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PARTIAL DRAFT PROPOSAL

For a National

WILDERNESS MEDICAL TECHNICIAN

Program

December, 1980

For the National Association for Search and Rescue

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	MODULE	CONTENT	TRAINING TIME
Wilderness Medical Technician-Basic	Module A: Basic Life Support and Emergency Medicine	DOT EMT-A curriculum excepting Lessons 21 & 22 (lecture & practical)	66 hours minimum
	Module 8: Basic Wilderness Search and Rescue	1. Survival, wilderness travel, and. wilderness medical self-care 2. Land navigation 3. Search 4. Wilderness rescue (lecture & practical	The training time will vary widely depending on the students' backgrounds; for an experienced backpacker with no SAN background, roughly 50 hours
	Module C: Human Systems an Patient Assessment	DOT EMT-P Module II complete (lecture & practical)	Approximately 10 hours
	Module D: Basic Wilderness Emergency Medicine	1. Wilderness medical emergencies 2. Patient protection 3. Medium-term management 4. Clinical experience 1n emergency department 5. Field practice	Approximately 25 hours of lecture and practice; 20 hours minimum of clinical experience
Wilderness Medical Technician-Intermediate	Module E: Trauma and Shock	DOT EMT-Shock-Trauma: EMT-P Modules I-III and VII-IX complete*	Approximately 57* hours of lecture
	Module F: Intermediate Wilderness Emergency Medicine	1. DOT EMT-P Modules IV and X, and additional material from other sources 2. Clinical in-hospital experience	Approximately 60 hours of lecture and practice; 40 hours minimum of clinical experience
(Wilderness Medical Technician-Paramedic)	No training for advanced-level WMTs is being proposed at this time.		
Specialized Modules	Cave Rescue Alpine Rescue Winter Rescue Long-Term Management	No outline is being proposed at this time for these suggested modules.	

*Note that EMT-P Module II is included in the WMT-Basic. If credit for it is allowed, this time could be cut to 47 hours.

TABLE I: Proposed WMT Levels and Modules

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WILDERNESS MEDICINE TECHNICIAN (-BASIC)

A 1 MODULE A:BASIC LIFE SUPPORT AND EMERGENCY MEDICINE

COURSE LESSONS (From D. O. T. Emergency Medical Technician-Ambulance [basic] course)

1. Introduction to Emergency Care Training - Course Scope, EMT Functions, Legal Considerations, Anatomy and Physiology, and Vital Signs (3 hours).
2. Airway Obstruction and Respiratory Arrest (3 hours).
3. Cardiac Arrest (3 hours).
4. Mechanical Aids to Breathing and Resuscitation (3 hours).
5. Bleeding, Shock and Practice on Airway Care, Pulmonary Resuscitation and Cardiopulmonary Resuscitation (3 hours).
6. Practice Test and Evaluation - Airway Care, Pulmonary Arrest, Cardiac Arrest, Bleeding and Shock (3 hours).
7. Wounds (3 hour.
8. Principles of Musculoskeletal Care and Fractures of the Upper Extremity (3 hours).
9. Fractures of the Pelvis, Hip and Lower Extremity (3 hours).
10. Injuries of the Head, Face, Neck and Spine (3 hours).
11. Injuries to the Eye, Chest, Abdomen and Genitalia (3 hours).
12. Practice, Test and Evaluation - Injuries I (3 hours).
13. Practice, Test and Evaluation -. Injuries II (3 hours).
14. Medical Emergencies I - Ingested and Inhaled Poisons, Bites and Stings, Heart Attack, Stroke, and Dyspnea (3 hours).
15. Medical Emergencies II - Diabetes, Acute Abdomen, Communicable Diseases, Patients with Abnormal Behavior, Alcohol and Drug Abuse, Epilepsy (2i hours).
16. Emergency Childbirth (2i hours).
17. Environmental Emergencies - Burns; Exposure to Heat, Cold and Water Hazards (21 hours).
18. Lifting and 'loving Patients (3 hours).
19. Field Exercises Extrication from Automobiles (3 hours).
20. Practice, Test and Evaluation - Medical Emergencies, Emergency Childbirth, Environmental Emergencies, Lifting and Moving (3 hours).
(21. Operations - Driving and Maintaining an Emergency Vehicle, Records and Reports, Communications, and Procedures at Emergency Departments (3 hours).)
(22. Responding to an Ambulance Call: A Review of Factors Affecting Ambulance Run Efficiency and Patient Assessment (2 hours).)
23. Situational Review (3 hours).
24. Final Written Test (2 hours).
25. Final Practical Evaluation of Skills (3 hours).

