

2019

GEOLOGICAL SOCIETY OF NEVADA NEWSLETTER

Geological Society of Nevada, 2175 Raggio Parkway, Room 107, Reno, NV 89512
(775) 323-3500 - Hours Tuesday -- Friday, 9 a.m. to 4 p.m. Monday by appointment.

Website: www.gsnv.org • E-mail: gsn@gsnv.org



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CALENDAR OF GSN EVENTS

**No Meeting
This Month!**

SO. NEVADA CHAPTER MEETING (No meeting in January!)

For more information please contact Josh Bonde at paleo@lvnhm.org.

**Jan. 9, 2019
WEDNESDAY**

WINNEMUCCA CHAPTER MEMBERSHIP MEETING (2nd Wednesdays)

The meeting will be held at the Martin Hotel, 94 W. Railroad St., Winnemucca, NV. Refreshments/appetizers at 6 p.m. Talk at 7:00 pm. **Speaker: Paul D. Noland, Fiore Gold. Title: "Geology and Exploration Potential at Fiore Gold's Pan Mine and Gold Rock Project". Sponsor To Be Announced.** For more information please contact Chapter President, Matt Fithian @ Matthew.Fithian@ssrmining.com. Details on page 7.

**Jan. 17, 2019
THURSDAY**

ELKO CHAPTER MEMBERSHIP MEETING (3rd Thursdays)

The monthly meeting will be held at the Western Folklife Center, 501 Railroad St., Elko, NV. Refreshments begin at 6 p.m. Talk begins at 7 p.m. **Speaker: Joel Lenz, Nevada Governor's Office of Economic Development. Title: "Results of a Study on Ore Tolling and Copper Concentrate Processing in Nevada". Sponsor: TIMBERLINE DRILLING INC.!** For more info please contact Nate Wright @ Nathan.wright@newmont.com. Details on page 8.

**Jan. 18, 2019
FRIDAY**

GSN REGULAR MEMBERSHIP MEETING—NEW LOCATION!!

The monthly meeting will be held at Great Basin's **Taps & Tanks**, 1155 S. Rock Blvd. Reno, NV. Drinks @ 6 p.m., Dinner @ 7 p.m., Talk at 7:45 p.m. **Speaker: Rick Streiff, OceanaGold. Title: "New Discoveries in an Old District: Waihi, New Zealand". Drinks Sponsored by: MINE DEVELOPMENT ASSOCIATES!** Cost for Dinner—\$25. GSN Students are free. Please make reservations for dinner with Laura Ruud, by emailing gsn@gsnv.org. 775-323-3500. Details on page 3. **See map to Taps & Tanks on page. 4!**



**Feb. 7, 2019
THURSDAY**

SO. NEVADA CHAPTER MEMBERSHIP MEETING (1st Thursdays)

The meeting will be held at the Las Vegas Natural History Museum, 900 N. Las Vegas Blvd. Pizza & beer at 5:30 pm, Talk at 6:00 pm. Speaker & Topic: To Be Announced. Please contact Chapter President, Joshua Bonde for information @ paleo@lvnhm.org.

G.S.N. JANUARY MEETING SPONSOR!



**MINE DEVELOPMENT
ASSOCIATES**

FROM THE PRESIDENT
Richard Bedell, GSN President 2018-2019
JANUARY 2019



Happy New Year! Only 17 months until the 2020 Symposium. Now that is a sobering thought if you are nursing any hangovers. As always it will be a stunning success and many thanks to Eric Struhsacker and the Symposium Committee for all their hard work over the coming year.

This month's speaker Rick Streiff will be talking about low sulfidation epithermal discoveries on the North Island of New Zealand. There are many reasons to visit New Zealand, but if you have not been to Champagne pool sinter terrace and watched the effervescent CO2 bubbling and precipitating fine bands of arsenides with economic quantities of gold, you must. Bring your prayer rug.

Of course, low sulfidation epithermals are important to Nevada precious metal production, particularly for the smaller to intermediate sized companies. In 2017 epithermals accounted for 623,450 oz., or 11% of Nevada's gold production (John Muntean, Nevada Bureau of Mines and Geology). This is not huge, but they can be highly profitable, particularly given the large amount of toll milling available in Nevada. Recently published Nevada Bureau of Mines and Geology Report 57 **Opportunities for Precious Metals Toll Processing and Copper Concentrate Processing in Nevada**, lists 51 processing facilities in the State and most of them would consider processing third party material. But first they must be found...

Epithermal discoveries elsewhere can translate to Nevada. I find these deposits to be more similar globally than almost any other deposit type. Maybe it is because they are reasonably constrained geologically. They may have paleosurface features and only extend typically no more than 1,000 vertical feet. They are usually structurally controlled veins (with notable exceptions) and formed by hydrothermal pressure exceeding lithostatic load resulting in dominantly subvertical structures formed within transtensional stress fields. Sinter terraces are more often than not barren, and geophysics can be a useful tool to locate feeders where they are not superficially apparent. New techniques that look at sinter biota show that many are temperature sensitive and one can vector using the identification of specific species.

