



GEOLOGICAL SOCIETY OF NEVADA NEWSLETTER

Geological Society of Nevada, 2175 Raggio Parkway, Room 107, Reno, NV 89512
(775) 323-3500 - Hours Tuesday -- Friday, 8 a.m. to 3 p.m. Monday by appointment.
Website: www.gsnv.org • E-mail: gsn@gsnv.org



October 2016, Vol. 32, No. 8

Published monthly except June and July

CALENDAR OF GSN EVENTS

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Elko Chapter President
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Paul Dockweiler

Winnemucca Chapter President
James Carver

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John Watson—CHAIR

Class B, 2016-2019
David Caldwell
Greg French

Class C, 2014-2017
David Shaddrick
Camille Prenn

Oct. 6, 2016
Thursday

SO. NEVADA CHAPTER MEETING (1st Thursday of the month)

The monthly meeting will be held at the Las Vegas Natural History Museum at 900 N. Las Vegas Blvd. **Speaker: Paul Dockweiler, Cardno Inc. Title: "Mountain Pass Rare Earth Mineralization and Its Geopolitical Importance"**. Contact Paul Dockweiler for more information, or if you'd like to sponsor or present a talk! paul.dockweiler@cardno.com. Details on page 8.

Oct. 12, 2016
Wednesday

WINNEMUCCA CHAPTER MEETING (2nd Wednesday of the month)

The Winnemucca meeting will be held at The Martin Hotel, Railroad St., Winnemucca, NV. **Speaker: Chad Peters, Premier Gold. Title: "McCoy-Cove Exploration Update, New Litho-Structural Model Leading to Drilling Success at the CSD Gap"**. **Food & Drinks Sponsored by: MAJOR DRILLING**. For more info please contact Matt Fithian at MFithian@silverstandard.com. Abstract and details on page 6.

OCT. 14-16,
2016

GSN FALL 2016 FIELD TRIP—DEADLINE MONDAY, OCTOBER 3RD!

We will spend 3 days touring the Gabbs magnesite operation, the Rawhide Mine and the Wind Mountain Mine! This will be a great trip and we have 10 seats left! **Please contact Laura Ruud at the GSN office to register by MONDAY!** gsn@gsnv.org or call 775-323-3500. Click on the link below to get the form. http://gsnv.org/info/events/Field_Trip_Signup%20Fall%202016.pdf

Oct. 20, 2016
Thursday

ELKO CHAPTER MEETING (3rd Thursday of the month)

The Elko meeting will be held at the Western Folklife Center, Commercial St. Refreshments at 6:00 p.m., Talk at 7:00 p.m. **Speaker: Warren Thompson, Klondex Mines Ltd. Title: "Update of Geology within the Midas Au/Ag Mining District, Elko Co., Nevada"**. **Food & Drinks Sponsored by: SWICK DRILLING**. For more information, please contact Mark Travis, mark.william.travis@gmail.com. Abstract and details on page 7.

Oct. 21, 2016
Friday

GSN MEMBERSHIP MEETING (3rd Friday of the month)

The GSN meeting will be held at the Reno Elks Lodge, 597 Kumle Lane, Reno, Nevada. Social hour begins at 6 pm, Dinner at 7 pm and talk at 7:45 pm. **Speaker: Terry Jennings, Round Mountain Gold. Title: "Round Mountain Gold Corporation's Round Mountain – Gold Hill Mines, Nye County NV"**. **Drinks Sponsored by RUEN DRILLING. Dinner cost is \$25/each.** Please contact Laura Ruud at the GSN Office for dinner reservations. gsn@gsnv.org or 775-323-3500. Abstract and details on page 3.

G.S.N. OCTOBER SPONSOR



FROM THE PRESIDENT
Alan R. Coyner, GSN President 2016-2017
OCTOBER 2016

Greetings to all our GSN members wherever you may be! I hope you were able to attend one of our September meetings and enjoyed renewing old friendships and making new ones. I was fortunate to be able to visit with the **John Mackay Club** at the **Mackay School of Earth Sciences and Engineering** at the University of Nevada last month. There were over fifty young people in the room, so I can assure you there continues to be great interest in a career in the earth sciences! I stressed to the students the importance of joining the **Geological Society of Nevada** (and/or the local chapter of the **Society of Mining Engineers** or the **Nevada Petroleum and Geothermal Society**) and taking the opportunity to network with geology and mining professionals. We also have a visit planned to the University of Nevada **Rockhounds Club**. So when you attend a GSN meeting and you see a young person, please strike up a conversation with him or her and do a little **mentoring**!

We continue to be very appreciative of our **sponsors** at our monthly meetings. There are too many to mention here and I don't want to leave anyone out, so I will just say "thank you" for helping us promote friendship and information sharing among our members. GSN continues to be the largest state-based geological society in the United States and the support of our sponsors is vital to our continued growth and stability.

October is when we celebrate **Earth Science Week**. Since October 1998, the American Geosciences Institute has organized this national and international event to help the public gain a better understanding and appreciation for the Earth Sciences and to encourage stewardship of the Earth. This year's Earth Science Week will be held from October 9-15, 2016 and will celebrate the theme "Our Shared Geoheritage". The **Nevada Bureau of Mines and Geology** will again be leading a one-day field trip on Sunday October 16 for the general public. The trip is titled "A River Runs Through It - Geology along the Truckee River Valley from Reno to Pyramid Lake."

It really helps to have some geology professionals along on the trips to answer people's questions. Why not do a little **mentoring** and **volunteer** to accompany the NBMG folks on one of the field trips? You will also want to attend the 3rd annual NBMG open house at the **Great Basin Science Sample and Records Library** on October 15.

Continuing on the theme of geo-education you might be surprised to know the **Boy Scouts of America** recently instituted a new **Mining in Society Merit Badge**. Volunteers and staff from the Society of Mining Engineers, including several of our GSN members, worked with the Boy Scouts of America to develop the requirements, pamphlet, badge design and other collateral materials so that Boy Scouts across the United States will be exposed to the mining industry as they earn this new merit badge. Why not consider becoming a **Mining in Society Merit Badge Counselor**? Details can be found at the Minerals Education Coalition website.

The **GSN Fall Field Trip** is on track for October 14, 15, and 16. Vice-President Kelly Cluer will be leading the trip to the Gabbs Magnesite mine, the Rawhide Gold Mine, and the Wind Mountain Gold Mine. There is still room on the bus at this time and since we have not visited these sites in recent years, I hope you will take this opportunity to join us. The registration form is available on the GSN website.

