

# Science Camp #170802.8

02-04 August 2016 @ the Condo, the Nelson Cabin, and surrounding area



## Advisors

H. Roice Nelson, Jr., Andrea S. Nelson,  
Paul F. Nelson, Benjamin B. Nelson



## Attendees

Ethan E. Nelson, Grant M. Nelson, Colby C. Wright,  
Taylor R. Wright, Ella D. Nelson, Halle N. Wright,  
Bobbi Sophia Waldron, Dallin Spencer Nelson,  
Avalyn Ashby Wright, Rachel Lee, & Ian Lee

# Past Science Camp Themes & Sites Visited

1. Nelson Cabin, Fishing, Condensation, Water Coloring, and Music
  1. Nelson Cabin
  2. Panquitch Lake
  3. Swimming at Cedar City Aquatics Center
2. Mining Range, Frisco, Silver Reef, Iron Town, Astronomy at Frisco Peak, Archery
  1. Nelson Cabin, Kolob Reservoir, Silver Reef, Snow Canyon, Volcano
  2. Parowan Gap, Rack Range Mines, Frisco, Frisco UU Telescope
  3. Iron Mine, Iron Town
3. Geocaching, Mammoth Cave, Cascade Falls, and Cedar City Cemetery
  1. Nelson Farm, Fiddler's Canyon,
  2. Boys to Mammoth Cave, Cascade Falls and Girls to St. George and Pottery Making
  3. Cedar City Cemetery
4. Volcanoes, Classy Closets, Maps, Surveying, Sand Painting, and Genealogy
  1. Condo, Snow Canyon Volcanoes, Classy Closets, Fiddler's Canyon
  2. Nelson Farm to survey, Nelson Cabin
  3. Cedar City 24<sup>th</sup> of July Parade
5. Patterns, Horse Riding, Internet, Be-a-man-campout
  1. Dust Devil Ranch, InfoWest, Fiddler's Canyon
  2. Nelson Cabin
  3. Cedar City July 4<sup>th</sup> Parade
6. Music & Spoken Word, SilencerCo, Indian Tribes & Archaeology, Solar Astronomy
  1. Family Discovery Center, Sophie & Dallin's Baptism, SilencerCo, Music & Spoken Word, UU Science Museum
  2. Freemont Indian Museum, Boulder Anasazi Ruins, Escalante Petrified Forest, Bryce Canyon
  3. Parowan Gap, Solar Astronomy, Nelson Cabin, Uncle Des' & Aunt Sara's, Swimming
7. Rock Cutting, SUU Museum, Computer Hardware and Software, Cabin
  1. 1<sup>st</sup> Annual Fun Run / Walk, rock collection Bloody Ridge, rock cutting and polishing
  2. HTML at SUU, and Lego Robots at Nelson Cabin
  3. Astronomy at Nelson Cabin, Bottle Rockets, and having a good time



# 8G Nelson Grandkids Summer Science Camp

1. Geography
2. Genetics
3. Genealogy
4. Grandma
5. Grandpa
6. Geology
7. Geophysics
8. Guitar

- 8<sup>th</sup> Year of Science Camps
- 8 Bits in a Byte (1 computer word)
- Completion of First Word
- Hopefully each Grandchild will complete 8 words in your lifetime  
Grandpa hopes for 2 more (age 83)  
Grandma for 3 more (age 86)

Good Times

Photos + 174 pages of slides  
posted at:

[http://www.walden3d.com/photos/Grandkids\\_Science\\_Camps/170802-04\\_Science\\_Camp](http://www.walden3d.com/photos/Grandkids_Science_Camps/170802-04_Science_Camp)

# Safety

- **Never go anyplace alone.**
- Exception is if one of you is hurt, then:
  - One of you stay and help the person hurt.
  - The other one run and get help.
- If you get lost stay put, we will find you.
- If you hear a rattlesnake do not move quickly, just slowly move away from the sound.
- Do not run with a knife open. Use knife safety.
- If you cut yourself, apply pressure to the wound to stop bleeding, and send for help.
- Never point an arrow in a cocked bow or a gun at any person.
- Drink lots and lots and lots of water.
- Do not go swimming unless an adult is with you.
- Do not start branches on fire and swing them around where others can be hurt.
- Have fun, use common sense, and **think before you act.**

# Schedule Tuesday - Saturday

- Tuesday, 01 August 2017
  - Folks Arrive, Grandpa and Grandma Family History Center.
  - Horses, planning meals, purchasing food, sun dial, making bottle rockets, 4-wheelers, etc.
  - 7:00 Shakespeare Greenshow, fishing, 8:30 safety review and 8G introduction
- Wednesday, 02 August 2017:
  - Water Garden, Fun Run/Walk, Breakfast, Geography of farm, Iron Springs, Irontown
  - Genetics, Presentations on a Family Member, Genealogy at Family History Center
  - Cabin, Geology Slides, Guitar & Singing
- Thursday, 03 August 2017:
  - Zion: Angels Landing & Emerald Pools, Weeping Rock, Sinawava
  - Geophysics Slides - Seismic
  - Cabin, Guitar & Singing.
- Friday, 04 August 2017:
  - Geophysics Slides – Water & Lightning, Cascade Falls, Mammoth Cave
  - Marshmallow Guns, Water Rockets,
  - Scavenger Hunt in Cemetery, Swimming, Fishing, Ben & Bridget's Families Leave.
- Saturday, 05 August 2017:
  - Garden, Fishing, Horses, 4-Wheelers
  - Paul's Family & Sophie leave.

# Job Chart

Tuesday evening, Grandma has macaroni salad, potato salad, and sandwiches and everyone makes their own.

Everybody picks up their own dishes!

Everyone cheerfully does what they are asked to do by Grandpa, Grandma, Uncle Ben, or Uncle Paul

Wednesday	Thursday	Friday
<b>Breakfast:</b> Grandma cooks at the house	<b>Breakfast:</b> Early at cabin, bagels, bars, juice	<b>Breakfast:</b> Taylor, Halle, Avalyn, & Sophie Set-Up, Cook, & Clean-Up
<b>Lunch:</b> Aunt Sara & Uncle Des's house	<b>Lunch:</b> Purchased in Zion Canyon	<b>Lunch:</b> Everyone makes their own sandwiches and helps clean the cabin
<b>Dinner:</b> Colby, Ethan, & Ian Set-Up, Cook, & Clean-Up	<b>Dinner:</b> Grant, Ella, Dallin, & Rachel Set-Up, Cook, & Clean-Up	<b>Dinner:</b> Pizza in Cedar

Saturday Morning: Cold Cereal

# Day 1: Wednesday, 02 August 2017

1. Water the Garden
2. Fun Run/Walk
3. Geography of Nelson Farm, Iron Springs, Irontown
4. Lunch with Aunt Sara & Uncle Des
5. Genetics and Genealogy
6. Grandkids Presentations
7. Cabin
8. Geology Slides
9. Guitar & Singing

# Award Certificate

Presented to

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**Second Annual Fun Run with my 67 year old Grandpa Nelson, or  
Fun Walk with my 62 year old Grandma Nelson at  
The 8th Annual Nelson Grandkids Science Summer Camp**



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**Signed**

02 August 2017



# 6. Presentations

- Ethan \_\_\_\_\_.
- Grant \_\_\_\_\_.
- Colby \_\_\_\_\_.
- Taylor \_\_\_\_\_.
- Ella \_\_\_\_\_.
- Halle \_\_\_\_\_.
- Sophie \_\_\_\_\_.
- Dallin \_\_\_\_\_.
- Rachel \_\_\_\_\_.
- Ian \_\_\_\_\_.
- Avalyn \_\_\_\_\_.

## **Day 2: Thursday, 03 August 2016**

1. Up Early to Zion
2. Angel's Landing – older cousins
3. Emerald Pools – younger cousins
4. Lunch
5. Geophysics Slides - Seismic
6. Guitar & Campfire Singing
7. Astronomy?

# Day 3: Friday, 04 August 2017

1. Geophysics Slides – Water & Lightning
2. Marshmallow Guns
3. Races
4. Water Rockets
5. Revisit Favorite Site:
  1. Cascade Falls
  2. Mammoth Cave
  3. Cedar Breaks
6. Go to New Site
  1. Kanaraville Falls
  2. Spring Hill Canyon
  3. Taylor Creek
  4. Calf Springs Ranch
7. Swimming

# 1. Geography

A science that deals with the natural features of the earth and the climate, products, and inhabitants.



SC8 - 018

# Topography of Cedar Valley

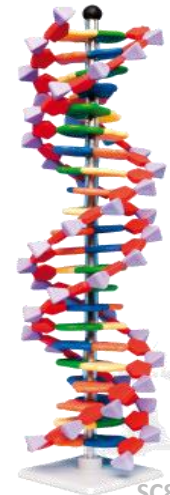
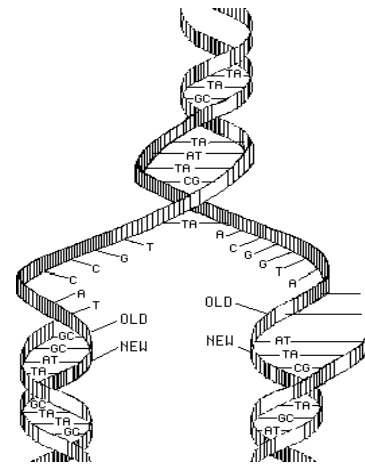
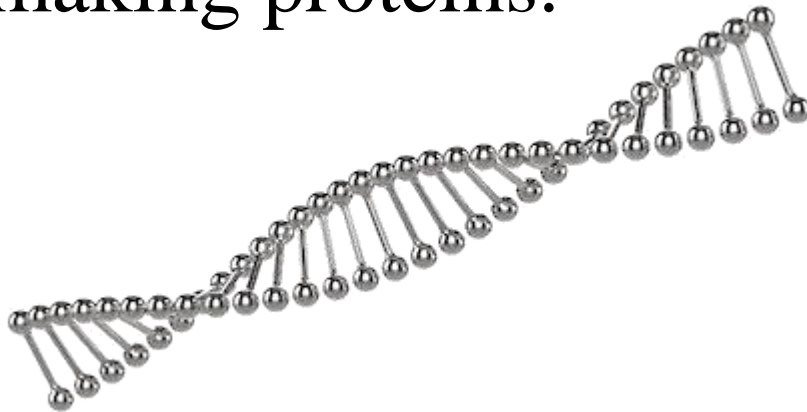




# 2. Genetics



The chemical code that is the basis of genetic inheritance and consists of triplets of three linked chemical groups in DNA and RNA which specify particular amino acids used to make proteins or which start or stop the process of making proteins.



