

# 2021 Public Training

## 2021 Lightning Analysis Basics

**INSTRUCTOR:** H. Roice Nelson, Jr.

**LOCATION:** Iron Springs Adventure Resort, 3196 North Iron Springs Road, Cedar City, Utah 84720

<p><b>DATES:</b></p> <ul style="list-style-type: none"> <li>➤ <u>January Evaluations</u></li> <li>➤ Postponed – by the first of each month need 5 registrations for course to proceed</li> <li>➤ June 15-17</li> <li>➤ July 13-15</li> <li>➤ August 17-19</li> <li>➤ September 14-16</li> <li>➤ October 12-14</li> <li>➤ November 16-18</li> <li>➤ December 14-16</li> </ul>	<p><b>COURSE AGENDA</b></p> <p><u>Day 1 Morning:</u></p> <ul style="list-style-type: none"> <li>➤ Introductions &amp; Objectives</li> <li>➤ Origins &amp; Other ElectroMagnetic Data Types</li> </ul> <p><u>Day 1 Afternoon:</u></p> <ul style="list-style-type: none"> <li>➤ Process of doing Lightning Analysis</li> <li>➤ Geothermal Lightning Project &amp; Field Trip</li> </ul> <p><u>Day 2 Morning:</u></p> <ul style="list-style-type: none"> <li>➤ Lightning Derived Maps</li> <li>➤ Lightning Derived Volumes</li> </ul> <p><u>Day 2 Afternoon:</u></p> <ul style="list-style-type: none"> <li>➤ Time-Lapse Lightning Analysis</li> <li>➤ Aquifer Lightning Project &amp; Field Trip</li> </ul> <p><u>Day 3 Morning:</u></p> <ul style="list-style-type: none"> <li>➤ Oil &amp; Gas Exploration Examples</li> </ul> <p><u>Day 3 Afternoon:</u></p> <ul style="list-style-type: none"> <li>➤ Mineral Exploration Examples</li> <li>➤ Class Choice Geology Field Trip and / or Rock Hounding</li> </ul>
--	---

### It's Time to Get Back to Geology!

- ✓ Come to Southern Utah for a class which will change your approach to exploration!
- ✓ Lightning Analysis, a new exploration process with a lot of case histories, showing real value!
- ✓ Are you tired of cramped spaces? None here!
- ✓ This course is in the middle of open spaces!
- ✓ Social distancing easy, so masks are optional!
- ✓ Use unspent 2020 travel and training budgets!
- ✓ Learn all about this new geophysical data type!
- ✓ We've spent 11 years preparing for your visit!

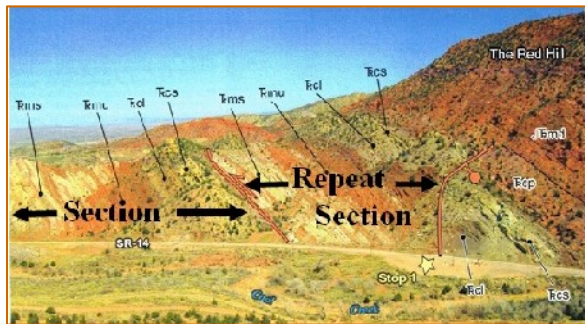


### Lighting Analysis Addresses These Exploration Challenges

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>➤ Limited Finances</li> <li>➤ Expensive Methods</li> <li>➤ Regional High-Grading of Leads</li> <li>➤ Long Prospect Generation Process</li> </ul> | <ul style="list-style-type: none"> <li>➤ Safety Requirements</li> <li>➤ Government Regulations</li> <li>➤ Invisible Resources</li> <li>➤ Lightning Analysis is Quicker, Safer, and Cheaper than any other geophysical data type!</li> </ul> |
|---|---|

# 2021 Public Training

## View the Best Seismic Scale Outcrop Geology on Earth before or after the Lightning Analysis Basics Course



Red Hill Backthrust (11 miles)