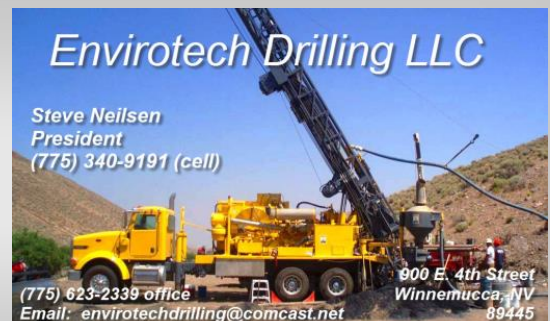
If you wish to prepare yourself for this North Island Kiwi lecture a special issue in Economic Geology (2011, volume 6) would offer excellent context.

Happy New Year

Richard Bedell

GSN President

The G.S.N. wishes to thank
ENVIROTECH DRILLING, LLC
for sponsoring the GSN's Christmas
Party on December 12, 2018!!



GSN MEMBERSHIP MEETING—JANUARY 18, 2019



SPEAKER: Rick Streiff, Great Basin Exploration Manager, OceanaGold

TITLE: “New Discoveries in an Old District: Waihi, New Zealand”

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

Speaker to Follow @ 7:45 pm

NEW LOCATION: Great Basin’s TAPS & TANKS, 1155 So. Rock Blvd., Reno, NV

(ENTER ON McCARRAN BLVD. —SEE MAP ON PAGE 4!!)

DINNER COST—\$25.00 PER PERSON

(You will be invoiced \$25 if you do not cancel your reservation by Thursday, Jan. 17th)

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

To Pre-pay for dinner please click here: <https://squareup.com/store/GSNV>

Dinner Reservations due by 5 p.m. on WEDNESDAY, JANUARY 16TH!



New Discoveries in an Old District: Waihi, New Zealand

Rick Streiff Great Basin Exploration Manager, OceanaGold

January, 2019

Waihi is a historic mining center within the Hauraki Goldfield, a classic epithermal mining district located on the North Island of New Zealand. Over 50 producing epithermal veins are located on the Coromandel Peninsula, hosted mainly in Miocene to Pliocene andesites or dacites overlying a Jurassic aged metasedimentary sequence. Significant veining also occurs in the overlying rhyolites as well. The district has produced over 12 million ounces of gold and 62 million ounces of silver since its discovery in 1862.

The principal producer in the district is the Martha mine, which was initially mined from 1883 to 1952 by underground methods and produced 4.9 million ounces of gold. The mine was reopened in about 1985 and has produced an additional 2 million ounces from an open pit which mined stope fill, remnants and adjacent stockwork veining.

Experience working at Waihi has built a toolkit for exploration which includes historic datasets, new geologic and structural models, geochemistry, geophysics and modern drilling techniques. A strong social license has allowed exploration in areas once thought to be off-limits.

Renewed exploration efforts in Waihi have resulted in 5 new discoveries within a historic mining area once thought to have been thoroughly explored. Moonlight was discovered in 1997 by recognizing the significance of near-surface geologic features. Favona was subsequently discovered in 2000, in part as a result of the Moonlight discovery. The Union/Trio discovery in 2003 was a result of reviewing historic data and applying new geologic concepts. Correnso was discovered beneath the town in 2009, a result of using oriented core on a routine basis and reinterpreting older drill intercepts. A renewed regional exploration effort in 2016 resulted in a grass roots discovery at WKP about 5 kilometres north of Waihi. Drilling is ongoing at the Eastern Graben vein which remains open along strike. The key to discovery at WKP included looking at the prospect without preconceived ideas, following a step by step persistent approach to generate new targets and a strong understanding of epithermal systems.

DIRECTIONS TO NEW RENO LOCATION FOR JANUARY 18th MEETING!!!

Directions to “Taps & Tanks” in Reno

To find in google or apple maps just key in Great Basin Brewing Company (Taps and Tanks). The address is 1155 So. Rock Blvd #490, Reno, NV 89502 **but the entrance is actually on McCarran just south of Pembroke/Rock**. If you are coming from I-80 take the E. McCarran Exit, Exit 19 and go south. Taps and Tanks will be on the west side of the road about 4 miles down. If you are coming from down south it is fastest to take Exit 61 for south Virginia Street then take Longley Lane (NE) to Rock Boulevard (East) then turn south onto S. McCarran Blvd. Taps and Tanks will be on the west side of the road. Doors will open at 6:00 pm as usual with dinner at 7:00 pm and talk will begin at 7:45 pm.



“FACES OF GSN”

Ellie Leavitt, Reno, Nevada

I grew up in the wilds of Connecticut in a big family, enough for a baseball team. I enjoyed childhood in the countryside surrounded by meadows, woods, and brooks. Our flatlander ways were reformed on summer vacations in the White Mountains of New Hampshire where we hiked from hut to hut clad in shorts, t-shirts, and sneakers with ponchos and wool sweaters for rain and cold. On our very first hike to Madison Hut, we reached a ridge at tree line as it was growing dark and stormy and paused to read a sign that said: “STOP, the area ahead has the worst weather in America. Many have died there from exposure. Even in the Summer. Turn back now if the weather is bad.” Shrugging we continued on to the hut for supper, slept on metal bunks under wool blankets, and continued the Presidential traverse the next day. My time in the White Mountains and skiing to survive New England winters provided a background for a career in earth science.

