Introduction to Rope Rescue

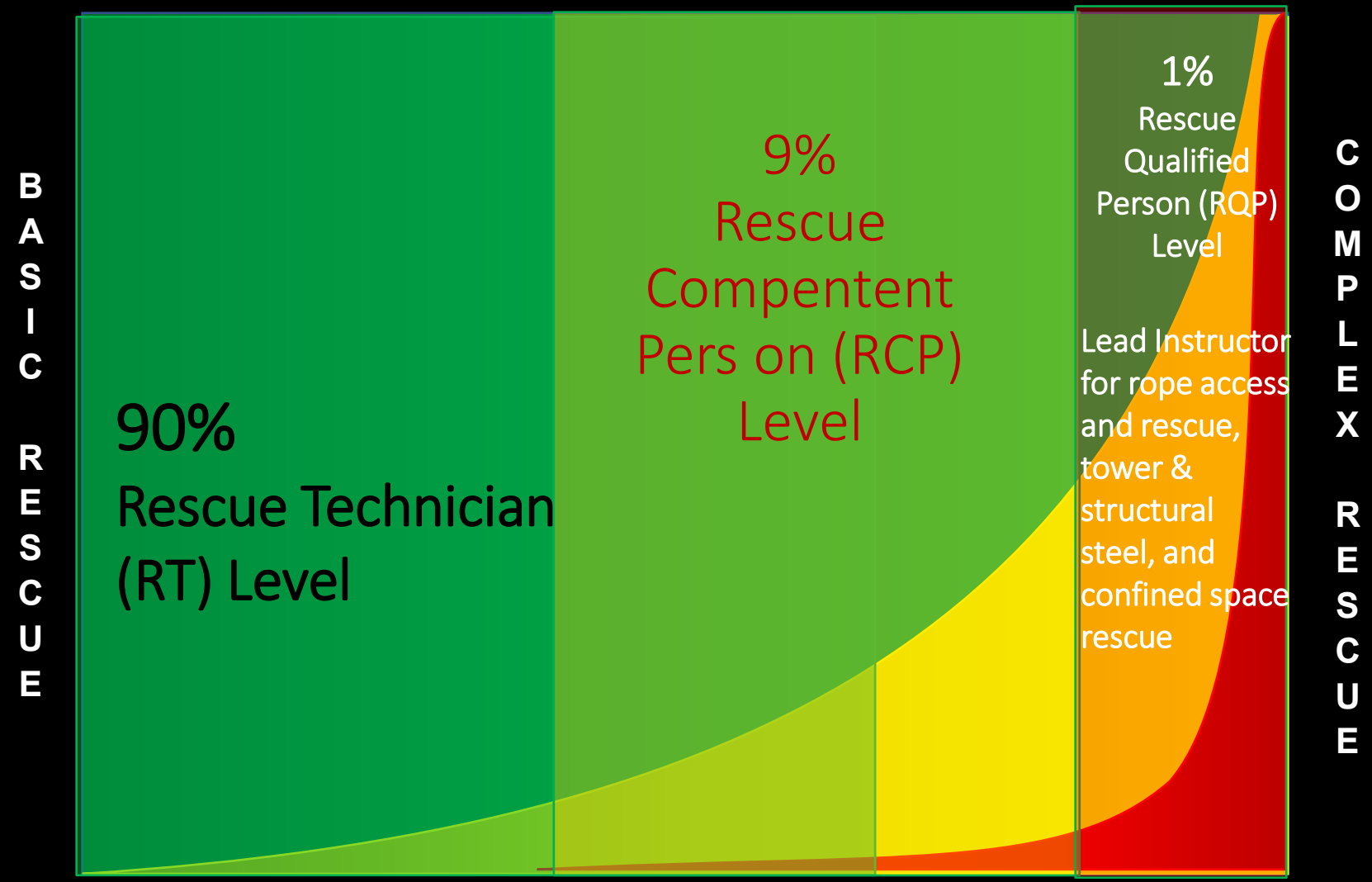
KES

KARY ENVIRONMENTAL SERVICES INC.

"THE KEY TO YOUR ENVIRONMENTAL SOLUTIONS"

We should never lose sight of the fact that most rescues are first and foremost, a medical problem, and the degree of complexity of the extrication will be driven by location.

