Introduction to Semitechnical Evacuation

Blue Ridge Mountain Rescue Group
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Few classes we teach would be possible without the cumulative efforts of dedicated SAR instructors over many years. This class in particular had undergone tremendous change as we have attempted to teach this subject most effectively. Special appreciation is due to Suzanne Esterson, Emily Minor, Justin Reich, Mit Robertson, Lauren Schiff, Brian Ulmer, Jason Dalton, Jon Peters, and Kevin Coyne for their efforts on this class during years past.

At the end of this lesson you will be able to identify:

- When and why we use a Semitechnical evacuation
- What roles individuals perform during a Semitechnical evacuation
- Primary concerns of a litter captain during an evacuation
- Primary concerns of a delayed during a Semitechnical evacuation

Review Questions?
1. What are the OBJECTIVES of any evacuation?

2. When do we use Semitechnical rescue?

3. List the members of an Evac-Team.
4. Why do rope handlers rotate positions?

5. What are the acronyms used to describe the 2 rope handler rotations?

6. List the 4 knots used in Semi-Tech

7. List some special safety considerations for the belayer
Semi-Tech, DOWNHILL

DOWNHILL ROPE HANDLER

Rescue Specialist

Safety Officer

Litter Captain (on 'driver's side of the litter')

MEDIC

UP HILL ROPE HANDLER

BELAYER

BELAY SITE/TREE/ANCHOR
Semitechnical Rescue Positions

Rescue Specialist
Rescue Specialist is responsible for the overall coordination and execution of an evacuation. She coordinates plans with Base, helps choose a general route, oversees team composition, equipment, recourses etc. The Rescue Specialist consults and briefs the Litter Captain, Safety Officer, Medic, and any other appropriate personnel on the situation. The rescue specialist makes it possible for the Safety Officer, Medic, and Litter Captain to do their job without incidents.

Safety Officer
The Safety Officer oversees the safety of everyone involved in the evacuation. He must constantly review all decisions with specific regard to how each decision affects the safety of the team, patient, and personnel. This job includes ensuring ample rest, hydration, and rotation of team members. The safety officer might advocate for any number of specific actions throughout the course of an evacuation, but must be careful not to micro manage any one particular area, particularly if this might lead to neglect in other areas. The Safety Officer communicates with the Rescue Specialist, Medic, and Litter Captain to ensure a smoothly run evacuation.

Medic
The Medic holds the highest functional medical certifications on an evacuation. Her primary responsibility is the care and well being of the patient being transported. The Medic must function at all times within her current medical training level and ASRC medical protocols. The Medic collaborates with the Rescue Specialist, Safety Officer, and Litter Captain to ensure that the well being of the patient is never compromised.

Litter Captain
A Litter Captain functions as the Field Team Leader for the Litter Team on a task. As such, he must keep the team's safety, comfort, and well being in the forefront of his mind. A litter Captain is responsible for communicating expectations to Litter Handlers, as well as to be the team's contact person for any concerns a Handler may have. He is constantly coordinating with the Medic, Safety Officer, Rescue Specialist and Rope Handlers. The Litter Captain is the only person on the litter to communicate regularly with other members of the evacuation team.

Litter Handlers
Litter Handlers participate as perhaps the most crucial component of a litter evacuation. They constitute the Litter Team and are concerned primarily with the safety of them selves and their teammates. They communicate directly with the Litter Captain. Six litter handlers (including the Captain) are needed on an evacuation, but adjustments may be made.

Rope Handlers
A team of 3 Rope Handlers will rotate through various rope positions, transferring responsibilities with each consecutive pitch. Rotation is important for efficient movement up or down a hill. Efficient rotation also ensures rest and variation of tasks for handlers whose work is exacting and difficult. The specific roles of each rope handler position are detailed below. Each rope handler must be able to perform all 6 roles with precision.
Rope Handler Positions: Roles and Responsibilities

There are two specific rotations for all rope handlers.

Uphill pitch→ **Downhill, Uphill, Belayer.** The acronym DUB as in "its DumB to go Uphill" may help.

Downhill pitch→ **Belayer, Uphill, Downhill.** The acronym BUD as in "If you go downhill you deserve a BUD."

**Belayer, going downhill**

*Before the Pitch Starts:*

The belayer should have a new system set up as soon as possible to expedite movement of the litter. With practice, this can be done within thirty seconds. (assuming a short walk to the next belay point.)

*During the Pitch:*

The belayer is continually responsible for the safety of the litter team. Whenever the team is on belay, the belayer should be able to stop a fall. If unable at any time, the belayer should call STOP, go off belay, and remedy the situation—communicating with the litter captain when necessary.

