



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



March 2015, Vol. 31, No. 3

Published monthly except June and July

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CALENDAR OF GSN EVENTS

- Mar. 5, 2015 Thursday** **SO. NEVADA CHAPTER—(1st Thursday of the Month)**
The So. NV Chapter meeting being held at the Las Vegas Natural History Museum, 900 Las Vegas Blvd. North, 5:30 p.m. **Speaker: Dr. Steve Rowland, UNLV.** Title: "Tule Springs Fossil Beds National Monument, Nevada's New National Park". Please contact Josh Bonde for more information Joshua.bonde@unlv.edu. Details on page 8.
- Mar. 11, 2015 Wednesday** **WINNEMUCCA CHAPTER MEETING (2nd Wednesday of the Month)**
The meeting will be held at the Martin Hotel, 94 W. Railroad St. Drinks at 6 pm, Appetizers at 6:30 pm, Talk at 7:00 pm. **Speaker Dr. Elizabeth A. Holly, Colorado School of Mines.** Title: "Controversial origins of Nevada's sediment-hosted gold: what can we learn from the Battle Mountain district?". **FOOD SPONSOR: Burt Thomas, IDS. DRINKS SPONSOR: TBA.** Please contact Pat Donovan at pat.donovan@newmont.com for more information. See page 9 for details.
- Mar. 19, 2015 Thursday** **ELKO CHAPTER MEETING (3rd Thursday of the Month)**
The meeting will be held at the Western Folklife Center, 501 Railroad St., Elko, NV. Refreshments & Appetizers at 6 pm, Talk at 7 pm. **Speaker: Kait Barber, Newmont Mining Corp.** Title: "Geology, Alteration, Geochemistry, and Paragenesis of the Vista Vein Shear Zone Deposit, Humboldt County, Nevada". **Food & Drinks Sponsored by: LEGARZA EXPLORATION.** Please contact Jon Powell at jon.powell@newmont.com for more information. See page 9 for details.
- Mar. 20, 2015 Friday** **GSN Regular Membership Meeting (3rd Friday of the Month)**
The GSN's monthly meeting & dinner will be held at the Reno Elks Lodge, 597 Kumle Ln, Reno, NV. Drinks at 6 pm, Dinner at 7 pm, Talk at 7:45 pm (NOTE NEW TIME). **Speaker: Alan Koenig, .** Title: "Where the Trace Elements in Ore Deposits "Live"— Applications of a New Elemental Analysis Technique". **Drinks Sponsored by: ENVIROSCIENTISTS, INC..** Please make dinner reservations with Laura Ruud at the GSN Office, 775-323-3500 or gsn@gsnv.org. Dinner cost: \$25 each. Abstract and Bio on pp. 3-4.
- May 14-23, 2015** **GSN 2015 SYMPOSIUM—"NEW CONCEPTS & DISCOVERIES"**
Register online now for this don't-miss "once every 5 years" Technical Conference put on by volunteers of the GSN. **REGISTRATION NOW!!**
<http://gsnv.org/2015-symposium/>. **REGISTRATION FORM ON PAGE 11-12.**

G.S.N. MARCH 2015 MEETING SPONSOR




Enviroscientists, Inc.

GSN MARCH 20, 2015 Membership Meeting

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

Please e-mail gsn@gsnv.org or call 775-323-3500 by 4 p.m. on WEDNESDAY, MARCH 18, 2015.

Social Hour begins @ 6:00 pm; Dinner @ 7:00 pm; Speaker @ 7:45 pm (NOTE EARLIER TIME!)

Location: Reno Elks Lodge, 597 Kumle Lane, Reno, Nevada (off of Virginia, across from the Convention Center)

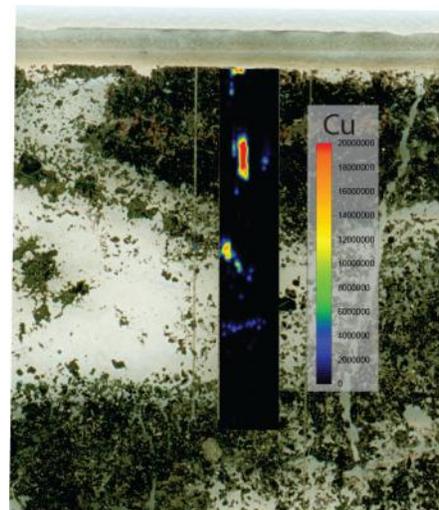
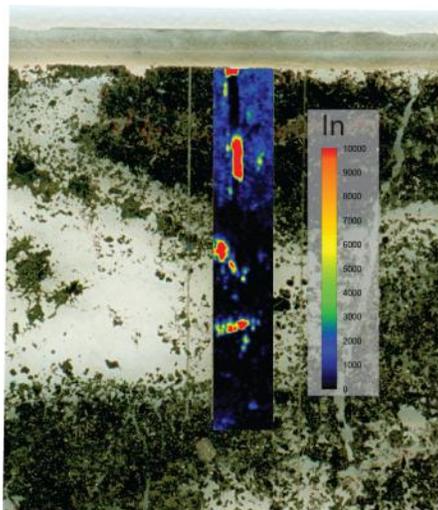
DINNER COST—\$25.00 per person. (You will be invoiced if you don't cancel your reservation)

Where the Trace Elements in Ore Deposits “Live” – Applications of a New Elemental Analysis Technique

Alan E. Koenig, Research Geologist, United States Geological Survey,
Laser Ablation ICP-MS Facility, Denver, CO. akoenig@usgs.gov

Abstract:

We are all aware of the importance of knowing the concentrations of important elements in our rocks, especially if it is fun stuff like gold or other energy-critical metals. But where do those elements “live” within our rocks? This talk will spell out two methods that we apply to understanding what is in our rocks and where the elements of interest reside. The application of laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) has become pretty well known as a powerful microanalytical tool for trace-element analyses of minerals. There are countless applications, such as gold in pyrite, trace-element zoning in biogenic minerals (bones, fossils, teeth, etc.), and forensic applications. A non-traditional application that we have developed at the USGS utilizes the power of LA-ICP-MS to directly analyze solids and applies to rapid screening of rock powders. By analyzing powders of historic mineral deposit collections, including the Mackay-Stanford Ore Deposits Collection, using a novel and rapid LA-ICP-MS bulk methodology we can screen samples for the entire periodic table in less than 10 minutes. Information about the method and the results from this work will be presented. Examining preliminary results from this method we can begin to identify anomalous levels of any element with an emphasis on the critical metals. This talk will present a potpourri of application of LA-ICP-MS as related to ores and related rocks as well as some fun examples of trace element residence questions (answers?) to some of these applications. Some discussion of preliminary exciting “discoveries” will also be included. This talk will be a fun overview of new analytical applications related to mineral deposits.



