

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



April 2014, Vol. 30, No. 4

Published monthly except June and July

CALENDAR OF GSN EVENTS

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April 3, 2014
Thursday

SOUTHERN NEVADA CHAPTER MEETING

The monthly meeting will be held at 5:30 p.m. in room 105 of the Lilly Fong Geosciences building, UNLV. **Speaker: Bill Durbin, NV Division of Minerals.** Title: "Nevada's Abandoned Mine Lands Program – Overview and Update" **Food & Drinks Sponsor: RUEN DRILLING.** Contact Wyatt Bain, bainw1@unlv.nevada.edu. Abstract, page 5.

April 9, 2014
Wednesday

WINNEMUCCA CHAPTER MEETING (Every 2nd Wednesday)

The monthly meeting will be held at the Martin Hotel, Winnemucca, NV. Appetizers/drinks at 6:00 PM, Talk at 7:00 PM. **Speaker: Jon Powell, Newmont Mining Corp.** Title: "Geology and Mineralization of the Long Canyon Gold Deposit, Elko County, Nevada". **Food & Drinks Sponsored by: GEOTEMPS, INC.** Contact Andy Jansen at Andrew.jansen@newmont.com for more info. Abstract on page 6.

April 17, 2014
Thursday

ELKO CHAPTER MEETING (Every Third Thursday)

The monthly meeting will be held at the Western Folk Life Center, 501 Railroad Street. Refreshments at 6:00 PM, Talk at 7:00 PM. **Speaker: Hugh de Souza, SGS, Inc.** Title: "IMPROVING AU AND AG RECOVERIES THROUGH QUANTITATIVE MINERALOGICAL CHARACTERIZATION BY QEMSCAN". **Food & Drinks Sponsored by: SGS, INC.** For more information contact Josh Sovie at jsovie@barrick.com. Abstract on page 7.

April 18, 2014
Friday

GSN MEMBERSHIP MEETING (Every Third Friday)

The monthly meeting will be held at the Reno Elks Lodge, 597 Kumle, Reno. Drinks at 6:00 PM, Dinner at 7:00 PM, Talk at 8:00 PM. **Speakers: Kait Barber and Ben Parrish, Mackay M.S. Candidates.** Titles on pg. 3. **Sponsors for the evening are: HARRIS EXPLORATION DRILLING & ASSOC. and FALCON DRILLING INC.** Dinner reservations must be made by **WEDNESDAY, APRIL 16TH.** Call Laura Ruud at 323-3500; Email: gsn@gsnv.org. DINNER \$25.00.

May 2-4, 2014
(Fri-Sun)

GSN SPRING 2014 FIELD TRIP

Humboldt Range, Majuba Hill, and Trinity Range (Au, Ag, Cu, Sn, W, Be, Hg, Sb, B). **ALMOST FULL! REGISTER NOW! Form on page 9.**

G.S.N. APRIL MEETING CO-SPONSORS



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FROM THE PRESIDENT, APRIL 2014
Tommy Thompson, G.S.N. President 2013-2014

Fifteen Reno geologists headed to the Iberian Pyrite Belt of southern Portugal and Spain during the 3rd week of March, all part of the Annual “*Spring Break*” fieldtrip for the Mackay Society of Economic Geologists student chapter. The 5,000+-year history of world-class volcanogenic massive sulfide (VMS) deposits in that region is well-documented. The trip began in Lisbon with a day to visit historic sites including an aqueduct, parks, and a spectacular castle. From there we traveled to Évora, Portugal where we were to start our mine tours. We began our tour of the *Faja Piritica* at Colt Resource’s Boa Fé exploration project (their next phase of exploration drilling with drill rig arriving was the same day of our visit) where the geologic setting and core review of a VMS system was presented; their core warehouse with wooden core boxes was incredibly well-organized. After the review of their project we traveled to Castro Verde, Portugal where, on the following day, we were to visit SOMINCOR’s Neves-Corvo mine. The photo below was taken at a traffic circle in town with a backdrop of huge pyrite crystal models and, along the base, painted cubes of igneous rock to simulate pyrite, placed there by SOMINCOR. Neves-Corvo deposits, discovered in 1977, are a complicated VMS system with Cu-Zn-(Sn) that formed by a combination of sea-floor deposition and sub-sea fracture-replacement orebodies hosted in felsic volcanic rocks and shales.

We traveled to Huelva, Spain where we visited the “*Muelle de las Carabelas*” (Wharf of the Caravels) where replicas of Columbus’s ships were open to visit. We continued on to Rio Tinto where a museum documents the history of mining from pre-Phoenician times. Rio Tinto is at the eastern end of the Iberian Pyrite Belt and is a pyrite-chalcopyrite deposit hosted in a felsic dome-sill complex; no mining is currently underway, but both open pit and underground mines have operated there. The leached cap at the Rio Tinto Cerro Colorado deposit had a gossan that averaged 2.4 g/t Au and 42 g/t Ag. We drove on to Seville after our Rio Tinto visit; Columbus’ expeditions departed from there along the Guadalquivir River.

From Seville we visited, on separate days, two mining operations: (1) Rio Narcea Gold Mines Ltd.’s (Lundin Mining Corp.) Aguablanca mine, a Ni-Cu-(PGE) deposit in mafic-ultramafic rocks; and (2) Cobre Las Cruces’ high-grade copper mine, the eastern-most discovery in the Iberian Pyrite Belt. Aguablanca deposits, discovered in 1993, are beneath a thick cover of marls and appear to be part of a 338 Ma Andean arc system that parallels the Iberian Pyrite Belt, with exciting potential for additional discoveries. Cobre Las Cruces mine has a unique secondary Cu zone in open pit with grades exceeding 6% and reserves of >1Mt copper metal.