Also, the belayer should keep track of the amount of rope remaining for the pitch. When 20 feet remain, the downhill rope handler should be notified so he can select a new belay point. The litter team should be locked off when 10 feet of rope remain.

*After the pitch:*

Remember the downhill rotation: **BUD goes down.** The belayer becomes the Uphill Rope Handler.

**Uphill Rope Handler, going downhill**

*Before the Pitch Starts:*

Initially, the URH checks the litter's tie-in to the belay system. This involves making sure the figure eight is still secure and backed up and that the 'biners are opposite, opposed, and locked.

*During the Pitch:*

The URH takes care of the rope, padding it where appropriate and watching for snags. He also relays commands between the litter team and the belayer.

*After the pitch:*

Remember the downhill rotation: **BUD goes down.** The URH becomes the DRH.
Uphill Rope Handler, going uphill

Before the Pitch Starts:
The uphill rope handler should get any uphill slack out of the belayer's way.

During the Pitch:
The uphill rope handler has two purposes: 1) to keep slack out of the belayer's way, and 2) choose the path for next pitch. This is accomplished by continually keeping slight tension in the rope while moving uphill. In choosing her path, the uphill rope handler must consider that she can negotiate some terrain & passages that a whole litter team cannot (e.g. don't go through a two-foot wide space between two trees). Going uphill (just as down) the path should be parallel to the slope to avoid pendulumming.
At all points during the pitch, the uphill rope handler should have a belay site picked for immediate use if needed. The belayer's call of TWO-OH to the uphill rope handler is a signal that the pitch will soon be over and a new belay point will be needed.

After the pitch:
Remember the uphill rotation: Going up is D-U-B (dumb). The uphill rope handler becomes the belayer. Once BELAY OFF is called, the new belayer should be able to set up her belay point within thirty seconds.

Belayer, going uphill

Before the Pitch Starts:
The belayer should have a new system set up as soon as possible to expedite movement of the litter. With practice, this can be done within thirty seconds.

During the Pitch:
The belayer is continually responsible for the safety of the litter team. Whenever the team is on belay, the belayer should be able to arrest a fall. If unable at any time, the belayer should call STOP, go off belay, and remedy the situation. This is especially important when the litter team advances faster than the belayer can take up the rope. Don't be bashful about calling UP SLOWER or even stopping them momentarily. If the litter team falls on a slack rope, they could be injured, you could bite tree or both. Also, the belayer should keep track of the amount of rope remaining for the pitch.
When 20 feet remain, the uphill rope handler should be notified so he can select a new belay point. This call is made to expedite setup of the next belay point, and as such is directed at the uphill rope handler. Do not call TWO-OH to the litter team. They can see this themselves.

After the pitch:
The belayer steps out of the belay system and proceeds to their next position as the Downhill Rope Handler.
Downhill Rope Handler, going downhill

Before the Pitch Starts:
The downhill rope handler should be surveying the terrain below to pick a route that is as straight and obstacle free as possible. Keep in mind the litter & team must fit between any trees, rocks, etc.

During the Pitch:
The downhill rope handler continues guiding the progress of the litter. He should warn the team of upcoming obstacles and hazards which cannot be removed. The DRH should continually have a chosen point for the next belay. Once the belayer calls TWO-OH, the litter should stop and the belay point changed, if practical. Under no circumstance should the litter continue downhill after the ONE-OH call.

After the pitch:
Remember the downhill rotation: BUD goes down. The downhill rope handler becomes the belayer. Once BELAY OFF is called, the next belay should be established ASAP. With practice, this can easily be done in thirty seconds.

Downhill Rope Handler, going uphill

Before the Pitch Starts:
The downhill rope handler has few specific pre-pitch tasks. Just be helpful.

During the Pitch:
Belaying uphill is quite difficult; the downhill rope handler makes the job easier by helping move rope around the tree. The key consideration is to prevent your fingers from EVER coming between the rope and the tree. If the team fell while your fingers were in that position, you could lose them.