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# Summary

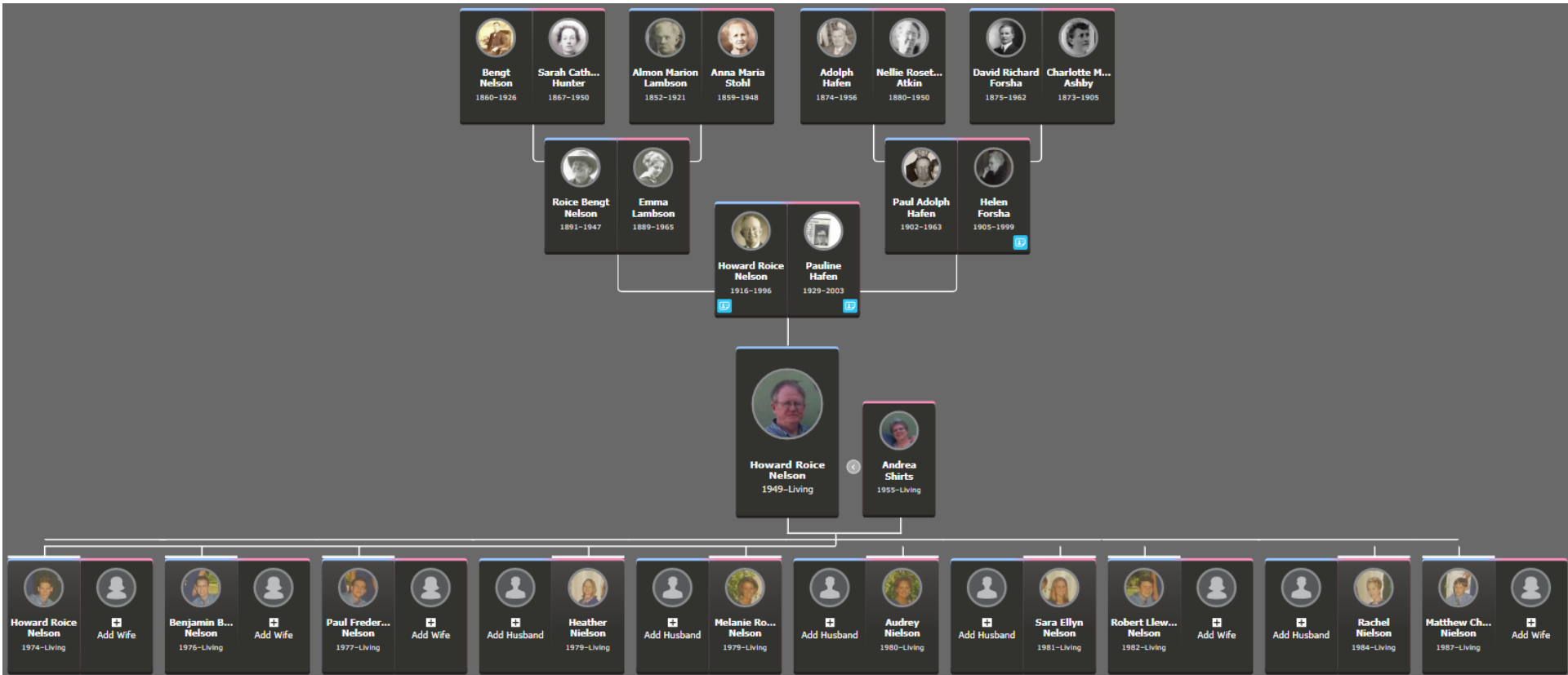
	Grandpa	Uncle Paul	Grandma	Uncle Russell	Aunt Audrey	Aunt Rachel
Europe West	54%	59%	26%	6%	14%	17%
Scandinavia	20%	20%	11%	21%	5%	8%
Great Britain	12%	11%	41%	48%	77%	69%
Ireland	6%	-	21%	23%	-	5%
Finland and NW Russia	-	-	-	1%	-	-
Iberia Peninsula	-	-	<1%	<1%	-	-



# 3. Genealogy



The study of family pedigrees.





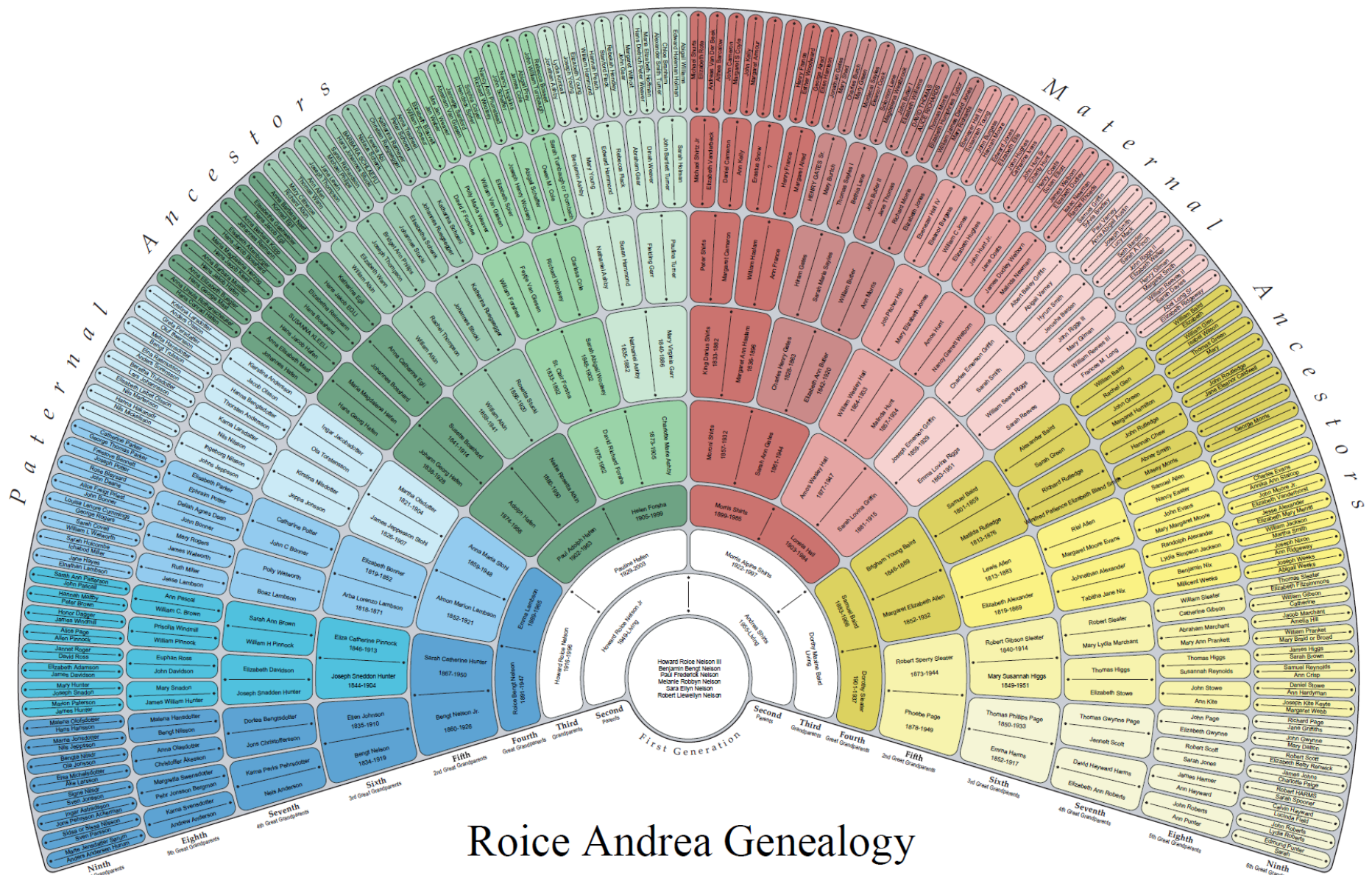
# 4. Grandma

The mother of one's father or mother.



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# 9-Generation Fan Chart



## Roice Andrea Genealogy

# 5. Grandpa

The father of one's father or mother.



← CASTO CANYON TR. NO. 3089  
← JCT. FREMONT TR. NO. 3002 5.5  
← JCT. LOSEE CANYON TR. NO. 3090 9  
← RED CANYON TRAILHEAD 13.5

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- 14, Adams
- 9, Arthur
- 9, Bauer
- 6, Bryant
- 28, Bulloch
- 17, Condie
- 15, Fife
- 11, Gibson
- 9, Grimshaw
- 91, Hunter
- 25, Jensen / Jenson
- 10, Leigh
- 13, Lunt
- 41, Nelson
- 11, Parry
- 16, Perry
- 6, Slack
- 6, Urie
- 11, Walker

# 556 of Grandpa's Cousins are buried in the Cedar City Cemetery

# Notes

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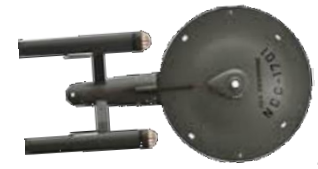
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# 6. Geology



The science that deals with the history of the earth and its life especially as recorded in rocks.

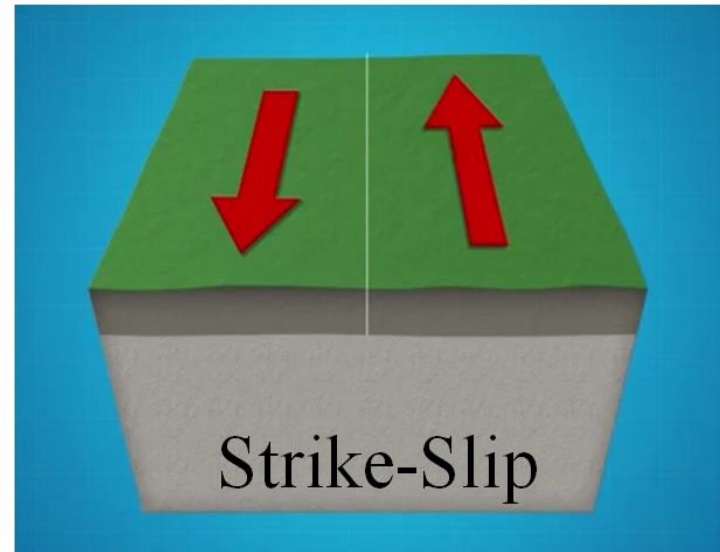
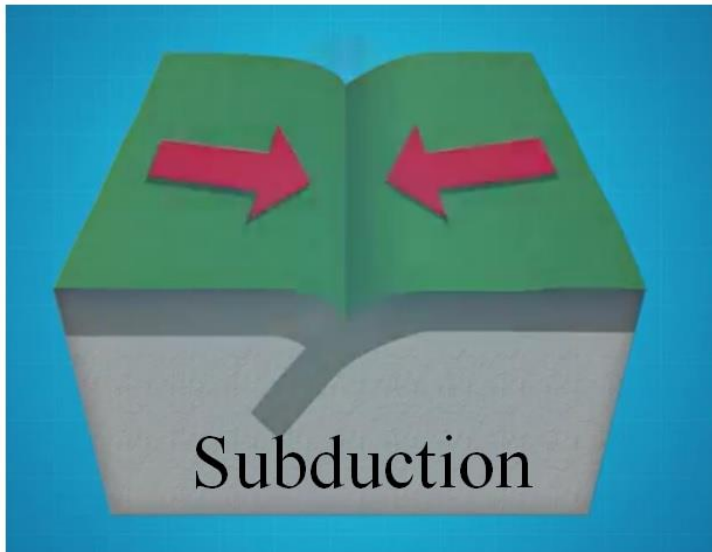
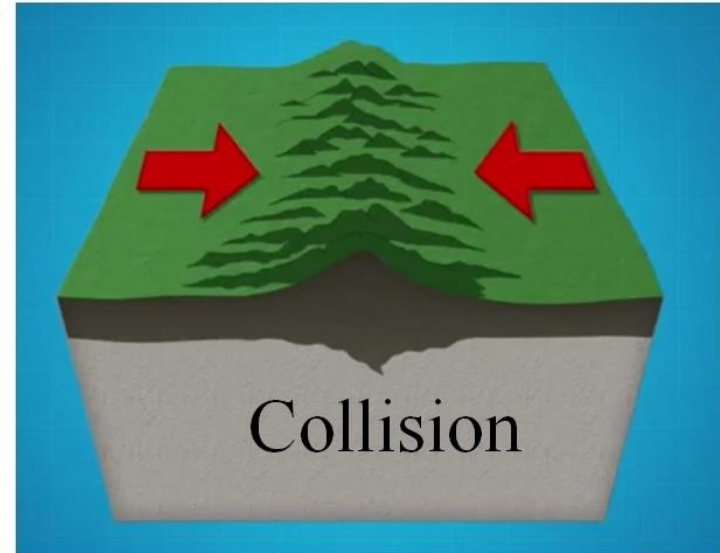
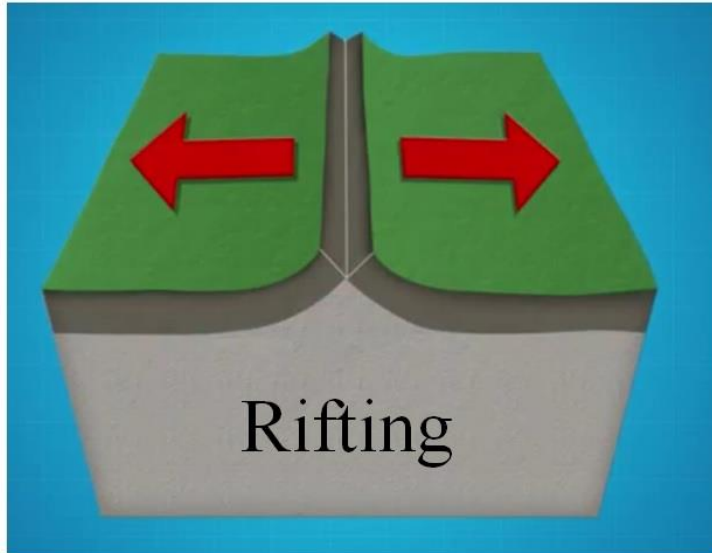


