

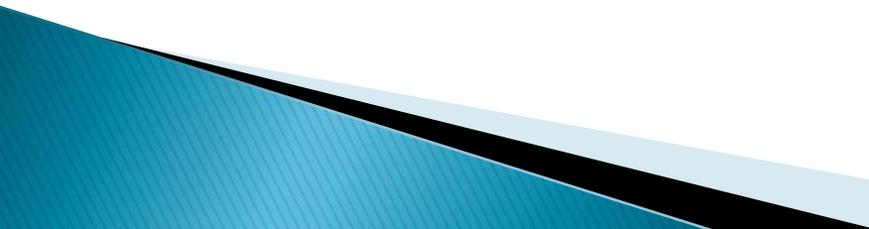
Rope Rescue

NFPA 1670 Awareness Level



*Kansas Search & Rescue
Response System
General Training Requirement*

NFPA 1670 – Rope Rescue

- ▶ (1) Recognizing the need for a rope rescue
 - ▶ (2) Identifying resources necessary to conduct rope rescue operations
 - ▶ (3) Carrying out the emergency response system where rope rescue is required
 - ▶ (4) Carrying out site control and scene management
 - ▶ (5) Recognizing general hazards associated with rope rescue and the procedures necessary to mitigate these hazards
 - ▶ (6) Identifying and utilizing PPE assigned for use at a rope rescue incident
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Rope Rescue Incidents

- ▶ Involve victims trapped or injured in normally inaccessible locations
 - Ravines
 - Mountainside
 - High-rise buildings
 - Towers
 - Below grade work spaces
 - Collapsed buildings

Low-Angle Rope Rescue

- ▶ Slope of ground over which rescuers are working less than 45 degrees
 - ▶ Ground provides rescuers primary support.
 - ▶ Rope system provides secondary means of support.
 - ▶ Type of ground surface may complicate operations
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Low-Angle Rope Rescue



High-Angle Rope Rescue

- ▶ Slope of surface over which rescuers working exceeds 45 degrees
- ▶ May require different types of equipment depending on situation
- ▶ Victims may be suffering life-threatening illness or traumatic injury.
- ▶ Rope system is primary load-carrying support system.
 - Rope supports rescuers' load.
 - Rope may be entire load-carrying support system.

