

Protocols

PURPOSE:

To establish a procedure for Tech Rescue personnel responding to technician level rescue incidents, ensuring safe and efficient operations using proper systems, command and control, and patient movement techniques.

PROCEDURE:

First-in Apparatus:

- First in E/M/L shall go to the addressed tone, secure RP, and establish scene control.
- If a confirmed tech rescue incident, deliver the Tech Rescue IRR and request the following additional resources as applicable:
 - Rescue61
 - Battalion Chief
 - Additional technical rescue-qualified personnel
- Don minimum PPE: helmet, eye protection, gloves, boots, harness.
- Establish an exclusion zone within 10 feet of the edge unless fall protection is in place.
- Establish a communication plan using voice, department radio, team radio, and/or whistle.
- Interface with LE or other responding agencies as needed.

Communication

- Tools
 - Voice, Dept Radio, Team Radio, Whistle
- Rope Specific commands-
 - "All quite"
 - "Edge is in control"
 - Rope commands
 - "Rescuer on/at edge" – Operations beginning
 - "Lower"
 - "Raise"
 - "Stop" – "Why Stop?"
 - "Lock off" – Set all for safety
 - "On Belay?" – Is belay ready
 - "Belay on" – Belay is ready
 - "On Main?" – Is Main ready?

- “Main on” – Ready to work

THE FOLLOWING NUMBERED TASKS ARE MEANT TO BE FOLLOWED IN ORDER, IF THE FIRST ONE WILL NOT WORK, THEN MOVE TO THE NEXT. PRINCIPLE IS TO KEEP IT SIMPLE, THEN WORK UP IN COMPLEXITY ONLY AS NECESSARY.

Tasks - Rope

- Communication
 1. Voice
 2. Dept Radio
 3. Team Radio
 4. Whistle (1-Stop, 2-Up, 3-Down, 4-Off rope)
 5. Rope pulls/tugs -O.A.T.H
 - O-Okay 1-tug
 - A-Advance 2-tugs
 - T-Take 3-tugs
 - H-Help 4-tugs
- Rope Specific commands-
 - "All quite"
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 - "Rescuer on/at edge" – Operations beginning
 - "Lower"
 - "Raise"
 - "Stop" – "Why Stop?"
 - "Lock off" – Set all for safety
 - "On Belay?" – Is belay ready
 - "Belay on" – Belay is ready
 - "On Main?" – Is Main ready?
 - "Main on" – Ready to work
- Belay system
 1. TTRS (DRR pg 43)
 2. ASAP (DRR 39-40)
 3. Tandem Prusik Belay setup (DRR pg 37-38)
- Mechanical advantage
 1. 3:1, Clutch and Capto
 2. 4:1 CSR2 – Con Space and Aerial ops
- Lowering system
 1. TTRS, Clutch - (DRR pg 43)

2. Clutch with asap belay on second line (DRR pg 42/40)
 3. Break bar rack with tandem prusik belay (DRR pg 41)
 4. Figure 8 plate with tandem prusik belay (consider rope around carabiner vs around yoke)
- Raising system
 1. TTRS, 3:1, Clutch and Capto (DRR pg 45)
 2. Compound system
 3. Lok head winch when available
 - Knot passing
 1. Jumper with AZTEK
 - Anchors and Redundancy (DRR pg 18-26)
 - Single point exception (DJ Walker)
 - Trusted manufacturer/ISO 9001, 3rd party testing
 - No moving parts/No human intervention/failure
 - Impossible to screw up
 - Could it fail? What would happen if it did?
 - Litter
 - Two line, interwoven long tail bowline (DRR pg 59)
 - Tied to Ring, one tail to pt, one tail for rescuer.
 - Rescuer tied to end, prusik attached for no extension
 - Grillion or Aztex can be used for work positioning.
 - Edge negotiation
 1. Structural High directional (DRR pg 28)
 2. AHD with vortex, tripod easel A configuration, guyed back. (DRR pg 30)
 3. Low directional (roller), red straps attached below the midpoint of litter. (DRR pg 28 and pg 62)
 - Artificial High Directional
 1. Structural high directional (DRR pg 28)
 2. Vortex in tripod configuration
 3. Vortex in easel A configuration, guyed back. (DRR pg 30)
 4. Vortex in offset bipod (ARS pg 70, DRR pg 32)
 5. Vortex in standard bipod (ARS pg 69),
 6. Monopod (vortex or paratech) (ARS pg 70,
 - Ascending rope, structures (natural or man-made)
 1. Find a different way around
 2. Haul team, TTRS or main and belay
 3. 2x ascenders with ASAP on separate line
 4. Purcells, with ASAP on separate line
 5. Lead climb with dynamic rope

- Consider fall distance (obstructions) and Fall factor.
- Horizontal movement with Rope
 1. Skate block– (DRR pg 79, ARS pg 86)
 2. Guiding Line – (DRR pg 80)
 3. Two rope offset – (DRR pg 82)
 4. Twin rope Highline – (DRR pg 83-86)
 - Last resort when absolutely necessary, consider loads on track line, potential failure and loads on anchors.
 - Consider Rule of 18's for ½", Rule of 12's for 11mm.
 - Norwegian reeve with secondary connection, when reeve is needed.

