

Anderson Fire Department



Technical Rescue Team

Technical Rescue: Awareness



- ⌘ This course is necessary for our Rescue Team to stay up-to-date with NFPA.
- ⌘ It is also necessary to educate other responders to recognize a technical rescue incident and be aware of their limitations.
- ⌘ The course was developed for other agencies, not just the fire departments.

Technical Rescue: Awareness



Course Outline

1. Introduction
2. Pre-test
3. NFPA 1670 & NFPA 1006
4. Video
5. Classroom Scenarios
6. Final Test

Technical Rescue: Awareness



Course Objectives

1. Define Technical Rescue
2. Explain the three levels of response to a technical rescue
3. Understand the role of the first responder at a technical rescue
4. Recognize the limitations of responders trained to the awareness level
5. Size-up a rescue situation

Technical Rescue: Awareness



Course Objectives (cont.)

6. Know whom to call for assistance for various types of rescue situations
7. Secure the scene at a rescue incident
8. Describe the hazards that may be present at each type of rescue
9. Know techniques to help victims self-rescue
10. Explain the four basic types of construction
11. Describe the five types of collapse patterns

Pre-Test



The pre-test is to get you thinking about Technical Rescue and to find out how much you already know.

There is no passing or failing grade.

Pre-Test



1. List several situations which may require a technical rescue.

Seven basic rescue scenarios are identified by the National Fire Protection Association and are covered in this program: Confined Space, Rope, Structural Collapse, Trench, Vehicle/Machinery, Water and Wilderness

2. Name some of the equipment that rescuers might use.

There are a number of pieces of basic rescue equipment used by responders: ropes, ladders, retrieval lines, tripods, ventilation equipment, for trenches and confined spaces, shoring equipment, air monitoring equipment, fall protection devices, thermal imaging cameras, protective equipment like hard hats.

Pre-Test



3. List some activities that those first on the scene of a rescue situation should carry out.

First on-scene rescuers trained to the awareness level are responsible for assuming command until relief arrives, sizing up the situation, calling for assistance, identifying hazards, securing the site to keep out citizens, ventilation, helping victims with self-rescue, and assisting operations- and technician-level rescue personnel once they arrive.

4. List some of the hazards that might exist at a building collapse.

Some potential hazards include secondary collapse; fires; potential for explosion if utilities are live; gas leaks; hazardous materials at industrial locations.

Pre-Test



5. Describe some of the ways first responders might be able to assist a victim of a confined space incident without entering the space.

Awareness level rescuers may drop ladders and ropes, attach and hoist retrieval lines, ventilate the area if toxic fumes are feared, and shut off utilities to prevent explosions. DO NOT ENTER THE SPACE!

6. What information should first responders gather about a rescue incident to pass on to the rescue team?

How many victims? What is their condition? Are they in communications with the rescuers? What is the scope of the incident? What are the hazards of the situation? What resources will be necessary to conduct a rescue? Is the responsible party on scene? Are witnesses available? Will the weather be a factor?

Pre-Test



7. What are the limitations of the role of the rescuer trained to the awareness-level?

If first responders on scene are not trained and equipped for a technical rescue they must not enter the hazard area.

8. Why is it important for rescuers to be knowledgeable of various construction types?

In a structural collapse, materials of construction will determine the equipment needed for rescue and may indicate the type of collapse pattern to be expected and where void spaces may exist where victims have survived. Knowing the materials of construction may also help to determine the likelihood of secondary collapse. There are four basic types of construction, light frame construction, heavy wall construction, heavy floor construction, pre-cast construction.

Pre-Test



9. What are some of the hazards that might be present at the scene of a suspected terrorism incident?

A terrorist event presents some special challenges for responders. There are likely to be massive numbers of victims and public hysteria. Rescuers must be particularly cautious for secondary devices and sniper-type activity. Other chemical or biological agent releases or other hazardous materials in the area.

10. What are some ways to reduce the dangers of a rescue operation?

Rescuers must never attempt a rescue without proper training or equipment. Rescue teams should train vigorously and often in various types of technical rescues, and should refine response plans continually. Rescue teams should follow procedures at all times. A safety officer must be appointed at each rescue, and life support teams should be on scene.

NFPA

Technical Rescue



What is the NFPA?

National Fire Protection Association

Non-profit educational and technical association devoted to protecting life and property from fire by developing fire protection standards and educating the public. (IFSTA – FD Company Officer)

Are you required to follow NFPA Standards?

No, but these are the standards that legal representatives will use against you in a court of law.

NFPA

Technical Rescue



"Technical rescue is the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations."

Where did Technical Rescue Awareness originate?



NFPA 1670

- ⌘ Standard on *Operations and Training* for Technical Rescue Incidents
- ⌘ Effective February 4, 1999

NFPA 1006

- ⌘ Standard for Rescue Technician *Professional Qualifications*
- ⌘ Effective February 11, 2000

For This Class, We Will
Focus on ***NFPA 1670***



Standards on Operations
and Training for Technical
Rescue Incidents

NFPA 1670

Intent of the Standard



Establish general guidelines for the Authority
Having Jurisdiction (AHJ) in:

- ⌘ Assessing technical rescue hazards
- ⌘ Identifying levels of operational capabilities
- ⌘ Establishing
 - ❑ Training documentation and
 - ❑ Response guidelines

NFPA 1670

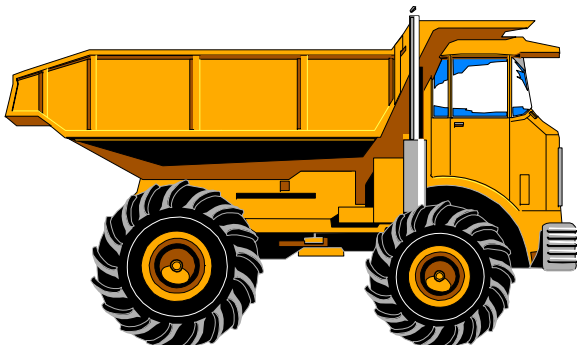
Authority Having Jurisdiction



The organization, office, or individual responsible for approving equipment, an installation, or a procedure.

