

# Class Descriptions

41<sup>st</sup> LMS Seminar — April 17-19, 2018

## General Session Tuesday Morning 9:00 am

### The Alarming Workplace Safety Challenge Facing the Ski Industry

Ryan Lavoie • Risk Manager • Peak Resorts

*With 11 recent fatalities at ski areas across all departments, ski areas face an alarming workplace safety and culture problem. Simply put, ski areas are industrial workplaces, and we need to change expectations dramatically to improve conditions and reduce risks. Not only do we owe a moral responsibility to our employees and their families, it's also a growing dilemma financially for ski areas, from escalating worker comp premiums and costs, to escalating OSHA citations and fines. Whether it's lost arms, lift maintenance fatalities, or on-mountain deaths of our co-workers—our employees, managers, and owners must emphasize, and invest, in safety. The culture must change.*

## Tuesday 11:00 am Classes

### A-1 Electrical Safety - NFPA 70E 2015 3-Hour Class

Paul Gelinias • Burlington Safety Laboratory, Inc.

*Basic Three Hour Electrical Safety for General Industry – The objective of this three hour program is to develop a strong commitment to safety, especially electrical safety. This program is designed to highlight the need for electrical safety, and provide a general treatment of the nature of electricity; the risks, hazards and solutions for a safe work environment. The program explores the inter-dependence of consensus standard NFPA 70E and OSHA Subpart S rules. Graphic illustrations of the consequences resulting from actual electrical accidents are presented. A review of LOTO procedures, PPE and other safety equipment is included. The issue of "How do I know what I need?" and strategies for dealing with uncertainty of risk level are discussed. The basics of grounding, hand tool safety and how to select the proper voltmeter are included.*

*Suitable for all categories of employees, electricians, maintenance, operators, supervisors, and management.*

### A-2 Introduction to Basic Electricity

Mike Taylor • Keystone Resort

*This course will cover the basics of electricity and will expand upon various electrical components typically found on ski lifts.*

### A-3 Introduction to Wire Rope

Sam Geise • Geise Engineering

*Terminology, constructions, use;*

*How wire rope is made;*

*Basic inspection & Math (Broken Wires, etc.) MRT: ANSI B77 Requirements.*

### A-4 Let's Talk Lift Inspections

Mike Nellis • State of Vermont

*Each State will explain how they do inspections.*

*What inspectors look for?*

*How many on staff and what it takes to become an inspector?*

*How each state deals with New Lifts, Modifications, Write ups, etc.?*

*Bring Your Questions!*

### A-5 Work Carrier Safety:

#### It's Just Another Carrier and You're Just Along For The Ride

Brook Kasman • Stowe Mountain Resort

*You load them up and climb on, but have you done your homework?*

*How much can they carry, have you done the grip maintenance, communication protocols, lockout-tagout?*

*With several accidents this past year, OSHA will be looking at work carriers and their usage. This open discussion will start with these items and the new requirements of the ANSI B77.1-2017 Standard and what steps you need to review and update to meet the requirements.*

### A-6 Operational Impacts of B77.1-2017 on

#### Fixed and Detachable Chairlifts

Mary Davis • ASC B77 Evacuation Subcommittee

*What's New and what has changed in the Operational and Signs requirements with the approval of the B77.1-2017 Ropeway Standard in the Operations and Signs. This session will update attendees on changes that will affect all lifts, not just new installations, major modifications, or relocated lifts.*

### A-7 Maintenance Training Guideline

Michael Lane • National Ski Areas Association

*Update on the Maintenance Guideline that NSAA is working on to help areas with their training needs for their maintenance training program.*