This is the time of year when we ask you to renew your **GSN Membership** for 2017. I believe we continue to offer a great value for your annual dues of \$50.00. Please go to the GSN website and renew your membership online or download the membership form. And why not invite a friend to attend one of our meetings and ask them to join our great organization? Deadline to register has been moved to Monday, October 3rd!

I want to thank Past-President Elizabeth Zbinden for leading the September meeting in Reno in my absence. I also want to again echo her words about the importance of **involvement**. Remember, the best way to get involved is to **volunteer**!

**The G.S.N. wishes to thank BOART
LONGYEAR for sponsoring the
SEPTEMBER SOCIAL HOUR in RENO**



GSN October 21, 2016 Membership Meeting!

For dinner reservations, please e-mail gsn@gsnv.org or call 775-323-3500

by 5:00 p.m. on WEDNESDAY, OCTOBER 19, 2016

Social Hour begins @ 6:00 pm; Dinner @ 7:00 pm;

Speaker to Follow @ 7:45 pm

Location: RENO ELKS LODGE, 597 KUMLE LANE (across from the Convention Center)

DINNER COST—\$25.00 per person.

(You will be invoiced if you do not cancel your reservation)

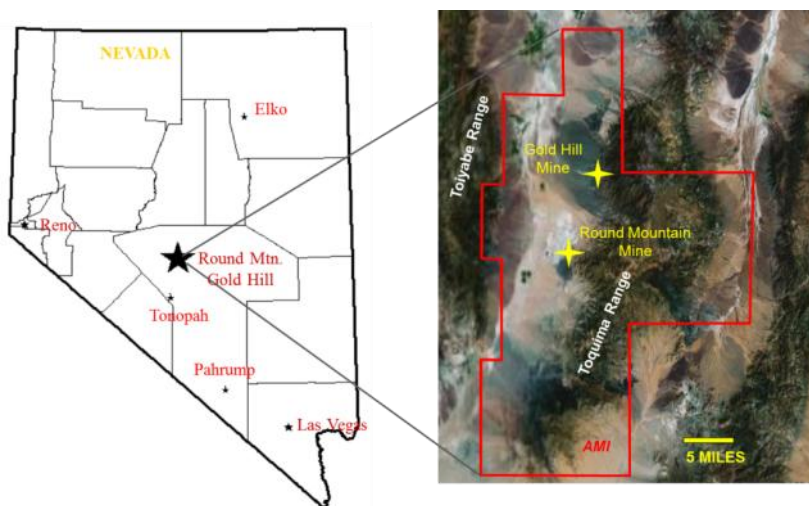
Round Mountain Gold Corporation's Round Mountain – Gold Hill Mines Nye County Nevada By Terry L. Jennings

Abstract

The Round Mountain gold deposit is located in northern Nye County, centered between Tonopah and Austin. The deposit is located on the western slope of the Toiyabe Range in the Big Smoky Valley of the Basin and Range province (fig. 1). The Basin and Range physiographic province is characterized by generally north-south trending block faulted mountain ranges, separated by alluvium-filled valleys. The Great Basin sub-province is specifically characterized by internal drainage. Topographic relief varies across the Basin and Range, from 1,500 feet to in excess of 6,000 vertical feet.

Gold at Round Mountain was first discovered in 1904; however, claims were not staked until 1906, when John Stebbins and Frank Dixon staked the Sunnyside 1, 2 and 3 claims on the Los Gazabo vein, on the southwest side of Round Mountain. The Round Mountain Mining Company was formed in April 1906 and underground mining commenced. Mining was continuous from 1906 through 1942 and sporadically from 1943 until 1969. The ore was produced from high-grade underground veins and placer mining. Approximately 350,000 ounces of gold and 360,000 ounces of silver were produced from 1906 to 1969. Open pit mining was continuous since it began in 1977. The peak gold production was 785,300 ounces in 2003 and since 1977 has produced over 14 million ounces.

Figure 1: Round Mountain – Gold Hill



The Round Mountain Gold Mine currently operates as a conventional open pit that is approximately 10,700 feet long in the north-west, south-east direction and 8,800 feet wide in the north-east to south-west direction. The Mine consists of three pits; Round Mountain pit, Fairview pit and the South Fairview pit. The Fairview pits are eastern satellites to the Round Mountain pit. Mining is conducted on 35-foot benches by electric shovels and front-end loaders paired with 150, 190 and 240 ton capacity haul trucks.

Gold Mineralization at Gold Hill was discovered in 1910 and 34,000 oz of gold produced from 1930-1933 via a JV between Tonopah Mining Co. and Tonopah Belmont Development Co. An additional 10,500 ounces of gold was produced by a series of small operations. Exploration resumed in 1980 with several companies completing drill programs; Cordex, Noranda, Homestake Mining Co., Nevada Star Resources and Round Mountain Gold Corp.

FACES OF GSN

Mark Travis, Geologist

I grew up in Omaha, NE, many miles from any mountain and any sort of geology. And even though Omaha is squarely in the mid-west it is fairly hilly and has abundant trees. My mother worked as a teacher and my father was an accountant. My mom's family was from the Omaha area whereas my father grew up in Sterling, CO. I lived in Omaha until college when I moved to Laramie, WY, but I'm getting ahead of myself.



You might be wondering how a corn-fed son of a teacher and accountant ended up as a mineral geologist in the West. Good question. Due to my mother's work she had every summer off and during the summer break we would vacation in the mountains of Colorado. She had worked as a teacher in Crested Butte and Alamosa, prior to meeting my father in Gunnison. I got to know the mountains of Colorado very well but those summers left many questions in my young mind. The greatest of these questions was quite simply, "where did these mountains come from?" This question proved to be much more complex than I could have known back then.

After graduating high school, which was a boarding school ran by Benedictine monks, I continued my education at the University of Wyoming in Laramie, WY. Adjusting to living at 7,200' elevation with a constant 20 mph "breeze" took some getting used to. But I was so ready to get elbow deep in the local geology and so thrilled to be living out in the West that I don't think I noticed much. Laramie was a revelation for me. Each geology class and each field trip I took opened my eyes up to a world that was forever changed since.

No longer could I drive through the canyons and mountains of the Colorado of my youth just happy to take in the scenery. Now this scenery has history and meaning. In one way my geology classes had ruined the mountains for me, in a very superficial way. In another way, a much more enjoyable way, my new geologic knowledge opened up a whole other level of understanding and appreciation. Even if that fascination causes my family these days to cringe while I'm driving through a particularly interesting canyon ("Watch the road, Dad!").

I was privileged enough to have many great professors at UW but one sticks out in my mind. My structural geology professor was none other than Art Snoke. Anyone who has studied Nevada geology and especially metamorphic core complexes has most likely come across his work. In addition I worked on an undergrad EPSCoR project dealing with sequence stratigraphy in the Haystack Mtns north of Sinclair, WY. This background in sequence stratigraphy and structural geology has helped me greatly out here in north-central Nevada.

