



## CLASS NOTES:

### **E-2 Introduction to the Usage of Digital Multi-Meter**

*Don't forget you multi-meter.*

### **E-3 Troubleshooting Comm-Lines and Mechanical Deropement Switches**

*Prerequisite for this courses is E-1 Introduction to Basic Electricity if one is not familiar with electrical power flow. Don't forget you multi-meter.*

### **M-6 What's My Tension? Don't Have Line Calcs? We Can Help!**

### **G-7 Basic Ski Lift Math and Physics**

### **G-8 Advanced Ski Lift Math and physics**

*Please bring a simple calculator to class. Cell phone calculators are great so you can follow the math calculations.*

### **E-4 Overhead Comline Installation** *(Sign up in class for lab sessions.)*

### **M-9 Old School Machinery Alignment** *(Limited to 15 participants. Sign up at Check-in.)*

### **M-10 Old School Cardan Shaft Alignment** *(Limited to 15 participants. Sign up at Check-in.)*

### **Sp-6 Fall Protection Equipment Inspector Course**

*This is a comprehensive inspection course which, after completion, will allow those responsible for the inspection of fall protection equipment to make educated decisions on the suitability for use. There is still some space available. Sign up at Registration desk.*

## **PARKING Classroom**

A classroom has been setup under the Convention Center in the parking garage. It is located at the Southwest Corner of the underground parking.

## **COLO.BLDG – 209 Classroom**

Located behind the Hampton Inn across Colorado Ave at a storefront.

## **Class Scheduling Form**

Use this form to schedule and document your training for the 2016 conference. At the completion of each class, attendees need to obtain a sticker from the instructor and attach it to this form in the appropriate time slot(s) to document training. You should keep a copy for yourself and give a copy to your supervisor to become part of your company training file.

## **Colorado Mountain College – CEU's**

Colorado Mountain College is happy to offer the attendees of the 2017 Rocky Mountain Lift Association Conference 1.0 CEUs for your participation and attendance. You must attend one class per each 8 scheduled class sessions plus the 2 general sessions for 13.75 clock hours of offered instruction. Information and sign-up forms are available at the registration desk. Turn this completed form into the registration desk at the end of the conference. The forms will be processed and returned to you. You should keep a copy for your records and give one to your supervisor..

# 46<sup>th</sup> RMLA SPRING CONFERENCE AGENDA

Two Rivers Convention Center  
Grand Junction , Colorado  
May 8-11, 2017

## Monday - May 8, 2017

		WHITEWATER	PLATEAU	ESCALANTE	DELTA RIGGING	FAIRFIELD LABORATORY
		SP-1	SP-2	SP-3	SP-4	
8:30 am to 5:00 pm		8:30 a.m. Ropeway Rigging	8:30 a.m. Interactive Introduction to Ropeway Hydraulics	Bring Your A Game to Work: Train-the-Trainer Workshop	8:30 a.m. Welding and Cutting 101	NDT Level II Training 3-DAY CLASS
3:00 pm to 5:30 pm	<b>REGISTRATION</b>	Join us for refreshments and snacks in the lobby while you plan your class schedule. <b>Sponsored by Crazy Mountain Brewery</b>				
5:30 pm to 8:30 pm	<b>WELCOME BBQ - Sponsored by Delta Rigging and Tools</b>	Delta Rigging Facility - Take the Bus behind the Convention Center				

## TUESDAY - May 9, 2017

7:30 am	<b>REGISTRATION</b>	Two Rivers Convention Center - Lobby				
7:30 am	<b>BREAKFAST</b>	Colorado River Ballroom				
9:00 am	<b>CONFERENCE OPENING</b>	Colorado River Ballroom				

Blaine Faulkner, President RMLA

### KEYNOTE:

**Making Common Sense Become Common Practice: YOU Can Teach Work Ethic!**  
**Josh Davies - The Center for Work Ethic Development**

		KANNAH	WHITEWATER	ESCALANTE	PLATEAU	HAMPTON - GRAND	FAIRFIELD - MESA	SPRING HILL - MAIN ST	SPRING HILL - MONUMENT	PARKING CLASSROOM	COLO. BLDG - 209
		SV-1	SV-2	G-1	E-1	E-7	G-2	M-13	M-1	M-8	G-12
10:30 am to 12:00 pm		Effective Communication Skills	Employment Law Update	Formalized Lift Maintenance Training: Where Do We Go From Here?	Introduction to Basic Electricity	DC Motor Maintenance	The Bridge Between Finance and Lift Maintenance	Lift Gear Basics, Field Service Inspections and Overhaul Procedures	Introduction to Wire Rope	Safe Hydraulics	Lift NDT Inspections- Focus on Bullwheels
12:00 pm	<b>LUNCH</b>										
1:00 pm to 2:30 pm		Constructive Feedback	B77.1 - Operational Responsibilities Alignment of Your Documents with B77	Leitner-Poma of America Manufacturers Session	Low Voltage Control Circuits (3-hour class)	Fall Protection Equipment Inspector Course	Learning the Ropes Synthetic Rope Construction and Retirement Criteria	Fastener Safety Seminar	Introduction to the Usage of Digital Multi-Meter	Old School Machinery Alignment 3-Hour Class	The Basics of Hydraulic Mechanical Advantage