High-Angle Rope Rescue



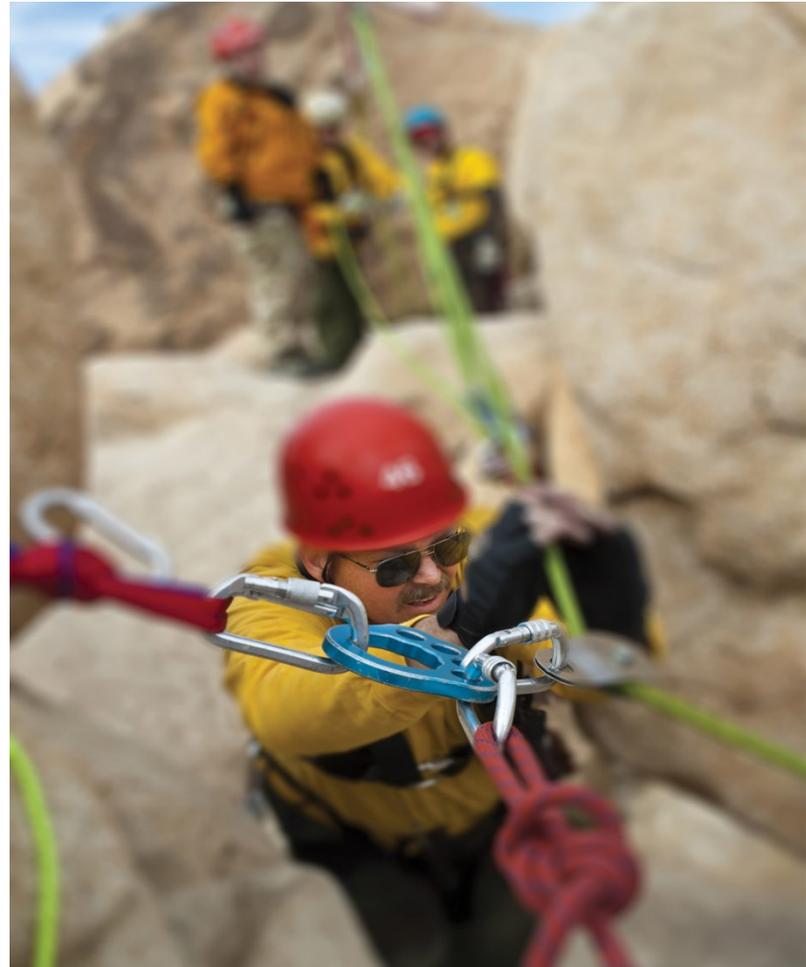
Rope Rescue at a Construction Site

- ▶ Victims may be in variety of locations.
 - ▶ May require rope rescue mechanical advantage systems
 - ▶ Responders must use personal protective equipment.
 - ▶ Numerous and varied hazards.
 - Examples: fall hazards, falling materials or debris, unstable footing, excessive noise, machinery entrapment
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Rope Rescue in a Rural Setting

- ▶ May include recreational climbers who have fallen down cliffs, hills, rock faces
 - ▶ May require entry into caves or mines
 - ▶ Necessitates trained, specialized rescue teams to build and operate rope rescue systems
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Rope Rescue in Rural Setting



Examples of Other Settings

- ▶ Stranded window washer
 - ▶ Transportation accidents where vehicle goes over embankment
 - ▶ Building collapse events
 - ▶ Swiftwater rescue
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Rope Rescue System

- ▶ Constructed system consisting of rope rescue equipment and appropriate anchor system (s) intended for use in rescue of subject
 - ▶ Use requires rescue teams or individuals trained to use equipment
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Mechanical Advantage Systems ⁵

- ▶ Require descent and control techniques to move victims
 - ▶ Create leverage force through the use of levers, pulleys, etc.
 - Mechanical advantage expressed as ratio of output force to input force
 - 3:1; 4:1, etc.
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Mechanical Advantage Systems ⁵



Hardware

- ▶ Rigid, mechanical auxiliary equipment
- ▶ Examples include:
 - Anchor plates
 - Carabiners
 - Mechanical ascent control devices
 - Descent control devices
 - Pulleys
 - Specialty devices

Hardware



Software

- ▶ Flexible fabric components of rope rescue equipment
- ▶ Examples include:
 - Rope
 - Accessory cordage
 - Webbing
 - Anchor straps
 - Harnesses