<http://www.alltrails.com/trail/us/Utah/the-red-hill>



Zion National Park (61 miles)

[nps.gov/zion/index.html](https://nps.gov/zion/index.html)



Kolob Canyons (22 miles)

[nps.gov/zion/planyourvisit/Kolob-canyons.htm](https://nps.gov/zion/planyourvisit/Kolob-canyons.htm)



Snow Canyon State Park (64 miles)

<https://stateparks.utah.gov/parks/snow-canyon>



Cedar Breaks National Monument (32 miles)

[nps.gov/cebr/index.html](https://nps.gov/cebr/index.html)



Bryce Canyon National Park (101 miles)

[nps.gov/cebr/index.html](https://nps.gov/cebr/index.html)



Brian Head (41 miles)

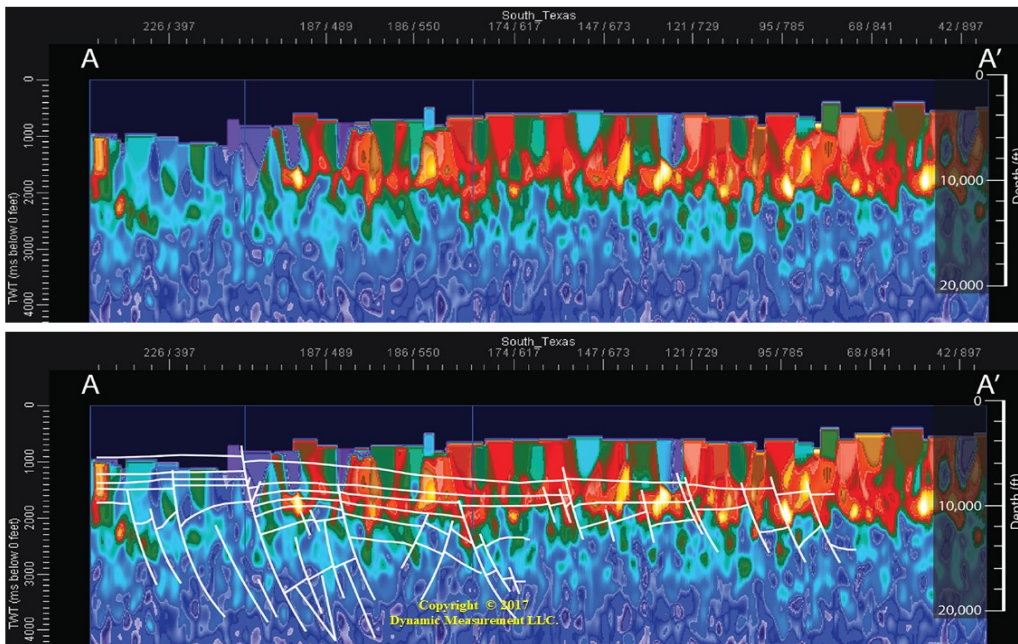
[www.skiutah.com/members/brian-head](http://www.skiutah.com/members/brian-head)



Great Basin National Park (151 miles)

[nps.gov/cebr/index.html](https://nps.gov/cebr/index.html)

## Zoom A-A'



**Regional-Scale Apparent Resistivity arbitrary cross-section selected from a 50-meter trace space volume derived from lightning analysis loaded in a standard seismic workstation and overlain on bottom with a Texas Bureau of Economic Geology (BEG) interpretation derived from seismic and well data**



**INSTRUCTOR:** H. Roice Nelson, Jr.  
**DISCIPLINE:** Geophysics & Geoscience Exploration  
**AVAILABILITY:** Public & In House  
**RECOMMENDED ATTENDEES:** Geophysicists, geologists, engineers, mining engineers, managers, exploration support staff, & exploration investors