### BREAK

		KANNAH	WHITEWATER	ESCALANTE	PLATEAU	HAMPTON - GRAND	FAIRFIELD - MESA	SPRING HILL - MAIN ST	SPRING HILL - MONUMENT	PARKING CLASSROOM	COLO. BLDG - 209
		SV-4	OP-5	G-3	E-11	E-5	M-3	M-12	M-21	M-9 Continued	G-5
3:00 pm to 4:30 pm		Situational Awareness for Lift Operations and Maintenance	Incident Investigation	Detachable Ropeways- History, Theory and Design	Low Voltage Control Circuits (Continued)	Lift Electric Roundtable	Lever Hoists and Chain Fall Inspections	High Pressure Hydraulic Safety Training	Lubrication Fundamentals and Best Practices	Old School Machinery Alignment Continued	Work Carrier Safety - It's Another Carrier
4:30 pm		Join us for refreshments and snacks in the lobby. <b>Sponsored by Bonfire Brewery</b> Lift Operations - After Shutdown Get Together in Whitewater Open Evening - Bike Tour, Trap Shooting, Golf, Wine Tour, Go Kart Racing, Bowling									

**WEDNESDAY - May 10, 2017**

7:30 am to 8:15 am		Colorado River Ballroom									
8:15 am to 10:00 am		Colorado River Ballroom									
8:15 a.m. - Annual Business Meeting 8:30 a.m. - Little Shop - Sid Roslund - Director of Technical Services, NSAA		Colorado River Ballroom									

Colorado Passenger Tramway Safety Board - Board Meeting Credit Union of Colorado											
10:15 am	KANNAH SV-5	ESCALANTE SV-6	PLATEAU G-7	HAMPTON - GRAND E-9	FAIRFIELD - MESA E-4	SPRING HILL-MONUMENT M-16	SPRING HILL-MONUMENT E-8	PARKING CLASSROOM M-5	COLO. BLDG. - 209 G-11	Lift Maintenance Safety 101 ½	
10:30 am to 12:00 pm	Successfully Managing Employee Performance	Getting Your Training On Track	Basic Ski Lift Math and Physics	Carbon Brush Fundamentals and Best Maintenance Practices	Overhead Comm-Line Installation	Gearbox Inspections and Failures	Fuseology, Overview, Application, and Selection	Lifting, Pulling and Rigging Basics Tools for the Toolbox			
12:00 pm	AWARDS LUNCH										

G-1 - Man Down Demonstration in the Parking Lot showing work carrier rescue systems. 3-Hours											
1:15 pm	KANNAH G-17	ESCALANTE G-6	PLATEAU E-18	HAMPTON - GRAND E-17	FAIRFIELD - MESA E-3	SPRING HILL-MONUMENT E-15	SPRING HILL-MONUMENT M-14	PARKING CLASSROOM M-10	COLO. BLDG. - 209 OP-4	Hiring & Interviewing 101	
1:15 pm to 2:45 pm	OSHA Updates for the Ski Industry	Doppelmayr USA Planetary Gearbox Concepts	HMI Programming 3-Hour Class	Vibration and Shaft Alignment Tools for Motor preventative Maintenance	Troubleshooting Comm-Lines and Mechanical Deropement Switches	Ski Lift Auxiliary Diesel Engine Controls:	Belt Drive Optimization and Maintenance	Old School Cardan Shaft Alignment 3-Hour Class			

BREAK											
3:00 pm to 4:30 pm	KANNAH SV-7	ESCALANTE G-13	PLATEAU E-18 Continued	HAMPTON - GRAND E-5	FAIRFIELD - MESA E-13	SPRING HILL-MONUMENT E-14	SPRING HILL-MONUMENT M-19	PARKING CLASSROOM M-10 Continued	COLO. BLDG. - 209 E-10	Lightning and Surge Protection for Ski Lift Operations	
4:30 pm to 6:30 pm	Accountability in Maintenance	Detachable Mechanical Roundtable What We Are Seeing?	HMI Programming Continued	Lift Calibration: Prepare Your Lift for the Coming Season!	Rope Position Detection (RPD) - Doppelmayr Systems	DC Motors - Keeping the Revolution Alive	Bearings - The Life Cycle of Ski Lift Bearings	Old School Cardan Shaft Alignment Continued			
4:30 pm to 6:30 pm	TRADE SHOW Food and Beverages sponsored by Doppelmayr USA, Inc.										

**THURSDAY - May 11, 2017**

7:30 am to 8:15 am		Colorado River Ballroom									
8:30 am to 10:00 am		Colorado River Ballroom									
8:30 am to 10:00 am	KANNAH SV-11	ESCALANTE G-14	PLATEAU M-18	HAMPTON - GRAND M-6	FAIRFIELD - MESA E-16	SPRING HILL-MONUMENT G-8	SPRING HILL-MONUMENT SV-12	PARKING CLASSROOM M-7	FAIRFIELD - LA-COURT	Torque Testing Brakes Getting the Proper Twist	
10:30 am to 12:00 pm	Small Ski Area Roundtable	Does This Happen At Your Area? Older Fixed Grip Mechanical Roundtable	Hydraulic Controls Brake Tension 3-Hour Class	What's My Tension? Don't Have Line Calcs? We Can Help 3-Hour Class	CPS's - Troubling Shooting Tower Faults	Advanced Ski Lift Math and Physics	Workers Compensation Year End Review				