GSN APRIL 18, 2014 Membership Meeting

Reservations Are Required - Please Cancel if You Are Unable to Attend

Please call 775-323-3500, Fax 775-323-3599 or e-mail gsn@gsnv.org by 4 p.m. on WEDNESDAY, April 16, 2014.

Social Hour: 6:00 PM – Dinner: 7:00 PM – Speaker: 8:00 PM

\$25.00 per person. Location: Elks Lodge, 597 Kumle Lane, Reno, Nevada

Directions: across (W) from the Reno-Sparks Convention Center
(S. Virginia Street, behind the Les Schwab Tire Center)

MACKAY STUDENT NIGHT!

**“Geology, Alteration, Geochemistry, and Paragenesis of the Vista Vein
Shear Zone Deposit, Humboldt County, Nevada”**

Kait Barber, M.S. Candidate

and

“The Mike Gold and Copper Deposit, Carlin trend, Nevada”

Ben Parrish, M.S. Candidate

The April 18th meeting is student night! We will be having students from the Mackay School of Earth Sciences & Engineering presenting their posters and competing for cash prizes. Any current student is encouraged to present their poster.

The speakers are both current Mackay M.S. candidates and will be giving their talks in addition to the poster session.

RICHARD F. HARDYMAN—MEMORIES

Prior to the start of the talks (during dinner) on April 18th, we are going to have friends and colleagues of Dick Hardyman share stories & anecdotes in his memory. If you would like to share something, please let me know in advance. If you cannot make it to the meeting, we encourage you to share your story in writing and we will have those printed and available for his wife and others to read. We will end by raising a glass to Dick!

***Thank you to ENVIROSCIENTISTS, INC.
For Hosting the March 21, 2014 Meeting!***

“FACES OF GSN”

Jake Margolis: That Little Mineral Gene



Field camp in western Maryland in 1981: there's an outcrop somewhere in that poison ivy!

I'm not certain why this geology thing started with me, but by my early teens I had become interested in mineral collecting. Growing up in an urban environment in Baltimore, this may seem a bit odd, but as it turns out, the region has a good geologic diversity and interesting and, in some cases, world-class mineral localities. I would buy specimens now and then, but I mostly just collected things I could find locally or on family trips. Many years later, I would take my daughter Hannah to one of these places just a couple miles from my old house - it was a ridge underlain by Cambrian Setters quartzite that contains nice black tourmaline crystals that weather out into the soil. As a teenager I also collected at the famous Wheatley mine pyromorphite locality west of Philadelphia. Also not too far away was the type locality for the mineral carrollite, a copper-cobalt sulfide, and I ended up doing a senior thesis on the occurrence for my undergraduate geology degree at the University of Maryland. I took a class in economic geology taught by Ann Wylie, and although I really had no idea what a career would look like, I saw the subject as the perfect union of my passion for minerals with applied geology. After my paternal grandparents passed away, I went with my father to clean out their apartment; it was a few years before I started college. Hidden in the back of a closet was a specimen of vanadinite my grandfather bought. It was then I realized that I had indeed inherited the mineral gene from my dad's side of the family. I still have that specimen of vanadinite to remind me.

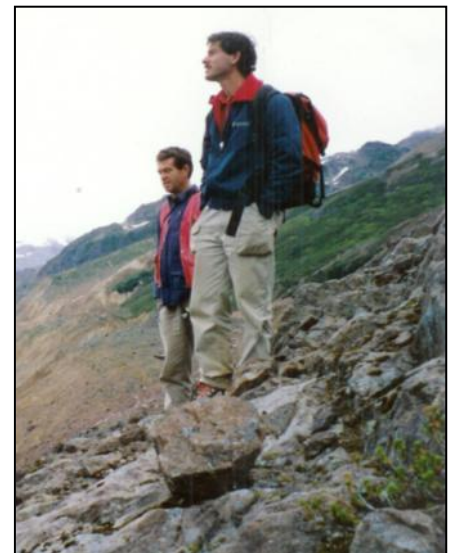
After getting my Bachelor's, I worked for a couple years with the U.S. Geological Survey in Reston, Virginia. It was Phil Bethke who got me the job and to whom I owe so much. When he told me there were no positions in mineral resources at the time, I told him I'd do anything, and he said: "Great, how about cutting rocks"! It wasn't romantic science, but running that little rock lab got me in the door, and I soon ended up in the Eastern Minerals Resources Branch working in the Carolina Slate Belt and on the geology and mineral resources of the Mesozoic rift basins of eastern North America. Work on the latter led to my first publication, a U.S.G.S. Bulletin reviewing the literature on the subject.

I didn't know much about gold when I arrived at the University of Washington in 1984 to start a Master's Degree with Eric Cheney. Soon I would, as I got funding from Asamera Minerals to study epithermal gold at Wenatchee, Washington, site of their Cannon mine. Wenatchee wasn't exactly roughing it, what with being able to go to Burger King for lunch after logging core under apple orchards in the morning and then asking an old lady if I could map an outcrop in her backyard in the afternoon. After graduating, I came down to Reno for a few days of interviews in late 1987 and recognized that I had two choices: work for a big company, where I'd be lost in the crowd, or get on board with a small outfit where I'd be able to make a visible impact. The answer came easily when I walked into Lacana

Gold's little office on Matley Lane and interviewed with Mike Fiannaca. Mike was the only guy who set a few rocks on his desk and asked me what they were and then walked me up to the geologic map of Nevada, which was a colorful stew I knew little about, and asked me where I'd look for gold. Although I had other offers, I couldn't resist Mike's, and it wasn't long before Lacana merged into the bigger Corona Corporation and then ultimately into even bigger Homestake, where I remained until 1999. I still remember my first field excursion in early 1988. I was charged with meeting up with Dave Sterling at a place called Sulfur along the railroad tracks north of Lovelock. Given that it was a prominent place name on the maps, I obviously assumed there must be a hotel, gas station and a place to eat, you know, like back at Wenatchee. Dave tried holding his laughter as I inquired about what the metropolis of Sulfur had to offer, but he finally burst out. Needless to say, a couple days of camping were in store, and I soon experienced what this Nevada gold exploration gig would be like. As part of my initiation fee, Mike provided me with an old Toyota pickup that had no air conditioning, power steering, or even an FM radio. After nearly passing out from heat exhaustion that summer, Mike finally relented, and I was soon behind the wheel of a nice F150. (cont. on page 5)



Schlepping a scintillometer through the mud in the Carolina Slate Belt (1983).