'Lessons 21 and 22 are not required for Module A of the WMT-Basic curriculum.

Note: The automobile extrication lesson is required, as most of this training is directly applicable to extrication from aircraft.

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B 1 MODULE B: BASIC WILDERNESS SEARCH AND RESCUE

Part I: Survival, Wilderness Travel, and Wilderness Medical Self-Care

A. Psychological Aspects of Survival, Including:
   1. Reaction to fear;
   2. Reaction to discomfort;
   3. The priority of survival needs;
   4. Responsibility for one's own well-being;
   5. Attitudes towards improvisation;
   6. Use of the STOP (Stop, Think, Observe, Plan) mnemonic;
   7. Artificial goals and proper judgment;
   8. Knowing the limits of one's abilities; and
   9. One's pack and gear as a life-support system.

B. Human Body Function, Including:
   1. The principles of homeostasis of temperature, energy, and fluid;
   2. The importance of, and the difference between, exhaustion and fatigue;
   3. Water needs and losses;
   4. The basic principles of digestion and short-term nutrition, including:
      a. Daily energy requirements,
      b. Availability and amounts of energy in fat, protein, and carbohydrate, and
      c. Ease of digestion of different foods and ac different levels of exertion;
   5. The energy budget concept of the body, including windchill and wetchill;
   6. The major physiological effects and dangers of alcohol, tobacco, aspirin, and carbon monoxide;
   7. The principles of physical and mental conditioning for wilderness search and rescue.

C. The Causes, Signs and Symptoms, Prevention, and First Aid Treatment for the Following Environmental Diseases:
   1. Immersion ("acute") hypothermia;
   2. Mountain ("exhaustion", "subacute", "chronic") hypothermia;
   3. Urban ("chronic", "complicated") hypothermia;
   4. Frostbite and immersion foot (trench foot);
   5. Heatstroke (sunstroke);
   6. Heat exhaustion;
   7. Heat cramps; and
   8. Dehydration.

D. The Proper Use of Clothing in Coping with the Environmental Stresses of Heat, Cold, Wind, and Wetness, Including the Following Concepts:
   1. Characteristics of clothing materials as regards dry and wet insulation value, wicking of water, wind and water resistance, and weight, including wool, cotton, down, and synthetic fibers;
   2. The advantages and disadvantages of waterproof shells;
   3. The relationship of loft to insulation value and warmth;
   4. The importance of ventilation;
   5. The layer principle and reasons for it; and
   6. The relationship of clothing's fit to warmth and ventilation.

B 2 E. The Selection, Use, and Care of Personal Equipment for Wilderness Rescue, Including:
1. Footgear and boots;
2. Packs;
3. Sleeping bags and pads;
4. Tents and bivouac shelters;
5. Stoves; and
6. Electric headlamps, batteries, and bulbs.

F. The Emergency Improvisation of Fires and Overnight Shelter.

G. Medical Self-Care and Self-Rescue in the Wilderness, Including:.
1. Precautions against illness and infection;.
2. Prevention, diagnosis, and wilderness medical treatment of:
a. Friction blisters,
b. Localized infection including ingrown nails, paronychia, felons, and abscesses,
c. Fever,
d. Diarrhea and vomiting,
e. Contact dermatitis,
f. Allergic reactions,
g. Poisonous bites and stings,
h. Snowblindness,
i. High altitude pulmonary edema, high altitude cerebral edema, and acute mountain sickness,
j. Tendonitis, and
k. Animal bites;
3. Wilderness medical treatment for:
a. Minor and major wounds,
b. burns and frostbite,
c. Fractures (including improvised splinting),
d. Compound fractures,
e. Sprains, strains, and dislocations,
f. Nosebleed,
g. Respiratory infections,
h. Conjunctivitis, foreign object in eye, and eye abrasions,
1. Ear infections,
j. Urinary tract infections, and
k. Subungual hematomas;
4. Criteria for medical decision-making in the wilderness, including:
a. Administration of oral fluid replacement, and
b. Self-rescue vs. requesting a rescue team; and
5. Practice with improvised evacuation methods, including:
a. 2-person linked-arms chair carry,
b. 2-person packstrap-and-pole carry,
c. Split-coil and sling piggyback carries, and
d. Improvised stretchers, using rope, rope and poles, parkas and poles, and blanket and poles.