My formal geology education began at Middlebury College where weekly earth science labs took place outdoors. My first lab (Oceanography) met on a small boat on Lake Champlain. One structure lab was held in James Pasture where we tried to decipher multiple episodes of deformation exposed in several outcrops no more than a square meter in size. Plate tectonics taught by Peter Coney, and igneous petrology by John Creasy provided macro- to micro-views of earth and a decent foundation in geology. My undergraduate thesis was a petrologic study of a composite ring dike in the White Mountain batholith. A field visit by Marland P. Billings (my advisor’s advisor) and more importantly his wife, Katharine (Kay) Fowler-Billings, commonly known as one of the earliest female geologists with an impressive record of research, teaching and publication was, at the time, an unappreciated honor. Dr. Fowler-Billings was the only professional female geologist to join me in the field until many years later; female geologists remained an anomaly far too long. After graduation and a brief stint at the USGS in Woods Hole, then teaching skiing and outdoor education, I headed to the University of Oregon to study volcanology and igneous petrology (the brochure looked interesting!).

Eugene was a dramatic shift from Vermont, and skiing was much too far from campus. There I met my husband Jim in one of my first classes, “The Geology of Oregon.” He encouraged me to sign up for a weekend field trip; I showed up bright and early Saturday morning, climbed into the van, but lo and behold, no Jim (overslept). The following year, I took a three-month sabbatical from the rain and worked as a geotech for a geophysics company on a micro-earthquake survey along the rift zones on the big island of Hawaii for geothermal resources. We individually hauled and placed portable seismometers along the rift zones. Each day we collected records from the drums then moved the seismometers to their next locations. The more remote telemetry stations required a tall antenna and two car batteries – not a light pack! By the last month we had progressed to the dry side of the island, the sites were relatively accessible, and we were off to the beach by afternoon. Unfortunately I was there during one of the quietest periods within the last 40 years, and did not see an eruption. Upon return to Eugene I completed my M.S. thesis on the geology and petrology of Three Fingered Jack, a High Cascade Volcano in Central Oregon.

After finishing my Masters I headed to Missoula where Jim and I worked for Noranda in the early 1980’s. We spent several years in the northwestern US carrying out grass roots exploration for volcanic-hosted precious metal deposits. From there we moved to Tucson and branched into sedimentary and shear-zone hosted systems as well. Our son Will was born in Tucson and soon afterwards we were transferred to Reno. I continued working part-time for Noranda (review of property files and landwork) and then for SRK (environmental permit writing for Debbie Struhsacker) and EMA (more environmental permitting; precursor to EM Strategies). Our daughters Julia and Jenny were born and I continued part-time, flexible work. In the early ‘90s, during our first major down-cycle, Jim was laid off, but landed a job with the USGS mission in Jeddah, Saudi Arabia. Rather than trying to get by on short gigs and part-time flexible, we sold our house, the car, lots of stuff including a truck and down jacket to Greg Maynard, left our dogs with my dad in Connecticut, and headed to the Middle East.



(continued on page 6)

Our time in the Kingdom turned out to be shorter than expected. It turned out to be a positive, though somewhat controlled, adventure. While I tutored, took a correspondence course in Hydrogeology, and ran in long pants, the kids attended school and made a new group of culturally diverse friends from all over the world. We snorkeled in the Red Sea, traveled when possible, and made life-long friends. Timing is everything; the USGS implemented RIF's (reduction in force's) our second year, so off we went, not sure where to until the last minute – not Almaty, Skelleftea, or Denver, but Reno. This time we settled on the other side of town (it was still small). I was not sorry to be back behind the wheel.



Eventually I landed a part-time job with Homestake, where Richard Bedell had spotted my resume and hired me to help with databases. The job evolved into compilation of geology, terranes, and deposits, utilizing existing databases, and construction of time slices in MapInfo. Gerald Heston, the MapInfo guru, urged me to try out a course at UNR where he was a student. At UNR I enrolled in Cordilleran Tectonics taught by Rich Schweickert; the course tied in well with the research. As many fun geology jobs do, it came to an abrupt end. Just before another industry down-turn I enrolled at UNR for a Ph.D. in Geology and focused on economic geology and the Ken

Snyder/Midas deposit for my dissertation. I received funding through a grant from UNR/Franco-Nevada as well as WAIMEE (thanks to D.D. Lapointe), GSA, and SEG. Invaluable encouragement and guidance from Midas geos Patrick Goldstrand and Jack Bernard, and my advisor Greg Arehart remain much appreciated. I enjoyed the research, and published the first portion, the geochronology of Midas, in *Economic Geology*. Additional chapters on the alteration and geochemistry were published in the 2005 GSN Symposium volumes. The final chapters describing the paragenesis and additional exploration vectors to precious metal veins remain in the dissertation (with a \$20 bill). Hope to publish those someday (see bucket list below).

The kids and I graduated, they went off to college, and in 2005 I was brought into the fold of GSN accepting the position of VP. I appreciated the opportunity to organize two field trips: one to the Long Valley Caldera – volcanology and natural resources with Steve Lipshie's guidance and guides – and one to the lesser known western north-central Nevada rift and associated deposits and occurrences. My role as VP was followed by that as President, an honor and worthwhile endeavor.

During and after completion of my Ph.D. from UNR I worked for a number of minerals exploration companies including Newmont, Western Energy Development Corp., Rio Fortuna and Bravada, Rare Element Resources, Barrick and Canamex Resources while exploring for a variety of commodities - precious metals, uranium, and rare earths. I held positions ranging from geotech to chief geologist on grass roots to prefeasibility projects, and carried out mapping, regional rock-chip and silt-sampling, drilling, logging, and pretty much anything else that needed doing.