BREAK											
10:30 am to 12:00 pm	KANNAH OP-8	ESCALANTE M-22	PLATEAU M-18 Continued	HAMPTON - GRAND M-6 Continued	FAIRFIELD - MESA E-12	SPRING HILL-MONUMENT M-15	SPRING HILL-MONUMENT G-20	FAIRFIELD - LA-COURT	Managing Diesel Fuel Quality in Mountain Operations		
10:30 am to 12:00 pm	Lift Operations Roundtable	Corrosion Cancer of Steel War Stories	Hydraulic Controls Brake Tension Continued	What's My Tension? Don't Have Line Calcs? We Can Help Continued	Electrical Power Distribution	Introduction to Brakes - 101					

# Class Descriptions

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## ELECTRICAL CLASSES:

### E-1 Introduction to Basic Electricity

Mike Taylor • Keystone Resort

Tuesday - May 9, 2017 • 10:30 a.m. • Plateau Creek

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

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

Mike Taylor • Keystone Resort

Tuesday - May 9, 2017 • 1:00 p.m. • Spring Hill - Monument

*You must bring a multi-meter to this class.*

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

### E-3 Troubleshooting Comm-Lines and Mechanical Deropement Switches

Mike Taylor • Keystone Resort

Wednesday - May 10, 2017 • 1:15 p.m. • Fairfield - Mesa

*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 E-1 (Introduction to Basic Electricity) if one is not familiar with electrical power flow*

### E-4 Overhead Comm-Line Installation

Mike McMahon • Breckenridge Ski Resort

Wednesday - May 10, 2017 • 10:30 a.m. • Fairfield - Mesa

*The presentation will be a hands on introduction to installing a comm-line. The presentation will show the steps needed to pull in a new comm-line, how to tension, and then how to "cut-in" a boot.*

*Hands-On Lab – E-4 Comm-line Installation class is a prerequisite.*

*Each lab will be a hands-on session with 4-6 people. You will install a section of comm-line, tension it up and then cut in boot. 2-3 lab sessions will be offered.*

*Sign up during E-4 class.*

### E-5 Lift Calibration: Prepare Your Lift for the Coming Season!

Bob McDonnell • Vail Mountain

Wednesday - May 10, 2017 • 3:00 p.m. • Hampton - Grand Room

*Panel with Todd Ruoff*

*We will cover this final critical step of off season electrical maintenance.*

### E-6 Lift Electric Roundtable

Todd Ruoff • Vail Mountain

Tuesday - May 9, 2017 • 3:00 p.m. • Hampton - Grand Room

*Panel with Bob McDonnell*

*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.*

### E-7 DC Motor Maintenance

George Finley • Morgan Advanced Materials

Tuesday - May 9, 2017 • 10:30 a.m. • Hampton - Grand Room

*The class is geared to Technicians & Managers responsible for maintaining motors and generators that use carbon brushes. No special tools or other requirements needed to attend. We will discuss the following:*

- Commutation & Sparking
- Commutator Surface Conditions
- Brush Grades & Application
- Humidity & Brush Life
- Brush Spring Forces & Brush Pressure
- Brush Current Density & Amperage

### E-8 Fuseology: Overview, Application, and Selection

Bruce Dube • Intermountain Fuse Supply

Wednesday - May 10, 2017 • 10:30 a.m. • Spring Hill - Monument

*Attendees will be given a working knowledge of fuses and the proper selection and sizing for various applications and situations. The presentation will include a brief open book quiz and several fuse selection and sizing problems for common applications. Class Limited to 25 participants.*

### E-9 Carbon Brush Fundamentals and Best Maintenance Practices

Robert Karlheim • Helwig Carbon Products, Inc.

Wednesday - May 10, 2017 • 10:30 a.m. • Hampton - Grand

*Panel with & Randy Keener, Sales/Service Representative*

*Anyone who works with or manages DC motors!*

*We cover the details of the carbon brush circuit not taught in any schools. We go into the fundamentals of how a brush works, what it takes to work properly, and how to best maintain carbon brushes and the DC motor. Many find this class very valuable in reducing many of the issues associated with carbon brushes. This is an in depth technical non sales presentation with handouts provided.*

### E-10 Lightning and Surge Protection for Ski Lift Operations

Joe Lanzoni • Lightning Eliminators & Consultants, Inc.

Wednesday - May 10, 2017 • 3:00 p.m. • TBD

*Lightning can interrupt normal lift operations and damage related lift equipment. This presentation will explain how lightning forms and how electrical surges are created. It will also cover various lightning and surge protection equipment and techniques. And because grounding is an inherent part of lightning protection, and grounding is difficult in rocky locations, it will also cover grounding principles, techniques and test methods.*

### E-11 Low Voltage Control Circuits 3-Hour Class

Bruce Wyman • S-K-I Electric

Tuesday - May 9, 2017 • 1:00 p.m. • Plateau Creek

*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.*

### E-12 Electrical Power Distribution

Primary, Switchgear and Secondary Systems.