Using LA-ICP-MS, indium correlates with copper in chalcopyrite from Bisbee, Arizona. (Koenig, continued on page 4)

(Koenig, continued from pg. 3)

Alan Koenig Biography:

Alan Koenig is a Research Geologist and laboratory manager of the Laser Ablation ICP-MS Trace Element Microanalysis Facility at the United States Geological Survey in Denver, Colorado. He obtained a B.Sc (1999) and M.Sc. (2009) from Colorado State University. He has run the Trace Element Microanalysis Facility at the USGS since 2004. He was a product manager for a laser ablation system manufacturer from 2002 to 2004, where he worked on the development of new laser ablation systems. His worked has focused on the use of LA-ICP-MS for deciphering the nature and residence of trace elements in minerals. Much of his worked has utilized LA-ICP-MS for quantitative trace-element mapping starting with the first LA-ICP-MS trace-element maps of garnet in 2001. The applications have ranged from fossil bones, teeth, tissues, minerals, and trees. For the past several years his work has focused on novel applications of LA-ICP-MS, including the analysis of bulk powders and trace-element mapping as well as integration of complimentary techniques such as Raman, SEM, and micro-XRF with LA-ICP-MS. Alan “entertains” numerous visitors of all ages to his lab throughout the year and is usually difficult to keep quiet about what he does.



(President’s Message, cont. from page 2)

Tellurium and selenium are primarily byproducts from the smelting of sulfide copper ores, but little is known about where these elements reside in minerals in the ores. The geometallurgical knowledge of which minerals contain the trace elements of interest, either as discrete minerals or in solid solution (and the sizes and intergrowths of the minerals) can help metallurgists improve recovery. Economics will prevail (e.g., the ratio of the value of global copper production to that of tellurium in 2014 was approximately 2300 to 1, which means metallurgists won’t risk lowering copper recovery to improve tellurium recovery).

This month’s talk by Alan Koenig will highlight an exciting analytical technique developed by the USGS for the determination of trace elements in ores. As the technique becomes available at commercial laboratories, exploration geologists evaluating trace-element data will be able to help metallurgists determine whether byproduct credits could be significant. We know from limited research on Nevada ores that there are some interesting opportunities for byproduct recovery from some of our copper and gold deposits, yet another reason why Nevada is a great place for exploration and production.

Upcoming GSN highlights in Reno include:

Friday, April 17 – UNR student posters and 3-minute presentations.

May 14-23—GSN 2015 Symposium, including short courses and field trips.

Friday, June 12 (starting at 4:00 p.m.) – BBQ at Rancho San Rafael – with a reinstatement of the traditional exploration games of the rock-hammer toss and the gold-pan toss.

Please note that the GSN membership year begins with our fiscal year, starting June 1. Therefore, pay your dues as soon as possible for the 2015-2016 GSN year, and see the January newsletter for the reasons why signing up for life membership makes sense for nearly everyone.



Western Nevada Regional Science & Engineering Fair Looking for Judges!!

We are still looking for judges for this year’s Western Nevada Regional Science & Engineering Fair.

Please consider helping us this year with judging!

When? Wednesday, March 25, 2015

5:00 PM Judging Dinner

6:00 PM to 10:00 PM

(or until Finished Judging)

Where? Lawlor Events Center, U.N.R.

Mezzanine Level (Dinner)

Main Floor (Judging)

Free Parking: Levels 4 & 5 of West Stadium Parking Complex

Thank YOU for ALL that you do for our Science Students!

Sincerely, George

+++++

[Please RSVP to George Ochs if you’d like to be a judge.](#)

www.nevadasciencefair.net

George T. Ochs, Executive Director
Western Nevada Regional Science & Engineering Fair,
1331 Davidson Way, Reno, NV 89509
Cell- 775-771-9662

“FACES OF GSN”

Clay Postlethwaite

It is an honor to be invited to write a submission for Faces of GSN, because for the last couple years I've been a Face-less member of GSN working in West Africa for Newmont. In spite very minimal commitment to GSN on my part, the organization has proven quite important in my career.

A tale of four oaths broken

My father was a petroleum geologist, and as a child I remember visiting drilling rigs in western Oklahoma. Following his example, I am a little embarrassed to mention that I also remember drawing cartoon cross sections with oil derrick and drill trace always penetrating some spongy looking thing full of holes that was supposed to be the reservoir. With so-so grades in high school, I was surprised to be admitted to my “stretch school,” Rice University in Houston. I attribute that in part to most likely being the only applicant that indicated an interest in earth sciences on their application. Rice certainly turned down more talented applicants that wanted to study electrical engineering.



Along the Mid-Atlantic Ridge in Iceland

Geology may have been my stated area of interest, but I had not settled on it as a major when I embarked on my first geology fieldtrip freshman year. It was a camping trip. The undergraduates and graduate students drank beer around a campfire, and then we all went skinny dipping in Lake LBJ. I believe I picked geology as my major that weekend. One of my jobs as a part-time employee in the Geology Department was to help a new Assistant Professor of structural geology and tectonics, John Oldow move into his office. He seemed the epitome of a field geologist, and formed the basis of my aspiration to be a field geologist myself. Well, that and the skinny dipping.