Software



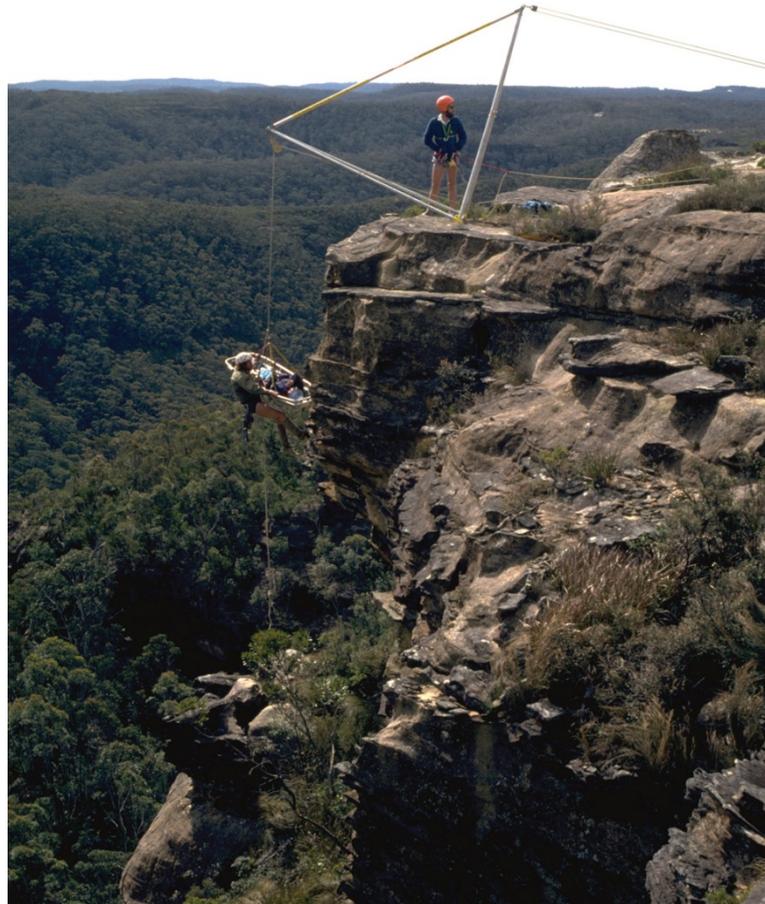
Equipment Safety Standards

- ▶ NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services*
 - ▶ Protect all rope rescue equipment from damage during storage, training, and rescue operations.
 - ▶ Inspect regularly and after use
 - ▶ Remove damaged equipment from service.
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Examples of Other Specialized Equipment

- ▶ Portable anchor devices:
 - Tripods, bipods, Larkin Frames
- ▶ A-frame devices
 - Arizona Vortex
- ▶ Edge protection

Examples of Specialized Equipment



Rescue Team Resources

- ▶ Requires specially trained personnel or teams and unique training and skills to use rope rescue tools and equipment correctly and to build and operate rope rescue systems safely

Rope Rescue Techniques

- ▶ Establishing anchor systems and fall protection
 - ▶ Building and operating lowering systems
 - ▶ Building and operating mechanical advantage systems
 - ▶ Building and using high-line systems
 - ▶ Ascending/Descending rope
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Hazards and Hazard Assessment

- ▶ Personnel must be well trained to recognize and understand the hazards they may encounter to protect them from being injured or killed.

Scene Assessment

- ▶ Assess rescue environment hazards before a rope rescue.
 - ▶ Hazards vary, depending on the primary cause of emergency.
 - ▶ Responders must recognize need for specialized resources, know personal limitations.
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On-Scene Hazards to Rescue Personnel

- ▶ Fall hazard
- ▶ Falling debris
- ▶ Bystanders, onlookers, friends, co-workers
- ▶ Industrial setting hazards

On-Scene Hazards to Rescue Personnel

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Rescue Situation in Industrial Setting

- ▶ May expose rescuers to energy hazards:
 - Electrical wires
 - Hydraulic fluids
 - Steam lines
 - Operating machinery
- ▶ Requires identification and control
 - Lock out–Tag out

Rescue Situation in Industrial Setting

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Basic Hazard Mitigation

- ▶ Controlling site prior to arrival of trained rope rescue teams
 - ▶ Using barrier tape to establish edge control
 - ▶ Using proper fall protection when going near edge
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Basic Hazard Mitigation



Site Control Includes

- ▶ Creating general area within 300 feet of event
- ▶ Removing unnecessary bystanders from operational area
- ▶ Establishing physical barrier at least 100 feet from operational area

Site Control Includes

- ▶ Controlling traffic
- ▶ Eliminating vibration sources
- ▶ Identifying and monitoring existing hazards within physical barrier

Basic Rescue Procedures

- ▶ Assess scene.
 - ▶ Gather information and locate victim.
 - ▶ Communicate with victim, if possible.
 - ▶ Gain access to patient.
 - ▶ Secure patient with rope system.
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Basic Rescue Procedures

- ▶ Package the patient.
- ▶ Attach the patient to rope rescue system for removal.

Role of Awareness Level Rescuers

- ▶ Moving tools and equipment
 - ▶ Securing perimeter
 - ▶ Helping operate haul systems
 - ▶ Transferring patients
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Summary

- ▶ Rescuers must recognize different types of rescue environments and associated hazards.
 - ▶ High-angle rope rescue requires specialized resources and rope rescue teams.
 - ▶ Responders must know where to acquire resources to perform successful rope rescues.
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Summary

- ▶ Rope rescue hazards include fall hazards, falling debris, energy hazards, environmental hazards, and crowd control issues.
 - ▶ Hazard mitigation efforts are required prior to rescue.
 - ▶ Awareness level responders should not attempt to access or remove a patient in situations where fall protection is required.
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This completes the general training requirement for
NFPA 1670 Rope Rescue Awareness Level

**Click the box below to take a quiz and
receive a Certificate of Completion.**

FINAL QUIZ