After the pitch:
Remember the uphill rotation: Going up is D-U-B (dumb). The downhill rope handler becomes the uphill rope handler. Once BELAY OFF is called, the new uphill rope handler should proceed up slope to the next belay point.
ROPE HANDLER KNOTTIONS

PHILL = Downhill, Uphill, Belayer

DOWNHILL

UP HILL

BELAYER

DOWN HILL = Belayer, Uphill, Downhill
KNOTS Used in Semitech

On the Litter

GERTH HITCH: Used to attach SAR personnel to the litter

Patient Packaging

TAUGHT LINE HITCH: Used to secure patient into a litter

Rope Handler

FIGURE-8 ON A BITE: Used to attach litter to a rope and belay

Belayer

TREE WRAP: Used as a friction device to maintain safety

How to Setup a Tree Wrap:

- Stand with rope between you and the tree, facing away from the tree. Your back is to the rope AND to the tree.
- Stretch out both arms and grab the rope in each hand, running it behind your back.
- The uphill hand will ALWAYS become your brake hand.
- Move around the uphill side of the tree. Your brake hand is on the far, uphill side of the tree. (In a correct stance, your brake hand is NOT the arm closest to the tree.)
- The rope will form an open loop around your back.
- Establish secure footing with your braking foot forward.
- How to Break: Push your break hand down between your legs, using your opposite foot to brace against the force on the rope.
- ALWAYS step completely out of the belay system and unwrap it from the anchor before calling, "OFF BELAY."
### Dictionary of Semi-Tech Verbal Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Belay-</td>
<td>Are you ready to belay me, am I ON BELAY?</td>
</tr>
<tr>
<td>Belay On-</td>
<td>Yes, I am ready to belay you, your BELAY is ON.</td>
</tr>
<tr>
<td>Off Belay-</td>
<td>I (my team) no longer requires a belay.</td>
</tr>
<tr>
<td>Belay Off-</td>
<td>I am no longer belaying you, and have stepped out of the belay system.</td>
</tr>
<tr>
<td>Slack-</td>
<td>The rope is too tight, give me three feet of slack</td>
</tr>
<tr>
<td>Tension (Up Rope)</td>
<td>Remove slack from the rope</td>
</tr>
<tr>
<td>Preload-</td>
<td>The litter team wants to test the system. The belay person should prevent the rope from moving.</td>
</tr>
<tr>
<td>Down Slow-</td>
<td>Allow the litter to descend slowly.</td>
</tr>
<tr>
<td>Down Fast-</td>
<td>Allow the litter to descend quickly.</td>
</tr>
<tr>
<td>Up Slow-</td>
<td>Allow the litter to ascend slowly.</td>
</tr>
<tr>
<td>Up Fast-</td>
<td>Allow the litter to ascend quickly.</td>
</tr>
<tr>
<td>Stop -</td>
<td>Command from any person to halt the system. The Belayer should lock off the system.</td>
</tr>
<tr>
<td>Two-Oh-</td>
<td>Roughly 20 feet of rope remains, the litter team must find a safe place to stop and a new belay point must be located.</td>
</tr>
<tr>
<td>One-Oh-</td>
<td>Roughly 10 feet of rope remains, the litter team must find a safe place to stop and a new belay point must be located.</td>
</tr>
<tr>
<td>Rock!-</td>
<td>Something is flying through the air, everyone should brace themselves, and the Belayer should lock off the system.</td>
</tr>
<tr>
<td>Clear-</td>
<td>The danger has passed, continue as usual.</td>
</tr>
<tr>
<td>Falling!-</td>
<td>Someone is falling, the Belayer should lock off the system immediately.</td>
</tr>
<tr>
<td>Vomit!-</td>
<td>The patient is going to VOMIT! Stop the litter, lock off the belay, turn the patient on their side (towards the medic) and remove the face shield.</td>
</tr>
<tr>
<td>Ready to Lift-</td>
<td>Litter Captain asks the Litter Team, “are you READY TO LIFT?”</td>
</tr>
<tr>
<td>Ready-</td>
<td>Affirmative</td>
</tr>
<tr>
<td>Lift-</td>
<td>Command to Litter Team from Captain to lift the litter in unison.</td>
</tr>
<tr>
<td>Clear-</td>
<td>Clear area, where litter will be lowered, of debris.</td>
</tr>
<tr>
<td>Ready to Lower-</td>
<td>Litter Captain asks the Litter Team, “are you READY TO LOWER?”</td>
</tr>
<tr>
<td>Lower-</td>
<td>Command to Litter Team from Captain to lower the litter in unison.</td>
</tr>
<tr>
<td>Ready to Ladder-</td>
<td>Litter Captain asks the Litter Team, “are you READY TO LADDER?”</td>
</tr>
<tr>
<td>Ladder-</td>
<td>Command to Litter Team from Captain to ladder the litter in unison.</td>
</tr>
<tr>
<td>Ready to Toenail-</td>
<td>Litter Captain asks the Litter Team, “are you READY TO TOENAIL?”</td>
</tr>
<tr>
<td>Toenail-</td>
<td>Command to Litter Team from Captain to toenail the litter in unison.</td>
</tr>
</tbody>
</table>
LITTER SKILLS

Litter Captain may use "Up Fast", "Down Fast" to increase rate of travel and may use "Slack", "Standby", "Tension", "Up Rope" or other commands as necessary.