When I graduated UW with my BS in Geology in 2006 I found work in Elko County with (cont. on page 5)

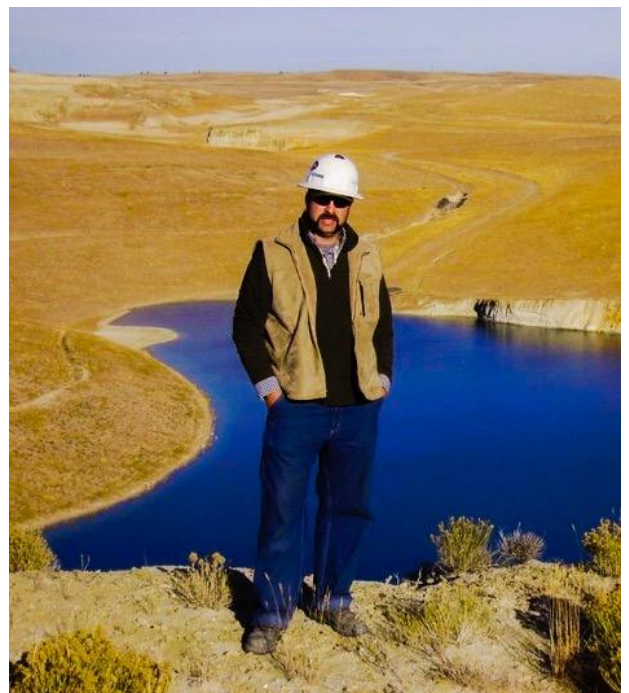
(Faces of GSN, cont. from page 4)

Gateway Gold as a contract geologist. Gateway Gold was a junior gold company working on the old Big Springs mine and the vicinity. After a summer and fall with them I continued contract work in Elko County until Wyoming called me back. In 2007 the uranium market was really taking off and I found a job with Strathmore Minerals in Riverton, WY. Strathmore's project areas were the Gas Hills district of central Wyoming and the Grants District of New Mexico. I fulfilled numerous roles with Strathmore besides geology. I was involved in permitting and reclamation as well as fulfilling the role of Radiation Safety Officer (R.S.O.). Being a uranium company, we had a down-hole geophysical tool that could produce in-situ assays of uranium using an electronically activated neutron source and some geophysical wizardry.



After I rode out the uranium boom for nearly 6 years I found my way back to gold country and a job with Barrick Cortez underground mine. During my 3 ½ years with Cortez I worked as a delineation drilling geologist, a hydro-geologist, and a resource modeler. Cortez was the first underground mine I worked for and also the first big mining company I had worked for as well.

Currently I am starting the next chapter in my geologic career with Jerritt Canyon Gold. I am very excited to meet this challenging new role with all of the experience and know-how that 10 years in the mineral industry has afforded me. Thanks to everyone who has mentored me through the years and to the many co-workers I've had the privilege to work with and learn from. And thanks to the GSN membership who have, in their wisdom, seen fit to elect me the Elko Chapter President for a second term.



GSN WINNEMUCCA CHAPTER MEMBERSHIP MEETING

WEDNESDAY, OCTOBER 12, 2016

Location: The MARTIN HOTEL, WINNEMUCCA, NV

Time: Drinks @ 6:00 p.m., Appetizers @ 6:30 p.m., Talk begins @ 7:00 p.m.

SPEAKER: CHAD PETERS, PREMIER GOLD MINES, LTD.

TITLE: “McCoy-Cove Exploration Update, New Litho-Structural Model Leading to Drilling Success at the CSD Gap”

Food and Drinks Sponsored by:

MAJOR

Partners on the Ground

“McCoy-Cove Exploration Update, New Litho-Structural Model Leading to Drilling Success at the CSD Gap”

Chad E. Peters

Premier Gold Mines, Ltd., Battle Mountain, NV

Abstract

The McCoy-Cove Project is located 35 miles south of Battle Mountain in Lander County, Nevada along the prolific Battle Mountain-Eureka gold trend. The property lies immediately south of Newmont’s Phoenix Cu-Au-Ag mine and is unique to Nevada in that it hosts Au-Ag ± Cu skarn, polymetallic vein-type Au-Ag ± Pb-Zn and “Carlin-style” Au-Ag deposits.

Echo Bay Mines, Ltd. conducted open pit and underground mining at McCoy-Cove from 1986 to 2001, producing 3.3 million ounces Au and 110+ million ounces Ag. Newmont Mining acquired the property in 2003 and continued closure activities while leasing a portion of the ground to Victoria Resources in 2006, leading to Victoria’s discovery of the Carlin-style Helen zone northwest of the Cove open pit. In June 2012, Premier [purchased the Victoria lease agreement and initiated an aggressive exploration](#) program resulting in an updated 2013 resource estimate at the Helen zone as well as the discovery of the high-grade polymetallic vein-type 2201 zone beneath Cove. Premier subsequently acquired 100% of the property in September 2014 and the consolidated land package now contains 31,000 acres of highly prospective ground in the heart of the Battle Mountain-Eureka trend.

A renewed focus on the Helen zone in early 2016 led to an extensive remodeling effort and subsequent reinterpretation of both the Helen and CSD zones as thrust fault-controlled Carlin-style deposits. As a result, the newly defined geometry has expanded the mineralized footprint of the 2014 resource and improved continuity throughout all zones. 2016 confirmation drilling has validated the aforementioned litho-structural model and identified the CSD Gap zone, a historically under-explored target between the Helen and CSD zones. Recent geochemical work has also identified multiple altered mafic sills throughout the deposit that were historically misinterpreted and appear to be an important control on high grade mineralization. As a result, ongoing drilling success in the CSD Gap area indicates significant potential remains to further expand high-grade mineralization and connect the Helen and CSD zones into one continuous deposit. Future activity will include a property-wide mineral resource update in Q1 2017 as well as continued permitting, engineering, and metallurgy studies with the goal of potentially re-establishing mine production at McCoy-Cove.

Key words; McCoy-Cove, Battle Mountain-Eureka trend, thrust fault, Carlin-style

GSN ELKO CHAPTER MEMBERSHIP MEETING

THURSDAY, OCTOBER 20, 2016

Location: The WESTERN FOLKLIFE CENTER, ELKO, NEVADA

Time: Refreshments/Appetizers @ 6:00 p.m., Talk @ 7:00 p.m.

SPEAKER: WARREN THOMPSON, KLONDEX MINES LTD.