Teaching Dick Sillitoe something about porphyry Cu-Au deposits at the Mitchell deposit, Sulphurets, B.C. in 1991; the mustache came off 5 years later.



The Pioneer mine at North Bullfrog in 2008; thanks to Alan Day for lowering me on a 1/8-inch cable 300 feet down the Indiana shaft and even more thanks for electing to lift me back out; photo by Lane Griffin (I think Alan finally decided to pull him out as well).

(Margolis cont. from pg. 4) In the early 1990's Homestake supported my dissertation research with Mark Reed at the University of Oregon on the Sulphurets district, a world-class porphyry Cu-Au and epithermal gold camp in northwestern British Columbia. I was the first to complete detailed studies of the Mitchell Cu-Au porphyry system, which at the time had about 3 drillholes in it. It's now one of the biggest gold resources in the world as part of Seabridge Gold's KSM project. The glaciated remote terrain was a stark contrast with Nevada and was an exciting place to work. After leaving Homestake, I worked with AngloGold in Elko as exploration manager at Jerritt Canyon and on their regional Nevada exploration program. Since 2003 I've been continuing my career in Nevada gold exploration working for Redstar Gold since 2005. Perhaps my best achievement in Nevada in recent years was recognizing the potential of the North Bullfrog district with Redstar. After staking it in early 2006 and leasing most of the patented claims, we vended the project to International Tower Hill Mines and their later spinoff, Corvus Gold. Before selling our remaining interest to them in 2009, I had

formulated the key exploration targets, including the Yellowjacket area, where Corvus is delineating a high-grade vein system with some great-looking visible gold.

I'm blessed with a wonderful 16-year old daughter, Hannah, who's in her sophomore year at Elko High School and at the top of her class. When she's not busy with school work, she's herding goats, cats, a dog, a chicken, a llama, a rabbit and other assorted beasts (a hamster has recently been spotted), working on science-fair projects, involved in FFA, 4H and her school paper and re-reading Harry Potter for the umpteenth time. Regrettably, she does appear to be interested in science, albeit more of the biological variety, so perhaps that little mineral gene is finally evolving!



With daughter Hannah, the queen of 4H, with her goat, Brownie, at the Elko County Fair in 2013. Yes indeed, she won the all-around showWOMANship!

G.S.N. SOUTHERN NEVADA CHAPTER MEETING

Thursday, April 3, 2014, 5:30 P.M.



Sponsor: RUEN DRILLING



Speaker: Bill Durbin, Nevada Division of Minerals

Where: Room 105 of the Lilly Fong Geosciences building, UNLV.

Title: "Nevada's Abandoned Mine Lands Program – Overview and Update"

Abstract

Nevada's abandoned mine lands program enters its 28th year in 2014. The program was initiated by the Nevada Legislature in 1987 in response to concerns over the dangerous conditions created by 150 years of prospecting and mining across the state. There are estimates of 200,000 to 300,000 historic mining-related features in Nevada, 50,000 of which are potential public safety hazards. Nevada continues its efforts to secure and permanently close abandoned mine openings and to re-visit and re-secure mine hazards secured by temporary fencing. This presentation will highlight the work that has been accomplished to date by the Nevada Division of Minerals and its partners and cooperating agencies.

Biography Of Bill Durbin

Bill Durbin is currently Chief of Southern Nevada Operations for the Commission on Mineral Resources' Division of Minerals. His responsibilities include management of the Division's Las Vegas office, oversight of the Abandoned Mine Lands public safety program for southern Nevada, coordination of Division earth science education and curriculum development projects, and Bill is a staff geologist. Bill has been a member of the Nevada Mining Association Education Committee for 23 years. He has a Bachelor of Science degree in economic geology from San Diego State University. Bill joined the Division of Minerals in 1989 following 6 ½ years as geothermal exploration geologist, project geologist and materials scientist for the China Lake Naval Weapons Center in California. Prior to that, Bill worked for nearly 10 years as underground mine geologist, shift foreman and assay lab analyst for Union Carbide Corporation tungsten mines in Lincoln County, Nevada and Inyo County, California.



**G.S.N. WINNEMUCCA
CHAPTER MEETING**



WEDNESDAY, APRIL 9, 2014

The Martin Hotel, 94 W. Railroad Street, Winnemucca, Nevada

6:00 p.m. - Appetizers/Drinks

7:00 p.m.—Talk begins

FOOD & DRINK SPONSOR: GEOTEMPS, INC.