### A-8 The Math of Making Snow:

#### What Every Snowmaker Needs to Know!

Ian Jarrett • HKD Snowmakers

*Given the many challenges brought on by climate change, competition and the overall demands of the skiing public, snowmaking is the most critical discipline for almost every resort in North America. As snowmakers, we must strive to understand our craft. The basic principles of snowmaking and their importance to the survival of the ski industry are what drove innovators such as Herman K. Dupre (HKD) to pursue greater levels of efficiency and performance. In this session we will address the essential metrics and principles that continue to be the basis of success (and failure) in snowmaking.*

## Tuesday 1:30 pm Classes

### B-2 Introduction to the Usage of the Digital Multi-Meter

Mike Taylor • Keystone Resort

*This course will cover the workings and usage of digital multi-meters.*

*Bring your meter.*

### B-3 SunKid Wonder Carpets

#### Maintenance, Operation, and Troubleshooting

Conor Rowan • Star Lifts, USA

*Panel with Dan Etman - Green Mountain Control Systems*

*The class will cover all things SunKid*

*Maintenance, Operation and Troubleshooting.*

### B-4 Concerned About Aging Lifts and Other Mechanical Equipment?

Neville Sachs, P.E. • Neville W. Sachs, P.E., PLLC

*Many of our ski lifts are over thirty years old and much of our other machinery is aging. This presentation reviews the common causes of mechanical deterioration, what we can do to prevent further degradation, and some steps we can take to improve their mechanical reliability.*

### B-5 Planetary Gearbox Concepts

Paul Ehlert • Doppelmayer USA, Inc.

*Panel with Donnie Martin, Walt Read*

*We will discuss the following:*

- Types of CAT planetary drives.
- How to identify, important differences for maintenance.
- Failure modes - What has happened to others; what have you experienced?
- Accessibility without removing the rope - Safety precautions!
- What to inspect and how.
- Other failure prevention measures.

### B-6 Accountability in Maintenance

Bob Ackland • Steep Management, LLC

*Understanding the value of accountability in our lift maintenance programs. It is the teaching opportunity to improve the performance of a lift maintenance department. This course is intended for all, but mainly supervisors and managers of maintenance departments.*

### B-7 Summer Operations – What You Need to Know

Richard Donahue • MountainGuard Insurance

Angela Hayden • MountainGuard Insurance

*Summer operations come with their own unique challenges and operational issues that are very much different than the Winter Season. This session will cover the unique challenges that areas are faced with and practical solutions to address summer activities.*

### B-8 Snowmakers Symposium

Dave Lacombe • Killington Resort

*This is an open discussion where snowmakers can learn, discuss, and swap information on all aspects of slope maintenance.*

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## General Session Wednesday Morning 8:30 am:

### Jiminy Roundtable - Little Shop

Mike Lane • National Ski Areas Association

*Sid Roslund, and others from insurance, authorities, and maintenance personnel. The year in review! What went "right and wrong," trends that have been noticed concerning Ropeways, and the people who maintain and operate them!*

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## Wednesday 10:30 am Classes

### C-1 DC - Electric Motors for the Mechanic

Karl Butz • Troy Industrial Solutions

*One of the critical parts of your ski area is the Electric Motor. This class will show the types in use today, A.C and D.C., the differences, typical installation techniques and the maintenance required. This class will be good for maintenance staff on Snowmaking plants as well as Lifts.*

### C-2 Troubleshooting Comm. Lines and Mechanical Deropement Switches

Mike Taylor • Keystone Resort

*This course utilizes a mock comm. line to demonstrate what type of faults can occur and how a digital multi-meter can be used to diagnose electrical problems. Prerequisite for this course is Introduction to Basic Electricity, if one is not familiar with electrical power flow.*

### C-3 Gear Box Fundamentals, Inspection & Repair Procedures

Nick Chieppo • Artec Machine Systems

*Gear Box Fundamentals & Applications, Modes of Failures and Preventative Maintenance Tips, Gearbox Inspection Techniques, Repair Procedures*

### C-4 Magic Carpet Conveyors

Audrey Archuleta • Magic Carpet Lifts

*Panel with Sam Geise  
Conveyor Design, Hazard Analysis, Maintenance, Safety, Operation, and Troubleshooting.*