After a slow spell in consulting work I took a job with NDEP-Bureau of Mining Regulation and Reclamation in 2017. Finally a job with benefits and I get to delve into yet another side of the exploration and mining business. I've had the opportunity to inspect the Carlin trend and other smaller mines and properties throughout Nevada, and am encouraged by the professionalism and dedication of people on both the regulatory and operational sides of the equation. I'll admit I keep a growing bucket list next to my computer with more big plans - to ski, cycle, hike, travel, etc. - than time. Fortunately my list remains possible with a supportive husband and family, professional and friend network, and organizations like GSN.



GSN WINNEMUCCA CHAPTER MEETING

WEDNESDAY, JANUARY 9, 2019

Location: The MARTIN HOTEL, 94 Railroad St., Winnemucca, NV

Time: Appetizers & Drinks @ 6:00 p.m.; Talk begins @ 7:00 p.m.

Speaker: Paul D. Noland, VP Exploration, Fiore Gold

Title: “Geology and Exploration Potential at Fiore Gold’s Pan Mine and Gold Rock Project”

Food and Drinks Sponsored by: To Be Announced

Abstract-

Geology and Exploration Potential at Fiore Gold’s Pan Mine and Gold Rock Project

Paul D. Noland, VP Exploration Fiore Gold

Fiore Gold Ltd., through its wholly owned subsidiary, is actively mining the Pan deposit in White Pine County, southeast of Eureka, NV. Gold mineralization at the Pan Mine occurs within silicified and sometimes argillized material along the steeply dipping, NNW trending Branham Fault Zone (BFZ), and secondarily, within favorable stratigraphic horizons in the Mississippian Pilot shale near the underlying Devils’ Gate limestone.

A 2018 exploration drilling program contributed to recently updated resources for the Pan mine. These newly announced resources include Measured and Indicated totals of approximately 28 million tons of ore at an average grade of 0.014 opt Au, for a contained metal content of approximately 430K ounces Au. An additional 110k ounces Au are contained in the ‘inferred’ category at similar grades.

Ongoing exploration efforts have identified a number of near mine and ‘property’ targets, which will be drill tested as time and budget permit. Favorable structures parallel to, and in the hanging wall (west of) the BFZ represent the highest priority, near mine and development targets.

Additional untested exploration targets within the Pan project boundary have been defined by favorable geology, structure and anomalous surface geochemistry.

The Gold Rock project is approximately 8 miles to the southeast of the Pan Mine, and is within a contiguous land package controlled by Fiore Gold’s wholly owned subsidiary. Gold Rock contains the historic EZ Junior open pit, which produced approximately 52k ounces of gold through 1994. Fiore commissioned APEX Geoscience LTD. to complete a NI 43-101 compliant resource of the Gold Rock project in 2018. The resulting resource contains approximately 420k ounces of Au in the combined Indicated and Inferred categories at average grades in excess of 0.02 opt Au.

The Gold Rock resource is centered near the old EZ Jr. pit. Mineralization at Gold Rock is controlled by the NNE trending, steeply dipping ‘EZ Fault’ and secondarily by favorable beds in the Mississippian Joana Limestone and Chainman Shale. In particular, mineralization is enhanced along the western limb of a near-isoclinal fold in the Joana-Chainman, where the EZ fault cuts through the western limb or near the fold axis. The axis of the tight folding also trends NNE.

The EZ fault, as well as similar, parallel structures have been identified to the west (hanging wall) and east (footwall) and extend up to 28 km along strike. These parallel structures and the favorable tight folding in Chainman-Joana sequence represent numerous exploration targets distal to the EZ Jr. pit and current resource area. Anomalous surface geochemistry along the EZ and parallel structures have aided in identifying additional exploration targets within the project boundary. A limited exploration drilling program was completed in 2018 by Fiore. The program purposely avoided known resource areas and evaluated three of the identified distal exploration targets. Anomalous gold was detected in several of the holes, and the target concepts were confirmed.

On September 21, 2018, the Bureau of Land Management issued its Record of Decision (ROD) for the Gold Rock Mine Project following the publication of the Final Environmental Impact Statement on the project. The ROD provides federal approval for construction of a mine, including expansion of the existing open pit, construction of two waste rock disposal areas, a heap leaching facility with an adsorption/desorption refining plant, roads, ancillary support facilities, and approximately 392 acres for exploration disturbance. Fiore Gold’s goal for Pan and Gold Rock is to continue to enhance the resource and mine life at Pan, while developing and expanding the resource at Gold Rock. For additional information, please refer to the Fiore Gold Website, or our document filings on SEDAR.

GSN ELKO CHAPTER MEETING

THURSDAY, JANUARY 17, 2019

Location: The WESTERN FOLKLIFE CENTER, 501 Railroad St., Elko

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

Speaker: Joel Lenz, NV Governor's Office of Economic Development

Title: "Results of a Study on Ore Tolling and Copper Concentrate Processing in Nevada"

Food and Drinks Sponsored by:



Abstract

"Results of a Study on Ore Tolling and Copper Concentrate Processing in Nevada"

To facilitate continued development of the mineral resources of Nevada, a high-level study was completed in 2018 with the intent of answering two questions:

Is there a need for a custom milling facility in Nevada for the processing of precious metal ores, or are there existing facilities that have capacity to process toll ores?

Would it be beneficial to construct a facility for processing copper concentrates in Nevada?