SPEAKER: Jon Powell, Newmont Mining Corporation

TOPIC: Geology and Mineralization of the Long Canyon Gold Deposit, Elko County, Nevada

ABSTRACT:

The Long Canyon gold deposit is located in northeastern Elko County, NV and is not part of any of the known major gold trends of northern Nevada. Gold mineralization is hosted in Cambrian and Ordovician platform margin facies carbonate rocks. The majority of the mineralization is hosted within limestones immediately above and below the Cambrian Notch Peak dolomite. Upper zone mineralization is hosted primarily by lenticular to planar laminated limestones of the lowermost portion of the Ordovician Pogonip Group. Lower zone mineralization is hosted in lenticular laminated Notch Peak limestone, generally at the base of the Notch Peak dolomite. Minor mineralization is also hosted within the Notch Peak dolomite and Mesozoic intrusive rocks. Both reverse and normal faults help control the location of multi-generational breccia bodies, which in turn control the mineralization. Mineralization is associated with strong oxidation, decalcification, and argillization. All mineralization defined to date is oxide, with oxidation extending to depths of greater than 1,000 ft.

The Long Canyon deposit occurs as a series of subparallel NE trending zones that extend for a strike length of approximately 2 miles. The deposit plunges gently to the northeast, with lower zone mineralization outcropping in the southwest and both upper and lower zone mineralization plunging below barren Pogonip limestones to the northeast. The deposit is structurally complex in the south, with the Notch Peak dolomite dissected by both low angle and high angle normal faults. In the north, mineralization is generally coincident with the crest of a broad anticline.

Do you have an amazing photo of Nevada geology that you would like to see in the next NBMG 2015 Nevada Geology Calendar?

Entries are now being accepted for this photo contest!

Here are the details for the NBMG 2015 Geology calendar contest:

http://www.nbmge.unr.edu/docs/2015_Calendar_photo_contest.pdf

- **Deadline for entries is June 30, 2014.**
- Photos need to be taken in Nevada. A location description and/or GPS coordinates should accompany submissions along with description.
- High-quality, high-resolution photo files of at least 300 dpi are required for quality printing.
- You may enter as many photos as you wish.
- **E-mail submissions to Jack Hursh (<mailto:jhursh@unr.edu>).**
- NBMG Cartographers will make the final decision on the winning photos.
- Prizes will be awarded for first-, second-, and third-place winners.





G.S.N. ELKO CHAPTER MEETING



THURSDAY, APRIL 17, 2014

Refreshments and appetizers @ 6:00 p.m., Talk @ 7:00 p.m.

Western Folklife Center

501 Railroad Street, Elko, Nevada

Sponsor for the evening is: SGS, INC.

SPEAKER: Hugh de Souza, SGS, Inc.

TITLE:

IMPROVING AU AND AG RECOVERIES THROUGH QUANTITATIVE MINERALOGICAL CHARACTERIZATION BY QEMSCAN

Hugh de Souza*, Tassos Grammatikopoulos, Chris Gunning, Sarah Prout, Kim Gibbs, SGS Canada Inc, Advanced Mineralogy Facility, Lakefield Site, 185 Concession Street, Lakefield, Ontario, Canada, K0L 2H0, e-mail: hugh.desouza@sgs.com

Mineralogical parameters of any ore body will aid a multi-faceted exploration program, help develop the metallurgical flow sheet and resolve plant issues arising from ore variability. In this presentation we discuss how these mineralogical data are obtained and the value they add to a project, specifically in Au and Ag projects, and especially in mineralogically complex ores.

Central to this is the determination and quantification of the various forms of gold or silver, defined as the different chemical states in which gold or silver is encountered in ore deposits. The most commonly known form is that of gold minerals and alloys (e.g., native Au, Au tellurides, Ag sulfosalts). Other forms of gold have been collectively described in the literature as sub-microscopic gold (i.e., less than 1 µm in diameter) and include solid solution Au in sulphides, colloidal Au, and preg robbed Au (e.g., clays, carbonaceous matter).

With the steady decline in the average gold and silver grades over the last couple of decades, contemporary mining operations have had to deal with very low-grade ores, in the order of a few g/t ROM, in which gold or silver is often fine-grained and mineralogy is very complex. These difficulties constitute a challenge both for exploration to define the Au mineralization and metallurgical processing to recover the Au.

A comprehensive accounting of the chemical forms of gold or silver is necessary to define Au/Ag mineralization and optimize gold metallurgy. SGS has developed standardized procedures based on automated mineralogical techniques (i.e., QEMSCAN and an automated SEM) that quantify the microscopic Au (and Ag), and, coupled with SIMS, the sub-microscopic Au. The data in conjunction with other physical and chemical methods provide a comprehensive delineation of the ore composition and behaviour.

*Presenter

Thank you to our generous donors in MARCH 2014

STUDENT DINNER FUND

**Sam Arentz
Del Flint
Pablo Garcia del Real
Jerry Mohling**

STUDENT FIELD TRIP FUND

**Kristin Alvarez
Pablo Garcia del Real
Nancy Richter**

ELKO CHAPTER MARCH SPONSOR



Thanks to GEOTEMPS, INC. for sponsoring the Elko Chapter meeting in March!



**Women's Mining Coalition announces its
23rd annual Fly-In to Washington D.C.
May 18-23, 2014**

All those working in the mining and exploration industries are invited to join a powerful network of women and advocate for a robust domestic mining industry.

To sign up, go to www.wmc-usa.org, click *Participant Form* under *Annual Fly-In* on the home page. For more information, email your enquiry to info@wmc-usa.org.

If your company would like to help sponsor the Fly-In, contact Lynne Volpi, WMC Coordinator, at info@wmc-usa.org.

The G.S.N. Spring Field Trip
is Almost Full!

Friday, May 2, to Sunday, May 4, 2014!

Jonathan Price, GSN V.P. and field trip leader has laid out a great itinerary for the 3-day trip. We will overnight in Lovelock, Nevada both nights. This trip will be a bit different as we will be riding in 4WD vehicles so we can visit places that a bus just can't get to. Bring your rock hammers and questions and join your fellow geologists on this one-of-a-kind adventure.

Register NOW using the form on page 9.



