	Kitsap County Technical Rescue Team Polices and Guidelines
Title: 2.1, Rope Rescue, *Version 1.4*	**Section/Topic: Operations**
Effective Date: March 22nd, 2018	**Classification: Operating Guideline**

Purpose

To establish a common and standardized operational approach for Kitsap County Technical Rescue Team (KCTRT) members responding to a rope rescue incident.

Scope and Applicability

This guideline provides operational guidance for the safe and effective use of Kitsap County Technical Rescue Team (KCTRT) personnel and equipment at incidents that involve rope rescue operations. This guideline is used in conjunction with WAC 296-305 and NFPA 1670, 1006 and 1983.

This guideline is intended to apply only to KCTRT personnel and while Kitsap county fire districts are welcome to adopt and use these guidelines, they are not intended to supersede individual department policy or guidelines, or to alleviate an individual agency's right and responsibility as the Authority Having Jurisdiction (AHJ).

Definitions

Rescue Group Supervisor: A competent individual trained to the Technician level, responsible for coordinating rescue operations and the associated activities within the rescue area. Serves as the "on-site competent person" and reports to the Incident Commander.

Technical Rescue Safety Officer: A competent individual trained to the appropriate level, responsible for monitoring safety in the Technical Rescue operational area. Reports to the Rescue Group Supervisor.

Lead Rigger: A competent individual trained to the appropriate level, responsible for planning and directing technical rigging operations. Reports to the Rescue Group Supervisor.

Edge / Entry Team Leader: A competent individual trained to the appropriate level, responsible for controlling access to the hazard zone. Supervises the Entry Team and edge personnel. Reports to the Rescue Group Supervisor.

Hot Zone: The hot zone is defined as the area within six feet of the working area with an established perimeter between the hot and warm zone.

Warm Zone: The warm zone is defined as the area outside of the Hot Zone where operational tasks are conducted.

Cold Zone: The cold zone is defined as any area outside of the Hot and Warm Zone where support personnel and equipment maybe staged.

“Low angle” rescue: Rescue operations conducted wherein the majority of the rescuers and victims weight is supported by the ground, the rope is primarily used for balance and to assist hauling patient’s weight up/down the slope, AND a slip or fall would not likely result in catastrophic injury.

”High angle” rescue: Rescue operations wherein most or all of the rescuers and victims weight is supported by the rope system(s) and failure of the system(s) would likely be catastrophic. High angle may also refer to vertical situations. Only technician level personnel shall lead and supervise these situations.

General Guidelines and Safety

When the KCTRT is utilized as a specialty resource, the Incident Commander shall assign a competent, appropriately qualified individual to serve as the Rescue Group Supervisor. The Rescue Group Supervisor will make position assignments in accordance with the Kitsap County TRT Guidelines and Mobilization Plan as required by the needs of the incident.

Rope rescue systems shall be safety checked prior to use.

Personnel trained to the operations level may utilize single rope systems in low angle situations in order to gain access, treat, and stabilize injured victims

Personnel should use appropriate verbal commands and minimize all unnecessary communications during rope rescue operations.

The minimum PPE for rope operations shall consist of helmet, gloves, and eye protection. Gloves may be doffed for rigging if ropes are not in motion.

All in-service life safety rope shall be inspected after each use and at regular recommended intervals. After inspection, the rope use / inspection shall be logged in the rope history card or log which shall be stored with the rope. NFPA 1983 (current edition) shall be used as a guide as to when to replace software. Life safety ropes shall be retired from service after 10 years from date of manufacture, or per the manufacturer's recommendation, as long as it is properly marked, and records kept on its use. Each rope will be labeled with a number corresponding to a rope history card or log. Rope ID labels will be attached to both ends of the rescue rope. Regardless of age, any rope that is damaged, shock loaded, or exposed to caustic chemicals shall be taken out of service and referred to the departments rescue equipment manager for evaluation.

KCTRT personnel are responsible for ensuring that rescue site security has been provided during all rescue operations.

In a high angle environment where a fall of greater than 10' is possible, a travel limiting device or tag line shall be used for all personnel operating within 6' of the edge. The Rescue Group Supervisor or Technical Rescue Safety Officer may adjust this distance as the situation dictates.

Operational Guidelines

First Arriving KCTRT Personnel

1. Size up the incident and attempt to gather the following incident information to report to the incident commander and incoming technical rescue assets:

    + Number and location of victim(s).
    + If the victim is suspended/hanging or supported.
    + If the patient(s) are injured.
    + If the victim can be reached by other than a rope rescue system.
    + If the victim can self-rescue.

2. Request additional Technical Rescue Response through dispatch as needed. Establish a designated staging area for incoming technical rescue resources.

3. Isolate the scene to minimize further danger to victim, bystanders, and emergency personnel. Only essential personnel should be allowed in the working area.

Operations Level Personnel

1. During low angle rope rescue operations, TRT members trained to the NFPA Operations level in rope rescue may:

    + Access victims using single rope technique where appropriate.
    + Package patients in a Stokes litter or other victim packaging device.
    + Serve as litter attendants to assist with patient movement.
    + Assist rescue technicians within the scope of their training.

2. In high angle rescue operations, TRT members trained to the NFPA Operations level in rope rescue may:

    + Establish two rope system anchor points for main or belay lines.
    + Attempt to pass a rope to the victim.
    + Assist rescue technicians within the scope of their training.

Technician Level Personnel

1. KCTRT members should report to and work through the Incident Commander. The IC will send responding Rescue Technicians to report to the Rescue Group Supervisor. All stages of the rescue operations shall be communicated to the Incident Commander for coordination and logging of time.