H. General Weather Patterns and Hazards, Including Signs of Arriving Frontal Systems and of Local Storm Development and Arrival.

I. Local Weather, Terrain, and Ocher Natural Hazards.

J. Foot Travel in Local Wilderness Areas, In All Seasons Including:
1. Stream crossing methods;
2. Bushwhacking (cross-country or off-trail travel);
3. Pace, efficiency, and rest steps;
4. Recognition and treatment of muscle tramps;
5. Navigation by map and compass;
6. Bivouacking overnight with pack gear normally carried on missions;
7. All without impairing the ability to carry out mission tasks the next day.

B 3 K. Improvisation of Fires and Emergency Overnight Shelter, Using Either Materials in the Surrounding Environment or Materials Normally Carried in the Pack.

Part II: Land Navigation

A. Determining Direction and Bearings, Including Declination Correction, Using a Magnetic Compass.
B. Determining Direction Approximately by Use of Stick and Shadow, Watch and Sun, and North Star Methods.
C. Reading Topographic Maps, Including:
    1. Symbols;
    2. Contours; and
    3. Edge information.
D. Grids and Coordinate Systems, Including:
    1. Latitude and longitude;
    2. The Uniform Map System;
    3. The Appalachian Search and Rescue Conference grid system; and
    4. The U. S. military 10,000 meter grid system.
E. Orienteering and Land Navigation Concepts, Including:
    1. Catching features;
    2. Collecting features;
    3. Attack points;
    4. Aiming off;
    5. Pacing; and
    6. Route selection, including the factors of
        a. Elevation change,
        b. Brush and terrain, and
        c. Difficulty of navigation.
F. Triangulation and Resection.
G. Interconversion of Topographic Map and Aeronautical Navigation Location Information.
H. Determining Bearings Quickly, Accurately, and Reliably Using a Magnetic Compass and Topographic Map.
I. Plotting and Following the Fastest, the Most Direct, and the Least Energy-Consuming Routes Between Two Points Plotted on a Topographic Map.
J. Estimating Distance by Pacing and by the Use of Collecting features.
K. Completing Basic-Level Point-to-Point Orienteering Courses.

Part III: Search

A. Lost Person and Downed Aircraft Search Theory in Outline, Including:
    1. Principles;
    Z. Statistical and historical approaches;
    3. Standard Strategies; and
    4. Base camp and field team function.
B. Local Laws and Principles Regarding SAR, Including:
    1. Authority and responsibility for SAR in the area;
    2. Authority for trespassing on private land; and
    3. Accident and crime-scene protection and procedures.
C. Details of Lost Person Search Tactics, Including:
    1. Hasty search (including expanding circle or square patterns);
    2. Sweep search;
    3. Survey search (including relevant eye physiology for night survey search);
    4. Scratch search (including proper clue marking and reporting);
    S. Line search (including standard calls and boundary marking);

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6. Containment; and
7. Attraction.

D. Details of Downed Aircraft Search Tactics, Including:
   1. Interrogation search (including proper questioning technique);
   2. Visual search;
   3. Electronic (Emergency Locator Transmitter, or ELT) search (including triangulation and evaluation of readings); and Locale search.

E. Standard Procedures for Working in Coordination with Man-Trackers, Tracking Dogs, and Search (Air Scenting Dogs.

F. Coordination with Fixed-Wing Aircraft, Including:
   1. Standard ground-to-air panel and paulin signals;
   2. Standard air-to-ground signals;
   3. Special air-to-ground vectoring signals; and
   4. Standard aeronautical navigation features, including VORs, radials, and airways.

G. Use and Simple Maintenance of Handheld and Field Portable Radio Transceivers, Including:
   1. Basic Federal Communications Commission regulations;
   2. Good radio phone procedures;
   3. Characteristics of various types and frequencies of transceivers as applied to field use; and
   4. Typical radio transceiver controls, batteries, and antennas.