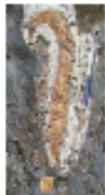
Thank You, Thank You, Thank You, Thank You

GSN SPRING FIELD TRIP SPONSORS:



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**Geological Society of Nevada
Spring 2014 Field Trip Registration
Friday, May 2, to Sunday, May 4, 2014**



“Humboldt Range, Majuba Hill, and Trinity Range (Au, Ag, Cu, Sn, W, Be, Hg, Sb, B)”

Friday, May 2nd: 8:00 a.m. – Depart from the GSN Office
Sack lunch provided
Day 1 - Oreana, Nevada Packard, & Nevada Quicksilver mines
6:00 p.m. - Dinner provided at the C Punch Ranch Inn in Lovelock, NV
Overnight at C Punch Ranch Inn (formerly Sturgeons)

Saturday, May 3rd: Breakfast on your own.
8:00 a.m. – Depart Lovelock
Day 2 - Majuba Hill and the Trinity Range
12:00 p.m. - Sack lunch provided.
6:00 p.m. - Dinner provided in Lovelock, NV
Overnight at C Punch Ranch Inn (formerly Sturgeons)

Sunday, May 4th: Breakfast on your own.
8:00 a.m. – Depart Lovelock
Day 3 - Lincoln Hill, Gold Ridge, Calcite-quartz vein wall, Willard mine, Willard Group (historical)
12:00 p.m. - Sack lunch provided.
5:00 p.m. - Return to Reno.

Sponsorship Opportunities for the SPRING 2014 Field Trip
One Sponsorship Left! Snacks/drinks in the vehicles for 3 days - \$750

Please call Laura at the GSN office 775-323-3500 or e-mail gsn@gsnv.org if you would like to be a sponsor.
Each donor will be acknowledged on the field trip and in the field guidebook.

Payments must be made by April 18, 2014
No refunds after April 18, 2014

Name: _____
Phone: _____
Company: _____
Email: _____

MEMBER COSTS:

\$260 - Double Room (2 nights)
\$305 - Single Room (2 nights)
\$155 - No Room in Lovelock
Students Double Room comped - limited space!

***NON-MEMBER COSTS:**

\$310 - Double Room (2 nights)
\$355 - Single Room (2 nights)
\$205 - No Room in Lovelock

Person to contact in case of Emergency:

Name: _____
Phone: _____

Lodging: Single Double No Room

Double Roommate: _____

Total amount included with this form: _____

Payment: Check # _____ Cash Visa Master Card

Card Number: _____ Exp. Date: _____ 3-digit security code: _____

Name (as it appears on card): _____

Return with payment to: Geological Society of Nevada
2175 Raggio Parkway, Room 107
Reno, NV 89512
Phone: (775) 323-3500, Fax: (775) 323-3500; E-mail: gsn@gsnv.org;

OBITUARY



Robert C. Horton

July 25, 1926 - Mar 15, 2014

Robert Carlton Horton together with his identical twin brother Richard Wingfield Horton was born July 25, 1926 to Eathel and Frank Horton in Tonopah, Nevada. He first attended McKinley Park Elementary School in Reno before moving to Unionville, Nevada where his father worked the Marigold mine/mill. He attended the still-standing one room schoolhouse in Unionville through the 8th grade, then moved to Winnemucca for high school. He graduated in 1944 from Humboldt Co. High School then moved back to Reno to attend the University of Nevada, graduating from the Mackay School of Mines in 1949 as a mining engineer. He also earned his Professional Engineering distinction and in 1985 Bob received Honorary Doctor of Science Degree from UNR.

Robert enlisted in the [U.S. Navy](#) and served during the [Korean War](#) as an Air Intelligence Officer on the USS Yorktown aircraft carrier as Lieutenant.

In 1952 Bob married his high school sweetheart Beverly Burhans and raised three daughters, Debra, Robin and Cindy. Bob and Bev were married for 56 years until Beverly's death in 2008.

After the Korean War, Bob worked for the Nevada Bureau of Mines at the University of Nevada for 10 years. Next he served as vice president of three related corporations responsible for exploration, drilling and production of petroleum in eastern Nevada. Then he worked for Meiser Enterprises, as chief of construction. Bob's next venture was opening an office in Reno as the geologist for Bendix Field Engineering Corp., later moving to Grand Junction, Co. headquarters to serve as geology director of the entire Bendix Corporation. In 1981 Bob & Bev moved to Washington, D.C., as Bob had been nominated by President Reagan and confirmed by the U.S. Senate to serve as Director of the U.S. Bureau of Mines} Dept. of the Interior. After the Reagan administration, Bob returned to Reno to work again for the Nevada Bureau of Mines as Associate Dean. His final professional contribution was serving as a consultant on the Board of Directors of FirstMiss Gold Inc. /Getchell Gold Corp. mines, until his retirement.

Robert is predeceased by his wife Beverly, parents, Eathel and Frank, as well as all of his siblings, Frank, Orville, Elizabeth and Richard Horton.

Surviving Robert are his three daughters: Dr. Debra Horton D.C., Robin Fitzpatrick & his adored son-in-law Ed, Cindy Meyer, grandson Bill Felices (Marissa) and great granddaughter Kaliah.

A memorial service was held Saturday, 3/22/14 at St. Paul's United Methodist Church, Reno.

In lieu of flowers, Bob's request is that you practice random acts of kindness!

Published in Reno Gazette-Journal from Mar. 19 to Mar. 21, 2014

- See more at: <http://www.legacy.com/obituaries/rji/obituary.aspx?n=robert-horton&pid=170238882#sthash.CUCNsas3.dpuf>

CALL FOR NOMINATIONS—2014/2015 CHAPTER OFFICERS

The G.S.N. Chapters in Elko, Winnemucca and Southern Nevada are seeking nominations for officers for the coming fiscal year beginning on June 1, 2014 to May 31, 2015. Please contact the President of your respective chapter if you are interested in volunteering or would like to nominate someone:

Josh Sovie, Elko Chapter President: jsovie@barrick.com.