Bruce Wyman • S-K-I Electric

Thursday - May 11 2017 • 10:30 a.m. • Fairfield - Mesa

*This class will familiarize you with low and medium voltage distribution system on your mountain. Discussions of reclosers, sectionalizers, types of transformers and related equipment in both Y and Delta distribution systems,*

### E-13 Rope Position Detection (RPD) - Doppelmayr Systems

Mike Taylor • Keystone Resort

Wednesday - May 10, 2017 • 3:00 p.m. • Fairfield - Mesa

*This class will explain how proximity switches produced by Efactor are utilized for haul rope location by Doppelmayr. 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 Efactor switch showing the function of the sensor.*

### E-14 DC Motors - Keeping the Revolution Alive

Michael Stuart • Amptech

Wednesday - May 10, 2017 • 3:00 p.m. • Springhill - Main St

*This session will cover the basic theory, maintenance and troubleshooting of DC motors. Additionally, Michael will conduct an open, questions and answer forum to discuss situations electrical maintenance personnel confront on the mountain.*

### E-15 Ski Lift Auxiliary Diesel Engine Controls:

Modern Solutions for Legacy Systems

Brian Gaffney • Winn-Marion, Inc.

Wednesday - May 10, 2017 • 1:15 p.m. • Springhill - Main St

*Many ski lift auxiliary diesel engines have legacy control systems with obsolete parts and inherent safety risks. The old Barber-Coleman ramp generators and speed governors are no longer available, and there are safety risks associated with the Normally Open EFC fuel actuators used on many of these engines. Operational flexibility is limited, and maintenance and troubleshooting of the system is often a troublesome effort. We will discuss these current problems along with solutions, and the benefits of upgrading to a modern control system. This class is intended for lift maintenance personnel, lift operators, and maintenance managers.*

### E-16 CPS's - Troubling Shooting Tower Faults

Mark Thorpe • Snowmass Ski Area

Thursday - May 11 2017 • 8:30 a.m. • Fairfield - Mesa

*This session will address Poma style C.P.S. faults including:*

- Introduction to Trouble shooting
- 3-wire switches - 4-wire old style switches;
- 4-wire new style switches - 5-wire newest switches.

# Class Descriptions

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**E-17 Vibration and Shaft Alignment Tools for Motor Preventative Maintenance**  
Loretta RD Maestas • Fluke  
Wednesday - May 10, 2017 • 1:15 p.m. • Hampton - Grand  
*Machine Wear: How vibration analysis has evolved to increase uptime. Most machines have rotation parts, and rotating parts vibrate. Measuring how those parts vibrate can tell you a lot about the Health of a machine. Machines have a tale to tell those who are willing and able to listen.*

**E-18 HMI Programming**  
Matt Smolskis • TMMI  
Wednesday - May 10, 2017 • 1:15 p.m. • Plateau Creek  
*Panel with Ryan Hendrichs  
Networking HMI's to PLC's, Addressing I/O from PLC to HMI, Creating screens on HMI, storing information. 3-hour Class*

## MAINTENANCE CLASSES:

**M-1 Introduction to Wire Rope and Inspections**  
RJ Knight • Knight Equipment Co.  
Tuesday - May 9, 2017 • 10:30 a.m. • Spring Hill - Monument  
*Panel with Justin Knight  
Terminology, constructions, use;  
How wire rope is made;  
Basic inspection. What to look for during you weekly and monthly inspections.  
ANSI B77 Requirements.*

**M-8 Safe Hydraulics**  
Steve Gulick • Gates Corporation  
Tuesday - May 9, 2017 • 10:30 a.m. • Parking Classroom  
*Preventative maintenance. Safety troubleshooting, Hose assembly & routing, Mechanics or anyone working w/ hydraulics. How to work and be safe while working w/ hydraulic applications*

**M-2 Learning the Ropes – Synthetic Rope Construction and Retirement Criteria**  
David Krupka • Samson Rope  
Tuesday - May 9, 2017 • 1:00 p.m. • Fairfield - Mesa  
*Learn about synthetic rope construction, usage, and retirement criteria. Learn the differences between wire rope and synthetic and the advantages of using synthetic*

**M-9 Old School Machinery Alignment 3-Hour Class**  
Brian Reihe • Vail Mountain  
Tuesday - May 9, 2017 • 1:00 p.m. • Parking Classroom  
*Panel with Rob Wilhoff, Lift Maintenance, Vail Mountain.  
This class is by Mechanics for Mechanics, this is a hands-on open discussion class, Topics include; Types and causes of misalignment, Alignment methods, Alignment preparation, Soft foot, Moving the machine, Simple alignment techniques, Precision alignment. Please bring a simple calculator or phone with a calculator.  
Limited to 15 participants. Sign up during check-in.*

**M-3 Lever Hoists and Chain Fall Inspections**  
Clayton Quillin • Delta Rigging  
Tuesday - May 9, 2017 • 3:00 p.m. • Fairfield - Mesa  
*We will demonstrate how we inspect, repair & rebuild lever chain hoists. We will actually be taking a lever hoist apart inspect the parts, replace as necessary & re-assemble.*

**M-10 Old School Cardan Shaft Alignment 3-Hour Class**  
Brian Reihe • Vail Mountain  
Wednesday - May 10, 2017 • 1:15 p.m. • Parking Classroom  
*Panel with Ryan Portz  
This class is by Mechanics for Mechanics, this is a hands-on open discussion class, Topics include; Cardan shaft overview, Universal joint terms and operation, Soft foot-types and correction method, Types and causes of misalignment in Cardan shafts, Alignment methods for Cardan shafts, Alignment preparation, Moving the machine to correct alignment, Simple alignment techniques, and Cardan shaft operating angles and velocities.  
Limited to 15 participants. Sign up during check-in.*