An inventory of existing processing facilities was completed and 51 were identified. The facilities were separated into four categories; 1) precious metal heap or dump leach; 2) precious metal oxide mills; 3) precious metal refractory mills; and 4) flotation concentrators and copper processing facilities. A summary of available precious metals and copper resources that may be candidates for custom processing was compiled. Excluding Barrick and Newmont resources, over ten million tons of resources were identified as potential candidates for precious metal toll milling. Today, custom processing is practiced at several operations in Nevada and others are willing to consider toll milling. Based on the currently available options for ore tolling, constructing a new custom processing facility for precious metals does not appear warranted. Approximately, one million tons of copper concentrate are exported annually, including 350,000 tons from Nevada. There appears to be a sufficient supply of concentrates now and in the future to support a new smelter or concentrate leach facility. Nevada is a mining-friendly jurisdiction, and potential locations for a smelter or concentrate leach facility were identified with access to transportation, energy, and air basins with no current sources of emissions. Autoclave leaching of concentrates is a lower capital cost alternative which could increase the economic attractiveness of a copper concentrate processing facility.

NEWS FROM THE FOUNDATION

By Cami Prenn, GSN Foundation Chair

It's a New Year! I hope everyone had a wonderful holiday season and you're ready for what this year brings us! We had another successful and fun Christmas Party – thanks to our donors, winners, speaker, attendees, and sponsor. The tally is complete and we raised just shy of \$17,000. Thank you all!

The usual people deserve our thanks for making the event happen but I want everyone to really appreciate that these folks give up their time to organize everything and make sure the party runs smoothly. D.D. LaPointe and Ruth Buffa spend a great deal of time organizing the raffle and silent auction. We have other volunteers that transport everything to the party, set it up in the Rose Ballroom, and supervise the silent auction, draw the raffle winners and process payments at the end of the night. Most of them don't get to enjoy the party in the dining area or hear the speaker. And nothing GSN does could happen without Laura Ruud. She is eternally helpful and we are grateful for her guidance and assistance! We all heave a big sigh when it's over – it's a lot of work.

Envirotech Drilling needs a big shout-out for sponsoring the meeting AND making some excellent donations for the silent auction. THANK YOU Steve Neilsen! Miner's Lunchbox donated excellent gold specimens for auction and Scott Werschky needs a very big THANK YOU for again providing the gold specimens for the live auction. Our auctioneer, Greg French, was definitely in the Scottish spirit of Christmas and we really loved that special touch! Newmont was again generous with a gold splatter and Hecla delivered a beautiful calcite specimen. These prizes are really very unique to Nevada – where else would you see such wonderful rocks that are appreciated by so many of us? GSN is definitely a unique organization! We can't thank the donors enough – so tell them every time you see them!

The business of the Foundation goes on in the New Year. The K-12 Field Trips have been awarded and the trips have begun. There are fewer requests coming in for that program so we've been able to allocate funds to the other programs under the Foundation's wings. Next up will be the UNR Field Camp Scholarships which will be awarded in the Spring. Happy New Year everyone!



Sponsor, Steve Neilsen receives an award from GSN's Molly Hunsaker



Speaker and generous donor, Scott Werschky



Auctioneer, Greg French



MANY THANKS TO ALL OF OUR FABULOUS DONORS:

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Lindsay Craig
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*Thank you to our generous
Sponsor for the Winnemucca
DECEMBER XMAS PARTY!*

*Thank you to our generous
Sponsors for the Elko
DECEMBER XMAS PARTY!*



Brian Morris Scholarship Fund

If you would like to donate, please click on this link:

<https://squareup.com/store/GSNV>

G.S.N. 2019 DIRECTORY PICK-UP PARTY

The new **GSN 2019 Membership Directories** will be available to pickup in Reno on **WEDNESDAY, JANUARY 9, 2019** at the **Great Basin Brewing Company, RENO LOCATION, 5525 S. Virginia St., Reno**. Time will be from 4 p.m.—7 pm. You can help save GSN postage by picking your directory up and have a drink on our sponsor for the evening, **SRK CONSULTING!** **A big thank you to the people at SRK Consulting for hosting this fun event for the 5th year in a row!**



The 2019 Directories will also be available for pick-up at:

- ⇒ Mine Development Associates, 210 So. Rock Blvd., Reno from Jan. 10-18, 2019
- ⇒ the Winnemucca Chapter Meeting on Wednesday, January 9, 2019
- ⇒ the Elko Chapter Meeting on Thursday, January 17, 2019
- ⇒ the Membership Meeting in Reno on Friday, January 18, 2019
- ⇒ The GSN Office, 2175 Raggio Pkwy., until Jan. 18, 2019
- ⇒ For those who can't pick them up, they will be mailed out on January 22, 2019

Thank you to our generous donors in December!

G.S.N. FOUNDATION

PLATINUM DONORS \$1,000+

GOLD DONORS \$500-\$999

Charles Weakly

SILVER DONORS \$100-\$499

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BRONZE DONORS \$1-\$99

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G.S.N. Student Field Trip Fund

(This fund covers the registration costs for college students who wish to go on the GSN field trips each year)

Charles Weakly

G.S.N. Student Dinner Fund

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Thank You!

ROCK TALK

Alien Mineral Discovered In Russian Meteorite That Crashed Down In Uakit
Subsequently named uakitite, the mineral doesn't exist anywhere else on Earth.