Andy Jansen, Winnemucca Chapter President: Andrew.jansen@newmont.com

Wyatt Bain, Southern Nevada Chapter President: bainw1@unlv.nevada.edu.

GSN 2014-2015 BALLOT

This Ballot will also be attached as a separate file to your email so you can submit online!

In accordance with Article V, Section 4 of the GSN Constitution and Article II of the GSN By-Laws, the GSN Executive Committee and the GSN Board of Directors are recommending the slate of candidates listed below to serve as Officers for 2014-2015 and Directors for 2014-2017; these positions become effective on June 1st.

The entire GSN membership has the right to vote separately on approving the elected positions to the GSN Executive Committee and the Class B three year term on the Board of Directors as presented below:

Officers for the 2014-2015 GSN Executive Committee

PRESIDENT

Jonathan Price

SECRETARY

Lori Carpenter

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Class C: Three Year Term – 2014 to 2017

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AGAINST BOTH_____

CURRENT GSN MEMBER'S NAME:_____

(All votes must include the GSN Member's Name. Vote without a name will not be counted.)

If you are receiving this notice by mail, either mail your vote to GSN, 2175 Raggio Parkway, Reno, Nevada 89512 or fax it to (775) 323-3599. In order for the vote on this ballot to be counted the completed ballot must be received in the GSN office on or before 11:59 pm on Friday, April 18, 2014. Thank you for your participation.

Activity Update

Mike Brady, February 2014

www.activityupdate.com

NEVADA

Columbus Gold Corp. announced that recent drill results at the Eastside Project include 99.1-103.6 meters @ 0.11 gpt Au (ES-3); 6.1-47.2 meters @ 0.30 gpt Au (ES-4); 35.1-42.7 meters @ 0.33 gpt Au (ES-8) and 109.7-115.8 meters @ 0.20 gpt Au (ES-12). *Press Release:* February 19

Newmont Mining Corp. announced that it acquired an option to earn a 70% interest in the Wood Hills South Property from Renaissance Gold Inc. for \$7,350,000 in exploration expenditures over 10 years. *Press Release:* February 18

Galileo Resources plc. announced that it purchased a 100% interest in St. Vincent Minerals Inc. for 21,650,000 of its shares valued at \$3,870,000. St. Vincent owns the Gabbs Property. (resource = 57,000,000 tonnes @ 0.56 gpt Au, 0.23% Cu inferred) *Press Release:* February 4

Newmont Mining Corp. announced that it re-assessed its gold reserves based on an assumed gold price of \$1,300/ounce (was \$1,400/ounce) resulting in an 11.0% decrease in total ounces from 2012 levels. *Press Release:* February 18

Silver Standard Resources Inc. announced that it acquired an option to purchase a 100% interest in the Marigold Property from Goldcorp Inc.(66.7%) and Barrick Gold Corp. (33.3%) for \$275,000,000. (reserve = 294,500,000 tonnes @ 0.52 gpt Au proven+probable) *Press Release:* February 4

West Kirkland Mining Inc. announced that based on recent studies at the Hasbrouck Project, resources aggregate 63,350,000 tonnes @ 0.41 gpt Au, 8.9 gpt Ag measured+indicated and 53,560,000 tonnes @ 0.24 gpt Au, 6.5 gpt Ag inferred. (was 116,900,000 tonnes @ 0.31 gpt Au, 7.8 gpt Ag inferred) *Press Release:* February 24

West Kirkland Mining Inc. announced that based on recent studies at the Three Hills Project, resources aggregate 7,730,000 tonnes @ 0.61 gpt Au measured+indicated and 10,000,000 tonnes @ 0.47 gpt Au inferred. (was 5,214,000 tonnes @ 0.78 gpt Au indicated+inferred) *Press Release:* February 24

Gold Standard Ventures Corp. announced that it acquired an option to purchase a 100% interest in the Pinon Property from Scorpio Gold Corp. for \$7,670,000 and 5,500,000 shares over 1 year. *Press Release:* January 29

Scorpio Gold Corp.(70%) announced that recent drill results at the Mineral Ridge/Mary LC Project include 57.91-67.06 meters @ 9.21 gpt Au (MR13632); 56.39-62.48 meters @ 1.07 gpt Au (MR13633); 64.01-68.58 meters @ 1.91 gpt Au (MR13638) and 0-6.1 meters @ 1.40 gpt Au (MR13647). (resource @ Mineral Ridge = 4,230,000 tonnes @ 1.47 gpt Au indicated) *Press Release:* February 18

Premier Gold Mines Ltd. announced that recent drill results at the Cove Project include 765.7-776.0 meters @ 13.22 gpt Au, 38.7 gpt Ag (AX-51) and 695.5-701.6 meters @ 15.83 gpt Au, 38.9 gpt Ag (PG-02). (resource = 425,000 tonnes @ 10.46 gpt Au indicated) *Press Release:* February 19

Pilot Gold Inc.(78%) announced that recent drill results at the Kinsley Mountain Project include 41.7 meters @ 6.85 gpt Au (PK127C) and 13.7 meters @ 1.70 gpt Au (PK126C). *Press Release:* February 27

Klondex Mines Ltd. announced that recent underground drill results at the Fire Creek Project include 63.4-64.9 meters @ 166.0 gpt Au (FC13-099U); 32.4-33.8 meters @ 39.47 gpt Au (FC13-103U); 24.3-26.8 meters @ 47.50 gpt Au (FC13-104U) and 36.9-38.4 meters @ 27.4 gpt Au (FC13-106U). (resource = 206,400 tonnes @ 44.7 gpt Au measured+indicated) *Press Release:* February 13