TITLE: “Update of Geology within the Midas Au/Ag Mining District, Elko Co., Nevada”

Food and Drinks Sponsored by:



Update of Geology within the Midas Au/Ag Mining District, Elko County, Nevada Warren Thompson, Klondex Mines Ltd.

ABSTRACT:

The Midas (Gold Circle) Mining District is located in Elko County, approximately 60 miles northeast of the town of Winnemucca. The Midas mine (Ken Snyder mine) occurs within the Snowstorm Mountains along the eastern edge of the Northern Nevada Rift (NNR) where it has been in production since 1998, producing 2.2 million ounces Au and 26.9 million ounces Ag. Midas mine produces Au and Ag from low-sulfidation quartz/adularia, selenide-bearing veins that are hosted in an assemblage of bimodal middle Miocene ash flow tuffs, airfall tuffs, felsic plugs, volcanoclastic sediments, basaltic flows and intrusives related to extension along the Northern Nevada Rift.

The Au/Ag veins occur as an anastomosing fabric with NS-N30°W and N50°-60°W faults of mid-Miocene time related to the NNR. Left lateral shear movement along the Midas fault created northwest-oriented dilatant openings within the Colorado Grande vein where higher grades are hosted. Fluid flow of mineralization was controlled by these dilational jogs (or cymoid loops) throughout the district.

The dominant fault structure in the district that controls most mineralization is the Midas fault, which has at least 5 miles of strike length. The Midas fault has a minimum of 1000' of down-to-the-east offset and is now determined to have been an active growth fault during most phases of middle Miocene volcanism, sediment and tuff accumulation. Growth faulting along the Midas fault has provided a graben basin which accumulated basalt flows and lacustrine sediments on the eastern hangingwall side. Geologic modelling shows thickened sediment and basalt accumulations within the graben whereas airfall and ash flow tuffs maintain relative constant thickness on both footwall and hangingwall sides of the Midas fault.

The regional fault fabric of the producing veins is broken into district domains by N65°E oriented Owyhee structures with some left-lateral deflection of the main Midas fault both north and south. These Owyhee structures are thought to be pre-, syn- and post-mineralization and form the dominant 8 ma Midas Trough landform. Three structural domains are identified separated by Owyhee faults; Elko Prince in the north, Colorado Grande in the central district and Trinity in the south area district. Veins along the Midas fault are stepped downward in elevation along these Owyhee structures where the exposed Elko Prince in the north has been largely mined out by the old-timers. The Colorado Grande in the central portion of the district is currently being produced and Trinity to the south is an expanding resource with great exploration potential.

GSN SOUTHERN NEVADA CHAPTER MEMBERSHIP MEETING

THURSDAY, OCTOBER 6, 2016

Location: Las Vegas Natural History Museum, 900 Las Vegas Blvd. North

Time: Pizza & Drinks @ 5:30 p.m., Talk begins @ 6:30 p.m.

SPEAKER: PAUL DOCKWEILER, CARDNO INC.

TITLE: "Mountain Pass Rare Earth Mineralization and Its Geopolitical Importance"

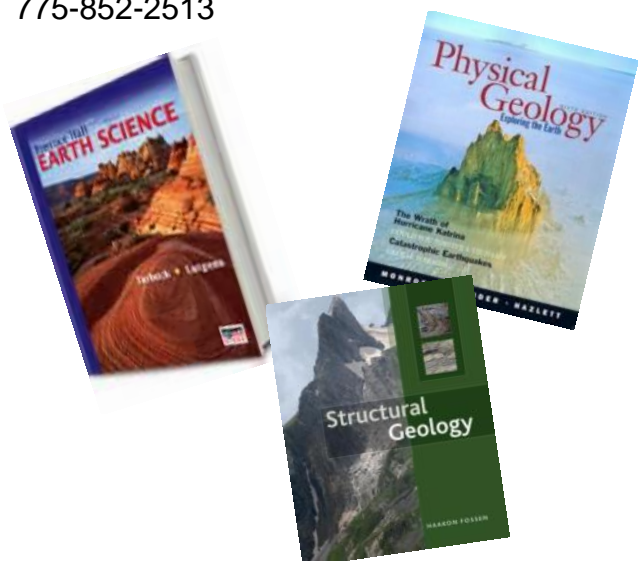
Short Bio: I served as the Supervising Mine Geologist at the Mountain Pass Mine from 2008 to 2012. I was part of a team to bring the mine back into full production after a 10 year shutdown; responsible for the resource and reserve development, mine planning and restart of the open pit.

Meeting includes Pizza and beer!

For more information, please contact GSN Southern Nevada Chapter President:
Paul Dockweiler @ paul.dockweiler@cardno.com

Tax Deduction for Books!!

It is that time of the year to consider gift giving. If you have any geologic books that you are considering giving away **please contact Clancy Wendt**. GSN and the Tucson Gem and Mineral Society have given over 70,000 books to Universities in Mexico. This is a tax deductible item and anything you have will be greatly appreciated as Mexican Universities have very little in the way of reference books. We are also seeking people who are going to Tucson who have room in the cars or trucks to take some of the books we already have. 775-852-2513



GSN MEMBERSHIP DRIVE 2017

**It's time to renew your GSN Membership
Dues for the 2017 fiscal year!**

RENEW NOW ONLINE AT:

<http://gsnv.org/membership/join-gsn.php>

**Dues are still only \$50/year for
Individual Members**

**(please add \$20 if you want a hardcopy
newsletter mailed to you)**

\$10/year for Nevada Student Members

\$25/year for non-NV Student Members

and ONLY \$1,250 for a

LIFETIME MEMBERSHIP IN THE GSN!

The 2017 Dues Renewal Form can be found on page 9 and a fillable form was attached along with your newsletter. The form can be printed then mailed or faxed in, OR filled out and submitted by email with a credit card payment.

Membership Matters!



GEOLOGICAL SOCIETY OF NEVADA

2017

2175 Raggio Parkway, Room 107, Reno, NV 89512 USA

Phone (775) 323-3500 • Fax (775) 323-3599 • gsn@gsnv.org • www.gsnv.org

Offices are located at NBMG's Great Basin Science Sample & Records Library at The Desert Research Institute

Walk-in Office hours: Tuesday through Friday, 8:00 AM - 3:00 PM. Mondays - Call or email for appointment.

The Geological Society of Nevada (GSN) is a non-profit, educational organization whose principal objective is to promote the advancement of geological sciences, especially as they relate to Nevada. GSN supports the dissemination of information through meetings, field trips, publications and academic endeavors. Membership is open to geologists, geophysicists, geochemists, engineers, educators, students, prospectors or anyone else with an interest in the geological sciences and/or the goals of the GSN. The organization is based in Reno with additional Chapters in Elko, Las Vegas and Winnemucca.