Massive beams of selenite dwarf human explorers in Mexico's Cave of Crystals, deep below the Chihuahuan desert. Formed over millions of years, these crystals are the largest yet found on Earth.

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# Types of Plate Movement



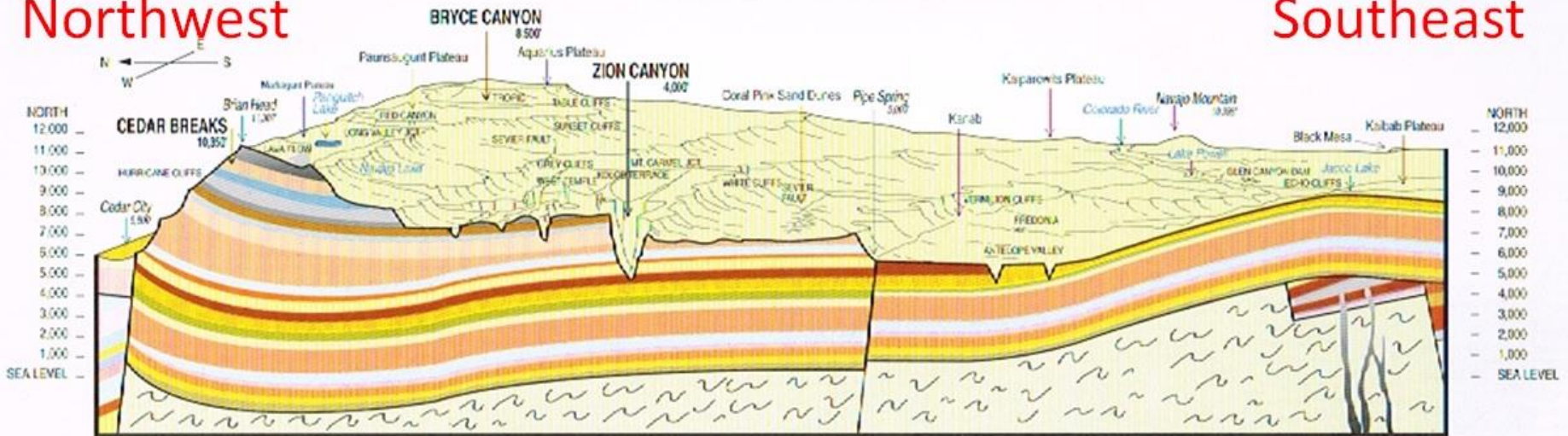
# Layers define Southern Utah

Geological Cross Section of the Bryce Canyon National Park area

Including Cedar Breaks National Monument and Zion National Park

Northwest

Southeast

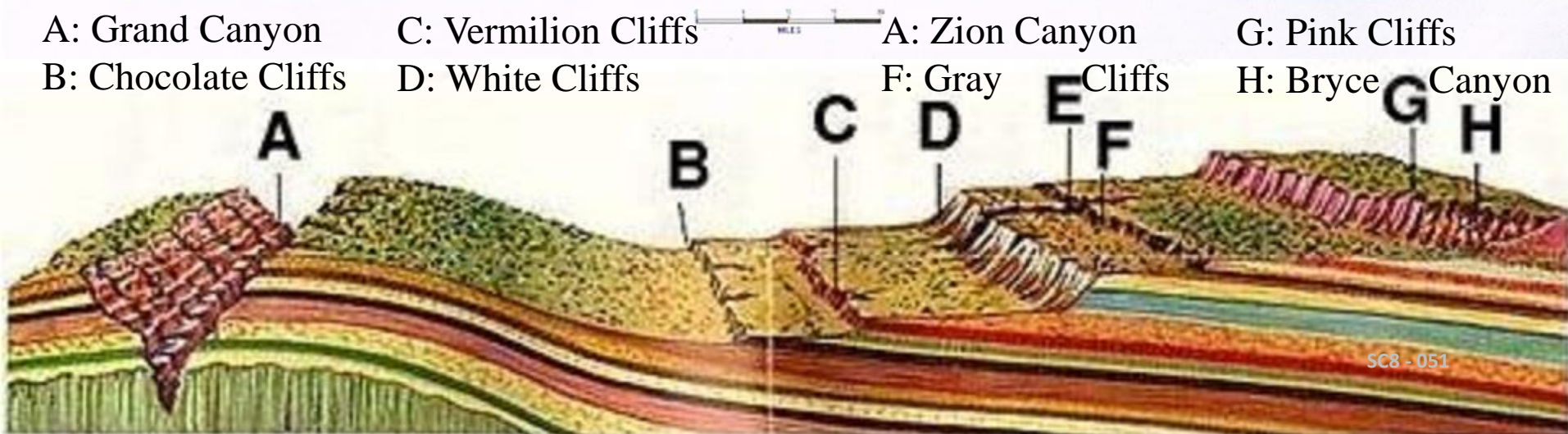


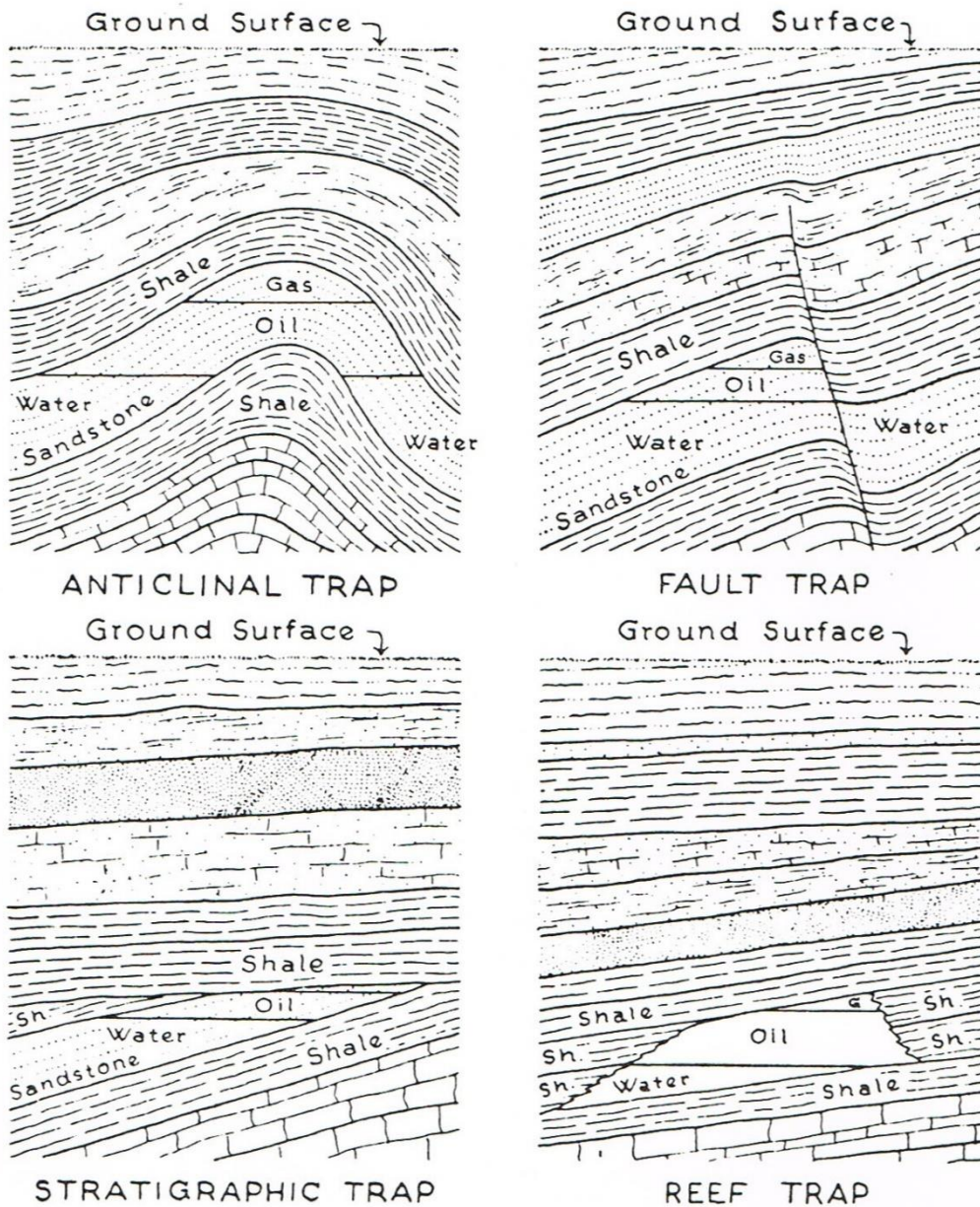
A: Grand Canyon  
B: Chocolate Cliffs

C: Vermilion Cliffs  
D: White Cliffs