### C-5 Adaptive Evacuation Workshop

Mary Davis • ASC B77 Evacuation Subcommittee

*Panel with Joe Hurley and Betsy Hurley  
Review of the "common adaptive equipment", interfacing it with resort evacuation equipment, and the ANSI/RESNA Standard. This session will include a Hands-on workshop working with typical adaptive ski equipment in an evacuation setting. An opportunity to explore adaptive evacuation procedures at various resorts.  
Note: Held at the Detachable outside of the JJ's Lodge*

### C-6 Funiculars - 3-Types ~ 3-Stories

Ross Stevens • Stevens Engineering

*A look at 3 very different types of funicular installations, what they look like, what they are used for and the machinery that makes there ropeways run. A show and tell class with lots of opportunity for questions and discussion that relates back to ski lifts.*

### C-7 What's My Tension?

Don't Have Line Calcs? We Can Help!

Sid Roslund • National Ski Areas Association

*We will look at how to calculate the tension on a haul rope at the location where you plan to install the rigging for a splice or project. Both hydraulic and counterweight systems will be reviewed and how to determine the initial tension in the rope, plus the additional vertical component/calculated rope weight and chairs for the location along the lift line.*

### C-8 Record Keeping for Lifts, Beyond Satisfying Our Lift Inspectors

Bob Ackland • Steep Management, LLC

*The intent is not to focus on the more notable reason for record keeping, legal, defenses etc., but rather the inherent value knowing where one is creates purpose and leads to better quality.*

## Wednesday 1:30 pm Classes

### D-1 AC Variable Frequency Drives (VFD's)

Tom Bates • New Hampshire Electric Motors

*Panel with Leighton Bates, President, N.H. Electric Motors  
Discussion and explanation on the construction and operation of VFD's. Poly phase (3Ø) motors are used in all aspects of ski area operations, lifts, and snowmaking. Tom will explain the application, installation parameters and theory of operation of VFD's. He will discuss the advantages of using a VFD and possible pitfalls.*

### D-2 Short - Circuit Current Rating (SCCR)

Christina Rosati • Eaton Bussmann Fuse

*The 2017 National Electrical Code specifically addresses the Short Circuit Current Rating of electrical equipment including the typical control(s) cabinet. Over current and short circuit fault protection is extremely important to your ski area.*

### D-3 Get a Grip on Your Slippage

Larry Wollum • All Ski Lifts

*The discussion will start with the requirements of the ANS B77.1 Standard for grips. The designs of several grip types will be looked at and how they accomplish the requirements. We will then look at the springs and spring washers that apply the force to accomplish the attachment of the grip to the cable.*

### D-4 Failure Analysis of Ski Area Mechanical Equipment - with Emphasis on Shafts and Fasteners 3-Hour Class

Neville Sachs, P.E. • Neville W. Sachs, P.E., PLLC

*The presentation starts by defining and showing examples of the physical, human and latent roots (causes) of failures. It then goes into detail about how to diagnose the physical causes and includes a number of hands-on examples. The last portion of the class is a review of several ski area failures and how their diagnosis can lead to preventing additional equipment problems. Students are encouraged to bring failed parts to the class for hands-on analysis.*

### D-5 Hydraulic Controls Brake and Tension

3-Hour Class

John Schilly • Skytrac Inc.

