ICAR 2015

A discussion of the benefits, issues, and challenges faced by our teams in adopting a two-tensioned rope rescue system.

This is not a "how to" class for two-tensioned systems.

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Reasons for Change

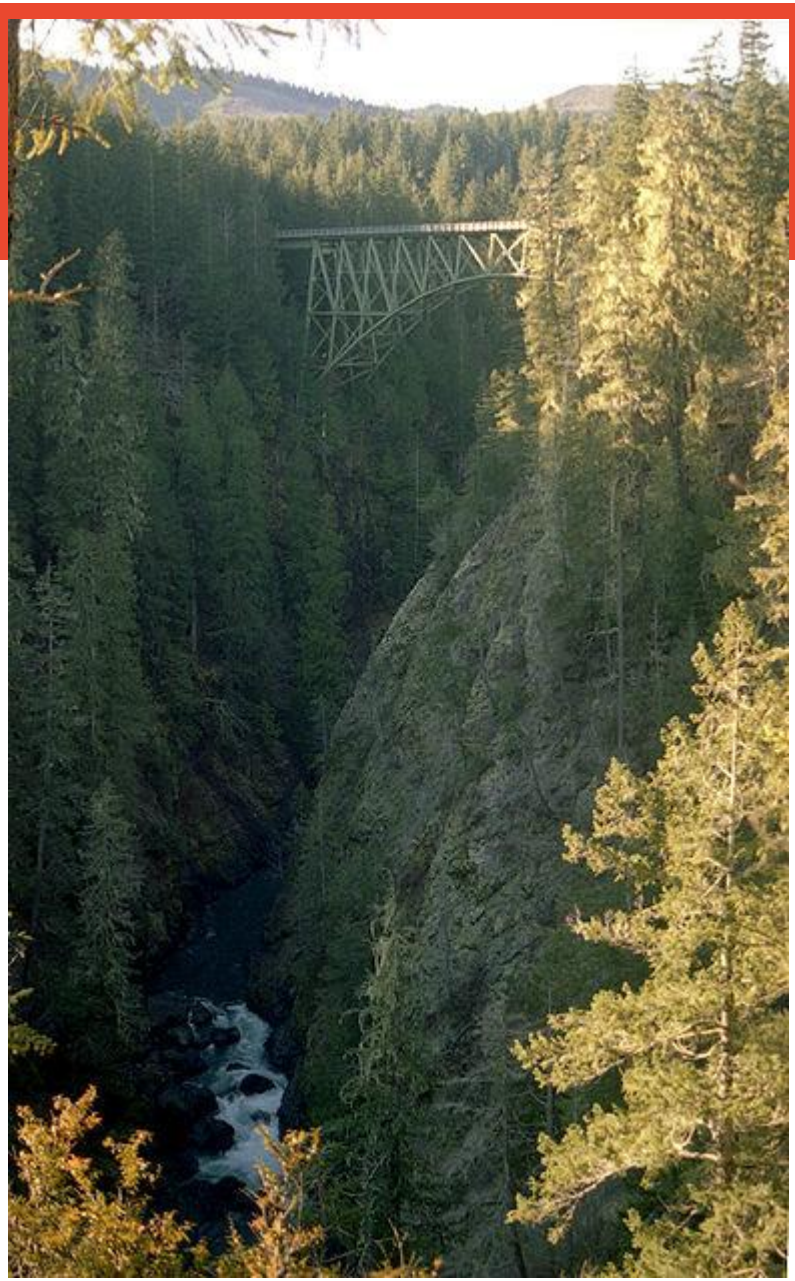
Why did PMR & OMR switch to two-tension?

Both PMR & OMR were operating two rope systems with one line taking full load and the other operating as a backup or "belay", hereafter referred to as a main/belay system.

Both teams were looking for ways they could reduce the potential fall distances should the main line fail, particularly on long lowers/raises.

Why Change to a Two Tensioned System?

Both teams recognized from testing that the magnitude of drops/ falls are substantially less with two-tensioned systems versus main/belay systems.