NFPA 1670

Organizations covered:



⌘ Any agency that responds to technical rescue incidents

☑ Fire departments

☑ Law enforcement

☑ Emergency medical services

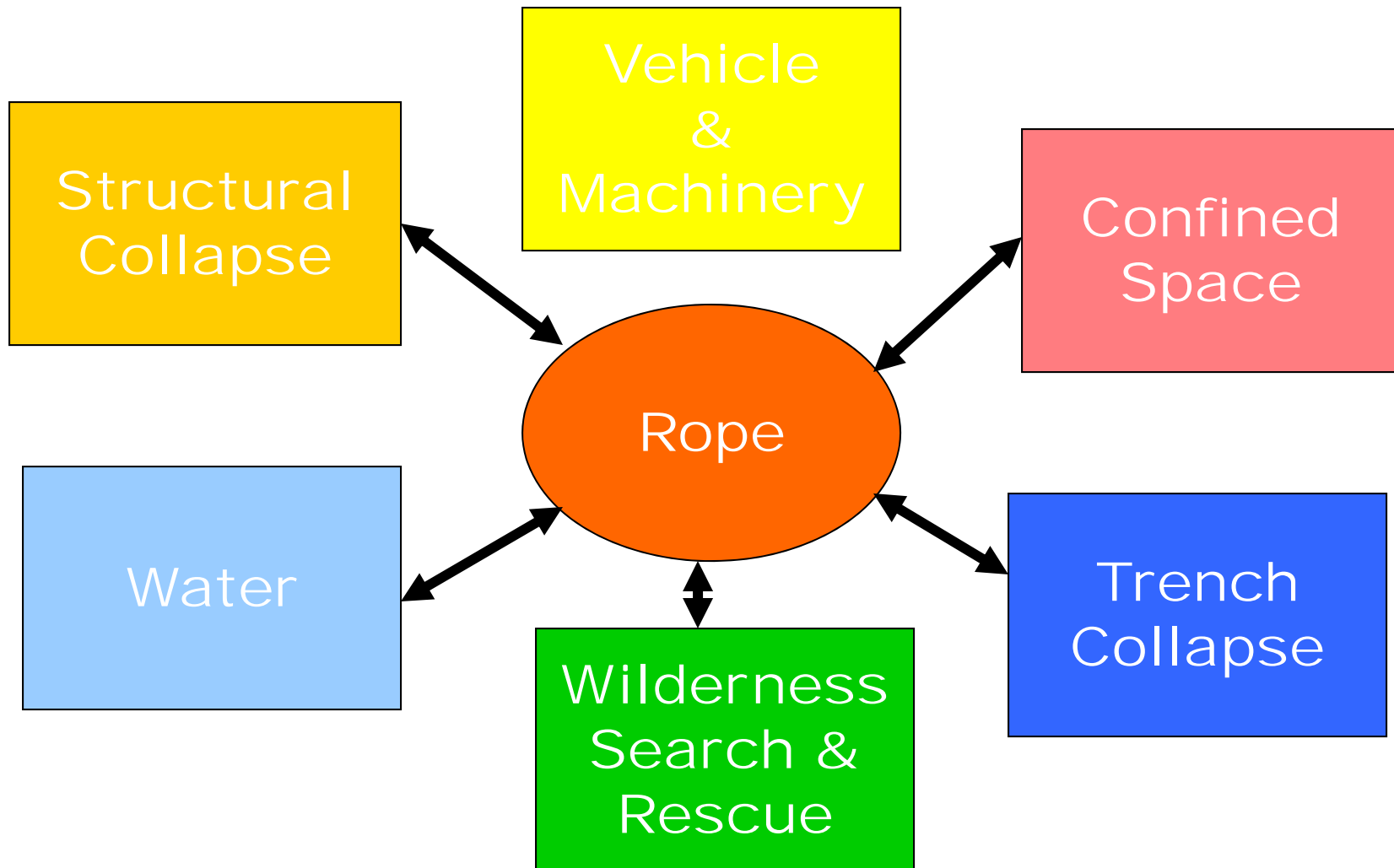
☑ Utility

☑ Public works

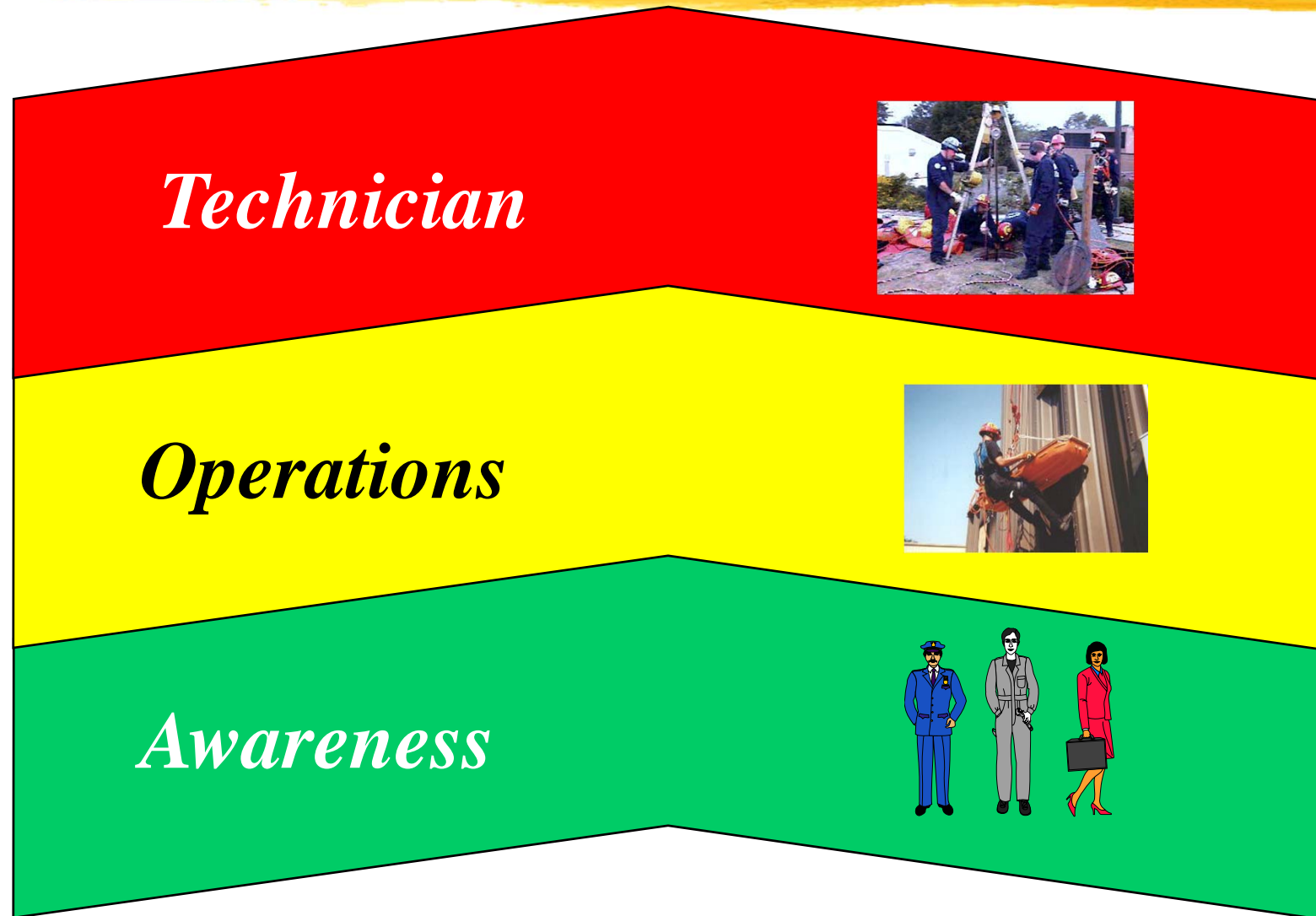
☑ Rescue organizations

NFPA 1670

Rescue Disciplines



Levels of Functional Capability



NFPA 1670

Awareness

⌘ Minimum capabilities

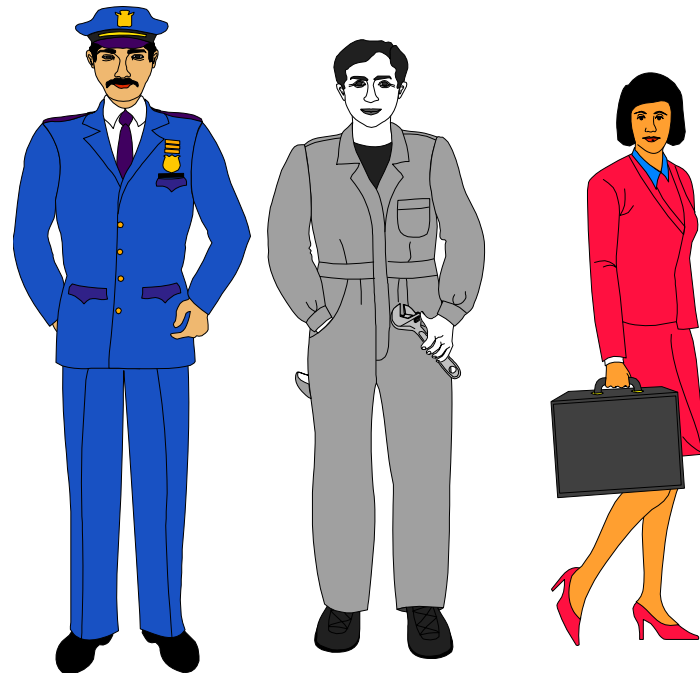
- ☒ Encounter a technical rescue in regular duties by
 - ☒ Response to
 - ☒ First on scene of

⌘ Authority

- ☒ Not considered a rescuer

⌘ Level

- ☒ Search
- ☒ Rescue
- ☒ Recovery



NFPA 1670

Operations



⌘ Support capability

- ☑ Hazard recognition
- ☑ Equipment use
- ☑ Techniques

⌘ Authority

- ☑ Supervised by a Technician

⌘ Level

- ☑ Search
- ☑ Rescue
- ☑ Recovery

NFPA 1670