*Panel with Andy Pierce  
Part 1 - Training on Hydraulic Components, Assemblies, Diagrams, Troubleshooting and Theories for Brake and Tension Systems.  
Part 2 - Finish any topics not completed and a troubleshooting roundtable. Please bring your questions and experiences.*

### D-6 The Fundamentals of Fasteners

Michelle Pesanelli • Bolt Depot

*Panel with Jason Bourque and Paige Mathewson  
This is an introduction to identifying and sizing fasteners. Students will learn how to distinguish fasteners by type and materials and learn how to size them. They will learn to recognize the difference between US and Metric fasteners.*

### D-7 Basic Ski Lift Math and Physics

Sid Roslund • National Ski Areas Association

*Bring a simple calculator +/-  $\sqrt{\text{SQ Root}}$  (Check your cell phone)  
Presenting practical math applications for ski lift technology including photos, formulas and sketches of the basic things you need to know about. Your opportunity to ask questions, discuss concepts and understand fundamentals. This course is for anyone who wants to know more about an important tool we use every day and including mechanics, supervisors, inspectors and authorities.*

### D-8 SMI Snow Makers - We've Got You Covered

John Parker • SMI Snow Makers

*This Hands-On session will focus on equipment maintenance tips and tricks to make sure that your equipment is ready for the season.*

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## Wednesday 3:00 pm Classes

### E-1 D.C. Drives

Bruce Wyman • S-K-I Electric

*This class will go back to the basics of D.C. Drives. You will learn the fundamentals of D.C. Drives and see the relationship between voltage, current, and speed of D.C. drives. If you have this type of Drive, a must see.*

### E-2 (RPD) Rope Position Detection - Doppelmayer Systems

Mike Taylor • Keystone Resort

*This class will explain how proximity switches produced by Efector are utilized for haul rope location by Doppelmayer. The two methods of deropement detection (Matrix and Individual tower) will be explained, along with the troubleshooting of each system. There will be a demo of the Efector switch showing the function of the sensor.*

### E-3 Conveyor Safety - During Maintenance and Operations

Sam Geise • Geise Engineering

Panel with:

Conor Rowan and Pete Kavanagh, Star Lifts

Audrey Archuleta - Magic Carpet Lifts

*Sam Geise will facilitate this session. Conveyor Safety and how to implement protocols, best practices, procedures to reduce the risks to maintenance and operational personnel is the main focus of this session. Too many people are getting injured while performing maintenance and routine operations on these installations.*

### E-6 Practical Applications of Bearings in the Ski Industry

Steve Greene • Action Bearing Company

*Lifts, Groomers, Pumps, compressors, Etc. all have bearings. This will be a dialog based discussion on bearing applications in the ski industry. Bring your questions, and stories from the field for sharing.*

### E-7 Advanced Ski Lift Math and Physics

Michael Lane • National Ski Areas Association

*Bring a simple calculator +/- % SQ Root (Check your cell phone)*

*This class will move beyond basics and will start with fundamental tensions, tower/sheave loading, rope angles, radial acceleration, grip slip forces, torque and horsepower requirements as a few examples. From these aspects the class then can expand on drive terminal locations, loss of tension issues, simple rigging, and lift inertia.*

### E-8 Lift Operations Roundtable - Where's the Cheese?

Jason Perl • Mount Snow Resort

*This course will be an interactive discussion focusing on key aspects of lift operations including: maze design, line management, ticket checking, guest coaching, and more. Please come prepared to share your best practices and bring your sense of humor!*

*At the end of the class at 3:00pm, the discussions will continue with a beer at Christiansen's Tavern.*

## Thursday 8:30 am Classes

### F-1 Low Voltage Control Circuits

3-Hour Class

Bruce Wyman • S-K-I Electric

*We will start with the symbols of the different electrical components and start to add the lines (wires) that connect them together forming series and parallel circuits resulting in a circuit diagram. The inter action of external control devices actuating the relays contained in the above circuits combine to control the electrical functions of the lift. As more components are added the basic circuits will come to light. The protocols for the layout of circuit diagrams will be explained and how to start to trace a circuit through a drawing.*

### F-2 Bearing Protection for Electric Motors

Tom Leunig • Helwig Carbon Products

*This session would cover how induced electrical currents cause shaft voltages that will discharge through the motor bearings of AC and DC motors. This will cause premature motor failure and increased maintenance and downtime. This is especially prevalent when motors are use with drives. We will cover what causes this problem and the solution which will reduce downtime and expensive motor repairs for ski areas.*