Mason County High Steel Bridge
420’ (128m) above river

Key Points to Consider

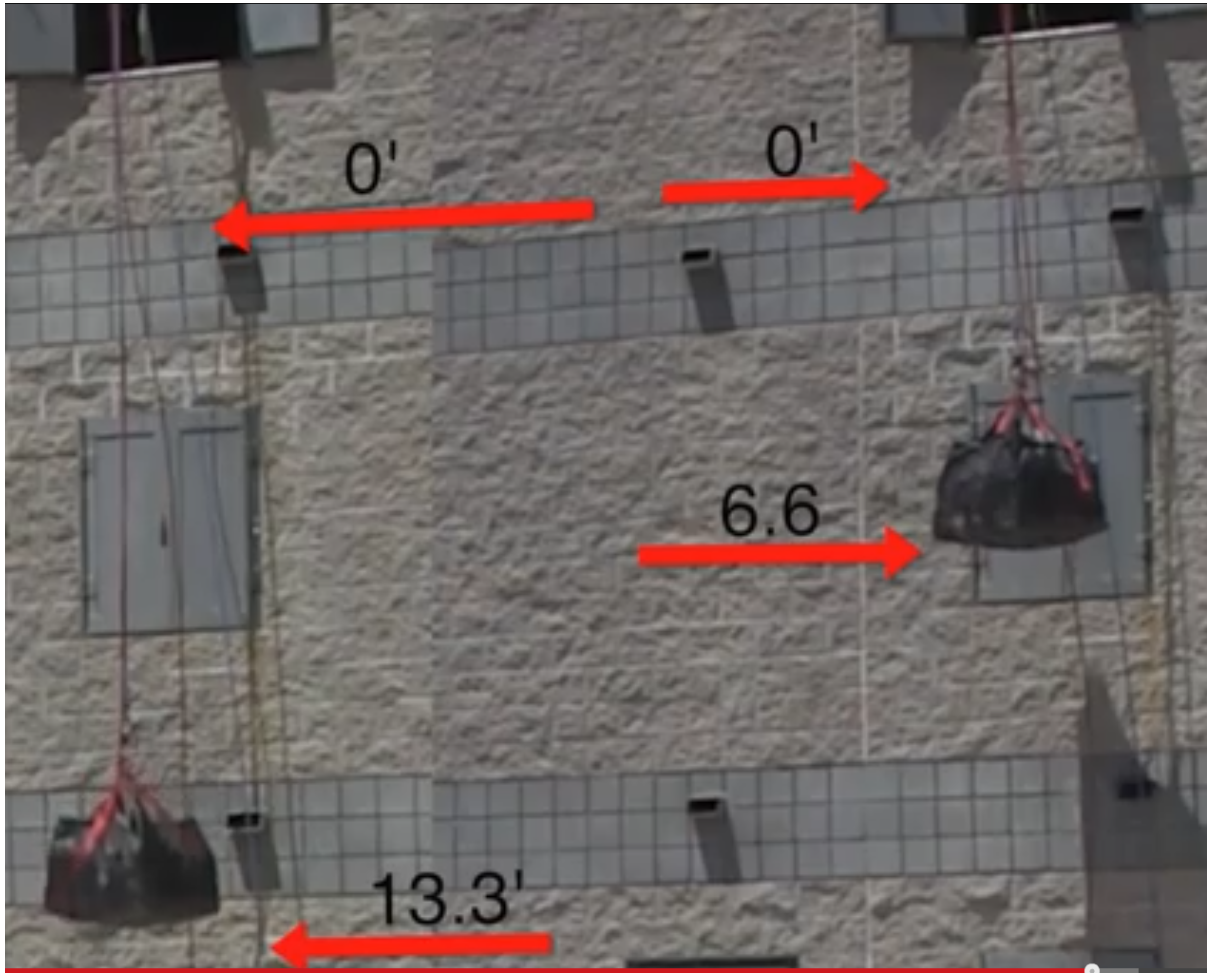
Questions teams could ask themselves before deciding to adopt a two-tensioned rope rescue system.

Divided into four categories:

I. Safety
II. Cultural
III. Training
IV. Costs

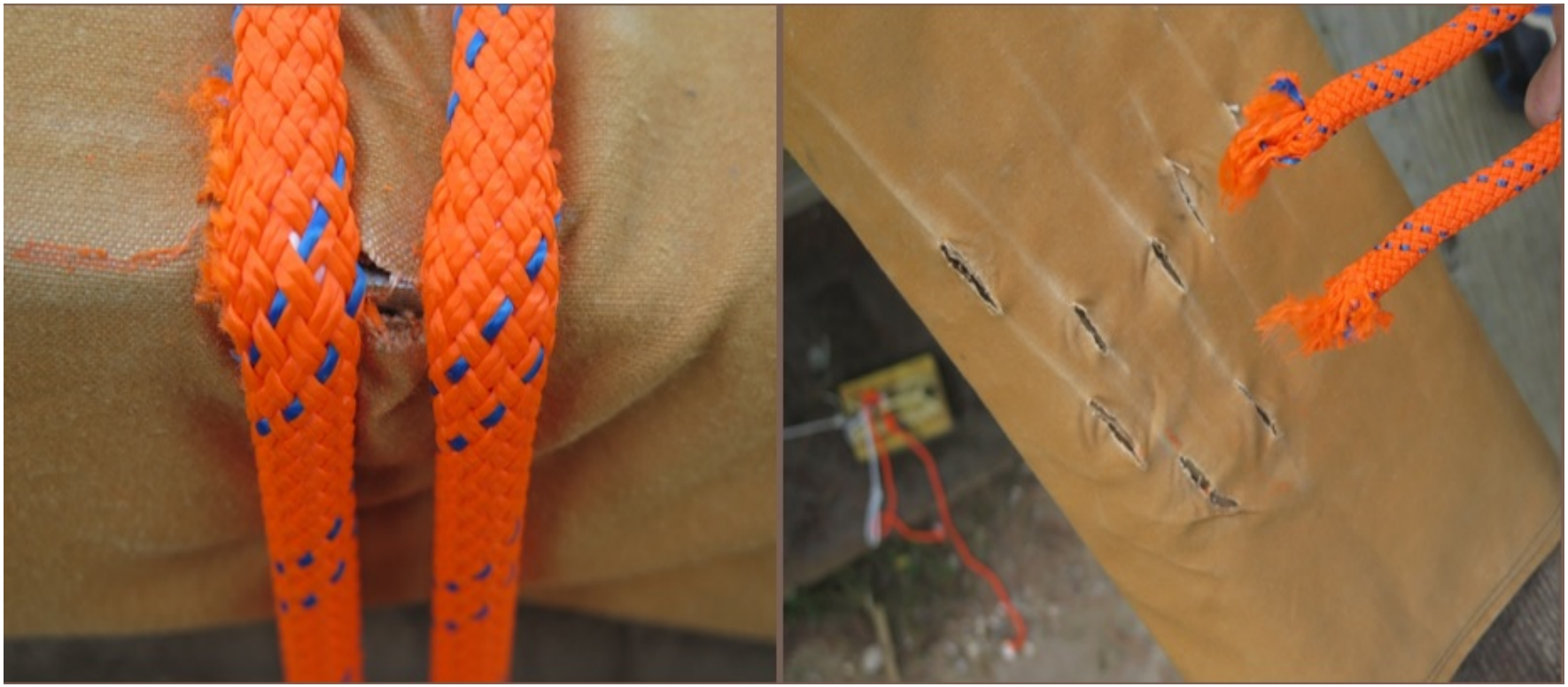
Safety

From Tom Pendley's video "How far will you fall" illustrating the difference in fall between main/belay (at left) vs two-tension rigs (at right).



Safety

Recent testing has dramatically demonstrated that two tensioned lines are less likely to be cut at the edge in a fall.



Comparative Sharp Edge Tests: Two-Tensioned Rope System on the left and main/ belay on the right. In all test series, Two-Tensioned Rope Systems fared better. From Kirk Mauthner's test videos.

Safety

The two-tension system simplified rigging.

Safety

Both lines can be used for hauling with mechanical advantage.

Safety

Would a two-tensioned rope system improve the safety of your team's rigging?

Consider:

- **Fall distance when one line fails**
- **Survivability of rope(s) after a fall over a sharp edge.**

Cultural Considerations

How does your team like change?

Being open to new concepts and flexible enough as a unit to have in place a process to adopt new techniques when it makes sense.

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- **Are raise lower transitions needed and if so are they effective and efficient?**
- **Are team members proficient in your current systems?**

Cultural Considerations

What is your team's process for incorporating change?

Who decides and how?

Cultural Considerations

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- **If so is there agreement among team members and leaders on what to change to?**

Training

The MOST critical component in adopting a two-tension system is not a change in equipment or technique, it is the human factor.

A change in mindset is required for your DCD operators.

Training

Each operator must now be of the mindset that he/she is the "backup" for the other operator. If there is an unexpected failure on one line the other operator must be in a position to instantly accept the full load. This is perhaps the most important human factor management tool that any team considering two-tensioned systems would be wise to consider and incorporate into their protocols.

Training

If you adopt two-tension, do you abandon your currently established rigging training?

Are there reasons to continue to train and practice your current rigging system (this may increase training time).

Training

Who will develop training material and protocols?

- Lesson plans
- Training manual chapters

Training

Consider what neighboring teams are doing and how often you work together on technical missions.

Training

Timing.