**M-5 Lifting, Pulling and Rigging Basics- More Tools for the Mechanic's Tool Box**  
Mike Stephenson, P.E. • Stephenson Engineering  
Wednesday - May 10, 2017 • 10:30 a.m. • Parking Classroom  
*Any lift mechanic who has experienced a near miss while lifting, pulling or rigging a load can appreciate the importance of knowing the weight of the object or load on the line before attempting to lift or move it. In far too many cases the technician just guesses the magnitude of the load and assumes the rigging is up to the task, which can be a formula for disaster. This class will illustrate some simple rules-of-thumb, techniques to determine loads, methods to approximate the weight of objects and an explanation of the use of center of gravity for lifting and rigging. Bring a basic calculator (Smart Phone app) to help solve some of the sample math problems which will be presented for analysis and discussion.*

**M-11 Fastener Safety Seminar**  
Chris Palazzolo • Lawson Products, Inc.  
Tuesday - May 9, 2017 • 1:00 p.m. • Springhill - Main St  
*We will teach the importance of using a matched fastener system for different applications. There will be a demonstration of the strength and function of different grade cap screws and their limitations. We want to create awareness of improper use and to reinforce the likelihood of failure when reuse occurs. We will identify different types of fastener failures and provide examples. Our audience is anyone doing maintenance. There are no specific tools required to attend.*

**M-6 What's My Tension? Don't Have Line Calcs? We Can Help! 3-Hour Class**  
Troy Frutiger • Vail Mountain  
Thursday - May 11 2017 • 8:30 a.m. • Hampton - Grand Room  
*Panel with Logan Still, Lift Maintenance, Vail Mountain.  
We will look at how 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. Please bring your cell phone with a calculator.*

**M-12 High Pressure Hydraulic Safety Training**  
Bill Golgosky • Enerpac  
Tuesday - May 9, 2017 • 3:00 p.m. • Springhill - Main St  
*Panel with Rod Flint  
A Safety Seminar is a 1-1/2-hour semi-hands-on high-pressure hydraulic safety training class designed to bring awareness to common safety hazards of both reportable/non-reportable (OSHA & MSHA) conditions and product seen in the high force tools industry. The seminar discusses safety concerns when using 10,000psi equipment. Class participation is required in identifying and determining common misuse and proper set up. We also conduct a brief question & answer session at the end providing feedback to participants on current issues they may be experiencing. Maintenance, welding, electrical, metal working personnel will use our products. No tools are required to attend.*

**M-7 Brake Torque Testing - Mysteries Unveiled**  
Mike Stephenson, P.E. • Stephenson Engineering  
Thursday - May 11 2017 • 8:30 a.m. • Parking Classroom  
*This class will review and clarify the various methods used by chairlift manufacturers for torque testing brakes, evaluate common errors in applying the correct torque value and provide a simple example of how an engineer might determine the brake torque test testing numbers for a chairlift. This class is geared for the newer lift mechanic, but seasoned mechanics may also benefit from a review of basics. Bring a basic calculator (Smart Phone app) to help solve some of the sample math problems which will be presented for analysis and discussion.*

**M-13 Lift Gear Basics, Field Service Inspections and Overhaul Procedures**  
Nick Chitepo • Artic Machine Systems  
Tuesday - May 9, 2017 • 10:30 a.m. • Springhill - Main St  
*A discussion of gearbox maintenance practices, on site field service inspection and troubleshooting techniques applicable to all gear types. Tooth contact and lubrication considerations.*

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## M-14 Belt Drive Optimization and Maintenance

Ben Huntoon • Gates Corporation

Wednesday - May 10, 2017 • 1:15 p.m. • Spring Hill - Monument

*Maximize the performance and life of belt drives. Learn about the different types of belts and their application. Learn the best ways to inspect, install, and maintain belt drives. This training is for anyone that works on belt drives.*

## M-15 Introduction to Brakes - 101

Mike Lane • USDA Forest Service

Thursday - May 11 2017 • 10:30 a.m. • Springhill - Main St

*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.*

## M-16 Gearbox Inspections and Failures

Bruno Pfister • Kissling AG

Wednesday - May 10, 2017 • 10:30 a.m. • Springhill - Main St

*We will present different types of gearboxes, introduce on how to inspect them and talk about the gear failures as well as bearing failures which can be found.*

*This class is for mechanics or people interested in mechanics which want to gain more experience on gearbox inspections and failure evaluation.*

## M-17 The Basics of Hydraulic Mechanical Advantage

Troy Frutiger • Vail Mountain

Tuesday - May 9, 2017 • 1:00 p.m. • TBD

*This is by mechanics for mechanics. Basic math skills will be reviewed: including calculator use, basic algebra and basic geometry. The crux of the presentation will be centered around Pascal's Law and how it applies to the use of hydraulic rams. Please bring a calculator, your phone is fine. This is a great refresher prior to Grant Ellis's "What's my tension? Don't have line calcs? We can help!" class.*

## M-18 Hydraulic Controls Brake Tension

William Hartman • Skytrac Inc.