Tasks – SCT

- Building evaluation, collapse zone (SOG 1.2-1.15)
- Visual and verbal search
- Victim location and Building Markings (SOG 1.23-1.27)
- Moving victim from elevated or subterranean position.
 - Carry
 - Ladder slide
 - Portland Pick
 - Rope System
- Shoring
 - **-Shoring operations follow US Army Corps of Engineers SOG as doctrine**
- Heavy lift – Progression
 - Go around it
 - Go over it
 - Go under it
 - Go through it
 - Move it
 - Lift it

Tasks – Confined Space

- Recognition of Confined Space
 - Definition

- is large enough and so configured that an employee can bodily enter and perform assigned work
 - has limited or restricted means for entry or exit,
 - is not designed for continuous employee occupancy
 - Converging walls or floor
- Hazards and Lock-out/Tag-out
- Entry team PPE Ensemble
 - Helmet
 - 2 light sources + backup source (chem stick)
 - Face piece
 - Fire resistive clothing, long sleeve
 - Communications
 - Harness
 - Boots
 - Leather Gloves
 - SABA system, or SCBA
- Air system
 1. SCBA if space allows, and victim is visible
 2. SABA, with escape bottle
 - Air cart, and box air system as back up
 - Note: 300' max from air source to rescuer.
- Comm System
 1. Voice or radio if line of sight into space and victim is visible
 2. ConSpace hardline comm system.
 3. Back up-
 - Whistle (1-Stop, 2-Up, 3-Down, 4-Off rope)
 - Rope pulls/tugs -O.A.T.H
 - O-Okay 1-tug
 - A-Advance 2-tugs
 - T-Take 3-tugs
 - H-Help 4-tugs
- Ventilation
 - Call for Hazmat team to assist with air monitoring
 - Natural ventilation if effective until more techs arrive
 - Ventilation hoses and small fan

- Ventilation hoses with large ram fan
- Raising and Lowering systems
 1. Vortex in standard tripod with 4:1, CSR2, belay line with ASAP
 2. Vortex in standard tripod with Lok-Head when available
 3. Monopod off of Rescue, with 3:1, haul system in line with rig, belay with ASAP.
 4. Vortex with 3:1, Low COD to haul system
 5. 4:1 off of Aerial, belay with ASAP.

Tasks – Trench

- **Trench operations follow the MUSAR manual as doctrine.**
 - Trench vs Excavation
 - Resources – Utilities
 - Ventilation
 - Dewatering
 - Egress ladders
 - Rescuer PPE – Minimum above, plus Harness required. Retrieval line may be removed if it impedes progress
 - Straight 8' or less trench
 - "L" shaped trench
 - "T" Trench
 - Stabilizing and lifting a load
 - Coordinate using heavy equipment
- Interview questions

Tasks – Machinery Rescue

- Elevator plan (Coming from team)
 - Rope systems for blind shaft-
 1. Door tex with AZ vortex
 2. Using floor above for anchors
 - Haul system
 - Harken Lok head (when available)
 - 4:1 CSR2
 - TTRS
- Moving victim from elevation
 1. Carry
 2. Ladder slide
 3. Portland Pick
 4. Rope System

- Artificial High Directional as necessary
 1. Structural high directional (DRR pg 28)
 2. Vortex in tripod configuration
 3. Vortex in easel A configuration, guyed back. (DRR pg 30)
 4. Vortex in offset bipod (ARS pg 70, DRR pg 32)
 5. Vortex in standard bipod (ARS pg 69),
 6. Monopod (vortex or paratech) (ARS pg 70),
 7. Aerial as available/appropriate

Tasks - Surface water-

- PPE – PFD is required to enter water
 - Dry Suit or Wet suit suggested, Dry suit required for contaminated water.
 - Tech helmet as appropriate, no fire helmets
 - Required for boat operations
 - Consider hypoxic victim using it as leverage
 - Whistle
 - Personal throw bag
- Interview questions - PLS
- Search patterns-
 - Shore based, boat based, water based
- Rescue Progression-
 - Pt chooses rescue progression for technician
 - Ops/Awareness - training level dictates progression
 - Reach, Throw, Row, Go, Helo

Tasks - Tower-

- Size-up/Hazards
 - Identify and secure fall zone at base of tower
 - Tower specific hazards
 - RF or Energy (ARS pg 83-84)
- PPE – Rope PPE plus-
 - MGO Lanyards
 - Work Positioning

- Cable grab specific to tower (on-site)
 - RF meter (Hazmat or onsite)
 - Haul line
- Rope systems specific to tower
 - Skate block– (DRR pg 79, ARS pg 86)
 - Guiding Line – (DRR pg 80)