90% - 9% - 1%


BASIC RESCUE
90%
Rescue Technician (RT) Level
9%
Rescue Compentent Pers on (RCP) Level
1%
Rescue Qualified Person (RQP) Level
Lead Instructor for rope access and rescue, tower & structural steel, and confined space rescue
COMPLEX RESCUE

90% - Rope Operations Level

- 90 percent of the time rope rescue is having to deal with steep angle, (40 to 60 degrees of elevation).

- Any terrain above 40 degrees is generally considered in the rescue service as a team-based/two-rope (main and belay) system.

- Team-based refers to any rope system that is controlled by a team of at least three and usually more when considering a haul team needed for raising systems.

- The rescuer is fully dependent on the team for main and belay control.

- Most rope rescue operations are in this 90% realm of team-based, steep angle work.

- Any person entering a rescue team can be very functional by obtaining a good grasp of the 90% skills specified throughout this manual.

9% - Rope Technician Level

- The 9 percent frequency of occurrence represents those rigging skills needed for terrains the fall between 60 and 90 degrees.

- The 9% frequency is still limited to team-based vertical operations; however, basic personal descending (rappelling) and ascending skills are added.

- Descending skills are especially valuable for recon and early patient contact.

- Rescue teams should be proficient in vertical rigging applications given the remote chance these skills are needed.

- More advanced knowledge is extremely beneficial in elevating the team’s overall confidence and rigging aptitude, regardless of the frequency of need.

1% - Rope Practitioner Level
Rescuers proficient in the remaining 5% frequency of occurrence are practitioners of rope rigging.

This area of skills addresses greater detail in rigging physics, advanced knot craft, horizontal systems (highlines and other vertical deviations), more advanced anchor construction (such as dynamic anchor systems), personal vertical mobility (rope access), and solo rescues.

The following allowances are given to those CPR members who have successfully completed the Practitioner Level:

1. *They will be considered a 'Qualified Person' in rigging with synthetic rope.*
2. *As such, a Qualified Person has the authority to deviate from techniques presented in this manual based on justifiable interpretation of rigging physics.*
3. *They will be elevated to the position of Lead Rigging Instructor.*

How and Why

Just knowing *how* minimizes one's ability to perform especially when circumstances create adverse or unexpected situations, environments and challenges.

A rescuers knowledge of *why* enables an extraordinary ability to predict, perceive, adapt to and operate efficiently in adverse situations.

Pertinent NFPA Standards

NFPA 1670	Operations and Training for Technical Search and Rescue Incidents
NFPA 1006	Technical Rescuer Professional Qualifications
NFPA 1983	Fire Service Life Safety Rope and Equipment for Emergency Services

Other applicable NFPA Standards

- **NFPA 1977, Standard on Protective Clothing and Equipment for Wildland Fire Fighting and Urban Interface Fire Fighting**
-
- **NFPA 1140, Standard for Wildland Fire Protection**
- **NFPA 1906: Standard for Wildland Fire Apparatus**
- **NFPA 1877, Standard on Selection, Care, and Maintenance of Wildland Firefighting Protective Clothing and Equipment**
- **NFPA 1051, Standard for Wildland Fire Fighter Personnel Professional Qualifications**
-
- **NFPA 1984, Standard on Respirators for Wildland Fire Fighting Operations**
-

NFPA 1983

Fire Service Life Safety Rope and System Components

- NFPA 1983 is not a user's standard…
- …it is a manufacture's standard.