The GSN Fiscal Year begins June 1st. Annual dues are \$50.00, Students \$25.00 or Lifetime Membership \$1,250.00. Dues are due prior to December 31st each year. The GSN conducts a Field Trip in the Fall and one in the Spring of each year. Monthly meetings are held September through May in Reno, Elko, Winnemucca, and Las Vegas. If you would like to receive email announcements from one of the G.S.N. Chapters (Elko, Winnemucca or Southern Nevada) please check a box below.

Please help support the GSN Foundation, the Student Dinner Fund, or Student Field Trip Fund when renewing. Foundation dollars are used for the Kindergarten through 12th grade Field Trip Earth Science Grant Program, Nevada Mapping Grants, Field Camp Grants, and scholarships at the University of Nevada, Reno, Great Basin College and University of Nevada, Las Vegas.

MEMBERSHIP APPLICATION Renewal New Date: _____

Name: _____ Position/Title: _____

CHECK HERE if everything is the same as before, except as indicated below.

Consultant Consulting Geologist Company Name: _____

Current Full-Time Earth Science Student University: _____ Alma Mater: _____

Address: _____ City: _____ State/Province: _____ Zip Code: _____

E-Mail: _____ Country: _____

Email address is required for Emailed Newsletter

Office/Work #: _____ Website: _____

Fax #: _____

Cell Phone #: _____ Home Phone # (optional): _____

(Your home phone number will not be listed in the Directory)

- I would like to have an asterisk by my name in the directory indicating I am available for consulting.
- I have met the licensing requirements and want "QP" (Qualified Person) by my name in the directory.

I authorize GSN to send to me, via email: GSN event announcements, publications updates, employment opportunities, etc.

Yes No

Optional Chapter Affiliation (to receive Chapter announcements directly and Chapter voting rights):

- Elko Chapter
- Southern Nevada Chapter
- Winnemucca Chapter

\$50.00 - Regular Membership Dues 2017 - Email newsletter (International or Domestic)

\$70.00 - Regular Membership Dues 2017 - Hardcopy newsletter via postal service (Domestic Only)

\$10.00 - Nevada Student Membership Dues 2017 \$25.00 - Non-NV Student Membership Dues 2017

(NV student's dues are subsidized \$15/ea. by Geotemps, Inc.)

LIFETIME MEMBERSHIP - 25 X the Current Dues Rate (25 x \$50 in 2017 = \$1,250.00)

DONATIONS:

(Foundation Donated Funds will be used for unrestricted grants and scholarships unless otherwise specified below)

I wish to donate to the GSN Student Dinner Fund

I wish to donate to the GSN Student Field Trip Fund ..

I wish to donate to the GSN Foundation

TOTAL: _____

Payment Type: Check # _____ Cash Visa Master Card Discover American Express

Card Number: _____ Exp. Date: _____ Security code: _____

Name (as it appears on card): _____ Billing Street # (or P.O.) and Zip Code: _____

Return with payment to: Geological Society of Nevada,
2175 Raggio Parkway, Reno, NV 89512
Fax to 775-323-3599, E-mail: gsn@gsnv.org
Website: www.gsnv.org

Thank you to our generous donors in September!!

G.S.N. FOUNDATION

SILVER DONORS \$100-\$499

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James Wright

Thank you to the WINNEMUCCA CHAPTER
MEETING SPONSOR
for SEPTEMBER 2016!

THANK YOU TO THE ELKO CHAPTER
MEETING SPONSOR
for SEPTEMBER 2016!





NEWS FROM THE FOUNDATION

By Cami Prenn, GSN Foundation Chair

Thank You!

Even though our fiscal year starts in June, it isn't till the fall that we start thinking about what lies ahead and start scheduling the Foundation's programs. As a review for our members, our programs are:

- K-12 Field trip transportation for Earth Science venues
- Mapping Grants for Nevada Bureau of Mines and Geology
- Scholarships for UNR, UNLV and the Elko Chapter's Graduate Student Support program
- Scholarships for UNR Field Camp Attendees.

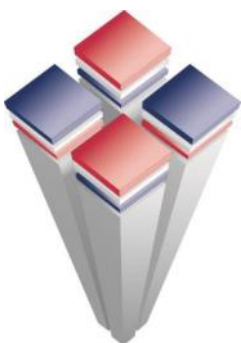
Last year the Foundation contributed over \$40,000 to these programs. We've come a long way since the Foundation was started in 2000 and our total contributions were just over \$5,000!

The bulk of our income comes from our generous GSN members who send a little extra when they renew their GSN dues and we also have some serial donors who send a hearty check separately. The Christmas auction and raffle has become the major fundraiser for the Foundation and we intend to continue that tradition that everyone enjoys. Stay tuned for future messages about that and please remember to plan on donating some fabulous items!

Roger Steininger retired from the Foundation Board this year and I'd like to acknowledge and thank him for steering the Foundation Board for ALL the years he stepped up as Chairman; 2007 – 2016! He set a course for us that included starting the UNR Field Camp Scholarships and re-establishing the UNLV Scholarship. Dieter Krewedl and Dan Rovig also retired from the Board and I thank them for their contributions and wise counsel.

Our Board this year comprises these fine folks:

returning Board members Kel Buchanan, DD Lapointe, Mike Ressel, Bob Thomas (volunteering to be Treasurer), and new members Bob Felder, Bill Howald, and Pam Klessig. We're looking forward to continuing the Foundation's valuable programs that further geologic study and knowledge in our communities and within the industry.



Lowell Program
in Economic Geology

*The University of Arizona
Geosciences Department
1040 East Fourth Street
Tucson, AZ 85721-0077*



Short Course on Cu, Mo, and Au Porphyry Deposits **December 6-15, 2016**

The **Lowell Program in Economic Geology at the University of Arizona** is pleased to announce the opening of registration for the 13th annual offering of our popular Porphyry Short Course, which will take place December 6-15, 2016, in Tucson, Arizona. We now alternate between the two formats of the course, and this year we are offering the version entitled "Cu, Mo, and Au Porphyry Deposits." This short course is designed for members of the industry and graduate students and will be led by Eric Sedorff, Mark D. Barton, and others. It has a focus on exploration geology and will include 3½ days of lectures and 2 days of labs in Tucson, as well as 3½ days of field trips to representative ore systems in Arizona. To request further information or to register, contact Rocío Brambila by e-mail at brambila@email.arizona.edu.