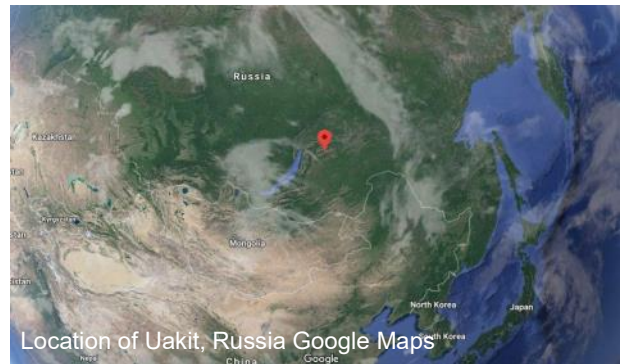
By Alexandra Lozovschi,
(Reprinted from www.inquisitr.com, Aug. 6, 2018)

Scientists have announced the discovery of a never-before-seen mineral that only exists in a single meteorite found on our planet, reports [Live Science](http://www.livescience.com).



Brian Maudsley / Shutterstock [Science](http://www.science.com)

Dubbed the Uakit meteorite, after the region in Siberia where it came tumbling down in 2016, the space rock was originally found by Russian gold hunters, who initially mistook it for a large gold nugget. As it later turned out, the yellow lump of rock they had stumbled upon was hiding a much more valuable prize—a completely unique mineral that has since been named uakitite.



According to scientists from Novosibirsk State University and the Sobolev Institute of Geology and Mineralogy in Russia, the Uakit meteorite is largely made up of iron and nickel.

More than 98 percent of its content was established as kamacite, an iron and nickel alloy that originates in space and can only be found in meteorites, notes [Outer Places](http://www.outplaces.com).

The rest of the 8.7-pound (3.96 kilogram) space rock packs a dozen minerals that mostly occur just in space. Among them is uakitite, which exists nowhere else on Earth except in the Uakit meteorite.

The researchers spotted this one-of-a-kind mineral after examining the meteorite under a powerful microscope. The uakitite sample encased within the space rock is so tiny that it only consists of microscopic grains measuring just 5 micrometers. That's about 25 times smaller than a fine grain of sand, explains [Live Science](http://www.livescience.com).

While this discovery is truly remarkable, the researchers have met a few challenges in finding out more about uakitite, due to the incredibly small size of the sample.

"Unfortunately, we failed to obtain all physical and optical properties of uakitite because of the very small sizes of the grains," the scientists wrote in a study, recently presented at the [Annual Meeting of the Meteoritical Society](http://www.annualmeetingofthemetereologicalsociety.com) in the Russian capital of Moscow.

What We Know About Uakitite So Far: One option of learning about the mineral's properties was to infer them from synthetic vanadium nitride, a chemical compound of (continued on pg. 15)

WINNEMUCCA CHAPTER & ELKO CHAPTER HOLIDAY FUND-RAISERS

By Laura Ruud

The **G.S.N. Elko Chapter** held its annual Silent Auction Fund-Raiser at their Holiday party on Thursday, December 6, 2018 at the Western Folklife Center in Elko. The Silent Auction tables were packed with great items to bid on. The sponsors for the evening were **BOART LONG-YEAR** and **LEGARZA EXPLORATION** who provided dinner and unlimited drinks. I don't have the final tally for the evening yet but 100% of the proceeds benefits the Elko Scholarship Fund. I hear they had a good turnout. I wasn't able to attend unfortunately so I don't have photos of the festivities this year. 😞



The **G.S.N. Winnemucca Chapter** held its annual Silent Auction Fund-Raiser at their Holiday party on Wednesday, December 19th at the Martin Hotel in Winnemucca. For the fourth year in a row they had to set up more tables to make way for all of the donations that were received! Of course the giant gift baskets, geo field supplies and the myriad of liquor items were popular items on the tables. The evening was capped off by a wonderful talk and slideshow presented by Kim Craig on his kayaking trip to Patagonia last year. **Thanks AGAIN to Steve Neilsen and Envirotech Drilling for provided the great food for the party and plenty of drinks to round out a very fun and successful evening!**



Speaker, Kim Craig entertaining the crowd in Winnemucca



Rose Ryan represented the sponsor company, Envirotech Drilling in fine elf fashion.



Dave Bernosky was hands-down the winner of the ugly sweater contest in Winnemucca!

Activity Update

Mike Brady, November 2018

www.activityupdate.com

NEVADA

OceanaGold Corp. announced that it acquired an option to earn a 51% interest in the Highland Property from Bravada Gold Corp. for \$200,000 cash and \$4,000,000 in exploration expenditures over 5 years. *Press Release:* November 15

Hecla Mining Co. announced that recent drill results at the Fire Creek/Zeus Project include 302.81-303.85 meters @ 6.14 gpt Au, 1.7 gpt Ag (FCC-114); 275.05-275.53 meters @ 4.77 gpt Au, 0.7 gpt Ag (FCC-115); 508.86-510.93 meters @ 4.43 gpt Au, 4.4 gpt Ag (FCC-117) and 270.66-271.6 meters @ 0.3 gpt Au, 407.5 gpt Ag (FCC-119). (reserve = 256,400 tonnes @ 21.5 gpt Au, 20.5 gpt Ag proven+probable) *Press Release:* November 6