A: Zion Canyon  
F: Gray Cliffs

G: Pink Cliffs  
H: Bryce Canyon

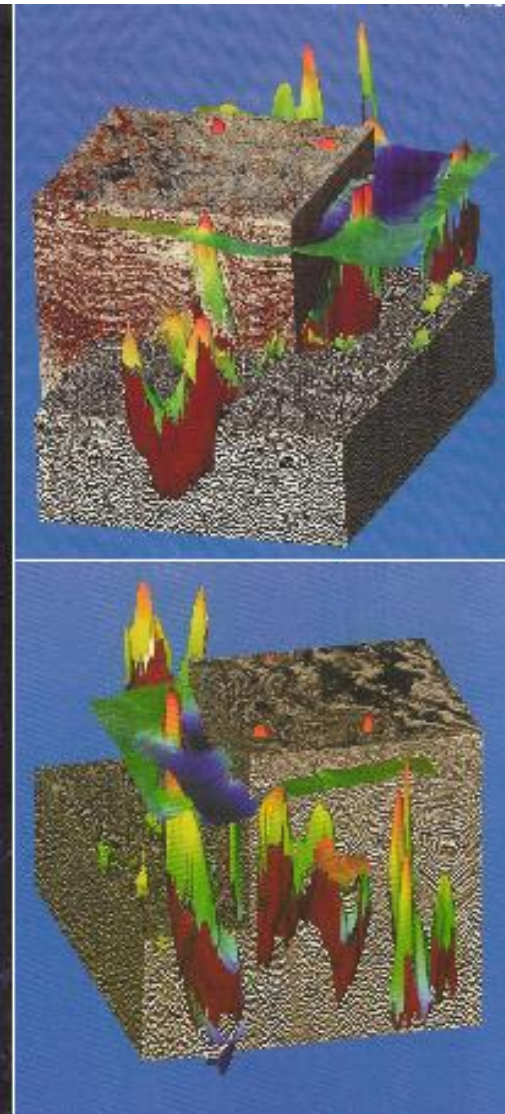
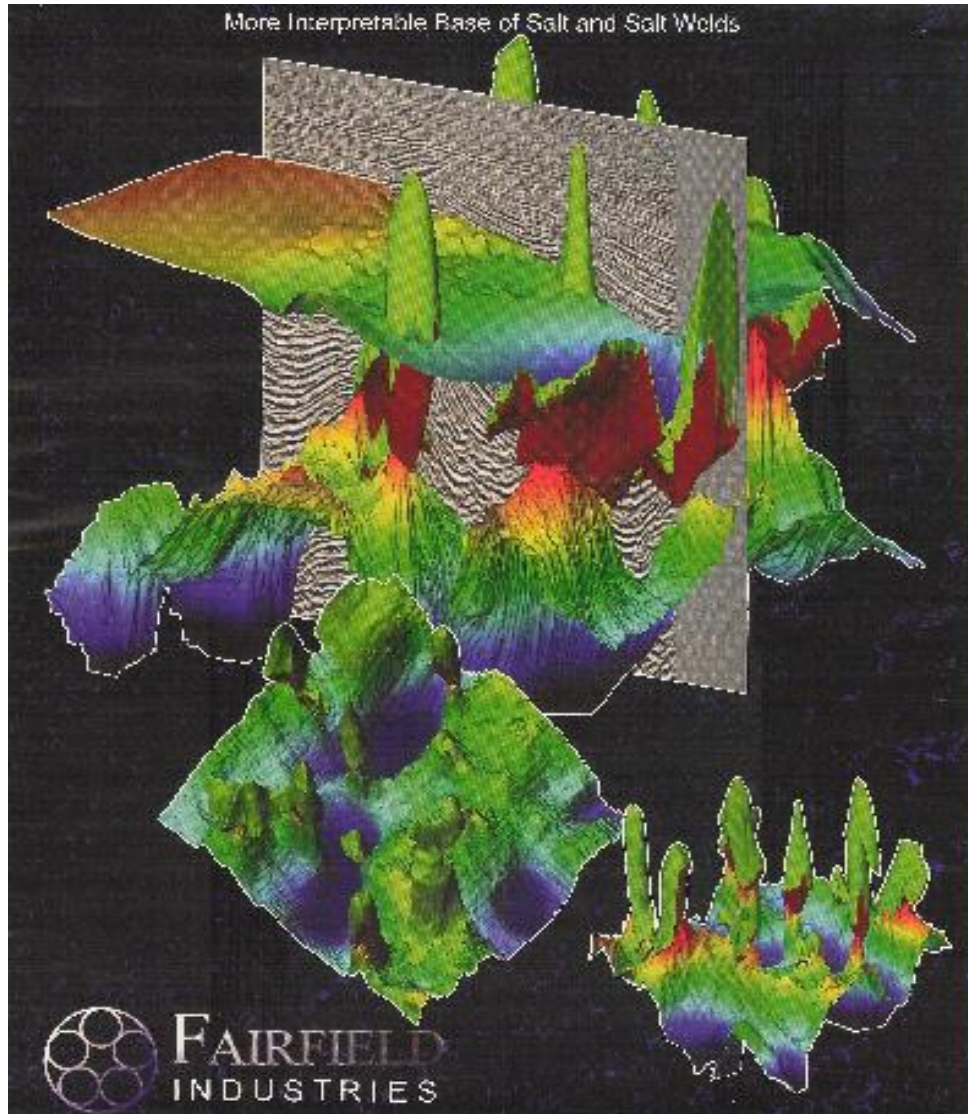




Geologic Layers have to be folded, faulted, eroded, or deposited to trap oil & gas

Figure 1-4. Typical examples of hydrocarbon traps. (After Dix.<sup>10</sup>)

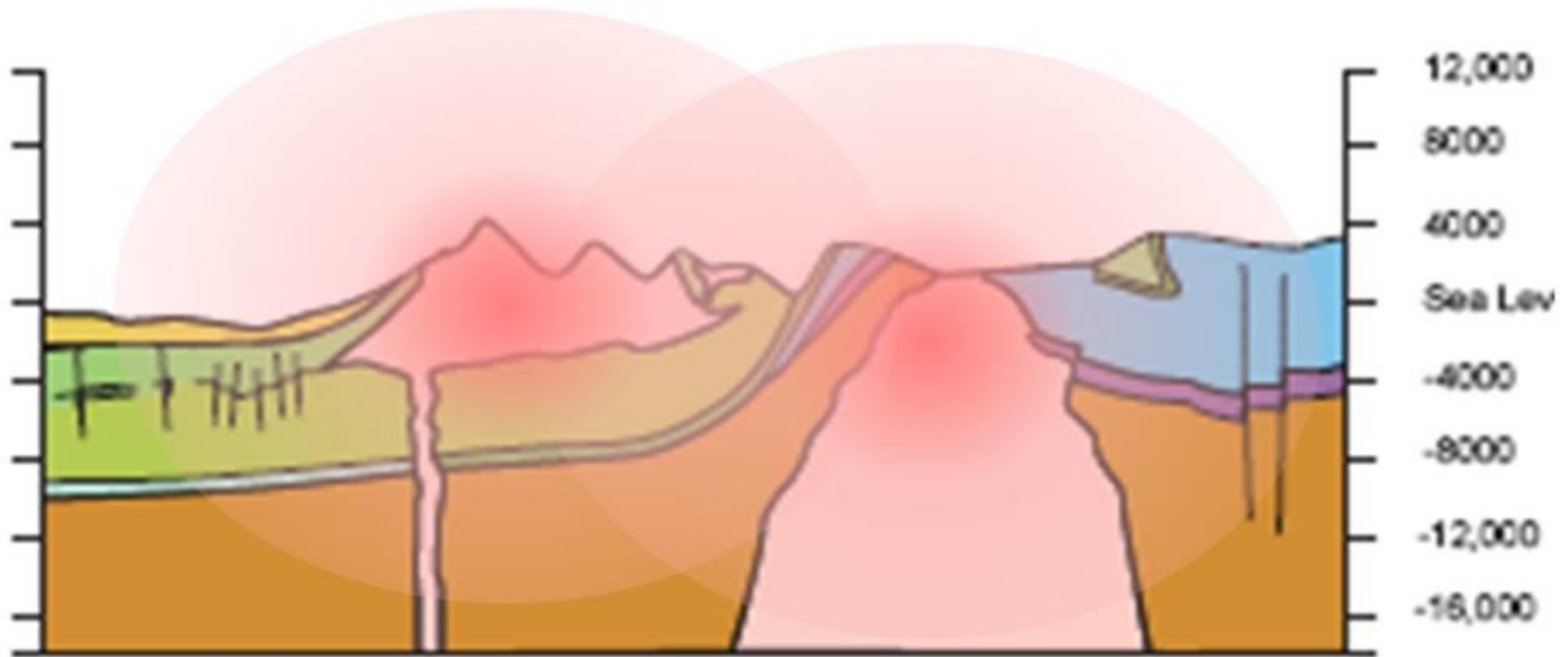
# Salt Domes in the Gulf Coast Fold



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# Temperature Cooks Off Hydrocarbons and Creates Mineralization



Temperature Anomalies from Intrusive Rocks



Mineralization Occurs in Heated Fluids in Faults



Is it an accident these rocks are here?