Activity Update

Mike Brady, AUGUST 2016

www.activityupdate.com

NEVADA

Global Geoscience Ltd. announced that recent drill results at the Rhyolite Ridge Project include 89-130 meters @ 0.189% Li, 1.22% B (SBHC-1); 72-110 meters @ 0.192% Li, 0.93% Bo (SBHC-2) and 23-78 meters @ 0.179% Li, 0.57% B (SBHC-5). *Press Release: August 16*

Gold Resource Corp. announced that it acquired a 100% interest in the Mina Gold Property from Ely Gold + Minerals Inc. for \$150,000 cash and \$850,000 in shares. (resource = 890,700 tonnes @ 3.51 gpt Au inferred) *Press Release: August 15*

Nevada Zinc Corp. announced that recent drill results at the Lone Mountain Project include 144.78-147.83 meters @ 1.61% Zn, 0.36% Pb (LM16-55); 164.59-265.18 meters @ 6.58% Zn, 0.41% Pb (LM16-56); 6.1-53.34 meters @ 6.01% Zn, 0.43% Pb (LM16-57) and 60.96-68.58 meters @ 2.58% Zn, 0.03% Pb (LM16-59). *Press Release: August 11*

Premier Gold Mines Ltd.(40%) announced that ore produced from the South Arturo Mine is now being processed at the Goldstrike Mill of Barrick Gold Corp. (reserve = 2,148,000 tonnes @ 5.62 gpt Au proven+probable) *Press Release: August 11*

Gold Standard Ventures Corp. announced that recent drill results at the Pinion/North Dark Star Project include 107.9-131.1 meters @ 0.72 gpt Au (DS16-02); 225.6-249.7 meters @ 1.28 gpt Au (DS16-05) and 165.2-291.4 meters @ 3.95 gpt Au (DS16-08). (resource @ Dark Star = 23,110,000 tonnes @ 0.51 gpt Au inferred) *Press Release: August 9*

Silver Standard Resources Inc. announced that recent drill results at the Marigold Project include 176.8-190.5 meters @ 3.92 gpt Au (MR6185); 0-89.9 meters @ 0.12 gpt Au (MR6217); 190.5-214.9 meters @ 1.18 gpt Au (MR6225) and 198.1-210.3 meters @ 2.69 gpt Au (MR6228). (reserve = 138,600,000 tonnes @ 0.49 gpt Au proven+probable) *Press Release: August 8*

Macarthur Minerals Ltd. announced that it acquired an option to earn a 100% interest in the Stonewall Property (Li) from Voltaic Minerals Corp. for \$98,000 cash and 2,000,000 shares over 6 months. *Press Release: August 17*

Gold Resource Corp. announced that it acquired an option to earn a 100% interest in the Isabella Pearl Property

from private interests for \$100,000 cash and 2,000,000 shares. (resource = 2,733,500 tonnes @ 2.18 gpt Au indicated) *Press Release: August 15*

Corvus Gold Inc. announced that recent drill results at the North Bullfrog/Swale Project include 193.55-347.47 meters @ 0.54 gpt Au (NB16-303); 211.84-274.32 meters @ 0.30 gpt Au (NB16-304); 153.92-190.5 meters @ 0.17 gpt Au (NB16-305) and 316.99-326.14 meters @ 1.02 gpt Au (NB16-308). (resource @ North Bullfrog = 4,040,000 tonnes @ 2.43 gpt Au, 18.9 gpt Ag measured) *Press Release: August 2*

Pacific Ridge Exploration Ltd. announced that it acquired an option to earn a 100% interest in the Poker Brown Property from private interests for \$1,000,000 cash and \$8,000,000 in exploration expenditures over 8 years. *Press Release: August 24*

OBITUARY

BRUCE W. MILLER, GEOLOGIST

Bruce W. Miller, Geologist and long-time GSN Member from Reno, Nevada has passed away.

Bruce fought a very long and courageous battle against Lymphoma and succumbed to the disease on September 4, 2016. Bruce was an active member of the GSN and regularly attended the monthly GSN dinner meetings in Reno and participated in many of the GSN field trips over the years.

Bruce didn't have any family locally so no plans have been made yet for a memorial service. I will send an announcement as soon as I hear of anything.



Bruce attending the GSN's Spring 2001 field trip.
Photo by Eric Ruud.

Scientists Uncover Insights into the Formation of the Earth's Oldest Continental Crust Source: University of Alberta

Reprinted from ScienceDaily Online, 19 September 2016.

<https://www.sciencedaily.com/releases/2016/09/160919121941.htm>

Addressing fundamental unknowns about the earliest history of Earth's crust, scientists have precisely dated the world's oldest rock unit at 4.02 billion years old. Driven by the University of Alberta, the findings suggest that early Earth was largely covered with an oceanic crust-like surface.

"It gives us important information about how the early continents formed," says lead author Jesse Reimink. "Because it's so far back in time, we have to grasp at every piece of evidence we can. We have very few data points with which to evaluate what was happening on Earth at this time." In fact, only three locations worldwide exist with rocks or minerals older than 4 billion years old: one from Northern Quebec, mineral grains from Western Australia, and the rock formation from Canada's Northwest Territories examined in this new study.

While it is well known that the oldest rocks formed prior to 4 billion years ago, the unique twist on Reimink's rock is the presence of well-preserved grains of the mineral zircon, leaving no doubt about the date it formed. The sample in question was found during fieldwork by Reimink's PhD supervisor, Tom Chacko, in an area roughly 300 kilometres north of Yellowknife. Reimink recently completed his PhD at the University of Alberta before starting a post-doctoral fellowship at the Carnegie Institute for Science in Washington, D.C.

"Zircons lock in not only the age but also other geochemical information that we've exploited in this paper," Reimink continues. "Rocks and zircon together give us much more information than either on their own. Zircon retains its chemical signature and records age information that doesn't get reset by later geological events, while the rock itself records chemical information that the zircon grains don't."

He explains that the chemistry of the rock itself looks like rocks that are forming today in modern Iceland, which is transitional between oceanic and continental crust. In fact, Iceland has been hypothesized as an analog for how continental crusts started to form.

"We examined the rock itself to analyze those chemical signatures to explore the way that the magma intrudes into the surrounding rock." One signature in particular recorded the assimilation step of magma from Earth's crust. "While the magma cooled, it simultaneously heated up and melted the rock around it, and we have evidence for that."