### COURSE INCLUDES:

- History of different geophysical Data Types
- Origins of lightning analysis for exploration
- Available ElectroMagnetic methods & costs
- The process of doing a lightning analysis
- Lightning Analysis Case Histories:
  - Geothermal Exploration, UT
  - Aquifer Exploration, UT
  - Remediation Site, SC
  - Regional Exploration, AZ, MI, ND, TX
  - Lead / Prospect Exploration, AZ, CA, FL, LA, MI, NV, NY, OK, SC, TX, UT
  - Time-Lapse Lightning Analysis, OK
- Field Trips to 2 Lightning Analysis Sites
- Mineral Exploration Examples
- Oil & Gas Exploration Examples
- Rock Hounding (lodestones: lightning magnetite)
- Opportunity to see & explore some of the best seismic-scale outcrop geology on planet Earth

### ANTICIPATED INSIGHTS:

- Understand different exploration options using different geophysical methods
- Learn the cost of different exploration tools
- Comprehend the basics of lightning analysis as a new geophysical data type
- Experience results of reciprocity of multiple strong EM sources and a few fixed sensors
- Value lightning analysis fault interpretation
- Realize the importance of data integration
- Limitations and benefits of lightning analysis

### COURSE MATERIAL:

- Philosophy, workflow, and methodology of lightning analysis - a new geophysical data type
- Geophysical data integration examples
- Regional structural interpretation
- Fault surface mapping with lightning data
- Horizon dip interpretation at well sites
- Newcastle & Hildale Report Case Histories

# 2021 Public Training

## VITA:

## H. Roice Nelson, Jr.

### **Dynamic Measurement LLC, Founder/CEO**

2008 - Present

Establishing a new branch in the geophysical services industry where we are harnessing lightning for natural resource exploration, including gold and other precious metals, vanadium and other critical minerals, petroleum, aquifers, geothermal energy, etc. The approach is quicker, safer, & cheaper than any other geophysical data type. Have an exclusive data license, 2-issued patents, and other patents outlined and planned.

### **Geophysical Development Corporation, Vice President, Interpretation Business Development**

2004 - 2008

Charged with opening the market for GDC in China, and building an integrated interpretation business to expand Geokinetics and its subsidiaries Quantum Geophysical and GDC into a full-service geophysical contractor supplying seismic acquisition, processing, and interpretation.

### **Dynamic Resources Corporation, Founder/President**

2001 - Present

Established to integrate advanced technologies with a NetWork of proven professionals as synergistic multidisciplinary teams for exploration or production projects within specified areas and utilizing proprietary tools and processes. Geophysical consulting services now through GDC.

### **Walden 3-D, Inc., Founder/President**

1990 - Present

A consulting company and new company incubator. Started Walden Visualization Systems (the first virtual reality service company for the oil industry), vPatch (providing web-based project management), Advanced Structures Incorporated (building space-frame, fabric, and advanced enclosures), HyperMedia Corporation (the first commercialization of a hypertext browser), and others. Did major seismic interpretation projects in Nigeria, in the United States, in Venezuela, and in New Zealand. Geophysical consulting services now through GDC.

### **Continuum Resources International Corporation, Co-Founder**

1997 - 2000

Merged Walden Visualization Systems with Energy Innovations to create petroleum industry commercial visualization theaters. Designed software to read from any databases or file with spatial information and integrate the displays as a 3-D virtual reality experience. Established simultaneous display and interaction capabilities connecting London England, Perth Australia, and Houston Texas.

### **The Global Basin Research Network, Co-Founder**

1992 - 1994

Participated in Department of Energy study with Lamont-Doherty Earth Observatory of Columbia University, Cornell University, Louisiana State University, Woods Hole, Penn State, and other major universities on dynamic replenishment of the largest Pleistocene oil and gas field in the Gulf of Mexico.

### **HyperMedia Corporation, Co-Founder**

1991 - Present

Designed, built, and produced a UNIX, X-Windows, Motif, Client-Server hypertext engine used for major projects in The United States, Saudi Arabia, and New Zealand, including development of a process model for running the ideal oil and gas company. Geophysical consulting services now through GDC.