Hecla Mining Co. announced that recent drill results at the Hollister/East Clementine Project include 76.5-77.11 meters @ 4.77 gpt Au, 3.4 gpt Ag (HUC-034); 92.04-93.57 meters @ 3.41 gpt Au, 3.4 gpt Ag (HUC-035) and 27.73-28.25 meters @ 60.75 gpt Au, 25.5 gpt Ag (HUC-59). (reserve = 70,000 tonnes @ 19.45 gpt Au, 160.4 gpt Ag proven+probable) *Press Release:* November 6

Hecla Mining Co. announced that recent drill results at the Midas/Trinity Project include 157.88-158.19 meters @ 5.11 gpt Au, 3.4 gpt Ag (BMC-352); 196.35-196.62 meters @ 4.09 gpt Au, 148.1 gpt Ag (BMC-357); 254.2-255.72 meters @ 5.46 gpt Au, 3.0 gpt Ag (BMC-364) and 20.93-21.94 meters @ 35.49 gpt Au, 95.2 gpt Ag (BMC-366). (reserve = 119,100 tonnes @ 22.86 gpt Au, 218.4 gpt Ag proven+probable) *Press Release:* November 6

Kinross Gold Corp. announced that it acquired an additional 50% interest (to hold 100%) in the Bald Mountain Exploration Joint-Ventures from Barrick Gold Corp. for \$15,500,000 cash. *Press Release:* November 7

Fiore Gold Corp. announced that recent drill results at the Gold Rock Project include 76.2-88.4 meters @ 0.67 gpt Au (GR18-04); 114.3-117.3 meters @

0.17 gpt Au (GR18-05); 1.5-27.4 meters @ 0.20 gpt Au (GR18-07) and 6.1-22.9 meters @ 0.17 gpt Au (GR18-08). (resource = 9,006,900 tonnes @ 0.82 gpt Au indicated) *Press Release:* November 1

SSR Mining Inc. announced that recent drill results at the Marigold/Red Dot Project include 303.3-342.9 meters @ 0.71 gpt Au (MRA6508); 269.7-358.1 meters @ 1.09 gpt Au (MRA6563); 213.4-365.8 meters @ 0.61 gpt Au (MRA6564) and 301.8-352.0 meters @ 0.95 gpt Au (MRA6572). (reserve @ Mari-gold = 205,100,000 tonnes @ 0.46 gpt Au proven+probable) *Press Release:* November 6

Premier Gold Mines Ltd. announced that it acquired an option to earn a 100% interest in the Rodeo Creek Property from Ely Gold Royalties Inc. for \$500,000 over 5 years. *Press Release:* November 14

Gold Standard Ventures Corp. announced that recent drill results at the Dark Star Project include 236.3-251.5 meters @ 4.24 gpt Au (DR18-109); 233.2-257.6 meters @ 2.05 gpt Au (DR18-110) and 0-45.1 meters @ 1.16 gpt Au (DC18-23). (resource = 15,380,000 tonnes @ 0.54 gpt Au measured+indicated) *Press Release:* November 15

Hudbay Minerals Inc. announced that it offered to acquire Mason Resources Corp. for \$0.40/share cash or a total value of \$31,000,000. (resource @ Ann Mason = 1,400,000,000 tonnes @ 0.32% Cu, 0.03 gpt Au measured+indicated) *Press Release:* October 31

Contact Gold Inc. announced that recent drill results at the Pony Creek Project include 228.6-231.65 meters @ 0.18 gpt Au (PC18-44); 0-27.43 meters @ 0.20 gpt Au (PC18-48); 1.52-41.15 meters @ 0.31 gpt Au (PC18-49) and 0-92.97 meters @ 0.33 gpt Au (PC18-51). *Press Release:* November 28

ROCK TALK

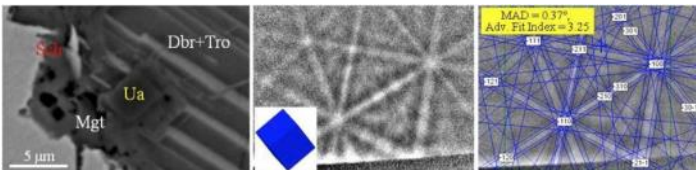
(continued from page 12)

vanadium and nitrogen and which closely resembles uakitite, notes *Live Science*.

The alien mineral was also found to have the same kind of structure as mononitride minerals, such as carlsbergite and osbornite, known as some of the hardest minerals in the world.

Although some media reports claimed that uakitite was actually harder than diamond (for instance, this article published by the *Daily Mail*), study lead author Victor Sharygin explains that this is not the case. All monitrides are very hard and fall between 9 and 10 on the Mohs hardness scale, uakitite included. Diamonds, however, are a solid 10, above the hardness of monitrides, Sharygin pointed out.

Another thing that his team uncovered was that uakitite was likely forged under staggering temperatures, since the mineral was detected in troilite-daubreelite associations within the kamacite. These couldn't have appeared unless the meteorite was exposed to temperatures well over 1,800 degrees Fahrenheit (1,000 degrees Celsius), notes the geologist.