Litter teams may be asked by the Litter Captain to "Ladder" or "Toenail" the litter over obstacles. These are commands that should be echoed to the Belayer one time only to inform them of activities out of site. These commands are repeated to the litter team every time but only to the belayer before the initial ladder or toenail.

Any person involved in the rescue may use "Stop", "Falling", "Rock" or "Vomit" when appropriate.

The belay line must be under tension to function properly. The litter team must avoid ascending faster than the belayer is able to take up rope.

All litter movement should always be preceded by a call for a belay. There should never be litter movement if a hazard is present without a belay.

Walk out of step to minimize rocking motion and keep litter level unless medic instructs otherwise.

Litter stance: Kneel on the knee closet to the subject's head, with your other foot forward and nearly touching the stokes, both hands on the litter rail with palms down. Lift by pulling away from your partner and slowly standing up.

Pairs of Litter Handlers across the stokes should be of approximately the same height; the litter Captain may want to arrange the team so that the tallest members are on the downhill side.

Always wear a seat harness, gloves, and helmet; carry your field pack with you and clip into the belay system. Safety is your first priority.
Ideal Downhill Semi-Tech Scenario in 25 Steps

1. Rescue Specialist coordinates plans for an evacuation with BASE. They choose a general route, oversee team composition, equipment, recourses etc. Rescue Specialist consults and briefs Litter Captain, Safety Officer, Medic, and any other appropriate personnel on the situation.

2. Litter team and Medic stabilize and package patient for descent. Initial Belay Person and Rope handlers rig the stokes (Y-yolk, 'bieners opposite and opposed), locate descent corridor, and 1st belay point.

3. Safety Officer reviews scene, and may at this time make recommendations to the Litter Captain, Medic, Rope Handlers, or Rescue Specialist.

4. When the litter team is ready to begin descent and the Litter Captain has properly briefed her team, the Litter Captain commands "On Belay." (Asking the question: am I ON BELAY?)

5. Belayer replies "Belay On" when on a proper belay (Answering the question: yes, your BELAY is ON)

6. Litter Captain asks Litter Team "Ready to Lift"

7. Litter Team replies "Ready"

8. Litter Captain commands "Lift." Litter team lifts the litter in unison. At this time the Litter Captain again turns to the Belay Person and commands "Preload"

9. Belayer echoes consent with "Preload"

10. Litter Team preloads the system. If the belay system is adequate the Litter Captain thanks the Belayer, "Thank You." If the System needs to be adjusted for any reason the "Stop" command will be given and the preload sequence will begin again.

11. Litter Captain commands "Down Slow"

12. Belay echoes "Down Slow"

13. Litter Team begins descent
14. Downhill Rope Handler Clears a decent corridor in front of the Litter. Choosing the path that the team will take, clearing obstacles, and looking for the next belay site.

15. Uphill Rope Handler stays between the Belayer and the Litter team in order to relay commands between the two, and provide assistance as necessary.

16. When there are approximately 20 feet of rope left then the Belayer will call out "TWO- OH" to indicate its time to establish another belay site. The command "ONE-OH" can be given when only ten feet of rope remain.

17. As soon as conditions Allow, the Litter Captain commands "Stop"

18. The Belayer echoes "Stop"

19. The Litter is lowered when the Litter Captain addresses her team with the commands "Clear" and "Ready to lower."

20. The Litter Team will respond "Ready" and the Litter will be set down after the Captain gives the "Lower" command. Allowing for the establishment of another belay site. The medic will take this time to tend to the patient. The Litter Captain informs the Belayer "Off Belay." (statement: I am now OFF BELAY)

*The following three steps occur simultaneously:

21. The Belay person can now step out of the rope system, unwrap the rope from the anchor and respond "Belay Off." (statement: the BELAY is OFF the tree)

22. The Downhill Rope Handler establishes a new belay site (becoming the Belayer for the next pitch) and takes up any slack in the rope system.

23. The Uphill Rope Handler proceeds downhill, past the new belay point becoming the new Downhill Rope Handler.

24. The old Belay person proceeds Downhill to betwee the new belay point and the Litter to serve as the Downhill Rope Handler

25. The Belayer will let the Litter captain know that the system is prepared by calling out "Belay On" (statement: your BELAY is once again ON)