Thursday - May 11 2017 • 8:30 a.m. • Plateau Creek

*Training on hydraulic components, assemblies, diagrams, troubleshooting and theories for brake and tension systems.*

*3-Hour Class*

## M-19 Bearings - The Life Cycle of Ski Lift Bearings

Cameron Misegadis • SKF

Wednesday - May 10, 2017 • 3:00 p.m. • Spring Hill - Monument

*Panel with Tom Benigni, Account Manager*

*Presentation will cover key points in the life of bearings used in ski lifts and ropeways providing information starting from the basic features up through the mid-life considerations for operation and maintenance towards improved bearing reliability. The program will begin as an introduction to bearing principals and continue into more advanced discussion of failures and prevention to bring interest to new and seasoned professionals.*

## M-21 Lubrication Fundamentals and Best Practices

Stephen Mazzola • Kluber Lubrication NA LP

Tuesday - May 9, 2017 • 3:00 p.m. • Spring Hill - Monument

*Students will be presented with lubrication information which will help them to understand the differences in various types of lubricants as well as best practices for their use. Topics include the advantages and disadvantages of different types of lubricants and their lubricating properties which can affect performance on the applications. If you are interested in learning how a grease works, why there are so many different products in the market, which type is best suited for an application, and how to change from one lubricant to another, this class is for you.*

## M-22 Corrosion: Cancer of Steel

### War Stories

Hans Schmoldt • Anode Systems Company

Thursday - May 11 2017 • 10:30 a.m. • Escalante Creek

*ISSUE: Corrosion at ski areas affects Haul Ropes, Lift Towers, Internal combustion engine fuel tanks, rebar and electrical systems.*

*GAIN: Understanding of how to prevent losses of equipment, down time, repair time due to corrosion.*

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## GENERAL CLASSES:

### G-1 Formalized Lift Maintenance Training:

#### Where Do We Go from Here?

Michael Weise • Leitner-Poma Services, Inc.

Tuesday - May 9, 2017 • 10:30 a.m. • Escalante Creek

*Previous sessions addressed what "Programs" are in place and how to develop your program. This session will briefly cover those topics again and discuss where this "Program" is headed with NSAA developing a Lift Maintenance Resource Guide for its Members. The preliminary direction of the Guideline will be discussed as well as how you can stay abreast of the developments.*

### G-2 The Bridge Between Finance and Lift Maintenance

Rich Burkley • Aspen Skiing Company

Tuesday - May 9, 2017 • 10:30 a.m. • Springhill - Main St

*I hope to outline a structure for lift maintenance managers that conveys the requirements of keeping the lifts running, is understood and accepted by a finance team, and provides for the long term safety and reliability of operating lifts. Roughly at this time:*

- 1. Outline the challenges and requirements of lift maintenance.*
- 2. Outline the challenges and requirements of finance, cash flow and NOI*
- 3. Articulate the common ground*
- 4. How to develop a multi-year plan financially and operationally*
- 5. Educating a finance group.*
- 6. Capitalize on operational efficiencies in lift maintenance.*
- 7. Strive for "no surprises" within the framework of the reality we always have surprises.*

### G-3 Detachable Ropeways- History, Theory and Design

Michael Wiese • Leitner-Poma Services, Inc.

Tuesday - May 9, 2017 • 3:00 p.m. • Escalante Creek

*This session will cover the History, Theory and Evolution of Design of Detachable Aerial Ropeways. Specific examples will be shown to give the participant a better understanding of these Systems.*

### G-4 Leitner-Poma of America - Manufacturers Session

Rod Stocking • Leitner-Poma of America, Inc.

Tuesday - May 9, 2017 • 1:00 p.m. • Escalante Creek

*Interactive discussion with engineering and service staff regarding the products and services we offer, annual and periodic maintenance procedures, problem resolution. Session intended for current and prospective lift users/operators. Rod Stocking- Service Manager, Jeremiah Frazier-Electrical Service Engineer, Jeff Copeland-Design Engineer, Nelson Tusberg-Design Engineer, Charles Atchison-Electrical Engineer, Jon Mauch, Sales Manager*

### G-5 Work Carrier Safety - It's Just Another Carrier and You Are Along for the Ride

Brook Kasman • Stowe Mountain Resort

Tuesday - May 9, 2017 • 3:00 p.m. • TBD

*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? This open discussion will start with these items and end with a discussion of the proposed changes for Work Carriers that are coming in the next ANSI B77.1 standard.*

# Class Descriptions

46<sup>th</sup> RMLA Conference — May 8-11, 2017

## G-6 Doppelmayr USA

### Planetary Gearbox Concepts

Paul Ehlert • Doppelmayr USA, Inc.

Wednesday - May 10, 2017 • 1:15 p.m. • Escalante Creek

Panel with Gary Mayo and Daniel Richer

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.

## G-7 Basic Ski Lift Math and Physics

John Jenkins • Breckenridge

Darren Brungardt, Asst. Professor: Mathematics,  
Colorado Mountain College

Wednesday - May 10, 2017 • 10:30 a.m. • Plateau Creek

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

Introduction and practice in basic math used in maintenance including: Speed, Spacing, Capacity, Volume, Hydraulic Force, Rigging, & Tension. Intended for entry level mechanics & electricians. Students will gain a deeper understanding into the calculations that go into ski lifts, and into the forces involved with hydraulics and rigging.

## G-8 Advanced Ski Lift Math and Physics

Mike Lane • USDA Forest Service

Thursday - May 11 2017 • 8:30 a.m. • Springhill - Main St

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.