Backscatter image of a uakitite-containing phosphide-sulfide inclusion in kamacite, the Kikuchi patterns and orientation for uakitite grain, Uakit meteorite. Symbols: Ua – uakitite; Mgt – magnetite; Sch – schreibersite; Dbr+Tro – daubreelite + troilite. 81st Annual Meeting of The Meteoritical Society 2018

OTHER UPCOMING EVENTS

7 January 2019 DREGS (Denver Region Exploration Geologists), Speaker & Topic To Be Announced. Social 6 p.m., Presentation 7 p.m. at Berthoud Hall, Room 241, CO School of Mines, Golden. For more info. contact James Piper at geopros@q.com

8 January 2019 Arizona Geological Society meeting, Speaker: John Dilles, Oregon State professor, presents “Using the Zonation of Trace Metal Geochemistry and Hydrothermal Mineralogy for Porphyry Copper Mineral Exploration”. 6 to 9 p.m. at the Sheraton, 5151 E Grant Rd. (& Rosemont), Tucson, AZ Click on the link for more info and online registration: More information and online registration: [John Dilles presents - Using the Zonation of Trace Metal Geochemistry and Hydrothermal Mineralogy for Porphyry Copper Mineral Exploration](#). Dinner closes at 11 am Friday January 4, 2019.

10 January 2019 Nevada Petroleum & Geothermal Society, Reno, NV monthly meeting. Cocktails at 6:30 PM, Dinner at 7:00 PM, Ramada Reno Hotel; 1000 East 6th St., Reno NV 89512. Speaker: Holly McLachlan, PhD, Geologist. Title: "Stratigraphy, structure, and fluid flow at the Soda Lake geothermal field, western Nevada, USA." Please make reservations by Tuesday, January 8, 2019. [Click here to register online](#) and reserve your seat.

14 January 2019 SME Northern Nevada Section Monthly Meeting. Circus-Circus Mandalay Room, Reno NV. Speaker and Topic To Be Announced. Happy Hour @ 6 pm, Dinner @ 7 pm. Please contact Sarah Lightner for more information at 775-746-7147 or NNevSME@gmail.com

25-26, January The Lowell Program in Economic Geology Short Course, Metallurgical Inputs to Integrated Planning. UA Campus, Tucson, AZ. For more details or to register, please contact Rocio Brambila at brambila@email.arizona.edu.

28-31, January 2019 AME Mineral Exploration Roundup, Vancouver, BC. Registration Information click here: <http://roundup.amebc.ca/attendees/registration-info/>. The NMEC's “NEVADA ROOM” will be back in room 18 upstairs and is THE place to meet up with other geos or to purchase some of our many GSN Publications! If there is a particular book you want, please let Laura Ruud know so we can make sure it is available. gsn@gsnv.org

28-31 January: 2019 NWRA Annual Conference Week – Monday, January 28, 2019 to Thursday, January 31, 2019. Location: Atlantis Casino Resort Spa, 3800 South Virginia, Reno, NV 89502. ~ Water Rights Class ~ Advanced Water Rights Class ~ MIKE SHE Workshop ~ FEFLOW Workshop ~ & ~ Capturing Evaporation from Nevada Pit Lakes Luncheon & Discussion. Go to www.nwra.org/2019-ac-week to register & for hotel information or call Tina Triplett at 775-473-5473 or creativerno@charter.net.

28-29, January: 2019 NWRA Mine Water Management Symposium – Monday, January 28, 2019 beginning at 8:30 a.m. - Tuesday, January 29, 2019, ending at 2:00 p.m. Location: Atlantis Casino Resort Spa, 3800 South Virginia, Reno, NV 89502. ~Six sessions covering many topics ~ Networking ~ Exhibitors ~ & lots more. Go to www.nwra.org/2019-symposium to register & for hotel information or call Tina Triplett at 775-473-5473 or creativerno@charter.net.

29-31, January: 2019 NWRA Annual Conference – Tuesday, January 29, 2019, beginning at 3:00 p.m. – Thursday, January 31, 2019 ending at 3:30 p.m. Location: Atlantis Casino Resort Spa, 3800 South Virginia, Reno, NV 89502. ~ 11 panels and technical sessions ~ Networking Reception ~ Student & Technical Posters ~ Exhibitors ~ & even Yoga. Go to www.nwra.org/2019-ac-program to register & for hotel information or call Tina Triplett at 775-473-5473 or creativerno@charter.net.





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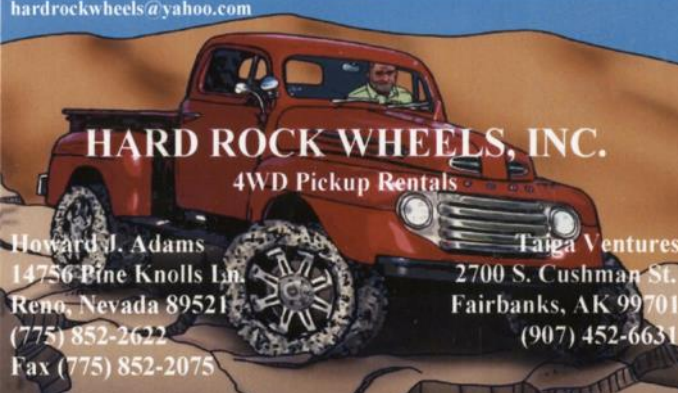
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TRAVELING GSN BACKPACK PHOTOS

(Please submit your backpack photos at any time!)

GSN Member, David Shaddrick, submitted this photo from the SEG trip to Finland last year. There are 2 backpacks in the photo!

Did anyone catch where the photo last month was taken next to the ancient statuary at the “Royal Wall”? It was right here in Nevada at the Royal Inn in Lovelock!