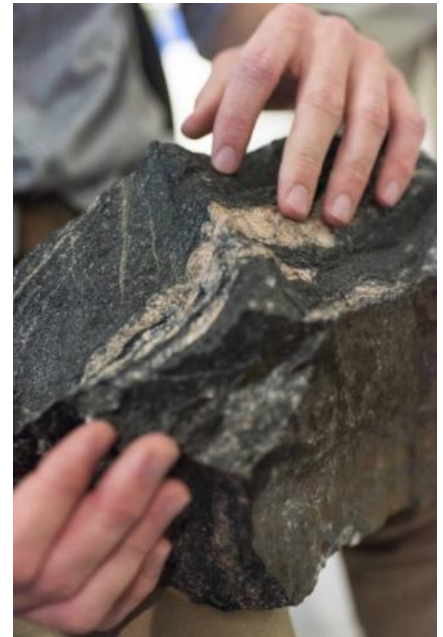
Reimink says that the lack of signatures of continental crust in this rock, different from what the early continents were expected to look like, leads to more questions than answers. Reimink says one of the biggest challenges as a geologist is that as we travel back in time on Earth, the quantity and quality of available evidence decreases. "Earth is constantly recycling itself, the crust is being deformed or melted, and pre-history is being erased," remarks Reimink.

"The presence of continents above water and exposed to the atmosphere has huge implications in atmospheric chemistry and the presence or absence of life. The amount of continents on Earth has a large chemical influence both on processes in the deep Earth (mantle and core) and at the Earth's surface (atmosphere and biosphere). There are constant feedback loops between chemistry and geology. Though there are still a lot of unknowns, this is just one example that everything on Earth is intertwined." "No evidence for Hadean continental crust within Earth's oldest evolved rock unit" appears in the October issue of *Nature Geoscience*.

Story Source: [Materials](#) provided by [University of Alberta](#). *Note: Content may be edited for style and length.*

Journal Reference:

J. R. Reimink, J. H. F. L. Davies, T. Chacko, R. A. Stern, L. M. Heaman, C. Sarkar, U. Schaltegger, R. A. Creaser, D. G. Pearson. **No evidence for Hadean continental crust within Earth's oldest evolved rock unit.** *Nature Geoscience*, 2016; DOI: [10.1038/ngeo2786](https://doi.org/10.1038/ngeo2786)



Samples of the world's oldest precisely dated rock.

Credit: Image courtesy of University of Alberta

ROCK TALK

This picture (upper left), submitted by Alan Coyner, is of a GSN backpack inside the Aleson Arch which is located on The Rincon at Lake Powell. The backpack travelled to Lake Powell in September with GSN Members Ron Parratt, Tom Burkhart and Alan Coyner.

Picture credits go to Reg Hanegraaff (Ron Parratt's brother-in-law)

(Feel free to submit your GSN backpack photo and we'll put it in the newsletter if there is space.)



Nevada Mineral Exploration Coalition

The NMEC's 2016 Annual General Meeting

2016 Annual General Meeting

Monday, October 17, 2016

8 am—6 pm

Atlantis Resort & Casino

3800 So. Virginia Street

Reno, NV 89502

Regular (Oct. 1 – Oct. 15):

Member \$75 Non-Member \$95

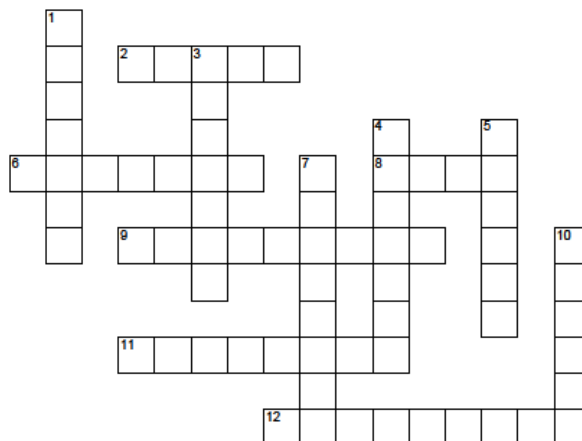
Late and on site (Oct. 16 & 17):

Member \$150 Non-Member \$200

To Register Online please go to this link:

<https://www.nvmec.org/2016-annual-general-meeting>

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ACROSS

- 2 the name given to molten rock from volcanos
- 6 a vent for extrusive igneous rocks
- 8 the common name for magma flowing from a volcano
- 9 igneous rocks that form from magma that reaches the surface of the earth
- 11 a light colored igneous rock with high silica content, explosive eruptions
- 12 igneous rocks that form below the surface of the earth and cool slowly

DOWN

- 1 rocks that come from the mantle
- 3 a common intrusive igneous rock
- 4 one of the eight basic rock forming minerals
- 5 an igneous rock with a low silica content that flows easily
- 7 volcanic glass with no crystalline structure, breaks with very sharp edges
- 10 a very light igneous rock, honeycombed volcanic glass

4th Annual Great Basin Rendezvous—best one yet!

By Laura Ruud

The NMEC's (Nevada Mineral Exploration Coalition's) Great Basin Rendezvous held on September 16-18, 2016 was the best one yet in my opinion. Mostly due to the PERFECT weather in Lamoille Canyon. Not too hot, not too cold, no rain, no snow and no wind! The fall colors in the canyon were almost at their peak which only added to the experience of geos getting together to socialize, camp, eat, enjoy the scenery and geology!

The Rendezvous attendees were privileged to have Keith Howard, USGS Emeritus and Lamoille Canyon geology guru lead a great geology trip with several stops throughout the canyon. Keith began mapping the area when he was 23 years old and he is 77 now. That is a lot of years of experience and I'd venture to say he is THE expert on Lamoille geology.

The NMEC has amazing sponsors who make this event wonderful by supplying tons of great food. The crew from Falcon Drilling cooked a huge breakfast on Saturday for about 100 attendees and Enviroscentists Inc. volunteers were in the kitchen early Sunday morning turning out an amazing hot breakfast to end the weekend. Friday night's very tasty tri-tip dinner was provided by National EWP and Saturday night's BBQ dinner of lamb, pork loin and chicken was provided by Steve Neilsen, Envirotech Drilling and cooked by Phred's BBQ catering out of Spring Creek, NV. Greg Sittig of Newpark Drilling Fluids worked all day making home-made potato salad and coleslaw for the campers too! Redcor supplied the alcohol (a big chunk of change for this crowd) and financial donors helped cover the cost of the camp rental and other supply needs. These include TonaTec, IDS, Boart Longyear, Drift Drilling, Major Drilling, Alfonso Bedoya and Rich & Lisa Perry. (Photos by Laura Ruud)



No geo-trip is complete without a geologist doing some arm-waving



Warren Thompson, Organizer



Dave Shaddrick, Organizer



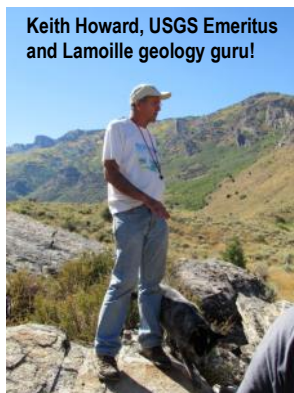
Relaxing & socializing in camp. And maybe a little imbibing and smoking cigars too!