Technician

⌘ Capability

- ☒ Hazard recognition
- ☒ Equipment use
- ☒ Techniques

⌘ Authority

- ☒ Coordinate
- ☒ Perform
- ☒ Supervise

⌘ Level

- ☒ Search
- ☒ Rescue
- ☒ Recovery



NFPA 1670

Technical Rescue: Review

Pre-test

Defined NFPA and the intent of NFPA 1670 & 1006

Defined Technical Rescue:

“Technical rescue is the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations.”

Explained the Seven Rescue Disciplines:

Rope, Trench Collapse, Structural Collapse, Water, Vehicle/Machinery, Wilderness and Confined Space.

Explained the Three Levels of response capabilities:

Awareness, Operations and Technician

Defined – AHJ (Authority Having Jurisdiction)

NFPA 1670

Technical Rescue: Next

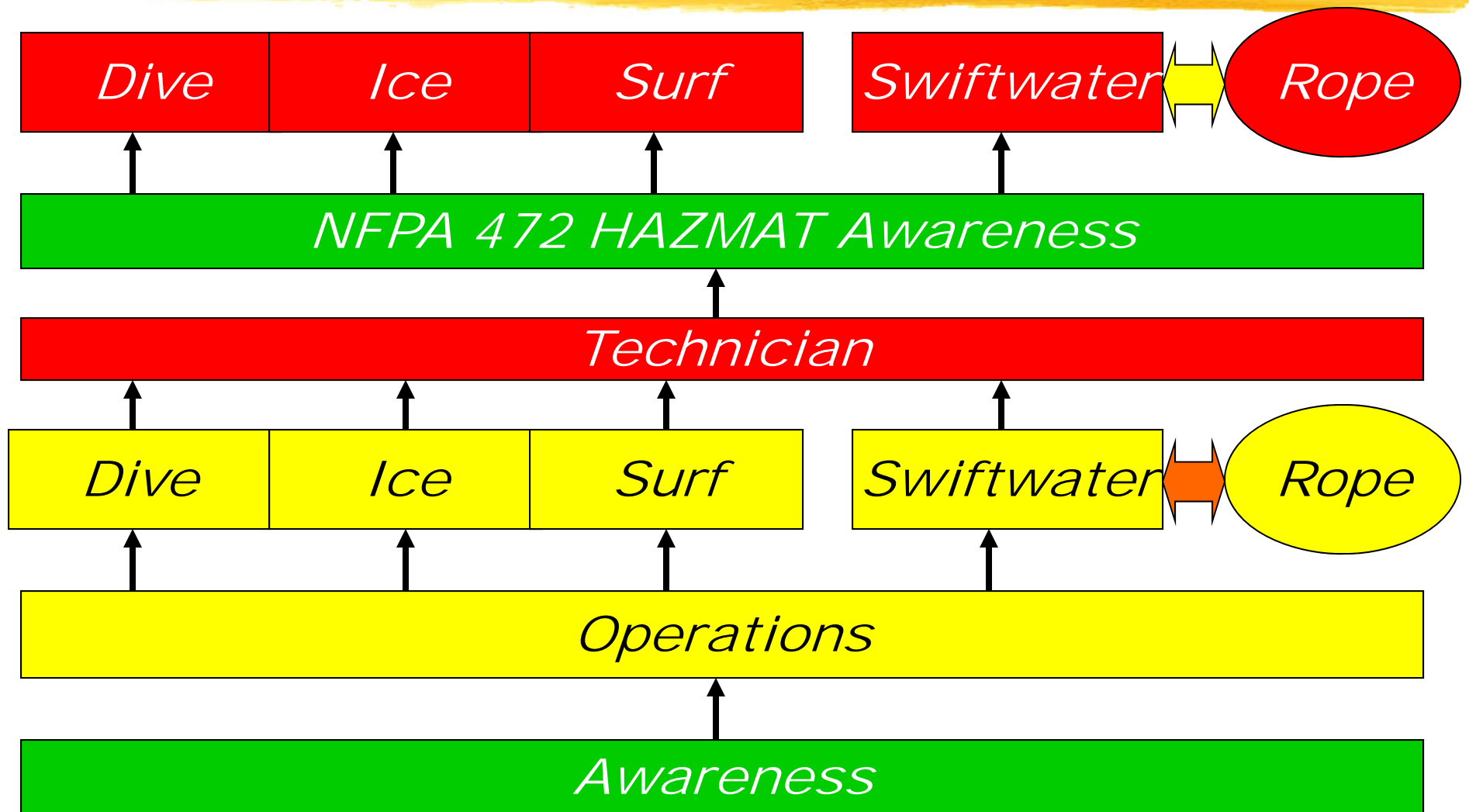
NFPA 1670 uses a building block approach for developing response capabilities.