Waterton Precious Metals Fund II announced that it offered to acquire Chaparral Gold Corp. for \$0.45/share or a total value of \$53,040,000. (reserve @ Gemfield = 14,300,000 tonnes @ 1.1 gpt Au proven+probable) *Press Release:* February 18

Corvus Gold Inc. announced that based on recent drill results at the North Bullfrog Project, the Yellowjacket Zone aggregates 4,000,000 tonnes @ 0.97 gpt Au, 5.1 gpt Ag indicated and 35,580,000 tonnes @ 0.70 gpt Au, 3.9 gpt Ag inferred. (no previous estimate) *Press Release:* February 25

Atna Resources Ltd. announced that based on recent drill results at the Reward Project, resources aggregate 18,450,000 tonnes @ 0.65 gpt Au measured+indicated and 6,428,000 tonnes @ 0.51 gpt Au inferred. (was 16,410,000 tonnes @ 0.68 gpt Au measured+indicated and 4,320,000 tonnes @ 0.48 gpt Au inferred) *Press Release:* February 25

G.S.N. SYMPOSIUM 2015 "New Concepts and Discoveries" ANNOUNCEMENT AND CALL FOR PAPERS

MAY 14-24, 2015

Abstract Deadline—May 30, 2014

EXHIBITORS—RESERVE YOUR BOOTH SPACE NOW!

Email for Booth space: Exhibits@2015GSNsymposium.org;

Emails to submit abstracts: Munteanj@unr.edu OR msmith@pilotgold.com

Website: www.gsnv.org/2015-symposium/



GEOLOGICAL SOCIETY OF NEVADA 2015 SYMPOSIUM ANNOUNCEMENT and CALL FOR PAPERS

THEME: New Concepts and Discoveries
WHEN: MAY 14-24, 2015
WHERE: JOHN ASCUAGA'S NUGGET
RENO/SPARKS, NEVADA

The Geological Society of Nevada invites contributions for oral, poster, and core shack presentations covering a broad range of geological topics for its upcoming seventh symposium. The symposium's focus is New Concepts and Discoveries emphasizing both the major deposit types and the trends that have sustained the mining industry for several decades as well as other deposit types and areas that may eventually have greater influence. The focus of the meeting is to utilize case studies; descriptions of new and reinvigorated deposits and targets; framework geology; tectonics and metallogeny; and the latest deposit concepts and exploration technologies.

Oral presentations require abstracts and a written paper that will be peer-reviewed and published in the Symposium Proceedings following the meeting. Poster presentations require abstracts and written papers are encouraged. Core shack presenters are welcome to submit abstracts and written papers, but are not required to do so.

Draft abstracts up to 500 words should be submitted no later than May 30, 2014. Written papers should be 2,000 to 20,000 words and include figures and tables. Draft manuscripts are due November 30, 2014.

Information for contributors is available on-line at: <http://www.gsnv.org/2015-symposium/>. Submit abstracts via e-mail at: munteanj@unr.edu and msmith@pilotgold.com.

GSN-SEG FORUM SUNDAY, MAY 17TH, 2015 TOPIC:

Carlin-like Gold Deposits: What Can We Learn
Beyond the Known Trends and Nevada

TECHNICAL PROGRAM MONDAY-THURSDAY MAY 18TH- 21ST, 2015

Focus Topics:

- Regional Geology and Metallogeny of the Great Basin
- Exploration Technology
- Case Histories of Discoveries and Exploration Update
- Intrusion-Related Cu-Au-Mo Deposits
- Northeastern Nevada: The New Frontier
- Advances in Carlin-type Gold Deposits
- Epithermal Deposits
- Diversification: Looking Beyond Gold, Copper and Silver

Questions? Contact us at:
<http://www.gsnv.org/2015-symposium/> or email at
mollymhunsaker@2015GSNsymposium.org

Meeting Co-Hosts



FIELD TRIPS

MAY 14TH-16TH AND MAY 21ST-23RD, 2015

Pre-meeting:

- Introduction of Carlin Gold Deposits
- Epithermal Deposits of Northern Nevada
- Mining for Non-Geologists: Exploration to Reclamation

Post-meeting:

- The Pequoop Trend-Nevada's Newest "Carlin" Trend
- Epithermal Deposits of Central Nevada
- Porphyry-related Deposits of Nevada
- The Famous Comstock Gold and Silver District

SHORT COURSES

MAY 14TH-16TH AND MAY 21ST-23RD, 2015
TOPICS TO BE ANNOUNCED

EXHIBITS

An active exhibit hall will provide excellent industry exposure for your company or organization. Space will go fast for this popular venue, so please reserve your booth early! Contact us at exhibits@2015GSNsymposium.org for more information.

Sponsorship Opportunities

We invite you to join GSN as we continue the tradition of excellence in presentations, field trips, and short courses. Opportunities are available for Patronage sponsorships, along with specific events. Please visit the website: www.gsnv.org/symposium or e-mail us at: dshaddock@aol.com

The Geological Society of Nevada (GSN) is a non-profit scientific society whose principal mission is to promote the advancement of the geological sciences, especially as they relate to Nevada. The Society encourages the dissemination of scientific and practical knowledge through semiformal presentations, field trips and symposia as well as by publishing the literature resulting from these activities.

ROCK TALK

A UAS Blast for the GSN Rock-Hound Techies...


By Lori Carpenter

If you've been investigating the use of civilian "drones" or, unmanned aerial vehicles (UAV) now referred to as unmanned aerial systems (UAS) for use in land resources management, mining and survey applications, you may also be following the legal issues surrounding their use – or is it still non-use?