SC8 - 088





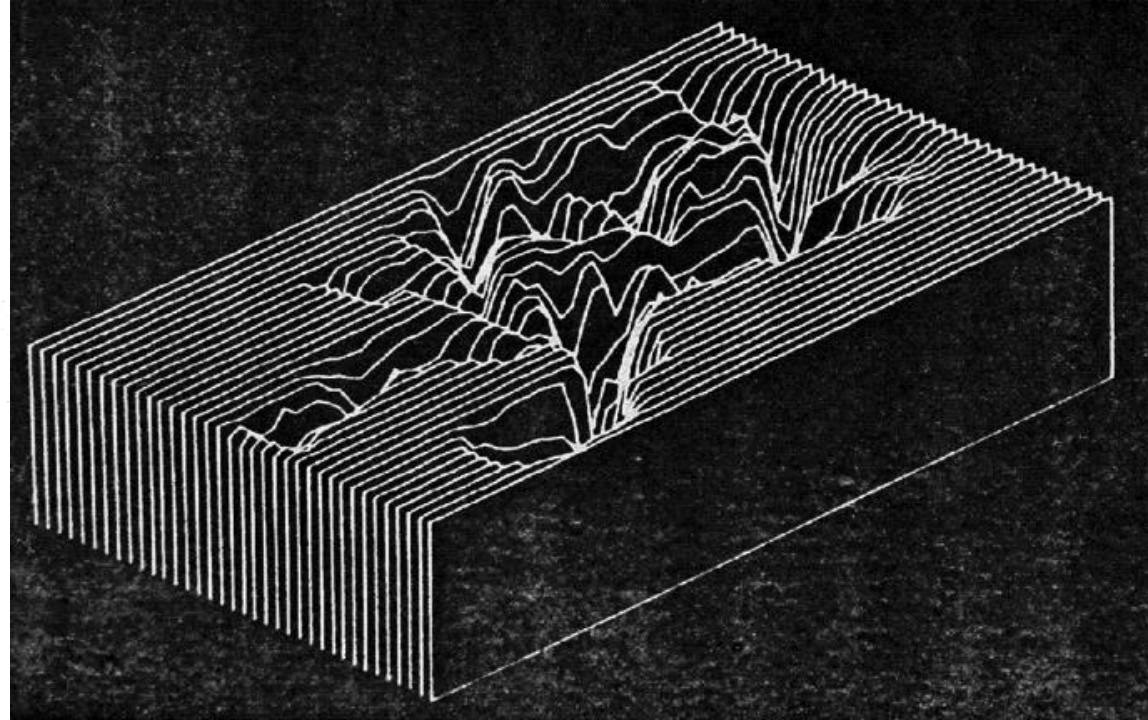
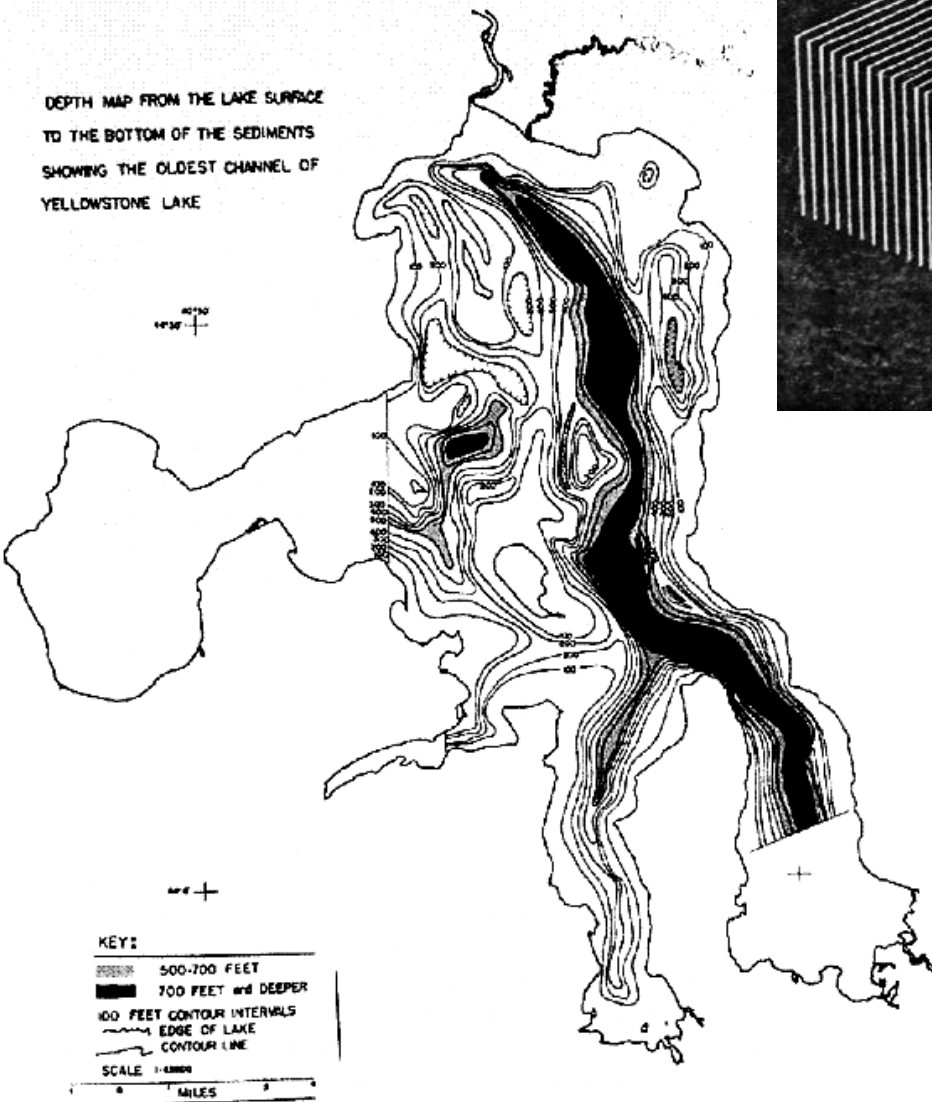
# 7. Geophysics



The study of the Earth by quantitative physical methods, especially by seismic reflection and refraction, gravity, magnetic, electrical, electromagnetic, and radioactivity methods.



# Base Quaternary Sediments Yellowstone Lake



## Grandpa's Senior Thesis



# Seismic Acquisition



A



B



C

Figure 1-5. Typical land crew operations in southwestern Utah. (A) Surface shooting using ten 5-lb sacks of explosives on a primachord string. The environmental damage is temporary, but overshooting, like overgrazing, can cause long-term problems. (B) Shallow hole shooting of, say, 10 lbs of dynamite per shotpoint is better in agricultural areas. (C) The most common land seismic source is Vibroseis.<sup>TM</sup> Normally, four of these trucks vibrate in synchronization.

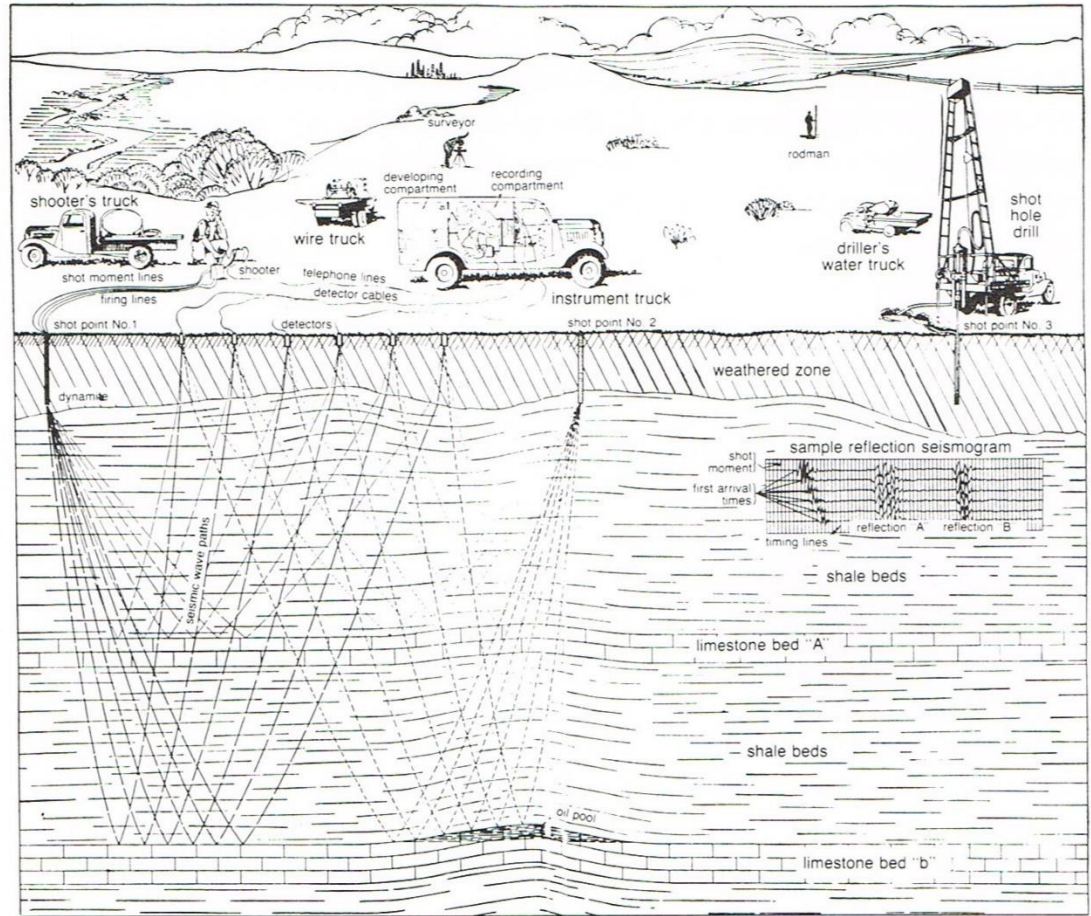


Figure 1-7. This diagram of a 1940s seismic shothole crew reflects the same basic configuration used today, except crews now use many more channels, various seismic sources, and sophisticated instrumentation. (After Nettleton.<sup>2</sup>) SC8 - 100



# 3-D Acquisition Design

3D Seismic Techniques 97

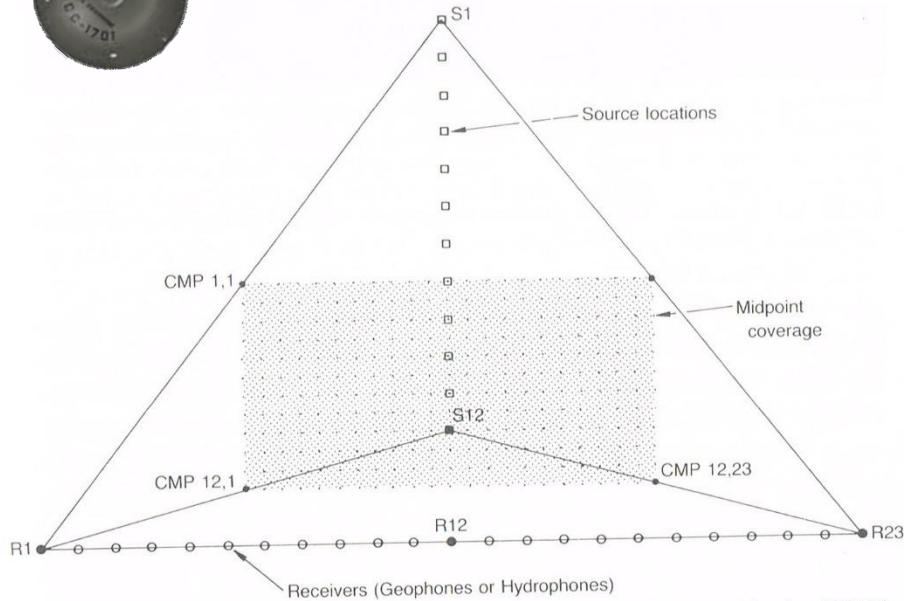


Figure 4-2. Cross-spread or T-spread data collection provides common mid-point (CMP) traces that cover an area. The T-spread is the simplest reduction of a 3D collection scheme, and can be expanded by running the receivers or sources in any arbitrary direction.

logies in Exploration Geophysics

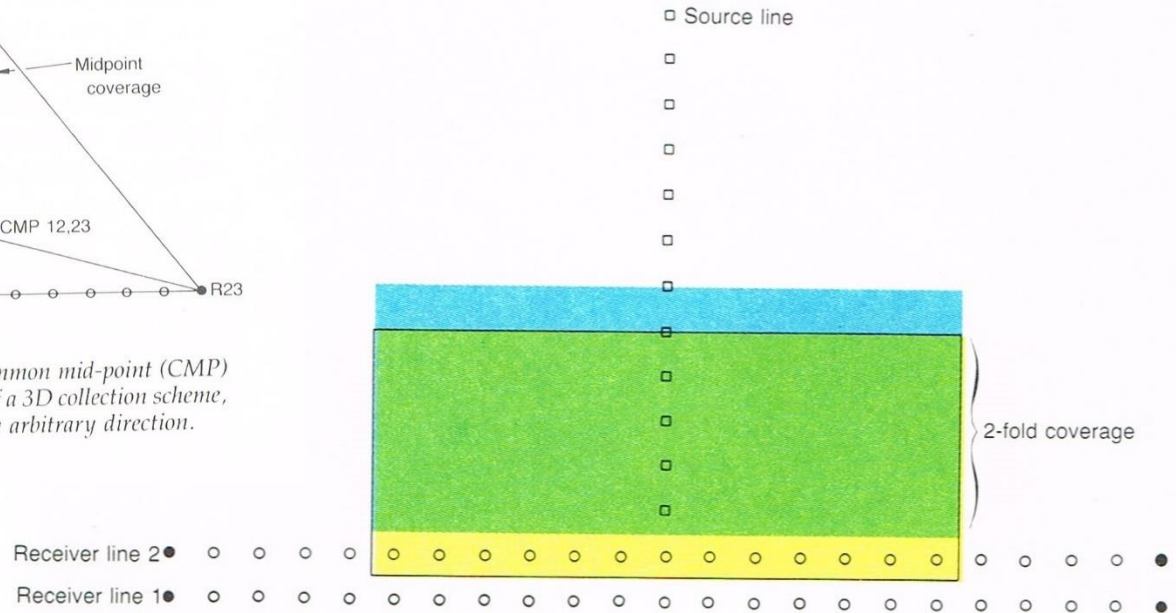


Figure 4-5. By shooting multiple source lines into the same receiver array, any desired CMP redundancy can be achieved. In the example above there is 2-fold coverage in the overlapped area and single fold coverage elsewhere. When there are two traces with different offsets at the same CMP, the data is referred to as 2-fold. Most 2D data collected today is 24, 48 or 96-fold, and by adding this redundant data together it improves the