Levels sometimes overlap to build a specific discipline..

Responsibilities of the AHJ (Authority Having Jurisdiction)

NFPA 1670

Water Rescue



NFPA 1670 & 1006

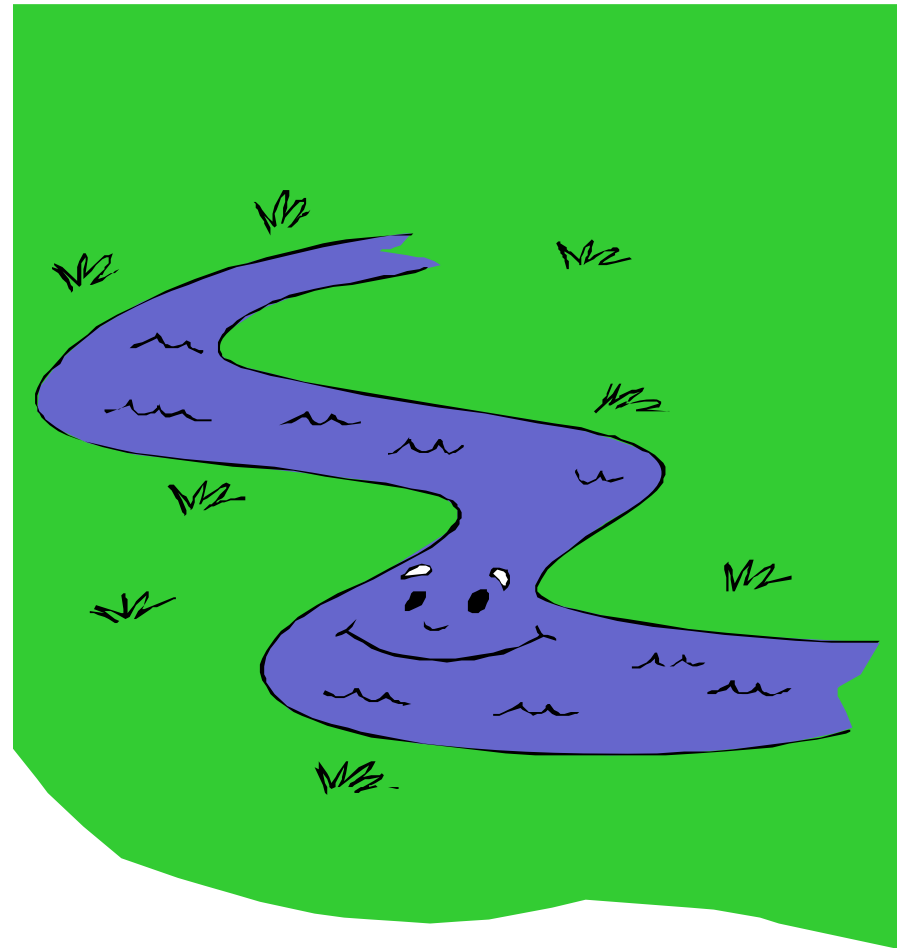
"Swiftwater"