About this time, probably in one of John's classes, I became fascinated by the idea that rocks could flow. I found the concept extraordinary that the very definition of stasis and immutability, could bend and even flow like syrup given enough time. The concept still intrigues me. Good fortune got me out of Houston and into the office of Carl Jacobson at Iowa State where I would get a strong dose of ductile, folded rocks. He was another new faculty of structural geology and metamorphic petrology. Carl was researching the Pelona-Orocopia Schists in southern California. I did my work on the Rand Schist, a transitional greenschist/blueschist package of sediments and mafic volcanics. Summer fieldwork in the Mohave Desert is not for everyone, but I did not know any better. Afterward, via John Oldow, I spent a summer as a field assistant for a Rice University grad student in the Brooks Range, Alaska. Different weather, altogether.

In the absence of job prospects in the oil business, I accepted an offer to do Ph.D. work in the eastern Mojave. It was difficult to refuse, including financial support and time in the USGS lab in Menlo Park, and even some helicopter time. Unfortunately, Reagan-era cuts to the USGS resulted in the cancellation of that program, and I found myself taking preliminary exams with no project. Plan B was structural analysis project on amphibolite-grade rocks in the Eastern Transverse Ranges in California. With minimal support, it was necessarily a low-budget enterprise. To minimize costs, I wrote my own stereonet plotting program, made my own XRF fusions and did the dark-room processing. My life was not all work, I was fortunate at this time to marry Joan Harpham, my wife of nearly 30 years.

Along the way, I attended a presentation on environmental science, and groundwater geochemistry. It seemed like such dreary stuff, compared to the reconstruction of plate margins, and microtectonics that were all the rage at the time. I swore to one of my committee members :

Oath #1: I will never work in environmental science

As I finished my Ph.D., I had the offer of a summer job with Mobil Oil in Denver to do fieldwork in the Sevier thrust belt. Two of us started in Las Vegas in May and ended up at Glacier National Park in September after a variety of mapping and sampling projects. It was great fun, but taught me that big oil contracts fieldwork rather than doing much itself. When that job ended, I found myself in Denver with no job prospects and still largely unaware of the minerals industry. After the GSA meeting there in October, I heard there was work to be found in Reno. In those days, you could buy a cheap ticket in Denver for a 3-day, two night gambler's special flight to Reno and the Sands Hotel. In February, I went, rented car, and worked my way through the then-thriving geo-ghetto with resumes in hand. Tainted by my oil experience, (cont. on pg. 6)

(Face of GSN, Postlethwaite, cont. from page 5)

I wore a coat and tie! I received no direct offers (the suit did not help), but was assured that when the field season kicked off in a month or two, I'd find work. Joan and I packed a U-Haul trailer, and without knowing a soul in Nevada, drove to Reno. I got work with GeoTemps soil sampling a week later, and was continuously employed for 12 years.

My first staff position was at Westmont, where Clancy Wendt and his team introduced me to the absolute basics of industry. We held ground that eventually became three mines, but soon Westmont was for sale, and with Steve Green's help I found my way to Santa Fe. I found my more regional mapping experience and structural background allowed me to fill niches in both companies programs. But it was my time working at Twin Creeks in the mid-90s that was pivotal. We had a good team of geologists doing good work. We were finding gold. I gave a talk at the Reno GSN meeting on the structural geology there. Then, Santa Fe was purchased by Newmont, and the future seemed uncertain. The team would certainly be dissolved. So, I walked away from Twin Creeks angry and swore Oath #2:

Oath #2: I will never work for Newmont

Thanks to that GSN talk, I was offered job with Pittston Nevada Gold, along with my Santa Fe boss, Bob Felder. We had a good run at Pittston, doing a great deal reconnaissance stream sediment sampling and follow-up. But, even as Mark Whitney and I were taking the first rock chip samples from what is now Long Canyon in 1999, the financial realities were squeezing Pittston. It closed its doors in Reno a year later, just after our first round of drilling, which included one hole into the deposit. As the company wound-down, I recall our geochemist, born in Rhodesia (literally a man without a country) saying "There is always Africa for the not too bright." Things were not so desperate as to work there, with all the malaria stories and so forth I had heard, so out came:

Oath #3: The situation will never be dire enough to work in Africa

Another functional team with successes was being shut down. I felt like my career was going nowhere. With Africa off the books, I decided a change was in order, and declared:

Oath #4: I will not work in mineral exploration (again)

Over some glum beers at a GSN meeting, Barney Mason told me the State of Nevada was hiring. I got a job there, and was working for NDEP when Rich DeLong and Opal Adams rescued me 16 months later. I had gotten to know Rich primarily while serving as Secretary to GSN, so a little volunteerism can pay off when you least expect it.

I cheerfully broke Oath #1 and worked in Rich and Opal's environmental consulting firm for close to five years. It was very stimulating to work in a new industry and learn new job skills. The knowledge that I could do something besides mineral exploration took a lot of stress out of my life.



On a VMS gossan in East Africa

Even as the gold industry turned around in the mid-00s and friends were warning me I was missing my chance to get back in, I was quite happy where I was. I was watching my daughter grow up, and of course I had sworn an oath. Then in late 2006, Newmont posted some open positions in the Reno Gazette-Journal (yes, I found my next job in the newspaper). In neat alphabetical order, between Mechanic and Surveyor was a listing that read something like "Structural Geology specialist, 10 years of experience in mineral exploration, Ph.D. required." I spoke with Kirk Schmidt about it in the Newmont booth at the NWMA meeting in Sparks. He suggested I apply. What would be the harm in that? After an interview in Elko, I was offered the position. Still hesitant about re-entering such a volatile industry, I had to give it a lot of thought. In the end, I violated oaths 2 and 4 simultaneously and took the job. It was the right choice.