### **Landmark Graphics Corporation, Co-Founder**

1982 - 1992

Designed Landmark Graphics seismic interpretation software. Created worldwide markets with training courses with technical support. Participated in regional and detailed interpretation projects in The United States, Canada, China, Australia, Indonesia, and the North Sea. Established Landmark's University Program helping students and professors develop new technologies from Australia to Holland.

### **University of Houston's Allied Geophysical Laboratory (AGL), Co-Founder**

### **University of Houston's Seismic Acoustics Laboratory (SAL), General Manager**

1980 - 1982

Managed the physical modeling facility at the SAL. Created and managed four new laboratories for studying vector processing, image processing, well logging tools, and integration of all exploration activities. Wrote the book New Technologies in Exploration Geophysics.

### **Mobil Oil Corporation, Geophysicist**

1974 - 1980

Worked as an interpretation and acquisition geophysicist. Participated in regional and detailed interpretation projects as well as equity re-determinations in the Far East, South America, Europe, Africa, and The United States.

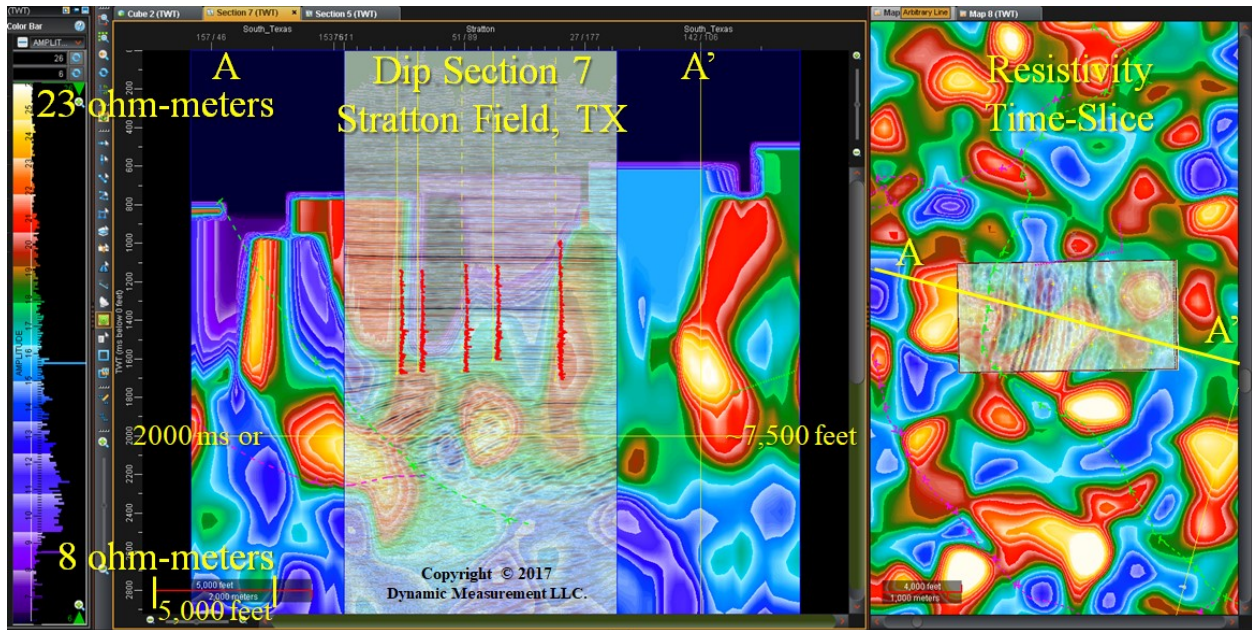
### **Pan American & Amoco, Assistant Geophysicist**