H. Participating as Team Member in All Types of Search Tasks Listed in III C & D.

Part IV: Wilderness Rescue

A. Proper Care of Ropes and Hardware, Including Criteria for Retirement and Marking of Retired Gear.

B. Use and Characteristics of the Following Knots:
   1. Bowline;
   2. Bowline-on-a-coil;
   3. Figure 8 loop;
   4. Water knot (overhand bend, ring bend);
   5. Prusik knot;
   6. Square knot (reef bend); and
   7. The Appalachian Search and Rescue Conference or equivalent tied seat.

C. Helicopter Operations, Including:
   1. Dangers to ground personnel;
   2. Standard procedures and safety rules for ground personnel;
   3. Hoist operations and their dangers; and
   4. Principles of landing-zone selection and preparation.

D. Extrication from Aircraft, Including:
   1. Dangers of military aircraft;
   2. The standard phases of extrication; and
   3. The use of field-portable extrication equipment in extrication from light civil aircraft.

E. Reliably Producing, Correctly Tied, Contoured, and Backed Up, the Following Knots:
   1. Bowline;
   2. Bowline-on-a-coil;
   3. Figure 8 loop;
   4. Water knot (overhand bend, ring bend);
   5. Prusik knot;
   6. Square knot (reef bend); and
   7. The ASRC or an equivalent tied seat harness.

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B-5 F. Rope-Handline Techniques, Including:
1. Codling and uncoiling with mountaineer's coil, lap coil, and "rescue" coil;
2. Stacking;
3. Inspecting and testing;
4. Padding;
5. Throwing; and
6. Rigging to an anchor with a bowline, or with runners.

G. Proper Belaying Technique, Including:
1. Anchorage;
2. Tie-in;
3. Stance (both sitting and standing hip belay stance);
4. Aim;
5. Procedures for up-rope, slack, and catching a fall; and
6. Calls.

H. Proper Use of Tree-Wrap and Figure 8 Braking Methods.

I. Proper Procedures for a Multiple-Pitch Non- and Semi-Technical Evacuation, Including:
1. Rigging a Stokes litter and a D-ring ("Army") stretcher;
2. Loading a patient into the litter, packaging and securing him;
3. Lifting, carrying, and lowering the litter;
4. Rotation of litter bearers;
5. Laddering, including toenailing;
6. Serving as rope team member using tree-wrap belays, mechanical belays, and the brute-force hauling system; and
?. Serving as litter captain.

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C 1 MODULE C: HUMAN SYSTEMS AND PATIENT ASSESSMENT

This module is Module II of the U. S. Department of Transportation (DOT) Emergency Medical Technician-Paramedic (EMT-P) curriculum, including:

I. Medical Terminology
II. Overview of Anatomy and Physiology
III. Patient Assessment

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D 1 MODULE D: BASIC WILDERNESS EMERGENCY MEDICINE

Part I: Environment and the Victim: Wilderness Medical Emergencies

A. Environmental Hazards of the Wilderness Environment, Including:
   1. Heat and solar radiation;
   2. Cold, wind, and wetness;
   3. Lightning;
   4. Rockfall, avalanches, and falls;
   5. Altitude;
   6. Water;
   7. Venomous bites and stings;
   8. Poisoning by mouth;
   9. Anaphylactic reactions; and
   10. Infectious and other diseases.

B. Diseases Due to Heat and Solar Radiation; Their Causes, Prevention, Signs and Symptoms, and Treatment, Including:
   1. Dehydration;
   2. Heat Cramps;
   3. Heat exhaustion;
   4. Heatstroke;
   5. Sunburn; and
   6. Snowblindness.

C. Diseases Due to Cold; Their Causes, Prevention, and Signs and Symptoms, Including:
   1. Immersion (acute) hypothermia;
   2. Mountain (subacute, chronic, exhaustion) hypothermia;
   3. Urban (chronic) hypothermia= and
   4. Frostbite and immersion (trench foot).

D. Lightning Injuries; Their Prevention and Treatment.

E. Epidemiology of Wilderness Trauma and Mechanism of Injury.

*F. High Altitude Pulmonary Edema (HAPE), Mountain Sickness, and Acute Mountain Sickness (AMS); Their Presentations, Diagnosis, and Treatment; and Current Research Results.