1. How will this fit into your existing training schedule?

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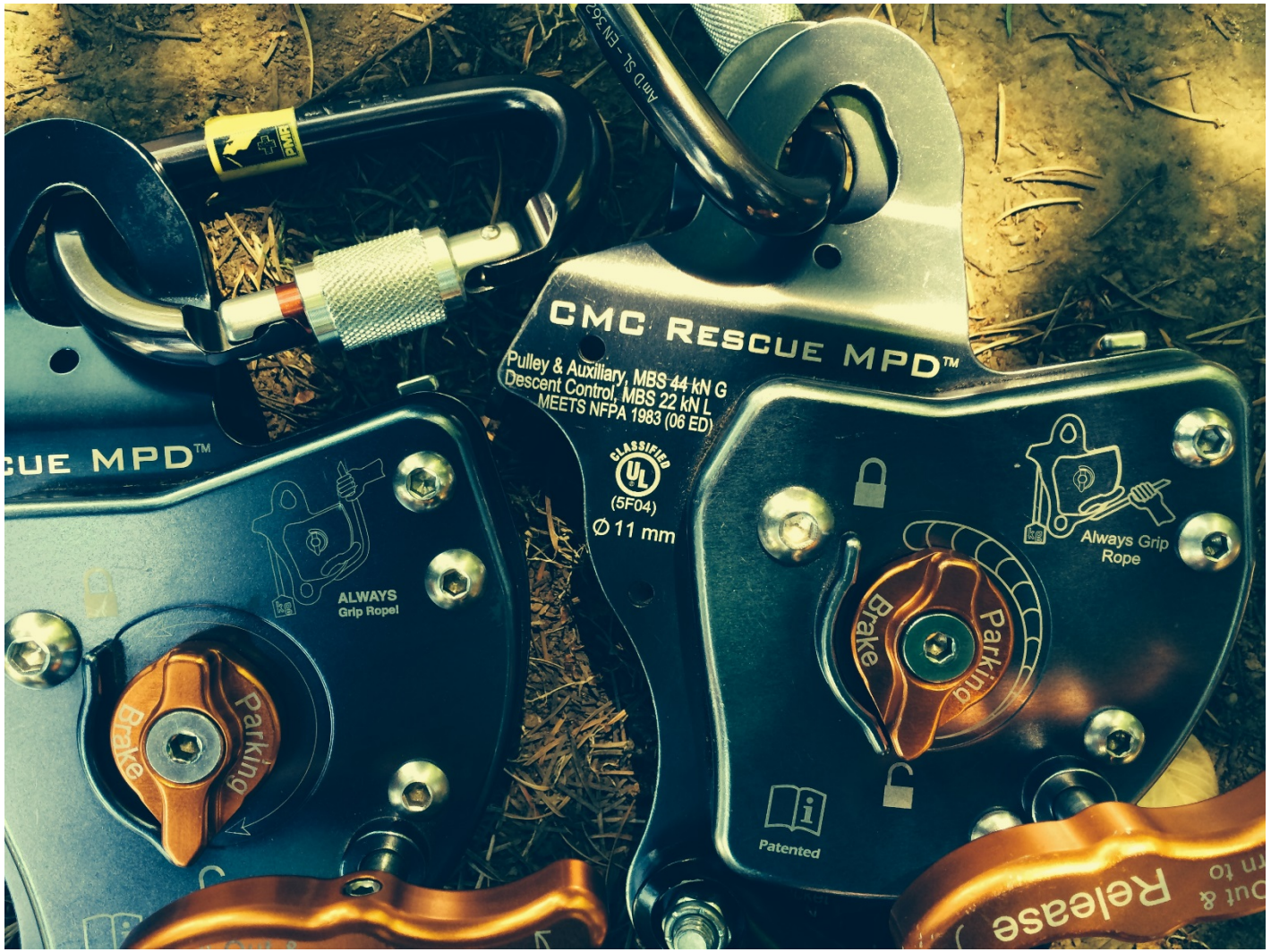
2. What won't you be training on while you are learning a new system? What can you drop from your standard training regime, if anything?

Training


CMC RESCUE MPD™
Pulley & Auxiliary, MBS 44 kN G
Descent Control, MBS 22 kN L
MEETS NFPA 1983 (06 ED)
CLASSIFIED
UL
(5F04)
Ø 11 mm
ALWAYS
Grip Rope!
Always Grip
Rope
Brake
Parking
Patented
Release

Cost

Hardware and Software

Two-tensioned does not by definition imply identical equipment on both lines, nor that unique devices must be employed. Nearly any DCD can be used. The key is dual-capability and insuring that each line has some form of auto-locking function.

Don't assume that you need to buy any new gear. Your existing kit may have all you need.

Cost

Hardware and Software

If needed, would any new gear purchased be compatible with your existing ropes and hardware and how will this impact your standard rigging kits?

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b. Or the challenge and fun of learning new systems and improving your team's performance may help to keep members engaged.

Questions