1970 & 1973

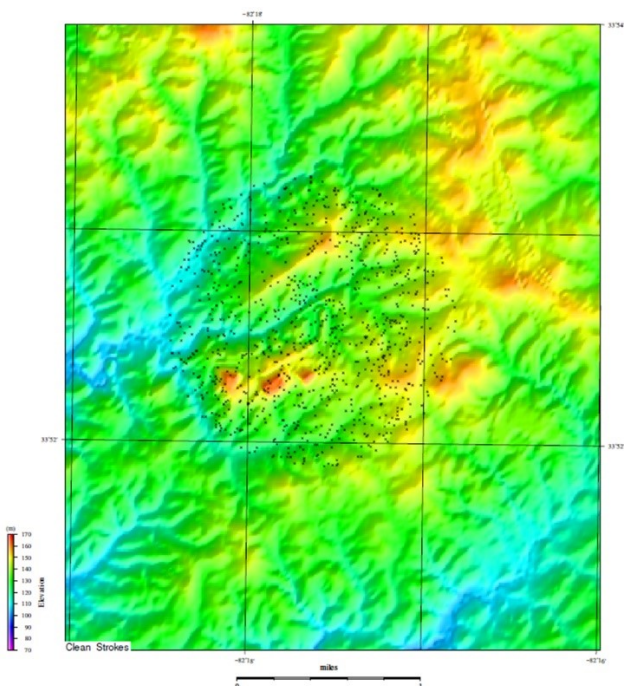
Worked as an assistant interpretation and acquisition geophysicist as a summer intern. Rocky Mountain seismic acquisition and seismic interpretation projects.

### **Academics, MBA, Southern Method University, 1981; B.S. Geophysics, University of Utah**

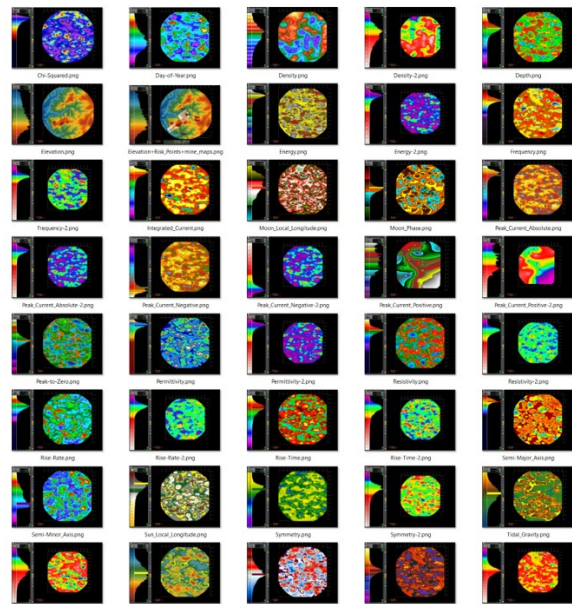
1974



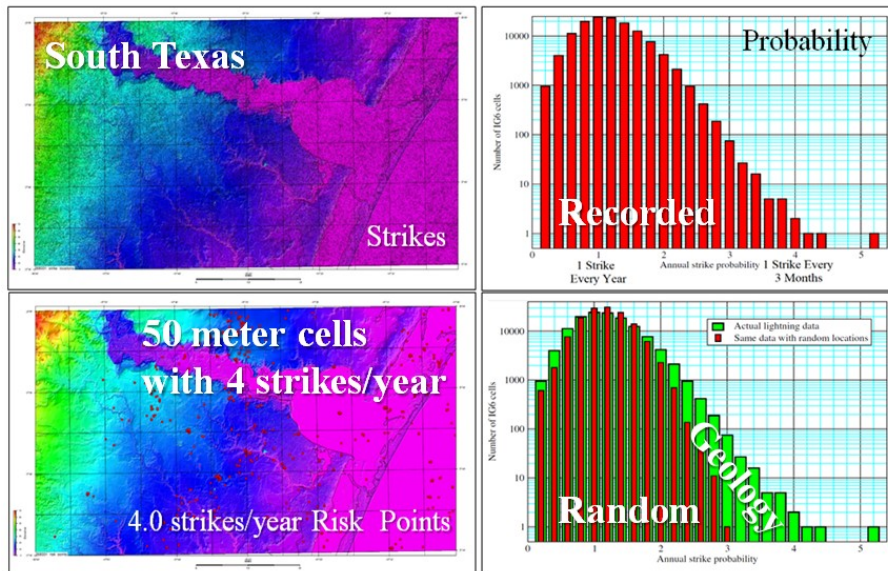
Prospect-Scale 50-meter trace spaced semi-transparent Apparent Resistivity arbitrary cross-section selected from a lightning analysis volume loaded in a standard seismic workstation & overlain with well logs and underlain with seismic using Landmark Graphics' DecisionSpace™ software on a standard workstation