G. Medium-Term Consequences of Near-Drowning and Their Management.

H. Venomous Bites and Stings; Their Mechanisms of Action, Recognition, Mortality and Morbidity, and Treatment, Including:
   1. Arachnids;
   2. Bees, wasps, and insects;
   3. Pit vipers;
   **(4. Scorpions;
   5. Coral Snakes;
   6. Marine Animals; and
   7. Non-snake reptiles.)

I. Principles of Medium-Term Poisoning Management.

J. Anaphylaxis: Review and Medium-Term Management.

K. Gastroenteritis and Severe Diarrhea: Causes and Medium-Term Management.

L. Acute Abdominal Pains Causes, Differential Diagnoses, and Medium-Term Management.

*For areas with any elevations above 4000' above sea level.

**For areas with these venomous animals.

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D 2 Part II: Environment and the Patient: Patient Protection

A. Synergism, Particularly of Trauma, Exhaustion, Fatigue, and Hypothermia.
B. Patient Packaging and Protection from Environmental Hazards in General.
C. Rewarming Hypothermic Patients:
    1. History of Treatments, Outcomes, and Contradictions;
    2. Division of Hypothermia into Three Types; and
    3. Present Treatment Recommendations.
D. Heat Addition and Rewarming Methods:
    1. Insulation;
    2. Warm fluids;
    3. Hydraulic sarong;
    4. Warm water immersion;
    5. Warm inspired air or oxygen; and
    6. Recommendations for patients not presenting with primary hypothermia.

Part III: Medium-Term Wilderness Management of the Emergency Patient

A. General Principles of Medical Therapy, Including:
    1. Rest;
    2. Warmth;
    3. Altitude;
    4. Coughing;
    5. Ambulation;
    6. Diet;
    7. Bowel care; and
    8. Convalescence.
B. Fluids and Electrolytes:
    1. Water and electrolytes in general;
    2. Osmosis;
    3. Diffusion;
    4. Electrolytes; and
    5. Acid-base balance and imbalance.
C. Fluid and Electrolyte Balance and Imbalance:
    1. Normal losses;
    2. Abnormal losses;
    3. Dehydration and overhydration;
    4. Electrolyte imbalances; and
    5. Oral fluids and electrolytes: pros and cons.
D. Shock:
    1. Its definition;
    2. Physiology of hypovolemia: sympathetic and adrenergic response, diminished perfusion, and metabolic acidosis;
    3. Early (compensated) hypovolemic shock, including fluid shifts; Late (decompensated) hypovolemic shock, including fluid shifts;
    5. Diagnosis: trends in vital signs, urine output, and the importance of earl diagnosis=
    6. Basic and advanced life-support treatment of hypovolemic shock;
    7. Cardiogenic shock: differences in presentation and treatment;
    8. Neurogenic shocks differences in presentation and treatment; and
    9. Outcome of untreated shock.
E. Medium- and Long-Term Pathophysiology of Trauma, Including:
    1. Blood glucose level;
    2. Electrolyte shifts;
    3. Phases of response to trauma: initial phase, turning point, and recovery;

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4. Coagulation disorders;
5. Kidney function and dysfunction;
6. Lung function and "shock lung"; and
7. Edema.

F. Medium-Term Management Techniques for the WMT-Basic:
1. Providing psychological care and reassurance;
2. Maximizing physical comfort;
3. Supporting the will to live;
4. Pain management without drugs;
5. Field reduction of dislocations;
6. Monitoring of vital signs;
7. Shock management;
8. Airway management;
9. Oral fluid administration; and
10. Hypothermia prevention.

G. Special Wilderness Medical Adaptations, Including:
1. Lightweight modular splints;
2. Improvised traction splinting;
3. Lightweight Toomey syringe suction units;
4. Use. of the litter for splinting;
5. Use of litter-cut backboards;
6. Use of strap sets for lifting and loading patients;
?. Chemical oxygen and rewarming systems; and
8. Oral fluid replacements.

Part IV: Clinical Experience in an Emergency Room

Twenty hours minimum.

Part V: Practice with Basic Life Support Skills in a Wild Environment, Including Loading and Evacuation of Simulated Patients