## G-11 Lift Maintenance Safety 101 ½

Michael Twede • Steamboat Ski and Resort

Wednesday - May 10, 2017 • 10:30 a.m. • TBD

Working safely in a dangerous environment. This session will look at preventative measures and procedures that can potentially reduce the exposure to risk technicians face as they perform maintenance on ropeway equipment. We will touch on the most dangerous aspects of our jobs with a slight emphasis on tower work. It will be a roundtable style session building off of questions and comments.

## G-12 Lift NDT Inspections-

### Focus on Bullwheels

Greg Floor • Wasatch NDT LLC

Tuesday - May 9, 2017 • 10:30 a.m. • TBD

Greg will discuss bullwheel NDT testing and inspections, including service bulletins, techniques, best practices, and recent findings

## G-13 Detachable Mechanical Roundtable

### What We Are Seeing?

Blaine Faulkner • Ski Granby Ranch

Wednesday - May 10, 2017 • 3:00 p.m. • Escalante Creek

This class will be an open discussion on what issues we are seeing on our detachable, and what tools, practices, and changes are we seeing/doing. There are some older detachables out there let's talk about the challenges everyone is dealing with to keep them going and what mechanics/management are doing to deal with the issues. What behind the scenes challenges are you seeing with all the new bells and whistles? No topic is off limits!! Be ready to bring your problems/comments to the class to help exchange ideas or problems for some good discussions.

## G-14 Does This Happen At Your Area?

### Older Fixed Grip Mechanical Roundtable

Scott Uren • Keystone

Thursday - May 11 2017 • 8:30 a.m. • Escalante Creek

This session will initially look at the following issues, but will branch out as questions are raised.

- Spacing of chairs and removal of chairs on older lifts;
- Reduce Gauge bullwheel to tower alignments;
- Slip Testing of grips.

## G-15 CPTSB Updates:

Larry Smith • CPTSB

Thursday - May 11 2017 • 8:30 a.m. • Whitewater Creek

Panel with Nicki Cochrell - Program Assistant

The CPTSB update will cover recent changes in rules over this past year, proposed new committees for rule review as well as a review of changes in the submission process and required paperwork for Modifications and New Installations.

## G-17 OSHA Updates for the Ski Industry.

Herb Gibson • OSHA

Wednesday - May 10, 2017 • 1:15 p.m. • Kannah Creek

The first part of this session will cover the newly updated "Walking-Working Surfaces" and "Fall Protection" standards.

The second portion will discuss lockout tagout issues.

## G-19 ANSI B77.1

### What's New in the B77.1 Standard?

Sid Roslund • National Ski Areas Association

Thursday - May 11 2017 • 10:30 a.m. • Whitewater Creek

With the ANSI B77.1a supplement approved by ANSI in 2012, the next required revision is due in 2017. This session will review proposals that the B77 committee has approved to revise the next standard. This will be your chance to find out what the ASC B77 Committee is discussing, the different points of view, and add comments and opinions.

## G-20 Managing Diesel Fuel Quality in Mountain Operations

Don Siegel • Gen-Shield Field Services div Siegel Energy Corporation

Thursday - May 11 2017 • 10:30 a.m. • Spring Hill - Monument

Diesel fuel quality in generators and bulk storage is often overlooked until called upon to perform when the primary source of power goes out. More often than not the Facilities Directors have no idea of the level of contamination that exists in their generator fuel tanks or bulk tanks needed to power operations in critical and safe operations. With a scheduled fuel management program in place, the operator will be able to identify the quality of the fuel, polish out impurities and contaminants, while insuring they meet local, state and federal regulations for both above ground and below ground storage tanks and the generators they serve in critical systems.

# Class Descriptions

46<sup>th</sup> RMLA Conference — May 8-11, 2017

## OPERATIONS CLASSES:

### OP-1 B77.1 - Operational Responsibilities

#### Alignment of Your Documents with the Standard

Paul Rauschke • Colorado Mountain College

Tuesday - May 9, 2017 • 1:00 p.m. • Whitewater Creek

We will focus on the standard as it applies to operational responsibilities of your supervisors, operators and attendants. You and your staff need to learn, comprehend and speak the fundamental language of the standard for operations and record keeping. Alignment of the language of your ski areas documents incl. titles, job descriptions and responsibilities will be addressed. Participants are encouraged to submit "blind" copies of their documentation for use in class

### OP-2 Guest Service 101

Kyle Gornell • Steamboat Ski & Resort Corporation

Wednesday - May 10, 2017 • 10:30 a.m. • Whitewater Creek

This class will serve as an overall introduction to guest service and its importance. Topics covered will include: internal versus external guest service, basic training techniques, and how to measure results.

### OP-3 Guest Service 201

Kyle Gornell • Steamboat Ski & Resort Corporation

Wednesday - May 10, 2017 • 1:15 p.m. • Whitewater Creek

This class will be a follow up to Guest Service 101 and will take a more in-depth look at guest service issues and techniques. Topics covered will include: training programs, a look into how other industries provides guest service, and a discussion of innovative techniques.