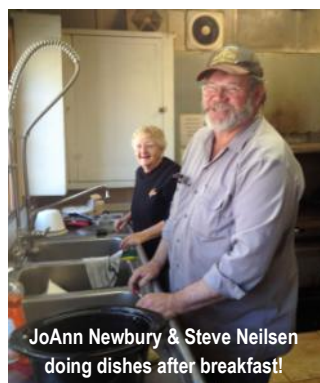
Lion's Camp in Lamoille Canyon



Garnet "rubies" in matrix



Keith Howard, USGS Emeritus and Lamoille geology guru!



JoAnn Newbury & Steve Neilsen doing dishes after breakfast!



Group photo on the geo-tour

OTHER UPCOMING EVENTS

2-5 October: AAPG Pacific + Rocky Mountain Joint Meeting. Paris Las Vegas Hotel. Co-organized by our friends at the NPGS! Click here for more information and to register: www.psaapg.org/2016convention.

3 October: DREGS (Denver Region Exploration Geologists), David Kelley, MMG. Title: "The Las Bambas Porphyry Cluster in the Andahuaylas Yauri Batholith, Southern Peru". Social 6 p.m., Presentation 7 p.m. at Berthoud Hall, Room 241, CO School of Mines, Golden. For more information contact James Piper at geopros@q.com.

4 October: Arizona Geological Society meeting, Speaker Hamish Martin presents "Geology of the Resolution Cu-Mo Deposit, Superior Arizona". 6 p.m. to 9 p.m. at the Sheraton, 5151 E Grant Rd. (& Rosemont), Tucson, AZ. Click on the link for more info: [Hamish Martin Presents Geology of the Resolution Cu-Mo Deposit, Superior Arizona](#). Dinner is closed.

4 October 2016 12th Mining and Exploration Forum – MINEX Russia to be held in Moscow, Russia on 4-6 October 2016. For more information about the Forum and participation options visit www.minexrussia.com/2016

6 October 2016 Nevada Petroleum & Geothermal Society, Reno, Nevada monthly meeting. Cocktails at 6:30 PM, Dinner at 7:00 PM, Ramada Reno Hotel; 1000 East 6th St., Reno NV 89512. Speaker: Dick Benoit, Consulting Geothermal Geologist, Reno, NV. TOPIC: Geology and History of the Soda Lake Geothermal Project 1972 to 2016. Please make reservations by Tuesday, October 4, 2016 by using the following link: <https://docs.google.com/forms/d/e/1FAIpQLSdcptcYw9IW0azmSGV22uVf41UEmPK82ErULqdyPzztrvWXnA/viewform>

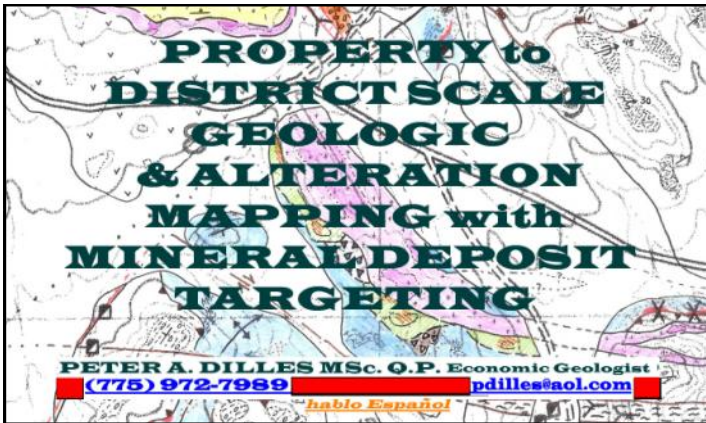
9-12 October 2016 Underwater Mining Conference 2016. Orakai Songdo Park Hotel, Incheon, Korea. Phone: 808-956-5095. Email: karynnem@hawaii.edu; www.underwatermining.org

10 October 2016 SME Northern Nevada Section Monthly meeting. Circus-Circus Mandalay Room, Reno NV. Social Hour @ 6 pm, Dinner at 6:45 pm. Talk at 7:30 pm. Speaker: Cliff Preston, IDS. Topic: Radar Slope Monitoring Trends. Cost \$30/each-Member, \$35/each-Non Member. Please RSVP by Wednesday, October 5th to Sarah Lightner, 775-746-7147 or NNevSME@gmail.com

17 October 2016 The NMEC Annual General Meeting will be held at the Atlantis Resort and Casino in Reno, NV. Contact Dave Shaddrick, Dave@dshaddrick.com. Click to register <https://www.nvmec.org/2016-annual-general-meeting>

18-21 October 2016 24th World Mining Congress 2016. SulAmerica Business Center, Rio de Janeiro, Brazil. Phone: 55-21-2432-6644email: fernanda@hynastha-inovar.com.br; www.wmc2016.org.br

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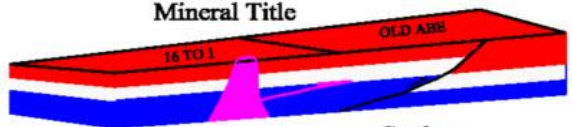
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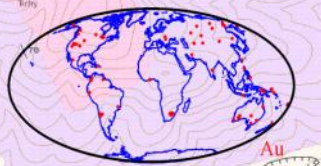
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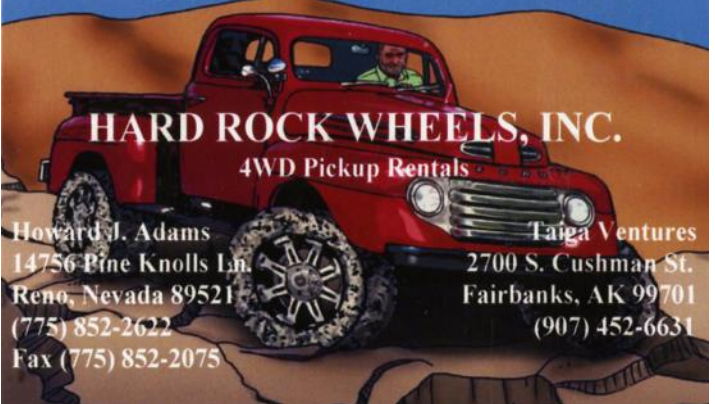
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Lion's Camp, Lamoille Canyon, Sept. 2016