2. First arriving Technician level KCTRT members should conduct or repeat the technical rescue size-up.

3. All victims and personnel in “high angle” rescue scenarios shall be secured by two separate rescue rope systems whenever possible.

4. All victim packaging devices (i.e. stokes basket, patient extrication devices, class II or III harnesses etc.) will be securely attached to the victim(s). When moved through a hazardous area where there is risk of injury by a fall, the victim will be attached to a belay or braking system.

5. Ropes should be protected against chafing and abrasion.

6. Two rope systems should be utilized except when the delay in securing and manning a second rope will likely create a negative outcome for the victim. In this case, a rappel-based system may be used when done in conjunction with a secondary braking system (self-belay technique) on the rescuers rope.

7. When a two-rope, non-mirrored system is used with a tandem prusik belay, 100% of the load shall remain on the mainline, and the belay line shall act only as a non-tensioned safety line with a pre-tensioner.

8. When using a twin-tensioned or mirrored rope system for lower, two KCTRT approved descent control devices shall be used. In a haul, two rope systems of equal mechanical advantage should be used. Whenever possible, the twin-tensioned or mirrored rope system is the preferred method of operation.

9. In all high angle rescue operations, a competent individual trained to the NFPA technician level in rope rescue shall supervise packaging and be responsible for litter tending, if necessary, and safely transporting the victim out of the hazard zone.

10. Belaying of single person loads on a lower may be safely completed with a Münter hitch, tandem prusiks, or a TRT approved commercial belay device. The Münter hitch is the preferred method as it is simple and can quickly be added or removed from the rope.

11. Single person rappels may be belayed using a Münter , tandem prusiks, or a TRT approved commercial belay device. It is acceptable to self-belay on a second rope using a single prusik or a TRT approved commercial belay device.

12. When operating a non-mirrored 2 rope system, 2 person loads shall be belayed using either tandem 8mm Prusiks or a TRT approved commercial belay device.

13. Rappel pick-offs shall be performed using a TRT approved NFPA general use rated descent control device. Rappel pick-offs shall be belayed as a two-person load.

14. Two-person loads shall be lowered using TRT approved, NFPA General-use rated commercial Decent Control Devices (DCDs).

15. Mechanical advantage systems will use soft interface rope grabs (prusik loops) or a TRT approved mechanical rope grab device. Frozen or muddy rope may require the use of mechanical rope grabs.

16. A stokes basket and one litter attendant may be lowered on a single rope if the terrain meets low angle guidelines, the basket is empty, and an appropriate descent control deviceis used.

17. Main and belay lines shall attach to the litter collection point(s), the litter attendant(s), if present, and the victim using TRT approved knots.

18. In the high angle environment, litter attendants shall be limited to two per litter and shall maintain two points of attachment to the rope systems.

19. For use of any Backcountry, Lead Climb or Tree Rescue, see Lead Climbing Rope Rescue Technical Use equipment SOG.

Appendix A: Kitsap County TRT Approved Devices

Descent Control Devices

- 6 Bar brake bar rack with hyperbar
- Figure 8 plate
- Conterra Scarab
- CMC Rescue 3D
- CMC Rescue Multi-Purpose Device (MPD)
- Petzl I'D

Belay Devices

- CMC Rescue Multi-Purpose Device (MPD)

Mechanical Ascenders/Rope Grab Devices

- Petzl Croll
- Petzl Ascension

Commercial Load Releasing Devices

- Mariners Hitch

Multipurpose Devices

- CMC Rescue Multi-Purpose Device (MPD)
- Aztek Pro-Series System, or general use rated equivalent
- Petzl I'D

Carabiners

- Single person load: Technical or General use rated, locking gate carabiner
- Two person "rescue" load: General use rated, auto-locking, requiring at least two movements to unlock

Appendix B: Kitsap County TRT Approved Knots & Hitches

- Overhand knot
- Water knot
- Overhand loop
- Round turn and two half hitches
- Clove hitch
- Prusik hitch
- Double Fisherman's bend
- Figure 8 stopper
- Figure 8 on a bight
- Figure 8 follow through
- Figure 8 bend
- In-line figure 8
- Double loop figure 8
- Tensionless hitch
- Munter hitch
- Alpine butterfly
- Bowline, including interlocking long tail bowlines
- Truckers hitch
- Radium release hitch

Appendix C: KCTRT Rope Rescue Scope of Operations

TRT members qualified at the Rope Rescue Operations level shall be trained in and may conduct the following operations:

- Size up a rope rescue incident
- Secure knots, bends, and hitches
- Construct single-point anchor systems
- Construct multi-point shared anchor systems
- Complete system safety checks for operations conducted at the Operations level
- Construct and operate belay systems
- Construct, descend, and ascend a fixed rope system
- Escape from a jammed or malfunctioning rope ascent device
- Construct a lowering system using TRT approved devices
- Operate or direct a lowering operation in a high-angle environment
- Construct and operate or direct a simple rope mechanical advantage system
  - 2:1, 3:1, 4:1, 5:1
- Construct and operate or direct a compound rope mechanical advantage system
  - 6:1, 9:1
- Construct and operate or direct a two-rope “mirrored” system for lower and/or raise
- Complete a loaded “change-over” from raiser to lower and/or lower to raise
- Package and transfer victims in both the low- and high-angle environments
- Direct a litter-lowering and/or litter-raising operation in a low-angle environment
- Operate as a litter tender in a low-angle environment

TRT members qualified at the Rope Rescue Technician level shall be trained in and may conduct the following operations:

- All Operations level activities
- Stranded victim “pick-off rescues”, either top supported or rescuer operated
- Operate as a litter tender in a high-angle environment
- Construct and operate or direct a horizontal highline or two-rope offset operation, resulting in the horizontal movement of a suspended load
- Lead climb