⌘ Water moving at a rate greater than 1 knot

☒ 1.15 mph

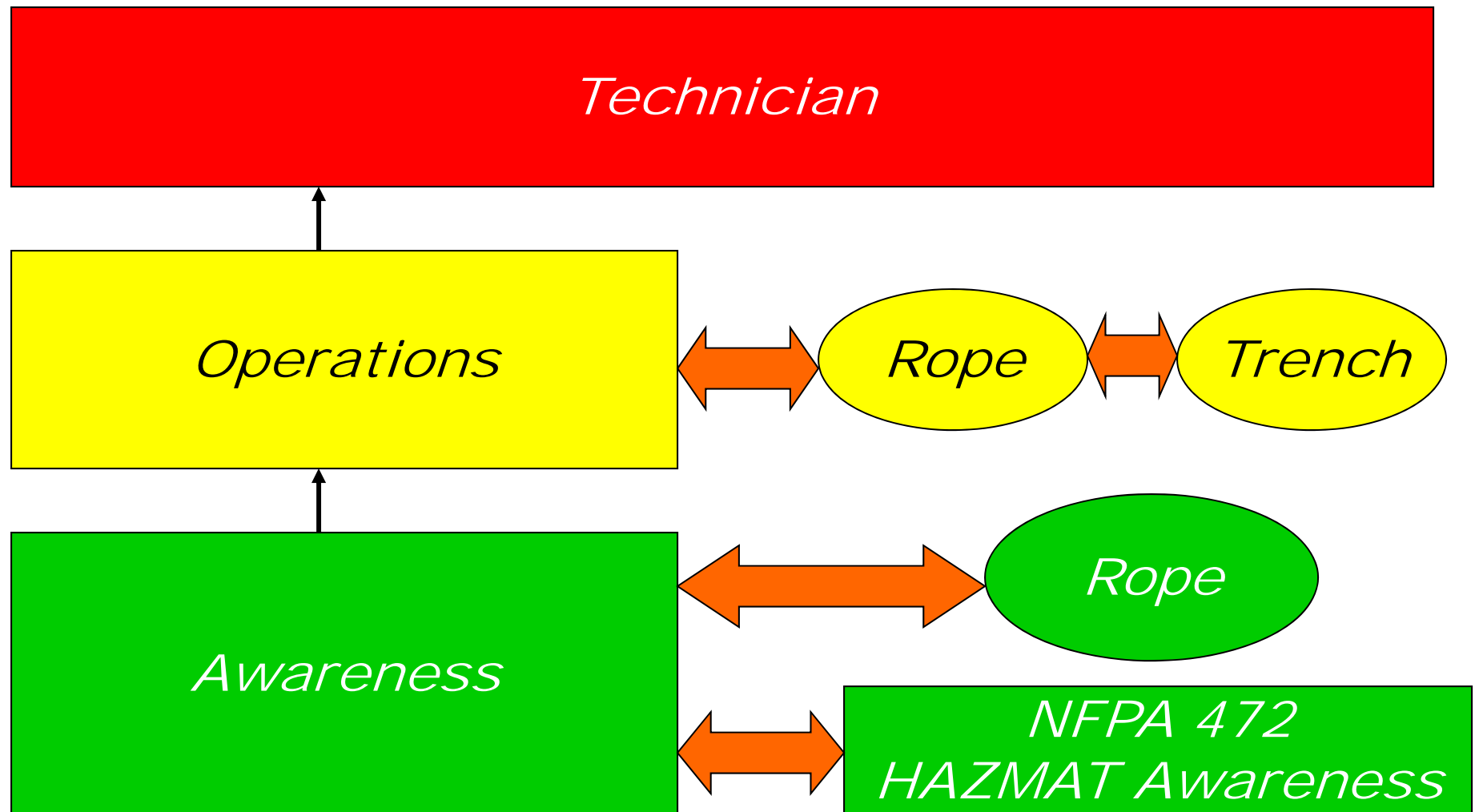
☒ 1.66 ft/sec

☒ 1.85 km/hr



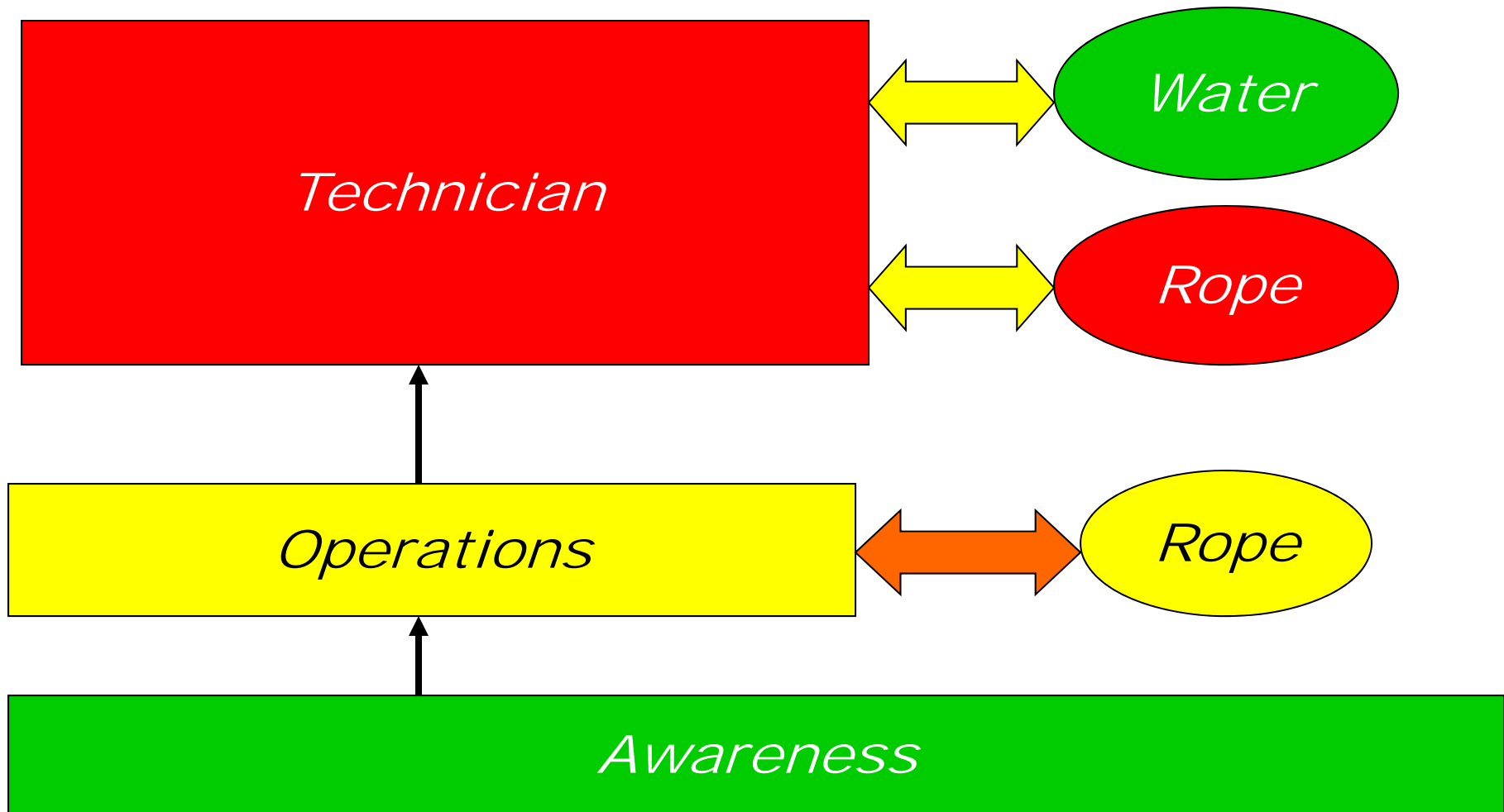