Lightning Attribute Map Thumbnails



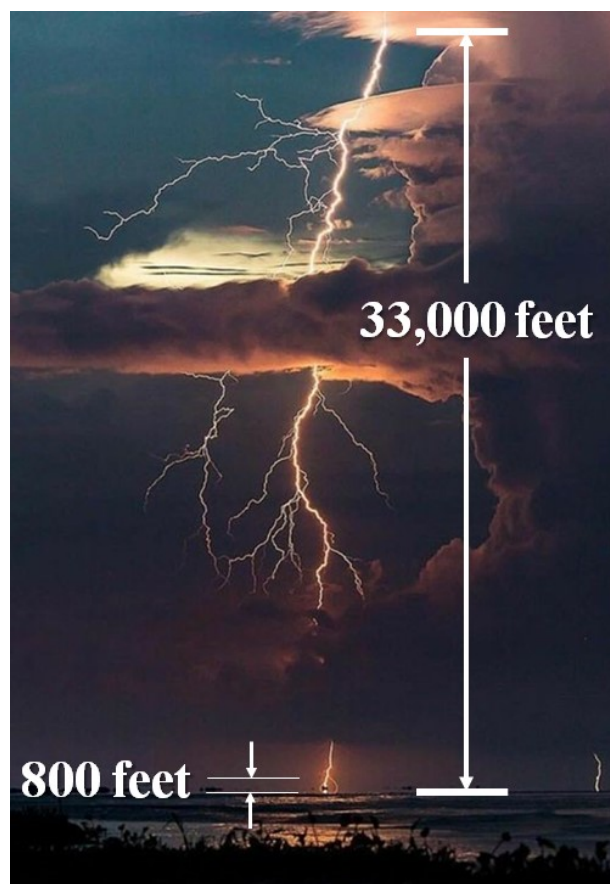
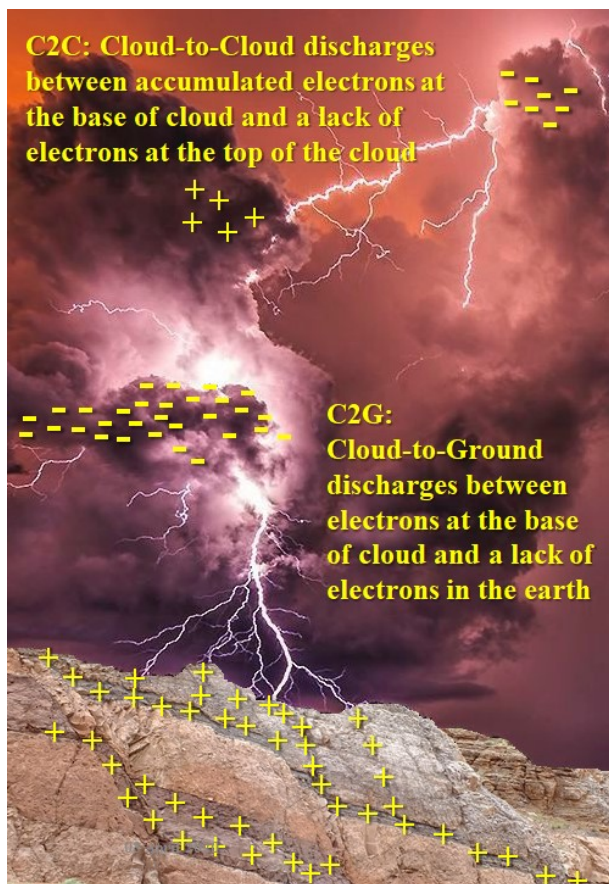
SPOT<sup>sm</sup> Lightning Strikes over Topography, Hildale, UT    SPOT<sup>sm</sup> Lighting Attribute Maps, Hildale, UT



