

### **John McKently, LeRoy Harbach, Michael Kuhlmeier, Bios:**

John McKently is the School Director for CMC Rescue School, specializing in Rope Rescue, Confined Space Rescue and other unique rescue disciplines. John McKently has been with the Los Angeles County Sheriff's, Montrose Search and Rescue Team since 1974, and has experienced over 2100 callouts during that time. The Team is also a member of the Mountain Rescue Association (MRA). John has taught SAR Management for California Governor's Office of Emergency Services OES since 1988. He served on the Board of Directors of the National Association for Search and Rescue (NASAR) and was the Treasurer of that Association for four years. Active in the development of Search and Rescue standards since its inception in 1989, John is a past Chairman of ASTM Committee F-32 on Search and Rescue. John is also certified instructor for US Mine Safety and Health Administration (MSHA) and California State Fire Training. John is a longtime supporter of ITRS.

#### **LeRoy Harbach**

LeRoy is a Sr. Instructor for the CMC Rescue School where he specializes in Rope Rescue and Confined Space Rescue (is this true). He is retired from the fire service where served as Firefighter, Battalion Chief, Training Officer and Member of Special Services Team for the Waukesha City and Caledonia Fire Departments. Leroy is also a member of the United States Air Force Reserve. Leroy has become the recognizable face of CMC and an authoritative voice in rescue training through numerous online product and rescue training videos featured on the CMC website. Leroy's main passions are rescue and his family. He travels throughout the world to provide rescue training to a wide variety of clients.

#### **Michael Kuhlmeier**

Michael is a Mechanical Engineer at CMC Rescue. He graduated from Washington State University with a degree in Bioengineering. During college he worked both as a Ski Patroller at Silver Mt. and as an outdoor guide. He enjoys getting outdoors, especially to ski, and designing random electro-mechanical devices.

#### **Abstract:**

The use of edge protection is a best practice for any rescue scenario where rope transitions over an edge. However, experience in both training and operations tell us that the rescue lines can be damaged despite the use of edge protection. One method of damage occurs though repeated loading and unloading of the line, such as when used as an anchor in a change of direction (COD) or when an individual is ascending a rope. As demonstrated in last year's presentation "Edge Testing of Various Surfaces in the Vertical Plane" this cyclic loading over edges can cause up to a 68% reduction in the breaking strength of the system.