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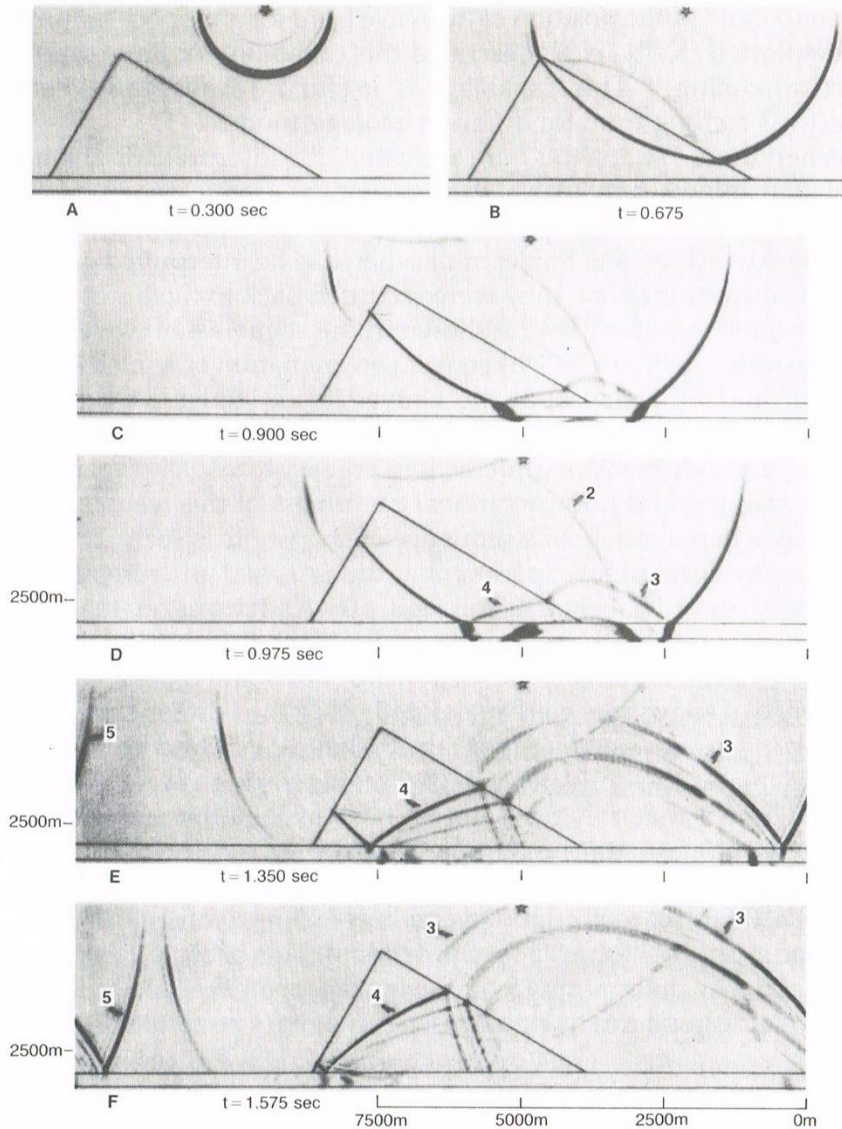


Figure 6-3. A sequence of wavefront "snapshots" calculated using the Kosloff, Baysal Fourier modeling technique. The pressure response is calculated at specific time steps and then the snapshots are "animated" to help interpret specific events. Event 2 is reflected energy off of the low-velocity wedge. Events 3 and 4 are reflected energy off of the high-velocity flat base. Event 5 is wrap-around due to the Fourier transforms used in this method. (After Kosloff and Baysal.)

# Wedge Numerical and Physical Model

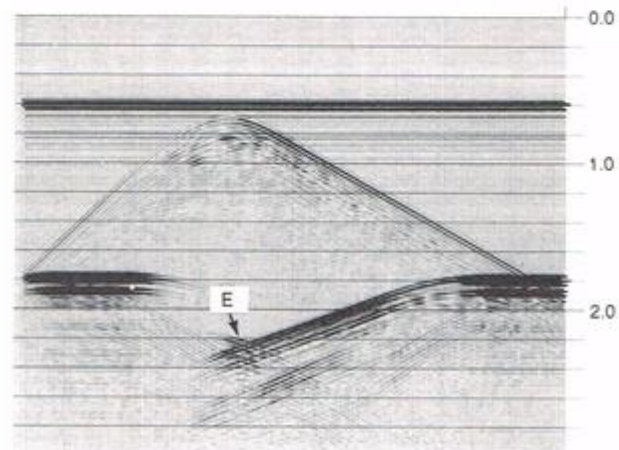
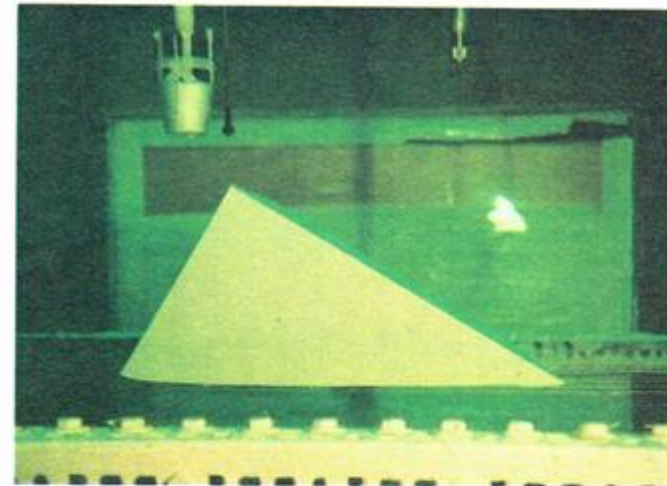


Figure 6-4. A 2D wedge physical model is shown accompanied by a seismic section across the model. Event E, the "mystery event on the physical model section, is the diffraction energy from the top of the wedge.



# Volumetric Data Allowed Study of 3-Dimensional Geology

96 *New Technologies in Exploration Geophysics*

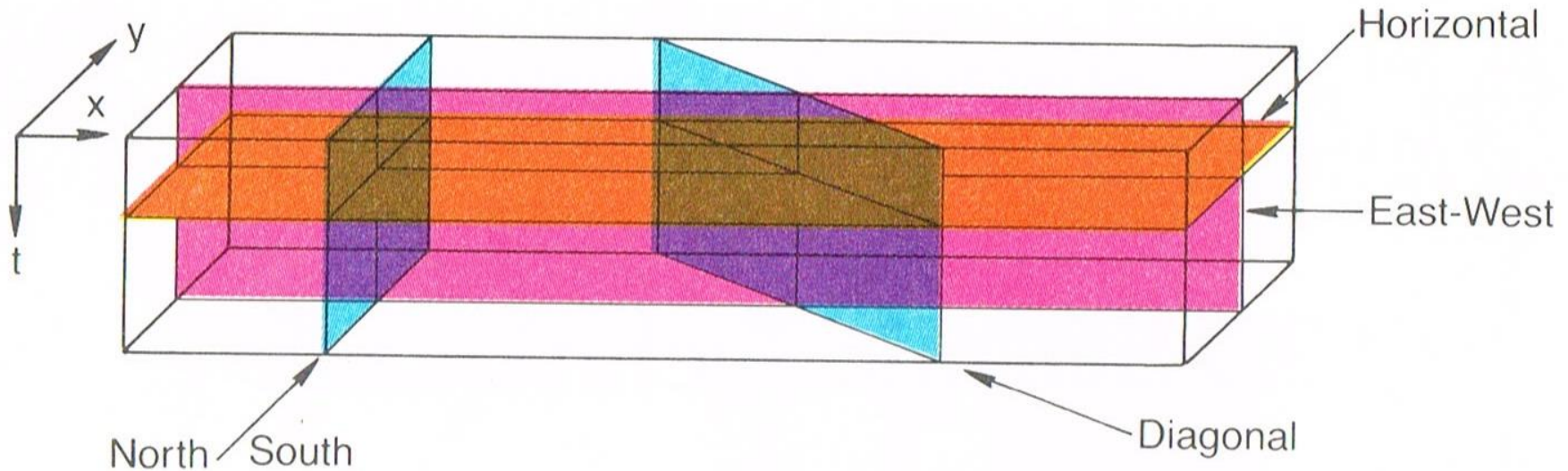


Figure 4-1. A 3D data volume allows for a much more complete evaluation of the subsurface. The data can be vertically sliced in any arbitrary direction to allow interpretation along the lines critical to an accurate evaluation. Horizontal sections can also be generated from a data volume.

# LAND MARK



Landmark Graphics Corporation will meet the needs of the seismic data interpretation market by introducing a stand-alone color raster computer graphics workstation with proprietary software. It will be used by explorationists in display, manipulation and interpretation of one-dimensional (1D) logs with synthetic traces, two-dimensional (2D) seismic and geologic sections, and three-dimensional (3D) seismic volumes.

Landmark Graphics Corporation has assembled the best talent in the seismic industry to define, develop, assemble and market a computer graphics seismic interpretation system.