After our daughter graduated from high school, and the house seemed so empty, an opening for structural geologist in Ghana appeared on the internal Newmont job page. On our site visit/interview trip, we were told Ghana is "Africa for beginners." It seemed easy enough. Joan and I decided it was time for an adventure. We tossed Oath #3 aside and took the plunge. After all the years working and studying in the Western US, I have new deposit types and a new continent to learn. Contrary to my Rhodesian friend, there is ample need of intellect. There are no NBM&G county reports here. In many places, you figure out the geology from scratch. In two years, I have stood on untouched porphyries that would have been drilled in the '60s in Nevada, not to mention VMS gossans that would have been mined away in the '50s and epithermal veins that would have been stoped 100 years ago. Discoveries are waiting. (continued on pg. 7)

(Face of GSN, Postlethwaite, cont. from page 6)

Unfortunately, I'll almost certainly miss the Symposium this year, but I look forward to returning to Nevada once again and be a Face of GSN.



Still enjoying folded rocks. These are in Morocco



Teaching future geologists how to use a brunton

GSN FOUNDATION

2015 FIELD CAMP GRANTS!!

The G.S.N. Foundation is offering partial field camp grants to Nevada students enrolled in 6 credits of UNR Geology Field Camp, Geology 451, for spring/summer 2015 or another accredited field camp. A limited number of grants will be awarded.

APPLICANTS MUST BE STUDENT MEMBERS OF THE GSN.

Applications can be found on the GSN Website:
<http://gsnv.org/gsn-foundation/Field%20Camp%20Application%202015%20rev.pdf>

Awards will be made on the basis of GPA, recommendation letter, and statement of need and career goals. Please print the form, fill it out, attach a letter of recommendation; statement of need/career goals; and current transcripts, then send to: D.D. LaPointe, Geological Society of Nevada Foundation 2175 Raggio Parkway Reno, NV 89512. You may also scan everything and email to: dlapoint@unr.edu or Fax to the GSN office: 775-323-3599.

Applications must be received by FRIDAY, MARCH 13, 2015 (before Spring Break!)

Presentation of summer field camp awards will be made at the April 17, 2015 Reno meeting of GSN.

G.S.N. LIFETIME MEMBERSHIP ENROLLMENT NOW AVAILABLE!

The G.S.N. Executive Committee and Board of Directors recently approved the availability to anyone to enroll as a lifetime GSN member! The cost is 25 times current dues of \$50 or \$1,250. Just think of never having to worry about renewing your dues again! There will be a prize for the oldest and youngest person to enroll. Please contact Laura Ruud by email gsn@gsnv.org for more information.

**The Geological Society of Nevada
Wishes to Thank GSN Member
NANCY GRACIA-GUNGOR
w/Skyline Assayers & Laboratories**

**for volunteering to take a suitcase
full of GSN books to the PDAC
Convention in Toronto!!**

GSN SOUTHERN NEVADA CHAPTER MEETING

THURSDAY MARCH 5, 2015

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

Time: Drinks and Pizza—5:30 p.m., Talk to follow

Speaker: Dr. Steve Rowland, UNLV Professor

Title: “Tule Springs Fossil Beds National Monument,
Nevada's New National Park ”



UNLV 10th Annual GeoSymposium April 10th and 11th

GeoSymposium is a student-run event designed to provide graduate and undergraduate students from the UNLV Department of Geoscience with a valuable opportunity to present their research in a professional and supportive environment in which they can receive feedback from industry, government, and academic experts.



The symposium will be held on Friday, April 10, at UNLV in the auditorium of the Science and Engineering Building (SEB). Throughout the day, graduate and undergraduate students will present their research through oral and poster presentations, followed by an afternoon award ceremony recognizing them for their research and academic achievements. The day will also include keynote addresses from both Pat Mulroy (Senior Fellow for Climate Adaptation and Environmental Policy at UNLV's Brookings Mountain West), and Tim Garfield (Chief Research Geoscientist at ExxonMobil). On Saturday, April 11, students will host a field trip to Lake Mead National Recreation Area. To celebrate our 10th Anniversary, there will also be a sight-seeing cruise on the lake featuring a guest speaker and catered brunch.

Thanks to the continued generosity of our sponsors and supporters it has been possible to continue running this event without a registration fee for the last 10 years making the experience more meaningful for both students and professionals.

For more information please visit our website at:
<http://geoscience.unlv.edu/GeoSymposium/index.html>

Please contact the GeoSymposium Coordinator with any additional questions:
Melisa Bishop bishom1@unlv.nevada.edu

ALL G.S.N. MEMBERS ARE ENCOURAGED TO ATTEND IF YOU ARE IN THE LAS VEGAS AREA!!

GSN WINNEMUCCA CHAPTER MEETING

WEDNESDAY, MARCH 11, 2015

Location: The MARTIN HOTEL, WINNEMUCCA, NV

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

Speaker: Dr. Elizabeth A. Holley, Colorado School of Mines

Title: “Controversial origins of Nevada's sediment-hosted gold: what can we learn from the Battle Mountain district?”.

Food Sponsored by:



Drinks Sponsored by:

TO BE DETERMINED

GSN ELKO CHAPTER MEETING

THURSDAY, MARCH 19, 2015

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

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

Speaker: Kait Barber, Newmont Mining Corp.

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

Food and Drinks Sponsored by: **LEGARZA EXPLORATION**



The Nevada Mineral Exploration Coalition-Nevada Room was outstanding describing our state, one of the largest gold “districts” in the world. Dave Shaddrick, Steve Green, and Elizabeth Zbinden did a fantastic job showcasing all aspects of Nevada Explorers and Miners: from vendors to prospectors and geologic information to important government agencies and contacts. The room had a key location and was adjacent to the B.C. provincial room, near to a snack bar and on the route people would take as they made their way to the lounge/bar at the adjoining Pan Pacific hotel.