### OP-4 Hiring & Interviewing 101

Deirdre Riley • Park City Mountain

Wednesday - May 10, 2017 • 1:15 p.m. • TBD

*Business Insider's, Nancy Halpin, reports that "66% of US consumers are willing to spend more money with a company that provides them with excellent customer service..." So are you hiring with that in mind? It doesn't just apply to our Lift Operators and Ticket Scanners, Lift Maintenance needs to have an understanding of our guest's needs and be able to work well in a team atmosphere. This class will give tips on behavioral interviewing, sample behavioral questions hand outs and how to keep your hired personnel engaged, while waiting for the season to start.*

### OP-5 Incident Investigation

Brian Rosser • MountainGuard Insurance Program

Tuesday - May 9, 2017 • 3:00 p.m. • Whitewater Creek

*"The forgotten side of lift operations...an update on incident investigation." This unique session will review the steps and requirements of an incident investigation.*

### OP-8 Lift Operations Roundtable

Jeff Marzka • Park City Mountain Resort

Mike Gierach • Crested Butte Mountain Resort

Thursday - May 11 2017 • 10:30 a.m. • Kannah Creek

*Wrap up the RMLA Conference by attending this class! This session will serve as a sounding board for Lift Operations Supervisors and Managers to get answers to those troubling questions that have arisen over the past season. Bring your questions and problems and we can discuss potential solutions that other areas have tried. Have an idea for a class that you would like to see at a future Conference? This is a great opportunity to present your idea and get input from others in the industry. Everyone is encouraged to attend.*

## SUPERVISOR CLASSES:

### SV-1 Effective Communication Skills

Lillie Hughes • Vail Mountain

Tuesday - May 9, 2017 • 10:30 a.m. • Kannah Creek

*Effective communication is critical to being a good leader. Communication is a two way process, involving both how we send and receive messages. This session will focus building active listening skills, navigating difficult conversations and common barriers to effective communication.*

### SV-2 Employment Law Update

Bethany Spitz • Aspen Skiing Company

Tuesday - May 9, 2017 • 10:30 a.m. • Whitewater Creek

Panel with Samantha Hoffmann

*The goal of this session is to teach the basics of employment law. Topics include a study of protected status, Americans with Disabilities Act, Fair Labor Standards Act and the Family and Medical Leave Act. This class will be taught using case studies that are relevant to recent issues faced by other managers. 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.*

### SV-3 Constructive Feedback

Lillie Hughes • Vail Mountain

Tuesday - May 9, 2017 • 1:00 p.m. • Kannah Creek

*Knowing when and how to coach and provide constructive feedback to employees is critical to being a successful manager or supervisor. Documenting that feedback is an often missed portion of the process that can have significant impacts. This workshop will focus on providing performance improvement feedback to employees and ways to document those discussions.*

### SV-4 Situational Awareness for Lift Operations and Maintenance

David Light • Sunlight Mountain Resort

Tuesday - May 9, 2017 • 3:00 p.m. • Kannah Creek

*David Light, Nefi; Awareness of surroundings and people at a lift station or working on lifts to avoid injury to guests and employees, with more focus on training than last year's presentation with examples of what went right and what went wrong.*

### SV-5 Successfully Managing Employee Performance

Lillie Hughes • Vail Mountain

Wednesday - May 10, 2017 • 10:30 a.m. • Kannah Creek

*Managing employee performance is not just a once a year obligatory form. Consistently managing performance is the critical foundation of a successful department and team. The performance management cycle focuses on what it takes to set employees up for success and hold them accountable. Feedback helps create an environment where employees understand the impact of their contributions and are empowered to perform at the top of their ability.*

### SV-6 Getting Your Training On Track

Gerald Lindsay • Eldora Mountain Resort

Wednesday - May 10, 2017 • 10:30 a.m. • Escalante Creek

*Proper training in all areas of employment especially that involving maintenance practices has become a hot button. Not only is how you are training your employees being scrutinized but more importantly, how you document that information. What's your system? Behind the scenes organization is critical for any Lift Department. This class will take an in depth look into utilizing technology to record employee training and provide ideas on creating an evolving, interactive, paperwork system. Create a thorough system that will satisfy the requirements of governing boards, provide a clear picture of skill levels while giving employees ownership of their training. Enhance your recordkeeping with a simple, free way to build and streamline an online, active paperwork system. Record daily, monthly and annual maintenance as well as tracking safety, certifications, long term archiving and more.*

### SV-7 Accountability in Maintenance

Bob Ackland • Steep Management, LLC

Wednesday - May 10, 2017 • 3:00 p.m. • Kannah Creek

*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.*

### SV-8 Hot Topics in Ski Area Liability

Mary Bozack • MountainGuard Insurance

Wednesday - May 10, 2017 • 3:00 p.m. • Whitewater Creek

*This session will focus on a broad overview of current industry risk management and legal considerations that directly impact your departments. Review of cases that highlight industry issues and good investigation and documentation practices*

### SV-11 Small Ski Area Roundtable

Andy Birch • Ski Granby Ranch

Thursday - May 11 2017 • 8:30 a.m. • Kannah Creek

*This will be an open discussion to look at issues and potential answers for personnel involved with small ski areas.*

### SV-12 Workers Compensation - Year End Review

#### Claim Trends & Prevention

Mistica Walker • Wells Fargo / Safehold Special Risk

Thursday - May 11 2017 • 8:30 a.m. • Spring Hill - Monument

*We will review statistics on injuries for lift operations and lift mechanics. Focus will be on mechanisms of injury and how employees can take an active role in prevention.*