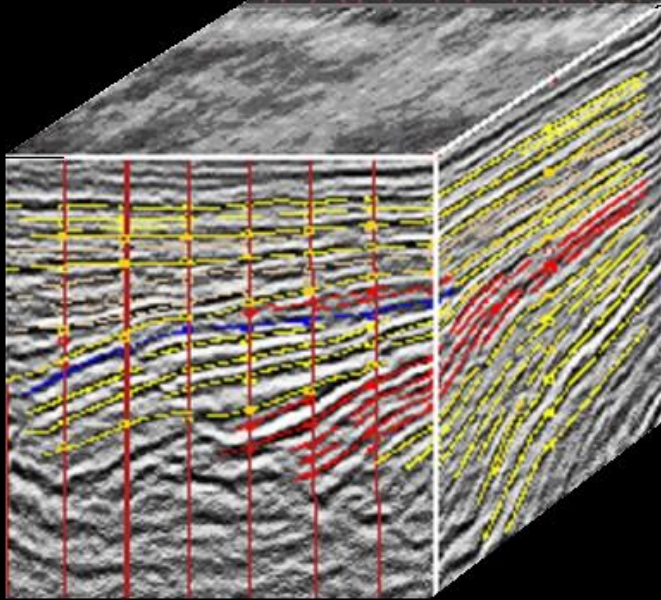
August 1, 1982

Landmark Graphics Corporation Business Plan

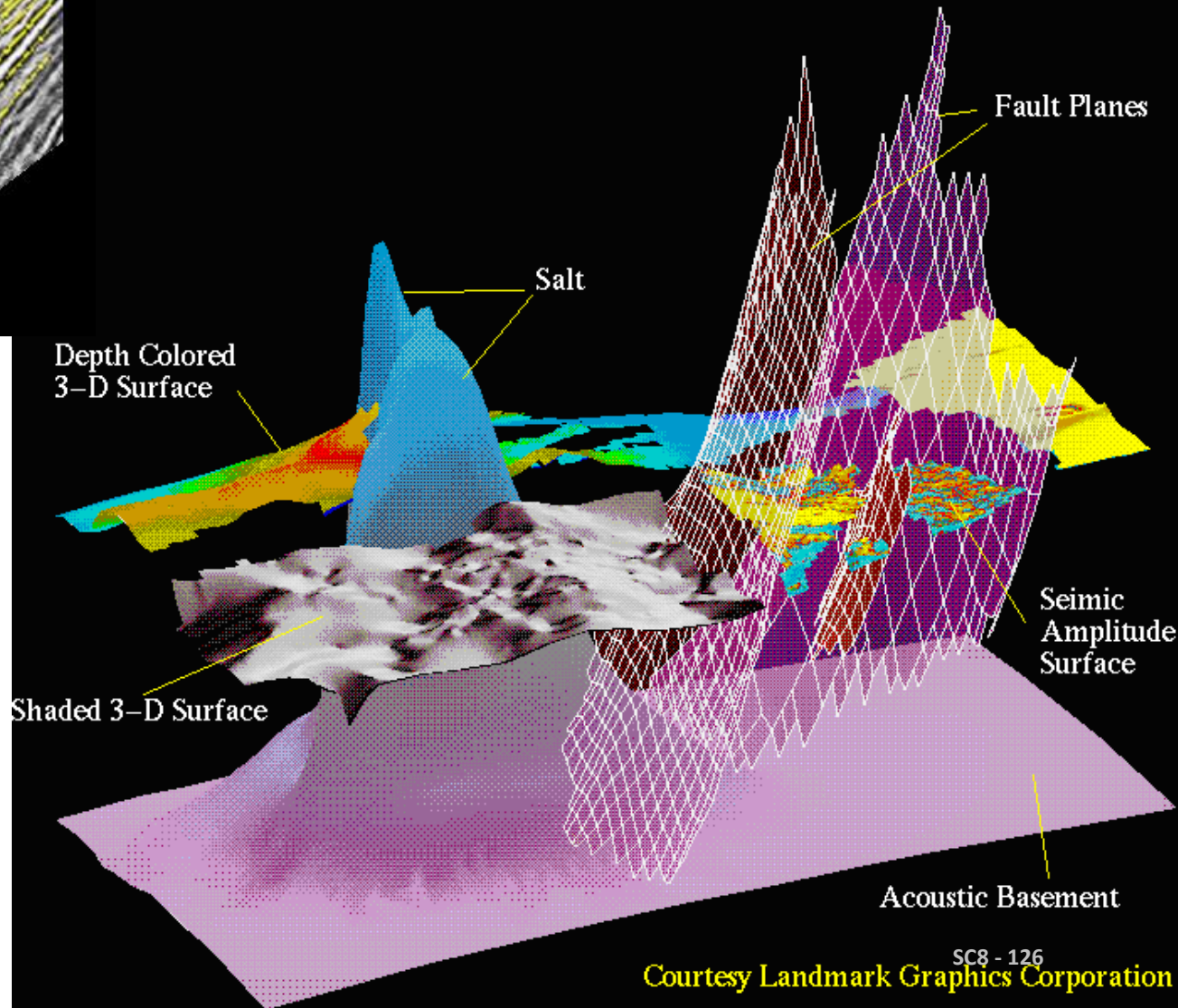
Founded by: Roice Nelson, John Mouton, Andy Hildebrand, Bob Limbaugh

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# 3-D Landmark Displays



1994, Still Doing  
Jimmy-Rig  
3-D Displays  
(Stratton Above)



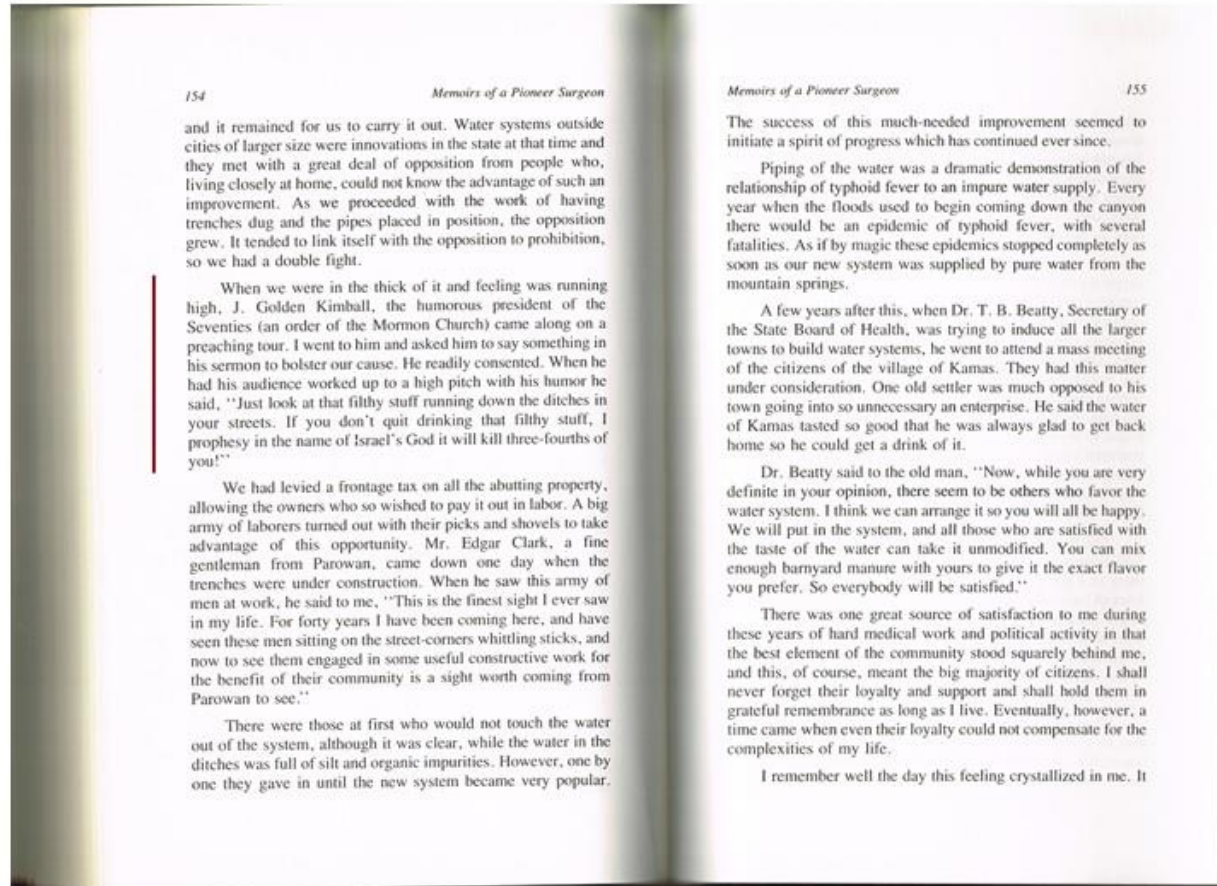
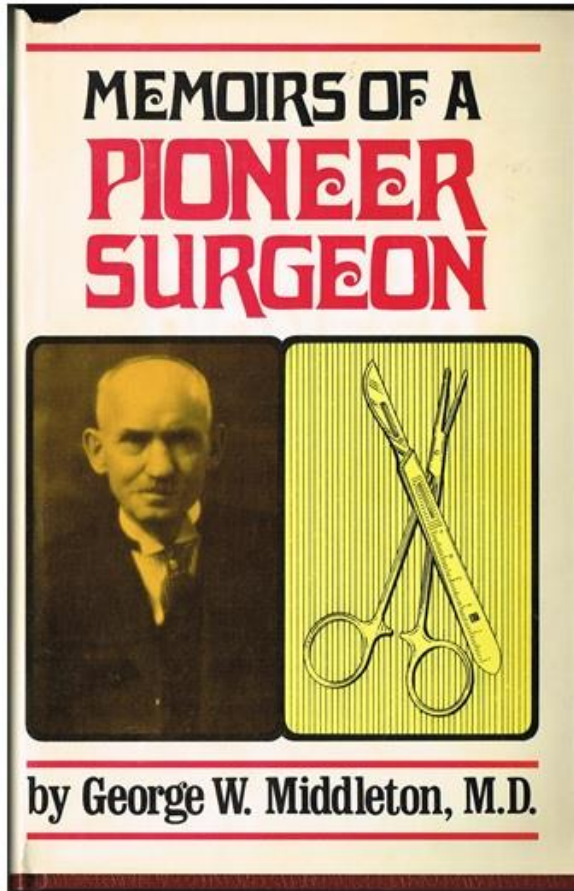






# Water is a Critical Natural Resource

## Historical Water Issue in Cedar City



and it remained for us to carry it out. Water systems outside cities of larger size were innovations in the state at that time and they met with a great deal of opposition from people who, living closely at home, could not know the advantage of such an improvement. As we proceeded with the work of having trenches dug and the pipes placed in position, the opposition grew. It tended to link itself with the opposition to prohibition, so we had a double fight.

When we were in the thick of it and feeling was running high, J. Golden Kimball, the humorous president of the Seventies (an order of the Mormon Church) came along on a preaching tour. I went to him and asked him to say something in his sermon to bolster our cause. He readily consented. When he had his audience worked up to a high pitch with his humor he said, "Just look at that filthy stuff running down the ditches in your streets. If you don't quit drinking that filthy stuff, I prophesy in the name of Israel's God it will kill three-fourths of you!"

We had levied a frontage tax on all the abutting property, allowing the owners who so wished to pay it out in labor. A big army of laborers turned out with their picks and shovels to take advantage of this opportunity. Mr. Edgar Clark, a fine gentleman from Parowan, came down one day when the trenches were under construction. When he saw this army of men at work, he said to me, "This is the finest sight I ever saw in my life. For forty years I have been coming here, and have seen these men sitting on the street-corners whittling sticks, and now to see them engaged in some useful constructive work for the benefit of their community is a sight worth coming from Parowan to see."

There were those at first who would not touch the water out of the system, although it was clear, while the water in the ditches was full of silt and organic impurities. However, one by one they gave in until the new system became very popular.

The success of this much-needed improvement seemed to initiate a spirit of progress which has continued ever since.

Piping of the water was a dramatic demonstration of the relationship of typhoid fever to an impure water supply. Every year when the floods used to begin coming down the canyon there would be an epidemic of typhoid fever, with several fatalities. As if by magic these epidemics stopped completely as soon as our new system was supplied by pure water from the mountain springs.

A few years after this, when Dr. T. B. Beatty, Secretary of the State Board of Health, was trying to induce all the larger towns to build water systems, he went to attend a mass meeting of the citizens of the village of Kamas. They had this matter under consideration. One old settler was much opposed to his town going into so unnecessary an enterprise. He said the water of Kamas tasted so good that he was always glad to get back home so he could get a drink of it.