NMEC provided a great setup with plenty of tables, chairs, and coffee. With all the surrounding walls containing posters and displays from everyone who wanted to talk about what can be found in Nevada. It gave a quiet place to meet with a client and you never knew who you might run into while you were in there. People looked in to see what Nevada and NMEC had to offer or old friends stopped to say hello. These gave great opportunities to network or sit down and catch up for a while. The constant stream included longtime Vancouver based money people, local geologists and promoters, as well as old Nevada hands and newly minted geologists from around the world. They all wanted to know what the international mining community is doing in the Great Basin now.

While traveling home I contemplated what this year’s Round Up brought to our business. The tough question in challenging money times, was it worth it? The one thing that I realized was our bronze sponsorship for the room was miserly, almost scrooge-like. I could have spent twice that and it still would have been worth more. The introductions and conversations that came directly from the setting that Dave Shaddrick provided are worth more than what I paid.

As we all know NMEC does a tremendous job watching out for our interests in the legislative arena. We don’t really see the heavy lifting but the benefits are direct and tangible. This has ranged from helping to develop the process to get our money back, when the legislature reversed the errant law for mining claim fees to insuring that drill sumps don’t get regulated like pit lakes. All of the time and effort spent lobbying, relationship building, listening, and trying to make sure our legislators and agencies are informed really matters. The Nevada room in Vancouver showcased all of these efforts.

So next time you see Dave Shaddrick, or one of the NMEC directors, or one of the volunteers tell them thanks. But, more importantly, put some more money into funding this important job they do for all of us. After seeing their work in Vancouver I would say that we should all at least double down on these guys. It’s a good bet.

**THANK YOU TO THE ELKO CHAPTER
FEBRUARY MEETING SPONSOR**

**THANK YOU TO THE WINNEMUCCA
FEBRUARY MEETING SPONSOR**





REGISTRATION FORM
Geological Society of Nevada 2015 Symposium
“New Concepts and Discoveries”
May 14-23, 2015
 J.A. Nugget Hotel, Sparks, Nevada



Exhibits and Technical Sessions **May 18-21**. Registration & Information: <http://www.gsnv.org/2015-symposium>.

Please call Molly Hunsaker at 775-340-0289, or e-mail Andrea Rascati, office manager at: info@2015gsnsymposium.org.

Registrants for field trips and short courses must register in one of the four categories below, unless otherwise noted by price designation. All Technical Session Registrants will receive a **CD Version of the symposium volumes**.

**Cancellation fees apply. Please see registration website for more information.*

| | |
|--|----------|
| Early (Registration must be received by February 28, 2015) Member \$325/Non-member \$375 | \$ _____ |
| Regular (between March 1 and April 30, 2015) \$375 Member/\$425 Non-member | \$ _____ |
| On-Site/Late (after April 30, 2015) \$425 Member/\$475 Non-member | \$ _____ |
| One-Day Technical Session Pass \$212.50 | \$ _____ |
| Student (must be able to show proof of student status) \$150 | \$ _____ |
| Exhibits-Only 4-Day Pass (may not attend technical sessions, no Symposium CD) \$75 | \$ _____ |
| Spouse Pass (may not attend technical sessions, no Symposium CD) \$20/day | \$ _____ |

Pre-Meeting Field Trips and Short Courses (limited number of spaces)

| | |
|---|----------|
| Field Trip 1-Introduction to Carlin Gold Deposits Nevada (May 14-16) \$400 | \$ _____ |
| Field Trip 2-Epithermal Deposits of Northern Nevada , (May 14-16) \$450 | \$ _____ |
| Field Trip 3-Mining for the Non-Geologists: Exploration to Reclamation (May 14-16) \$375* | \$ _____ |
| *Not required to register for the Symposium Technical Program | |
| Field Trip 4-Epithermal Deposits of Central Nevada (May 14-16) \$450 | \$ _____ |

| | |
|--|----------|
| Short Course 1-Ore Reserve Estimates in the Real World (May 15-17) Registrant \$675 , Non-Registrant \$850 , Student \$150 | \$ _____ |
| Short Course 2-Modern Drilling Systems: The Hardware (May 13-14) Registrant and Non-Registrant \$195 , Student \$25 | \$ _____ |
| Short Course 3-Modern Drilling Fluids: The Software (May 15-16) Registrant \$450 , Non-Registrant \$550 , Student \$100 | \$ _____ |
| Short Course 4-Great Basin and Cordillera Mining Geophysics (May 16) Registrant \$225 , Non-Registrant \$350 , Student \$50 | \$ _____ |
| Short Course 7-Analytical Methods in Geochemistry (May 17) Registrant \$225 , Non-Registrant \$350 , Student \$50 | \$ _____ |
| Short Course 10 - Geochemical Data Analysis using ioGAS (May 16) Registrant \$200 , Non-Registrant \$250 , Student \$50 | \$ _____ |

SUNDAY, MAY 17, 2015 - G.S.N. and Society of Economic Geologists Forum

Topic: “Carlin-Like Gold Deposits: What Can We Learn Beyond the Known Trends and Nevada?”
 Symposium Registration not required, but encouraged; **Cost \$195.00, Students \$100** \$ _____

Keynote Luncheons:

| | |
|---|----------|
| Monday, May 18th - Chuck Thorman, Keynote Speaker Cost \$35.00 | \$ _____ |
| Tuesday, May 19th-Andreas Audétat, Keynote Speaker Cost \$35.00 | \$ _____ |
| Wednesday, May 20th-Brent Cook, Keynote Speaker Cost \$35.00 | \$ _____ |



REGISTRATION FORM (continued)
Geological Society of Nevada 2015 Symposium
May 14th-23rd, 2015



Post-Meeting Field Trips and Short Courses (limited number of spaces):

Field Trip 5 - The Pequop Trend - Nevada's Newest "Carlin" Trend (May 21-23) **\$450** \$ _____

Field Trip 6 - Porphyry-Related Deposits of Nevada (May 21-23) **\$425** \$ _____