NFPA 1983
Fire Service Life Safety Rope and System Components

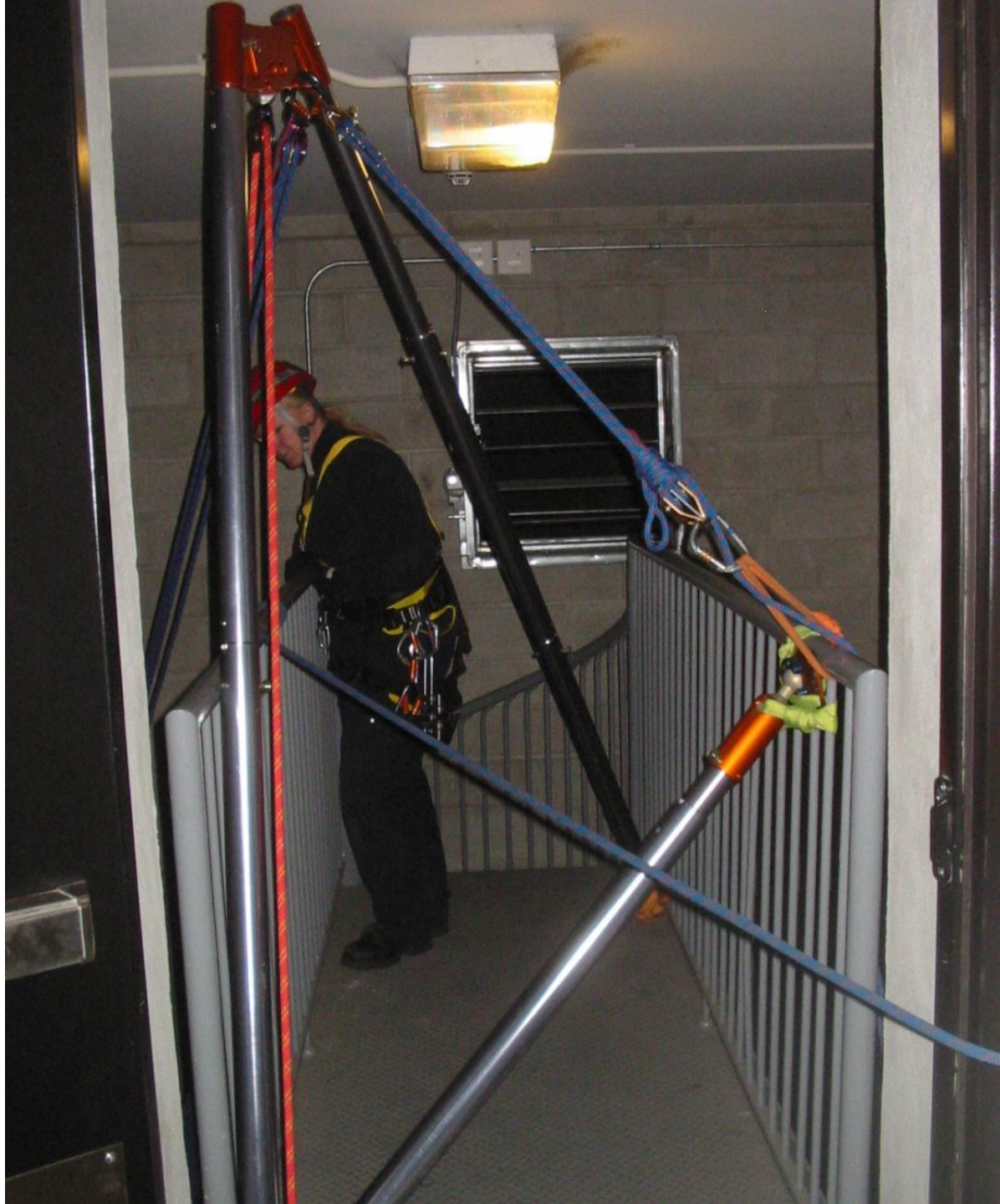
	Technical	General
Rope	20kN (4497)	40kN (8992)
Carabiners	27kN (6069)	40kN (8992)
Rope Grabs	5kN (1124)	11kN (2473)
Descent Control	13.5kN (3034)	22kN (4946)
Portable Anchors	22kN (4946)	36kN (8093)
Pulleys	22kN (4946)	36kN (8093)

The NFPA 1983 standard may have some value in establishing system safety factors as a starting point, however, equipment factory ratings do not guarantee the operator is acting in a safe manner!

NFPA 1670 Operations and Training for Technical Search and Rescue Incidents

Key Elements of the Awareness Level

- Recognize need for technical rescue
- Identify resources necessary to conduct rescue
- Carry out emergency response system
- Site control and management
- Recognizing hazards associated with technical rescue
- Identifying and utilizing personal protective equipment



NFPA 1670 Operations and Training for Technical Search and Rescue Incidents

Key Elements of the Operations Level

- Knowledge of equipment
- Knots, bends, hitches
- Edge protection
- Single and multi point anchors
- Belay systems
- Mainline systems, lowering and raising
- Ascending, descending and self-rescue
- Patient packaging
- Litter operations

NFPA 1670 Operations and Training for Technical Search and Rescue Incidents

Key Elements of the Technician Level

- Understanding of the basic physics involved in constructing rope rescue systems, including system safety factors, critical angles, and the causes and effects of force multipliers within rope rescue systems
- Constructing an elevated point to facilitate safe transition of rescuers or victims over difficult edges (high directional anchors)
- Horizontal systems