NFPA 1670

Confined Space



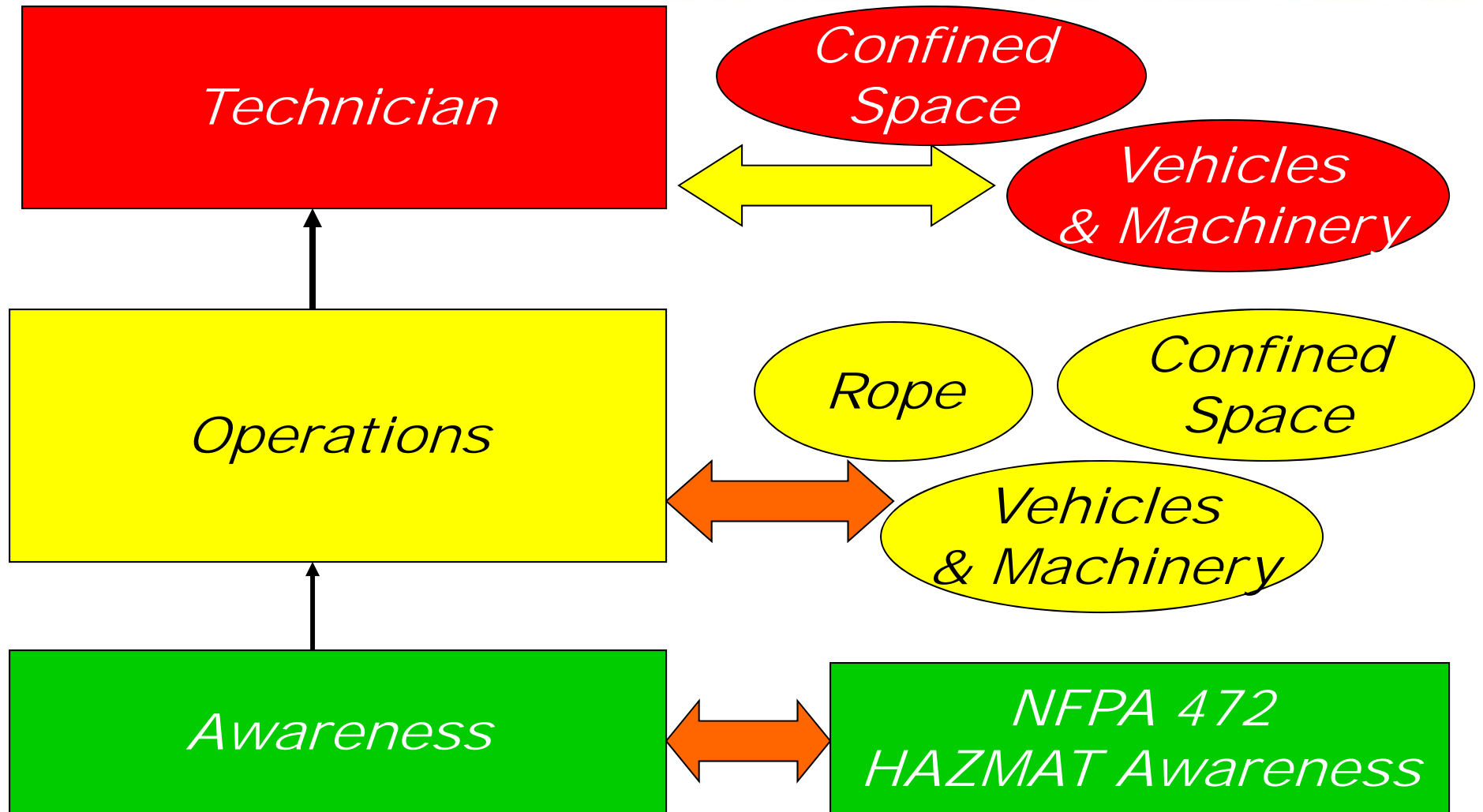
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Wilderness Search & Rescue