Short Course 6 - Epithermal Deposits: Characteristics and Processes (May 21-23) in combination with

Field Trip 7* - The Famous Comstock Gold and Silver District (May 23)
 Registrant **\$575**, Non-Registrant **\$700**, Student **\$125** \$ _____

*Will be open to field trip participation only (May 23) in April, 2015. Field Trip Only Cost **\$100**

Short Course 8 - Geometallurgy: Applied Metallurgy for Geologists (May 21-22)
 Registrant **\$450**, Non-Registrant **\$550**, Student **\$100** \$ _____

Short Course 9 - Leapfrog Modeling for Exploration and Development (May 21-22) \$ _____

Short Course 11 - Paper to Electrons: Practical GIS for Geoscientists (May 22)
 Registrant **\$225**, Non-Registrant **\$350**, Student **\$50** \$ _____

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Hotel rooms at J.A. Nugget Hotel (www.janugget.com), please call 1-800-648-1177 and use the code "GGSN" to get the group reservation rate.

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**NEVADA WATER RESOURCES ASSOCIATION
UPCOMING EVENTS IN NEVADA**

April 15, 2015 - Water Rights in Nevada

**Location: Boart Longyear, 605 Union Pacific, Elko NV
Time: 8:00 a.m.—4:00 p.m. Lunch is not provided**

THIS COURSE WILL PROVIDE:

1) A detailed explanation of NRS (Nevada Revised Statutes) under title 48-Water. 2) Knowledge about water rights issues as they relate to the purchasing and selling of real estate in Nevada. 3) A review of regulations established for water resource administration in Nevada. 4) Information on court cases, which have initiated water law. **To register, visit: www.nvwra.org**

April 16, 2015 - Advanced Water Rights in Nevada

**Location: Boart Longyear, 605 Union Pacific, Elko NV
Time: 8 a.m.—3:30 p.m. Lunch is not provided**

THIS COURSE WILL PROVIDE:

1) Class will expand upon the knowledge obtained from previous introductory Water Rights courses. 2) Knowledge about water rights issues as they relate to the purchasing and selling of real estate in Nevada. 3) A review of regulations established for water resource administration in Nevada. 4) Information on court cases, chain of title, deeds and language.

To register, visit: www.nvwra.org



Please join the Women's Mining Coalition for the 23rd annual Fly-In to Washington D.C. on April 12-17, 2015! This is a great opportunity for the members of WMC to introduce ourselves and our organization to the new and returning members of Congress: who we are, what we do, and a chance to make new contacts.

Goals:

To raise awareness of the mission of WMC and its members, to discuss issues of importance to the mining industry as a whole with members of Congress and their staff, and to showcase how women benefit from a robust domestic mining industry.

Tentative Itinerary:

Sunday, April 12: Early evening informal get-together for weekend arrivals.

Monday, April 13: Orientation and strategy briefing at National Mining Association headquarters.

Monday, April 13: Lunch, then meetings on the Hill.

Tues., April 14 - Thur., April 16: Meetings on the Hill.

Tues. evening, April 14: WMC Fly-In Open House (for participants and Congressional members & staffers)

Wednesday evening, April 15: possible theater event for those interested.

Friday, April 17: Meetings on the Hill, delivery of information packets to offices not visited (for those who can stay through Friday).

Accommodations:

One Washington Circle Hotel: \$245.00 per night
800-424-9671 or 202-872-1680

Reference Group Name: Women's Mining Coalition or
Group Code: 1281710 when making your reservation.

WMC is looking for sponsorship for the following categories: open house event, printing and supplies, and WMC staff expenses. If you or your company is interested in sponsoring all or part of any of the above categories, please fill out the attached sponsorship form and return via email to Lynne Volpi, lvolpi@frontiernet.net.

If you plan to join us for the 23rd annual WMC Fly-In, please complete the attached participant form in its entirety and email it back to me. I look forward to greeting past participants and meeting new ones in April!

Lynne Volpi, WMC Coordinator
lvolpi@frontiernet.net

Activity Update

Mike Brady, January 2015

www.activityupdate.com

NEVADA

Goldspike Exploration Inc. announced that recent drill results at the Lone Mountain Project include 208-79-233.17 meters @ 12.81% Zn, 0.06% Pb (LM14-09) and 178.31-196.6 meters @ 6.41% Zn, 0.41% Pb (LM14-10).
Press Release: January 14

Gold Standard Ventures Corp. announced that recent drill results at the Pinion Project include 289.6-298.7 meters @ 1.13 gpt Au (PIN14-25); 160-189 meters @ 0.44 gpt Au (PIN14-28); 125.0-144.8 meters @ 0.21 gpt Au (PIN14-34) and 86.9-112.8 meters @ 0.26 gpt Au (PIN14-36). (resource = 20,840,000 tonnes @ 0.63 gpt Au indicated)
Press Release: January 14

Timberline Resources Corp. announced that recent drill results at the Lookout Mountain Project include 301.8-321.62 meters @ 3.22 gpt Au (BHSE-171). (resource = 26,254,000 tonnes @ 0.62 gpt Au measured+indicated) *Press Release:* January 14

Scorpio Gold Corp.(70%) announced that recent drill results at the Mineral Ridge/NW Brodie Project include 67.06-71.63 meters @ 0.97 gpt Au (MR141149); 27.43-32.0 meters @ 1.93 gpt Au (MR141153); 10.67-13.72 meters @ 13.10 gpt Au (MR141192) and 33.53-48.77 meters @ 0.53 gpt Au (MR141195). (resource = 4,230,000 tonnes @ 1.47 gpt Au indicated) *Press Release:* January 19

Pershing Gold Corp. announced that it purchased 1,600 acres of private lands and 1,300 acres of mining claims at its Relief Canyon Project from Newmont USA Inc. for \$6,000,000. (oxide resource = 24,270,000 tonnes @ 0.68 gpt Au measured+indicated) *Press Release:* January 19