Those already utilizing UAS or, conducting business case analyzes, find that UAS are efficient, cost effective and can go where no man (or woman) should go (dull, dirty and dangerous situations). On March 8, 2014, an administrative judge invalidated a fine against an [individual](#) who used a small drone for the commercial purpose of taking and selling photographs. Techies everywhere saw this as a [blow](#) to the Federal Aviation Administration's ability to regulate private drone use in the United States.

If you're following this series of events you also know that the FAA plans to [appeal](#) the decision. However, in the March 8 decision, the FAA regulations approved for manned aircraft do not apply to unmanned aircraft. The March 8 decision also found that the FAA's 2007 policy statement banning the commercial use of model aircraft is not enforceable. WOW. Does this mean you could fly until the appeal is filed?

Arguably, maybe, right? ...and yet at what height? ...what advice will your attorney provide under this circumstance? Ask your council to look at a 60-year old law detailed in the links above. It appears that no matter what the FAA appeal includes, this 60-year old law involving the height of private air space (< 500 feet, therefore below the public navigable airspace) versus the public navigable airspace (>500 feet) could potentially allow you to fly below 500 feet for commercial purposes (if you also own the [air space](#) above). Those eager to use drone technology for commercial purposes should keep a close eye on what the FAA does next.



(Just for Fun! A couple of members sent this announcement to me and you never know who, out of our 1,200 members might go for this!)

ICE COLD GOLD

Ever watch a show and think you could do a better job? Now is your chance to **STEP UP** or **SHUT UP!** We are seeking the most experienced geologists, miners, dredgers, jewelers, loggers, truckers, contractors, and shippers from across the country to join the cast for Season 3 of Animal Planet's #1 show "Ice Cold Gold"! This series follows eight men who leave behind their families and friends to risk it all in some of the most harrowing weather and topographical conditions in Greenland all for a chance to dig for fortune in precious metals and jewels.

If you have what it takes, are confident in your skills and abilities and have the balls to weather the storm, we want to hear from you! To apply, please email jessie@metalfloresmedia.com, like us on Facebook at www.facebook.com/metalfloresmedia, or apply online at www.metalfloresmedia.com.

This is the chance of a lifetime for the right individual.

P.D.A.C. Wrap-Up

The G.S.N. Booth at the PDAC Convention in Toronto last month enjoyed a constant flow of traffic and interest in Nevada! Overall attendance was down to ~25,000 this year but I think the mood was a little more optimistic than last.

We want to take this opportunity to thank the GSN Members who carried booth supplies and HEAVY BOOKS in their luggage to help save GSN shipping charges.

Bob Kastelic, Clancy Wendt, Dave Shadrick, Eric Ruud, Elizabeth Zbinden and Jim Leavitt we appreciate you!

Also, special thanks to **BV Inspectorate & Acme Labs** for paying for Laura's hotel room and many of her meals while attending PDAC this year. She didn't even mind sharing the room with Eric Ruud (her husband).



INSPECTORATE

BABY ANNOUNCEMENT

Alan Robert Hoffer was born February 26, 2014 at 6:48 pm weighing in at 6 lbs. 4 oz. He is the son of proud parents, Matthew and Amanda Hoffer. Matt recently took a position with Coeur Mining in Chicago so baby Alan narrowly missed being a Winnemucca, Nevada baby!



Upcoming Events

1 April, Arizona Geological Society, Tucson, AZ. Speaker: **Eric Seedorff**, University of Arizona. Title: "**Structural dismemberment of a porphyry molybdenum system, Spruce Mountain district, northeastern Nevada**". Sheraton Hotel, Oasis Room, 5151 E. Grant Rd., Tucson, AZ. Drinks @ 6 pm, Dinner @ 7 pm, Talk @ 8 pm. Reservations required by March 27th. For more information please go to: <http://www.arizona Geological Society.org/>

3 April, Nevada Petroleum & Geothermal Society, Reno, Nevada. Speaker: **James Faulds**, NBMG Director & State Geologist. **Topic: Why is Nevada in Hot Water? New Approaches to Understanding and Harnessing Nevada's Vast Geothermal Resources.** 6:30 PM, Ramada Reno Hotel; 1000 East 6th Street, Reno, NV. Contact Vicki Ehni for dinner reservations: vehni@aol.com.

7 April, DREGS meeting, Golden, CO. Speaker: **Jon Thorson**, PhD. Title: "Colorado Potash Project". Colorado School of Mines, Golden, CO, Berthoud Hall Room 241. Social at 6 pm, Presentation at 7 pm. Please Visit the DREGS web site at <http://www.dregs.org> for more information.

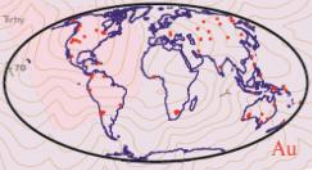
15-17, April, 116th National Western Mining Conference & Exhibition, Colorado Mining Association. Colorado Convention Center, Denver CO. Go to this website for details and to register: http://www.coloradomining.org/releasedetail.php?R_ID=1117

26 April, Arizona Geological Society, Spring Field Trip - Geology of the Christmas Porphyry Copper Deposit Oro Valley. On-site tour will last from ~8:30 a.m. to 3:30 p.m. Tour leader is **Randy White, Freeport-McMoRan**. More information and online registration: [Spring Field Trip - Geology of the Christmas Porphyry Copper Deposit](#).

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Classified ads = \$10.00 per line (approximately 8-9 words in a line)


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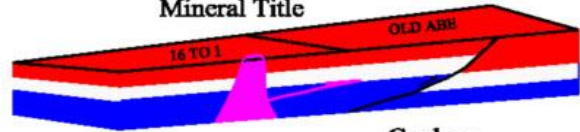


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