### F-3 Skytrac: Phased Lift Replacement Program

Maynard Russell • MCR Services

*The financial impact of a lift replacement doesn't have to create overwhelming cash flow burden on your resort. Skytrac has created a program that steers away from complete installation to a phased lift replacement approach. The different consideration will be discussed concerning the lift replacement approach.*

### F-4 Introduction to Brakes - 101

Michael Lane • National Ski Areas Association

*This class will look at the different types of brakes, their physical characteristics, components, nuances, and adjustments. The session then applies the different brake types as they are used on ropeways and attempts to give an overview to help you understand their operation and how they relate to the requirements of the B77.1 Standard.*

### F-5 Leitner-Poma of America

Customer Service Round Table

3-Hour Class

Rod Stocking • Leitner-Poma of America, Inc.

Panel with Patty and Kuseno

*Leitner-Poma of America would like to provide our customers the opportunity to discuss problems, concerns, procedures, and Ideas for improvement.*

*This open forum discussion will be conducted By Rod Stocking, Leitner-Poma of America Service Manager. Rod requests everyone come prepared with your questions, comments and ideas for this 3 hour secession. This is your chance, don't let it pass you by.*

### F-6 Evacuation Planning - What's New - What's Different?

Mary Davis • ASC B77 Evacuation Subcommittee

*B77.1-2017 has changes in the evacuation requirements. This session will address what has changed (and why) along with the history of the evolution of evacuation equipment and "best practices" as impacted by OSHA and other standards.*

### F-8 Summer Maintenance Checklist of TA Fan Guns

John Dixon • TechnoAlpin USA, Inc.

*How to complete suggested maintenance checklist for "Summerization" of TA fan guns to ensure maximum performance in the fall/winter. Hands-on demonstration with TA fan in outside courtyard/base of trail. Students will gain tips for best practices for summer maintenance that will increase the longevity and maximize performance of their automated snowmaking equipment.*

## Thursday 10:30 am Classes

### G-2 Lift Electric Roundtable

Andy Pierce • AP Electrical Service, LLC

*This is an open forum for all those who practice the "Dark Art of Lift Electronics". All skill levels are welcome. We will discuss all flavors of Lifts, Snowmaking, and other electrical challenges. Please bring your questions, ideas, and anything else you would like to talk about.*

### G-3 How and Why Accidents Happen

Neville Sachs, P.E. • Neville W. Sachs, P.E., PLLC

*A review of the common causes of accidents looking at the human errors and systematic procedures (or lack of them) that cause accidents. In the class we'll discuss a number of practices that we can take both as individuals and supervisors to reduce the probability of future accidents. Included will be some ski area examples.*

### G-4 ANSI B77 - What's Is In the New 2017 B77.1 Edition

Mike Lane • National Ski Areas Association

*The ANSI B77.1 Standard was approved by ANSI May 11, 2017. This session will review what is new in the standard and what steps you need to take to adjust to the new standard.*

### G-6 9-1-1: Recognizing an Emergency

Jason Perl • Mount Snow Resort

*This course will be an interactive presentation focused on recognizing medical/traumatic emergencies and how to respond in a calm and professional manner. Topics will include: suspension trauma, stroke, heart attack, heat related emergencies, and allergic reactions.*

### G-7 HR for Supervisors

Melissa Benoit • Jiminy Peak Mountain Resort

*Supervisors often find themselves in personnel situations as a part of the daily operations. While you don't need to be an expert on Human Resource topics, you need to be aware of what you can and cannot do. We will discuss hiring interviews, discipline, and protected status (ADA, Fair Labor Standards, Family and Medical Leave Act) At the end of the session, the participant will have an understanding of employment law; know when to ask for help and how to address in the moment situations..*

NEW