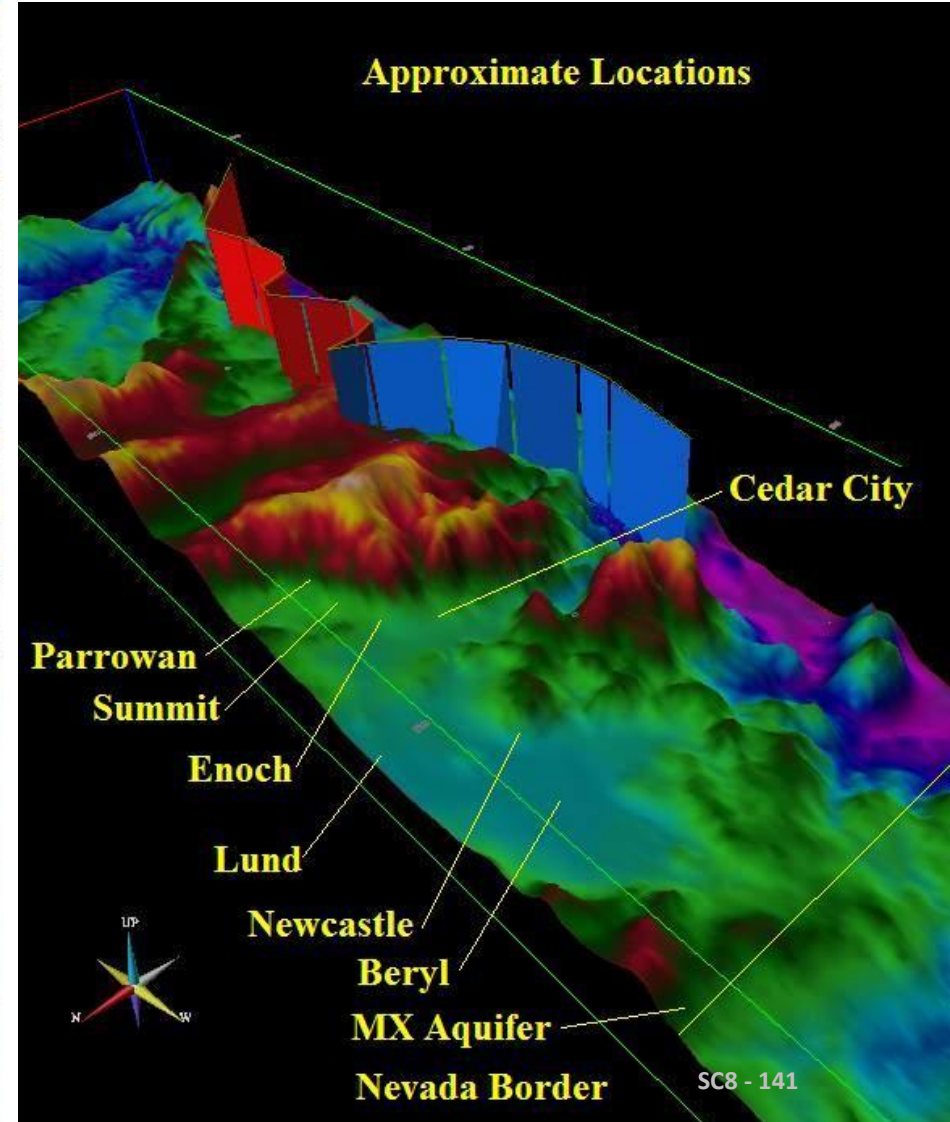
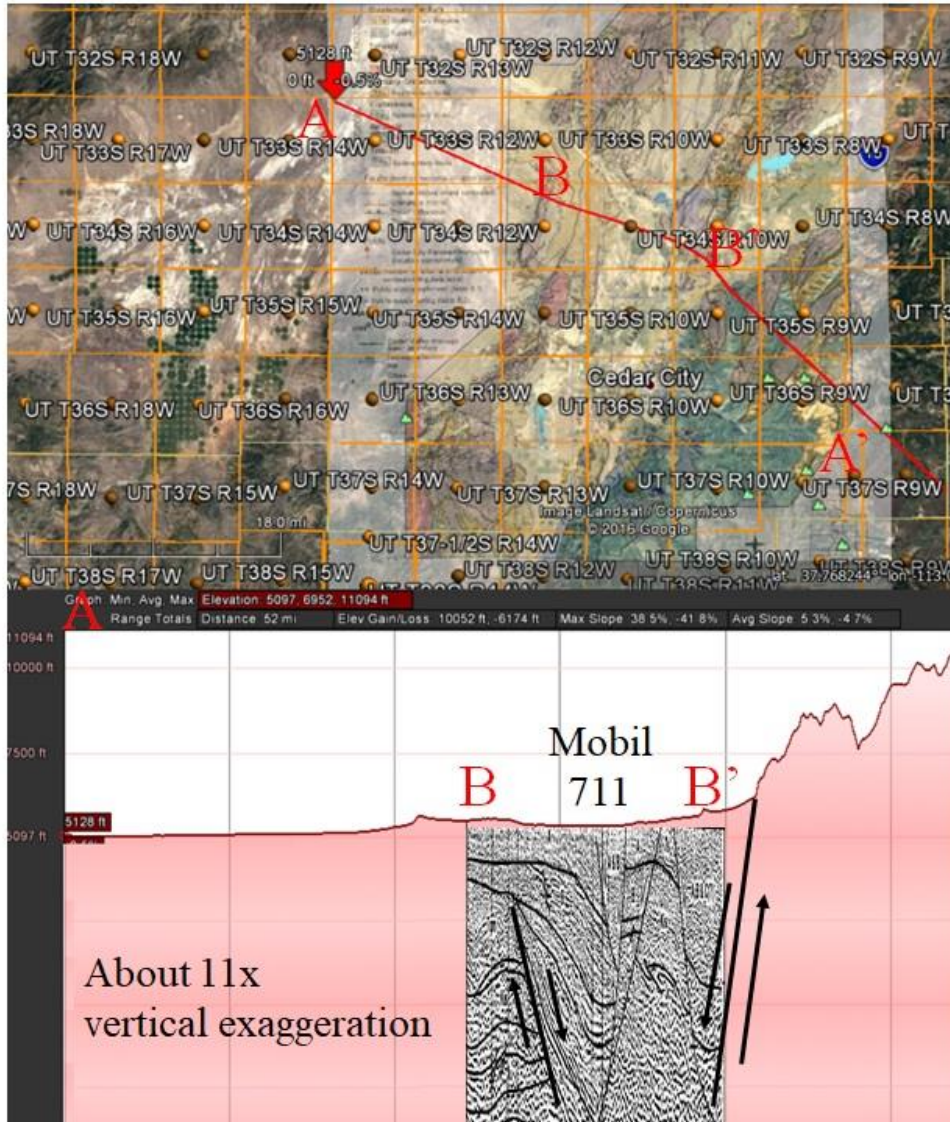
Dr. Beatty said to the old man, "Now, while you are very definite in your opinion, there seem to be others who favor the water system. I think we can arrange it so you will all be happy. We will put in the system, and all those who are satisfied with the taste of the water can take it unmodified. You can mix enough barnyard manure with yours to give it the exact flavor you prefer. So everybody will be satisfied."

There was one great source of satisfaction to me during these years of hard medical work and political activity in that the best element of the community stood squarely behind me, and this, of course, meant the big majority of citizens. I shall never forget their loyalty and support and shall hold them in grateful remembrance as long as I live. Eventually, however, a time came when even their loyalty could not compensate for the complexities of my life.

I remember well the day this feeling crystallized in me. It

# Lake Powell Pipeline

## Mobil Line 711 cross-section





How can we find  
and optimize  
natural resources?



SC8 - 150

# We Discovered Strike Locations Are Controlled by Telluric Currents



US009523785B2

(12) **United States Patent**  
**Denham et al.**

(10) **Patent No.:** **US 9,523,785 B2**  
(45) **Date of Patent:** **Dec. 20, 2016**

(54) **METHOD FOR DETERMINING  
GEOLOGICAL SURFACE AND SUBSURFACE  
RESISTIVITY**

- (71) Applicant: **Dynamic Measurement, LLC**, Cedar City, UT (US)
- (72) Inventors: **L. R. Denham**, Houston, TX (US); **H. Roice Nelson, Jr.**, Cedar City, UT (US); **D. James Siebert**, Katy, TX (US)
- (73) Assignee: **Dynamic Measurement, LLC**

(57) **ABSTRACT**

A method for determining geological subsurface resistivity. The method includes obtaining a set of lightning parameters associated with a lightning strike received by a geological volume of material, the set of lightning parameters including an indicium of the current of the lightning strike at a first initial time and an indicium of the current of the lightning strike at a first decay time subsequent to the first initial time, and inferring the resistance of the volume of geological material, at least in part, from the set of lightning parameters.

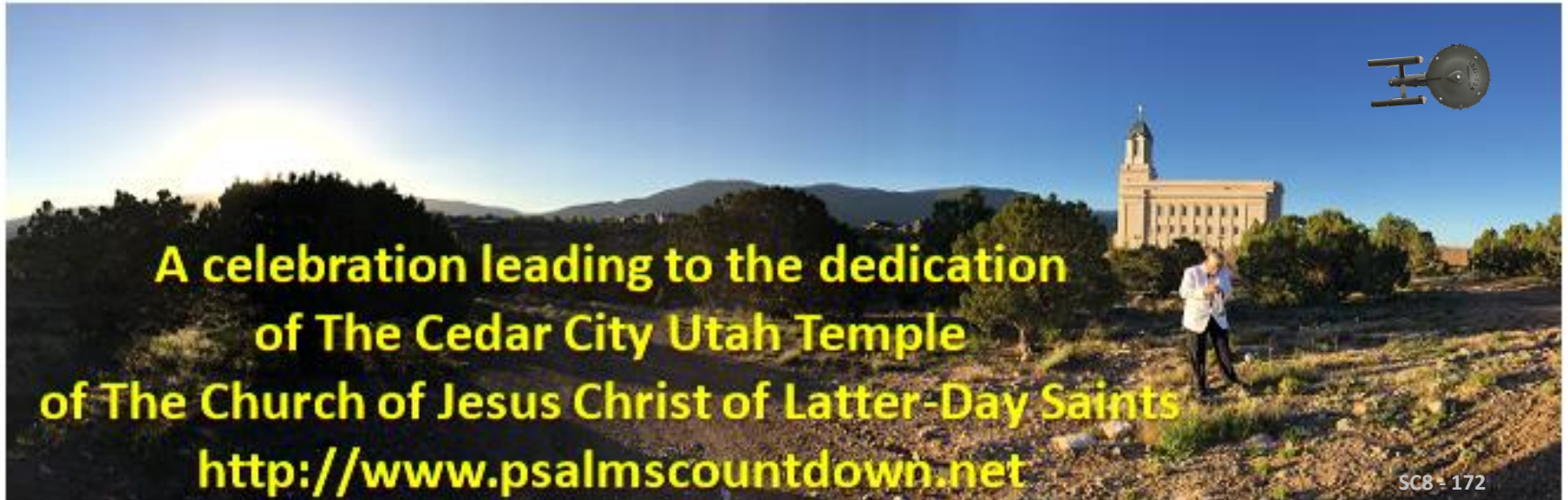
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6 Claims, 2 Drawing Sheets



## 8. Guitar

A musical instrument with usually six strings plucked with a pick or with the fingers.



**A celebration leading to the dedication  
of The Cedar City Utah Temple  
of The Church of Jesus Christ of Latter-Day Saints  
<http://www.psalmscountdown.net>**

# 2017 Science Camp

- What was best about 2017 Science Camp?

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- What would be your ideal 2018 Science Camp Theme?

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