Hazards and Scene Management
 - (2) Fire
 - (3) Extrication with Lightweight and Improvised Tools
 - (4) Nullifying ELT Signals
 - 23. Whitewater Rescue
 - A. Hazards of the Whitewater Environment and the Rescuer*
 - B. River Rescue by Rope*
 - C. Rescue from Entrapment*
 - 24. Disasters
 - A. Backcountry Multi-Casualty Incidents
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F. Regional Natural Disasters

G. National and International Natural Disasters

- VI. ASRC Training Standards*
- VII. Pretests
- VIII. Pretest Answers
- IX. Annotated Bibliography
- X. Skills Checklists

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