## Geology Impact on Strike Locations & Intellectual Property

- Cross-Plotting randomized lightning strike locations vs recorded locations shows there is a geologic effect to strike locations.
- Exclusive license to NLDN & GLD-360 lightning databases for Natural Resource Exploration
- Two issued U.S. Patents:
  1. Method for Locating Subsurface Natural Resources
  2. Method for Determining Geological Surface & Subsurface Resistivity

Lighting Analysis calculates the risk of a lightning strike (South Texas example above shows 50-meter x 30-meter cells, & predicts which will have 4 lightning strikes each year). Randomizing strike location shows the impact of geology on lightning strike locations.



Course Notes examples pages, left showing cloud-to-cloud & cloud-to-ground strikes & right stroke length.

# 2021 Public Training

## COURSE LOCATION

Iron Springs Adventure Resort  
Conference Center:

<https://www.ironspringsutah.com>

3196 North Iron Springs Road,  
Cedar City, Utah 84720

[info@ironspringsutah.com](mailto:info@ironspringsutah.com)

435.708.0101

Stay On-Site (15% Discount)

### Things to do at Iron Springs Adventure Resort:

- Hiking
- Horse Drawn Wagon Rides
- Mountain Biking
- Disc Golf
- ATV & Side-by-Side Riding
- SUMA (Southern Utah Museum of Art)
- Frontier Homestead State Park
- Summer: Shakespeare Festival
- Winter: Skiing at Brian Head



Lodge Suites



RV Sites



Stay at Iron Springs Adventure Resort

or

Stay in Cedar City (10 miles)

or

Brian Head Ski Resort (43 miles)



Mining Cabins

# 2021 Public Training

## PRICE

### Includes:

Continental Breakfast (T, W, Th, F)  
Lunch (T, W, Th)  
Dinner (T, W, Th)  
Snacks  
Transportation 3 Field Trips (T, W, Th)  
Entertainment (Monday Night)  
Rock Hounding / Collecting

**\$2,880 each attendee +  
Hotel & Transportation**

(5 students per class)

## To Reserve Tickets:

**CALL:** Leslie Dodge at 435.851.6434 or

**E-MAIL:** [les@ironspringsutah.com](mailto:les@ironspringsutah.com) or

**ON-LINE:** [www.ironspringsutah.com/classes-workshops](http://www.ironspringsutah.com/classes-workshops)

Please Specify when you plan to arrive and leave, and if you want us to arrange housing and/or transportation from Cedar City, St. George, Las Vegas, or Salt Lake Airports

**100% of Course Price credited towards  
your first Lightning Analysis Project**

## LIGHTNING ANALYSIS

Using the Most Powerful Geophysical  
Energy Source: Lightning

Exclusive Rights to Worldwide Evergreen  
Lightning Databases

Customer Provides Area-of-Interest

Dynamic Orders, Cleans, Processes, &  
Interprets the Lightning Data

Dynamic Provides Maps & 4-D Volumes

Easy Integration with Existing Data

Faster, Safer, Cheaper Geophysics

No Permitting, No Regulation, No Access,  
No Boots-on-the-Ground, Easy Integration



**Dynamic Measurement LLC**

<http://www.dynamicmeasurement.com>

2155 W 700 S #21, Cedar City, Utah 84720

713.542.2207 [roice@dynamicmeasurement.com](mailto:roice@dynamicmeasurement.com)