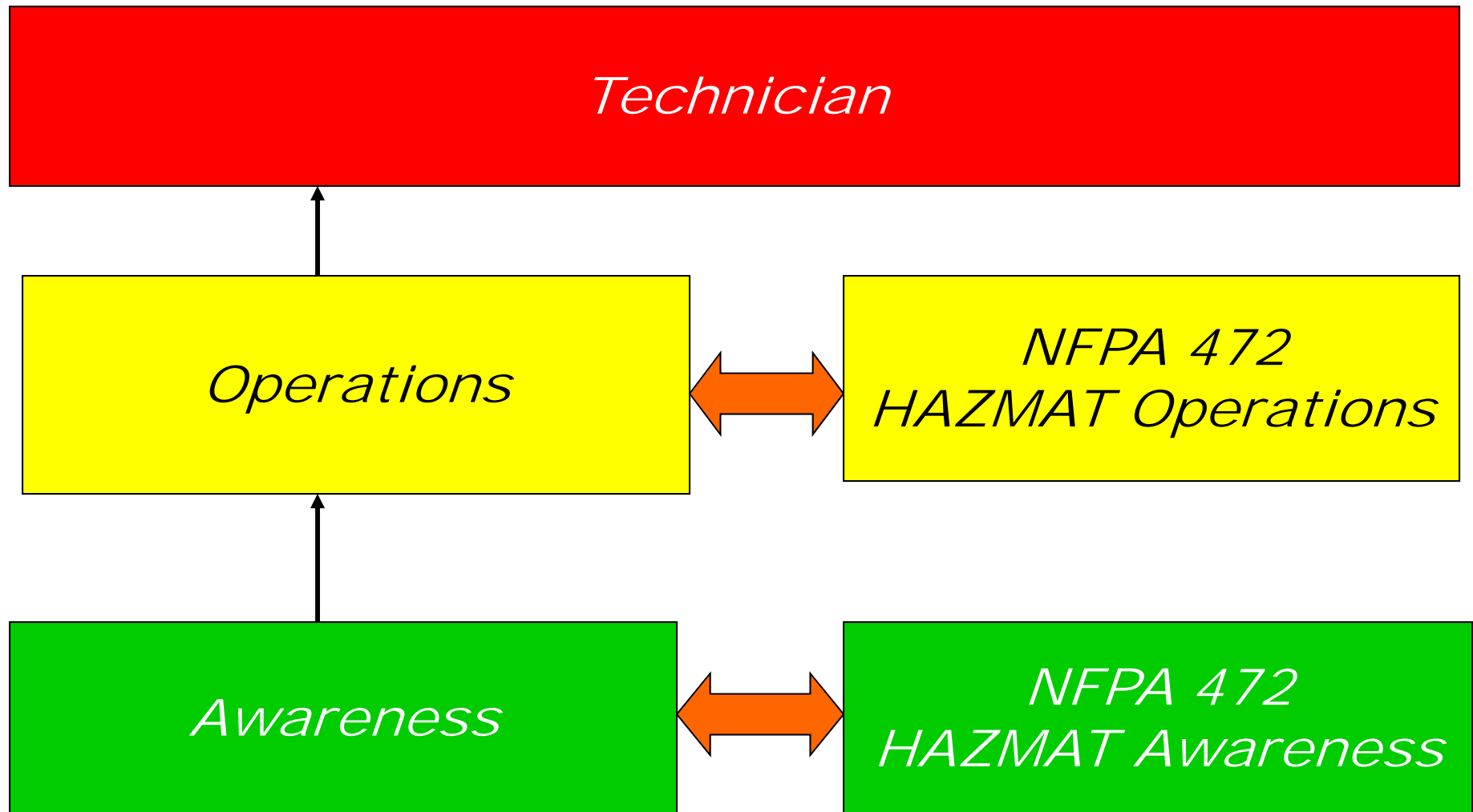
NFPA 1670

Trench & Excavation



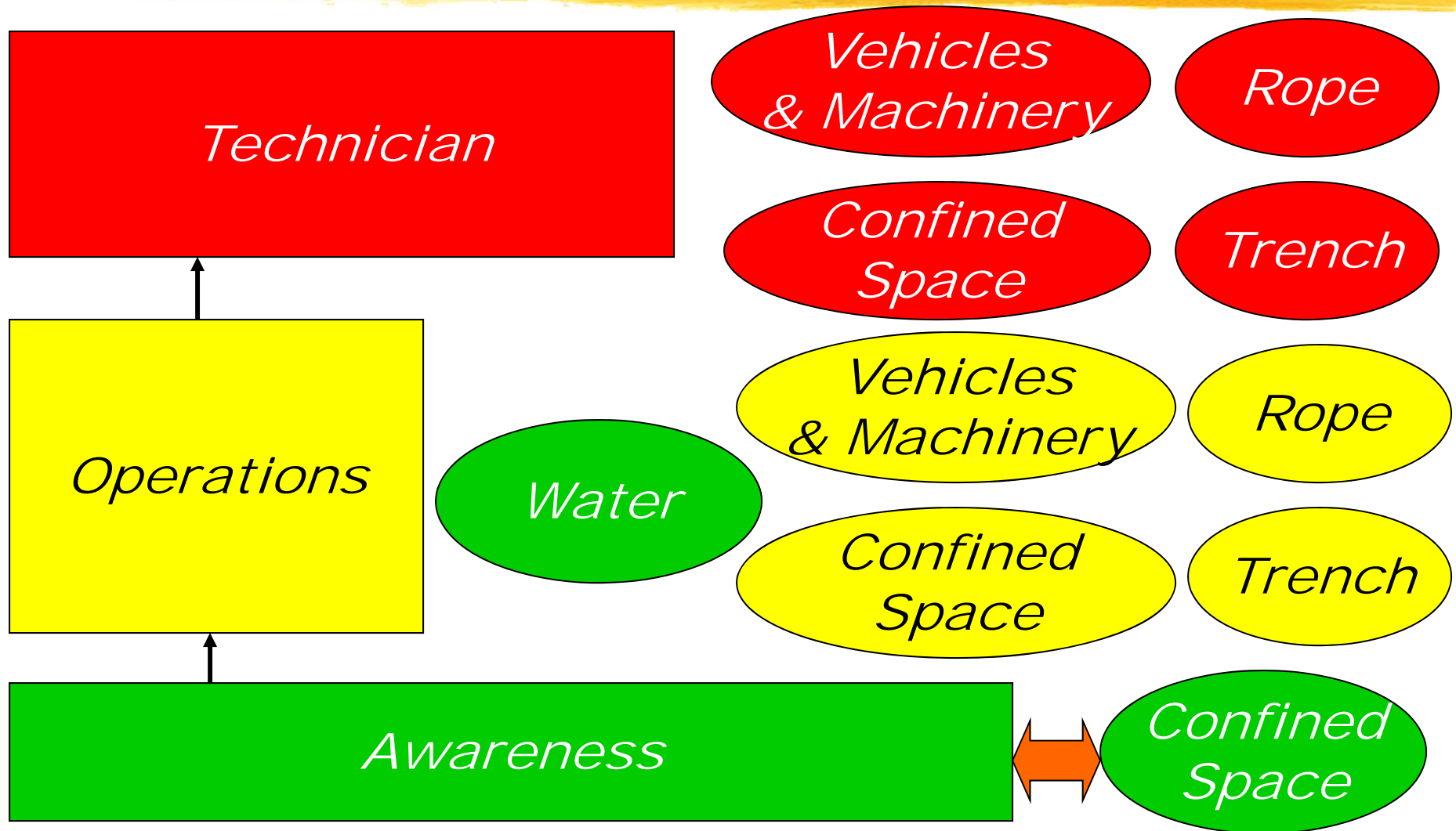
NFPA 1670

Vehicle & Machinery



NFPA 1670

Structural Collapse



NFPA 1670

Requirements for the AHJ

As required by NFPA 1670, each agency must select the appropriate level(s) of capability for all of its personnel. In addition to determining those levels, the AHJ must also satisfy a number of general requirements in order to be fully NFPA compliant.

Examples of those requirements are:

NFPA 1670

Basic Life Support

- ⌘ ALS recommended
- ⌘ Training in addition to BLS
 - ☒ Cervical/spinal immobilization
 - ☒ Vertical packaging
 - ☒ Horizontal packaging
 - ☒ Crush injury syndrome
 - ☒ Recognition
 - ☒ Evaluation
 - ☒ Treatment



NFPA 1670

Standard Operating Guidelines

- ⌘ Performed in a safe manner
- ⌘ Consistent with operational capability
- ⌘ Also used for
 - ☑ Training
 - ☑ Body recovery
 - ☑ Evidence search
 - ☑ Other urgent operations



NFPA 1670

Training



- ⌘ Awareness minimum
- ⌘ Continuing education program
 - ☑ Annual performance review
- ⌘ Documentation
 - ☑ Names
 - ☑ Trainer signature
 - ☑ Dates
 - ☑ Outline
 - ☑ Resource material

NFPA 1670

Accountability

- ⌘ NFPA 1561 § 2-6
- ⌘ Assists the Incident Commander and Safety Officer with site management
 - ☑ Rapid accounting
 - ☑ Rapid evacuation
 - ☒ Audible warning
 - ☒ Visual warning
 - ☒ Radio warning



NFPA 1670

Technical Rescue: Review

Requirements for each of the Seven Rescue Disciplines:

Rope – Awareness, Operations and Technician

Water – Awareness, Operations and Technician

Confined Space – Awareness, Operations and Technician

Wilderness – Awareness, Operations and Technician

Trench – Awareness, Operations and Technician

Vehicle/Machinery – Awareness, Operations and Technician

Structural Collapse - Awareness, Operations and Technician

Requirements for the AHJ:

Basic Life Support

SOG's

Training

Accountability

NFPA 1670

Technical Rescue: Next



Video – Technical Awareness Awareness

Classroom Scenarios

Final Written Test

Scenario #1



You are outside a structure in the downtown area and you hear a rumble.