NuLegacy Gold Corp. announced that recent drill results at the Iceberg Project include 126.5-155.5 meters @ 0.25 gpt Au (RHB-31); 39.6-50.3 meters @ 0.41 gpt Au (RHB-32); 57.9-72.0 meters @ 2.06 gpt Au (RHB-33) and 30.5-48.8 meters @ 1.60 gpt Au (RHB-34). *Press Release:* January 8

Entrée Gold Inc. announced that recent drill results at the Ann Mason Project include 115-234 meters @ 0.22% Cu, 0.01 gpt Au (EG-AM14-058); 108-160 meters @ 0.20% Cu, 0.01 gpt Au (EG-AM14-062); 296-572 meters @ 0.27% Cu, 0.05 gpt Au (EG-AM14-063) and 221.0-884.9 meters @ 0.29% Cu, 0.04 gpt Au (EG-AM14-065). (resource = 581,800,000 tonnes @ 0.38% Cu, 0.24 gpt Au indicated)
Press Release: January 21

Corvus Gold Inc. announced that recent drill results at the North Bullfrog/Yellowjacket Project include 96.9-100.6 meters @ 5.70 gpt Au, 19.2 gpt Ag (NB14-411); 11.6-26.4 meters @ 0.40 gpt Au, 3.9 gpt Ag (NB14-413); 142.6-194.1 meters @ 2.09 gpt Au, 5.5 gpt Ag (NB14-415) and 113.6-128.4 meters @ 9.21 gpt Au, 179.9 gpt Ag (NB14-418). (resource @ Yellowjacket = 4,000,000 tonnes @ 0.97 gpt Au, 5.1 gpt Ag indicated) *Press Release:* January 20

Canamex Resources Corp. announced that recent drill results at the Bruner Project include 15.8-47.9 meters @ 0.34 gpt Au (B-1463C). *Press Release:* January 8

Tertiary Minerals plc. announced that recent drill results at the MB Project include 71.63-134.12 meters @ 11.38% CaF₂ (14TMBRC028) and 64.01-134.11 meters @ 10.36% CaF₂ (14TMBRC029). (resource = 8,900,000 tonnes @ 10.3% CaF₂ indicated) *Press Release:* January 22

Anova Metals Ltd. announced that recent drill results at the Big Springs Project include 15.1-16.7 meters @ 2.4 gpt Au (AWVDD-049); 18.2-21.2 meters @ 12.3 gpt Au (AWVDD-050) and 169.6-174.1 meters @ 6.7 gpt Au (AWVDD-051). (resource = 5,403,000 tonnes @ 2.50 gpt Au measured+indicated) *Press Release:* January 20

Discovery Harbour Resources Corp. announced that recent drill results at the 2Bar Project include 10.19-17.47 meters @ 0.14% Cu (2B14-05); 11.94-38.95 meters @ 1.2% Cu (2B14-06) and 2.55-25.84 meters @ 0.74% Cu (2B14-07). *Press Release:* January 26

ROCK TALK

Friendly Reminder from the Lowell Program in Economic Geology!

Short Course on Structural Analysis of Systems of Structures

March 14 – 22, 2015

University of Arizona, Tucson

Dear Friends and Colleagues of the Lowell Program:

We take the opportunity to inform you that preparations for the **Short Course on Structural Analysis of Systems of Structures** are well underway and to remind you that the **February 20th, 2015** early bird registration deadline is approaching fast (editor note: early bird registration has passed). Please let us know if you are planning to attend. We still have a number of seats available.

The main emphasis of this short course is to provide participants with additional grounding in and experience in describing and interpreting geologic structures, fault rocks, 3-D geometries, and fabrics associated with deformation.

The nine-day, field-based course will be led by our first class instructors:

Professors [George H. Davis](#), University of Arizona, Tucson.

and [Stephen J. Reynolds](#), Arizona State University, Tempe.

The course will be based in Tucson, Arizona, with easy access to first-class geological exposures, and (normally) pleasant spring weather conditions. There will be 9 days of engagement, with 1.5 days of classroom presentations and 7.5 days in the field. The course will focus not only on individual geologic structures, but systems of structures.

The fee for the short course is US\$3,200 before the early registration deadline on **February 20th, 2015**, and US\$3,400 thereafter. The cancellation policy provides for participant substitutions or a refund of ½ the registration fee by March 2nd, 2015. Thereafter, there will be no refunds.

We hope you can join us!

You can also visit our Lowell Program In Economic Geology website at <http://lpeg.geo.arizona.edu/> to learn more about our program, all of our 2015 short courses, as well as to register for any of them.

Rocío Brambila

Program Coordinator, Lowell Program in Economic Geology

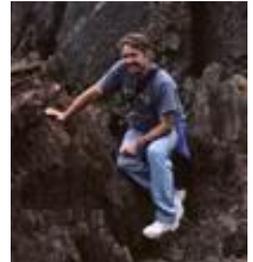
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“Canada’s gold mines are shooting the lights out”

By Vladimir Basov

(reprinted from Mining.com, Feb. 13, 2015)

According to the United States Geological Survey (USGS) provisional data, estimated global gold production amounted to 2,860 tonnes in 2014, and was 2.1% higher than 2013 totals (2,800 tonnes).

The top 10 gold producing countries mined out 1,920 tonnes of the precious metal which is 2.3% more than in 2013 (1,876 tonnes).

Among them, five countries — China, Australia, Russia, Canada, Uzbekistan — increased their gold output and four — USA, South Africa, Peru and Mexico — fell in production. Gold output in Ghana was in line with 2013 totals (90 tonnes). (continued on page 16)

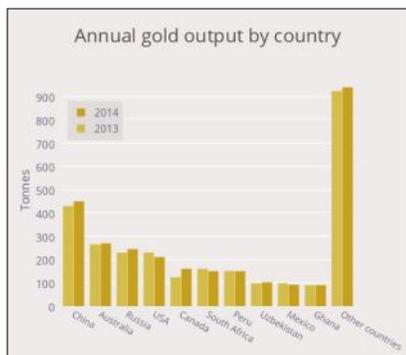


Canadian Malartic mine in Quebec at dusk.

Image: Agnico Eagle

(Gold production, cont. from pg. 15)

China has been at the top of the rankings for the past eight years with 450 tonnes of gold produced in 2014 (+4.7%) followed by Australia (270 tonnes, +1.9%) and Russia (245 tonnes, +6.5%).



Russia climbed to third place while the US fell from third to fourth position with gold output nosedived by 8.3% in 2014 (211 tonnes).

Canada achieved the record gold output in 2014 (160 tonnes, +29%) and jumped two positions up, from seventh to fifth place, surpassing South Africa for the first time.

South Africa ranked number one

in the world for a century before losing the top spot to China in 2007. At its peak in the late 1960s the gold fields of South Africa produced more than a 1,000 tonnes of the yellow metal per year.

| | 2013 | 2014 | 2013 / 2014 change, % |
|-----------------|------|------|-----------------------|
| China | 430 | 450 | 4.7 |
| Australia | 265 | 270 | 1.9 |
| Russia | 230 | 245 | 6.5 |
| USA | 230 | 211 | -8.3 |
| Canada | 124 | 160 | 29 |
| South Africa | 160 | 150 | -6.3 |
| Peru | 151 | 150 | -0.7 |
| Uzbekistan | 98 | 102 | 4.1 |
| Mexico | 98 | 92 | -6.1 |
| Ghana | 90 | 90 | 0 |
| Other countries | 924 | 940 | 1.7 |
| Total | 2800 | 2860 | 2.1 |

Medium and small gold-producing countries increased their gold output in 2014 by 1.7%, from 924 tonnes of gold in 2013 to 940 tonnes in 2014.

Table 1. World gold production, by top producing countries, tonnes (USGS preliminary data).

OTHER UPCOMING EVENTS

March 1-4, 2015 PDAC—Prospectors and Developers Association of Canada, Metro Toronto Convention Center, Toronto, ON, Canada. Phone: 416-362-1969, Email: convention@pdac.ca, Website: www.pdac.ca **Come visit us at the GSN Booth #6301N in the NORTH TRADE SHOW HALL** near the Intercontinental Hotel entrance.

Mar. 5, 2015—Nevada Petroleum & Geothermal Society Meeting. Speaker: David Boden, Professor of Geosciences, Truckee Meadows Community College. Topic: Observations - Icelandic & The Geysers Geothermal Systems. Ramada Reno Hotel, 1000 E. 6th Street, Reno, NV. Cocktail Reception 6:30, Skyline Bar, 14th Floor. Dinner 7 pm, Talk at 8 pm. NPS Members \$20; Non-members \$23; Students—\$10. RSVP by Mar. 3rd with the following link: <https://docs.google.com/forms/d/1tT4BySayTuvkhsJzZ1wdFjHXGmPIRRqjR8lgoPuCDjA/viewform>

March 9, 2015—SME Northern Nevada Section. Happy Hour @ 6pm, Dinner @ 6:45 pm; Talk @ 7:30 pm. Circus-Circus Mandalay Room, Reno, Nevada. Speaker: Dennis Bryan, Western Lithium Corp., Reno, Nevada. Title: "Developing a Hectorite Clay Resource for Lithium and Organoclay Products, Humboldt County, Nevada". Members-\$25; Non-members \$30; Students free. Please make reservations by Wednesday, March 4. RSVP to Brooke Miller: NNevSME@gmail.com.

March 18-21, 2015—PACRIM 2015 (Australasian Institute of Mining and Metallurgy - AusIMM) - hosting quadrennial congress on mineral deposits of the Pacific Rim. Conrad Hotel, Hong Kong. <http://www.pacrim2015.ausimm.com.au/>

April 20-24, 2015—27th International Applied Geochemistry Symposium, Location: Tucson, AZ. Website: www.27iags.com

May 31-June 3, 2015—2015 AAPG Annual Convention & Exhibition, Colorado Convention Center, Denver, CO. <http://ace.aapg.org/2015>

14-23 MAY 2015, GSN SYMPOSIUM 2015: NEW CONCEPTS AND DISCOVERIES

Being held at J.A. Nugget, Sparks, Nevada. Pre- and Post-Field Trips, Short Courses, Exhibits, Technical Program and GSN-SEG Forum. For more information please contact Molly Hunsaker, mollymhunsaker@2015GSNsymposium.org.

REGISTER NOW for the Technical Session, SEG Forum, Field Trips, Short Courses and Exhibits online at: www.gsnv.org/2015-symposium. **REGISTRATION IS OPEN & EXHIBITS ARE NEARING FULL CAPACITY!!**

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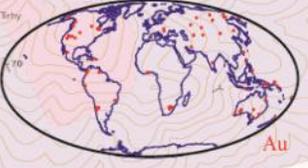
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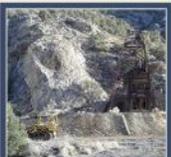



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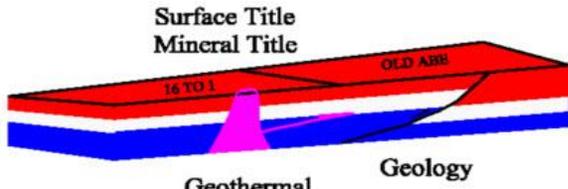
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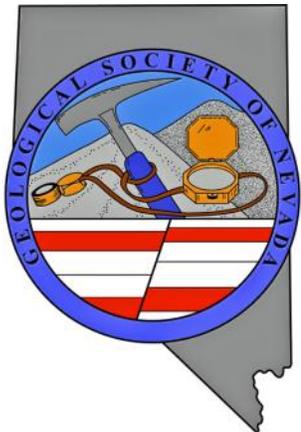
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