The two highway patrolmen are shouting that there are two people inside this structure.

Scenario #1



Anderson County sheriff's deputies stand next to a South Carolina Highway Patrol cruiser that was crushed by rubble when a building at 123 N. Whitner St. collapsed Tuesday morning. Two people were inside the store, Carolina Collection, when it collapsed. They escaped unharmred.

Scenario #1



Is this a Technical Rescue?

"Technical rescue is the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations."

What type of Technical Rescue Incident is this?

Structural Collapse

What type of collapse?

Lean-to

What Level of Responders will be needed?

Building Collapse – Technicians and Operations

What actions can you take?

Scenario #2



You are at a coffin vault manufacturing company picking out a vault when someone comes in screaming that a young man has fallen into the gravel hopper.

You rush outside to the hopper and this is what you see.

Scenario #2



Scenario #2



Is this a Technical Rescue?

"Technical rescue is the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations."

What type of Technical Rescue Incident is this?

Confined Space:

- (1) **Is large enough and so configured that an employee can bodily enter and perform assigned work**
- (2) **Has limited or restricted means of entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults and pits are spaces that may have limited means of entry)**
- (3) **Is not designed for continuous employee occupancy**

What Level of Responders will be

Confined Space – ~~Technicians~~ *needed?* and Operations

What actions can you take?

Scenario #3



You are in a rural subdivision after a flash flood.

Someone tells you that there are people inside the house.

Scenario #3



Scenario #3



Is this a Technical Rescue?

"Technical rescue is the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations."

What type of Technical Rescue Incident is this?

Water

What Level of Responders will be

Water Rescue – Technicians and Operations

What actions can you take?

Scenario #4



You are hiking in the woods and come across several other hikers.

They tell you one of their member has become separated from them and they have been searching for him for two hours.

Scenario #4



Scenario #4



Is this a Technical Rescue?

"Technical rescue is the application of special knowledge, skills, and equipment to safely resolve unique and/or complex rescue situations."

What type of Technical Rescue Incident is this?

Wilderness

What Level of Responders will be

Wilderness Search & Rescue – Technicians and
Operations / SAR Tech I & II

What actions can you take?

POST SEMINAR TEST DISCUSSION



1. Technician level training is for responders who arrive first on the scene of a technical rescue incident.


*This statement is **false**. Technician level training is for responders who enter the hazard area to effect the rescue. First on-scene-responders should be trained to the awareness level.*

2. The first responding unit at a rescue incident assumes command until relieved by a ranking official.

*This statement is **true**.*

3. Civilian rescuers should be allowed uncontrollable access to the rescue scene.

*This statement is **false**. The activities of civilians and volunteers should be controlled by responders in command of the rescue.*

- 
4. First responders should not call for outside help until initial rescue efforts fail.


*This statement is **false**. First responders must call for help and additional resources immediately, before initiating rescue efforts. Thus, should the effort fail, rescuers with the appropriate training and equipment are already en route.*

5. Determining the number and condition of victims is a part of size-up activities

*This statement is **true**.*

6. The responsible party (I.e., employer or property owner) should be removed from the incident immediately

*This statement is **false**. The responsible party should be brought to the command post as he or she may be a valuable source of information.*

- 
7. At a confined space incident, first responders can lower ladders to allow the victim to self-rescue.

This statement is true.

8. Rescuers trained to the awareness level may enter a confined space for rescue purposes.

This statement is false. Awareness level training does not prepare a responder for this activity. First responders trained at the awareness level must call for special rescue teams with specialized training and equipment to enter a confined space for rescue.

9. For structural collapse rescues, first responders need to be familiar with four basic types of construction.

This statement is true. The four basic types are: light frame, heavy wall, heavy floor, and pre-cast construction.

10. In structural collapse, there are four types of collapse patterns.


*This statement is **false**. There are five types of structural collapse patterns: lean-to, V-shape, pancake, cantilever, and A-frame collapse.*

11. In a cantilever collapse, bearing walls fail and an upper floor drops onto a lower floor.

*This statement is **false**. In a cantilever collapse, a wall fails and one end of a floor hangs free.*

12. After a structural collapse, unusual sounds may indicate an impending secondary collapse.

*This statement is **true**. Other signs include: walls that lean more than 10%, smoke or water seeping through joints, expanding diagonal cracks, recurring after-shocks, sagging floor or roof assemblies, damaged points of connection of structural elements, excessive loading of structural elements, sliding plaster and airborne dust, racked or twisted structure, and sudden vibration.*



13. After a structure collapse, a hot zone should be established which includes a distance equal to the height of the structure involved in the collapse.


*This statement is **false**. The hot zone should be a distance equal to the height of the structure plus one-third.*

14. When placing ladders at a trench collapse, the best approach is at the middle of the trench.

*This statement is **false**. The best approach is from the ends of the trench.*

15. Spoil pile and shear wall are two types of trench collapse patterns.

*This statement is **true**.*



16. At a trench collapse, development of fissures may indicate a secondary collapse.


This statement is true. Another sign of secondary collapse is small amounts of material suddenly rolling down into the excavation.

17. In a shore based water rescue, the first action should be to try to reach to the victim with a pole or other device.

This statement is true.

18. Awareness –level rescuers use rope-based raising and lowering systems to rescue victims.

This statement is false. Awareness-level trained responders are not trained to operate technical rescue equipment.



19. The National Fire Protection Association recognizes three levels of training for those involved in a technical rescue.

This statement is true. The three levels are Awareness, Operations and Technician

20. Responders trained at the awareness level can determine the hazards present at a technical rescue incident.

This statement is true. This activity is part of the first responders size-up activity.

NFPA 1670

Conclusion



Did we meet our objectives?

1. Define Technical Rescue (#13)
2. Explain the three levels of response to a technical rescue (#20)
3. Understand the role of the first responder at a technical rescue (#8)
4. Recognize the limitations of responders trained to the awareness level (#21)
5. Size-up a rescue situation (#41-51 Scenarios)

NFPA 1670

Conclusion



6. Know whom to call for assistance for various types of rescue situations
7. Secure the scene at a rescue incident (video)
8. Describe the hazards that may be present at each type of rescue (video)
9. Know techniques to help victims self-rescue (video)
10. Explain the four basic types of construction (#10)
11. Describe the five types of collapse patterns (video)