

NEWSLETTER

Serving the Petroleum and Geothermal Community

Nevada Petroleum and Geothermal Society; P. O. Box 11526; Reno, NV 89510

Visit our NPS Homepage: <http://www.nbmgs.unr.edu/nps/>

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Dinner Meeting: Thursday Sep 03, 2015

Speaker: Dick Benoit
Consulting Geothermal Geologist
Reno, NV

Topic: Dixie Valley Geothermal Power Project

Place: Ramada Reno Hotel
1000 East 6th Street, Reno, Nevada

**Cocktail Reception 6:30, Skyline Bar, 14th Floor
Hosted by:**



Dinner Served at 7:00 PM

NPGS Members \$20; Non-Members \$23; Students \$10

PLEASE RSVP WITH THE FOLLOWING LINK:

<https://docs.google.com/forms/d/1LHEMiXnKmTXGBC2zFkvxEChx79vkGxz2k9IxK6NvF0I/viewform>

NPGS is charged for every meal that is reserved. If you cannot keep your reservation, please cancel prior to the meeting.

SEE CALENDAR Page 22 for upcoming meetings

► **NPGS Monthly Dinner Meeting – Sep 3, 2015**

Dixie Valley Geothermal Power Project

**Dick Benoit
Consulting Geothermal Geologist**

ABSTRACT

The 56 MW net Dixie Valley geothermal power project has now operated at more or less full output for 27 years. This success was primarily due to three companies with very different character and strengths being involved during the development phase between 1974 and 1988. The wide spacing of exploration wells early in the project history greatly reduced dry hole or step-out risk during the field development phase. The large horizontal and vertical separation between producers and injectors has been successful in allowing modest production fluid temperature declines. The project evolved over its initial 9 years of production from a 49.8 MW net project with a projected long-term production well makeup schedule to a 56 MW net project supported by a cold groundwater injection augmentation program that stabilized the reservoir pressure and eliminated the need for future makeup production wells. The timing of this fairly intense and costly activity coincided with a period of high electricity prices in the Standard Offer #4 contract that allowed significant ongoing field development expenditures. Since 2000 project improvements have shifted from the wellfield to power plant modifications. The turbine was modified to enable the power plant to operate at lower pressures and a 5 MW net binary plant was installed on the injection line.

► **About the Speaker:**

Dick Benoit, Consulting geothermal geologist

Dick Benoit is a semi-retired consulting geothermal geologist with 42 years of work in the geothermal industry. He received a Bachelor's degree in geology from Western Washington University in 1970 and a Master's degree in geology from the University of Montana in 1972. Dick began working in the geothermal industry in 1973. He was the Resource Manager of the Dixie Valley geothermal field from 1986 until 2000.

► **Sep 03, 2015 Cocktail Reception hosted by:**



**Alan Griffith | Technical Service Representative
National Oilwell Varco | FluidControl**

**Cell: 775.296.1088 |
216 16th Street, Suite 915
| Denver, CO 80202**

Alan.Griffith@nov.com | www.nov.com/fluidcontrol

► **Memorials:**

In Memory of – Peter West Hummel

Peter Hummel was a Founding Member of NPGS and was elected Honorary Member in 2006

Excerpts taken from Obituary provided by Marie Hummel

<http://www.legacy.com/obituaries/rqj/obituary.aspx?pid=175384345>

July 4, 1929 – July 25, 2015

Born on the 4th of July, 1929, Peter dedicated his life to his family, his extended family, the Boy Scouts of America, the State of Nevada and the U. S. Navy during the Korean War.

A resident of Nevada for 60 years, he was instrumental in establishing local Cub Scout Pack 15 and Boy Scout Troop 15 while extending his volunteerism to National and International scouting..... He was elected a Baden-Powell Fellow in 1982, in recognition of his support of World Scouting.....

A graduate of Stanford University and Harvard Business School, Peter was active in minerals exploration in Nevada and the Rockies. He served on the Nevada Minerals Commission for 25 years and was instrumental in establishing current rules and regulations for mineral exploration in Nevada.

Peter is survived by his wife, Marie; sons, Bill, Rett, Peter and Stephen; daughter, Virginia; and several grandchildren and great grandchildren.....

Peter led a full and adventurous life – may he rest in peace.

A private family celebration of life is planned. Remembrance donations may be made to the Nevada Area Council of Boy Scouts, 500 Double Eagle Ct., Reno, NV 89511.

In Memory of - Herbert David Duey

Submitted by Alfred H. Pekarek

October 4, 1932 - June 24, 2015

A memorial service for Herb will be held at Olinger Chapel Hill Mortuary and Cemetery, 6601 S. Colorado Blvd, Centennial, CO on Saturday July 11th at 10:00 am.

Herbert David Duey was born Oct. 4, 1932, in Deshler, Nebraska. Herb spent a majority of his early years in Silver Spring, MD. He attended Montgomery Junior College and enjoyed boxing as an intramural sport. He graduated with a B.S. and M.S. from Penn State University. At Penn State, he was an active member of the Spelunking Club, where he met Barbara Voysey. They married July 13, 1957. He served as a corporal in the U.S Army before embarking on a successful career as a petroleum geologist.

Herb and Barbara spent many years in Wyoming and Colorado before living in both Bakersfield and Houston.

Complete obituary from dignitymemorial.com
Olinger Chapel Hill Mortuary and Cemetery, Centennial CO

http://obits.dignitymemorial.com/dignity-memorial/obituary.aspx?n=Herbert-Duey&lc=2556&pid=175166367&mid=6497350&locale=en_US

Remembering Hal Bonham

From Jim Faulds, Director, Nevada Bureau of Mines & Geology

We are very sad to inform you that Harold F. Bonham, Jr. passed away of natural causes on Saturday June 6, 2015. The family will hold a private memorial service.

Hal was a research geologist at Nevada Bureau of Mines and Geology for thirty-three years (1963–1996) and Acting State Geologist and Acting Director at NBMG for two years (1993–1995).

Hal was an internationally recognized expert in the geology of mineral deposits, volcanology, and exploration of precious metal deposits. He had more than thirty years of experience in geologic investigations and mapping in Nevada.

Hal's contributions to Nevada geology are evident in this list of publications, http://www.nbmng.unr.edu/staff/Bonham/Hal_Bonham_publications.html which include million-scale commodity maps for gold, silver, copper, lead, and zinc; many urban maps in the greater Reno area; and the geology and mineral resources bulletin for Washoe and Storey counties.

You can read more information on Hal's career here:

NBMG Resume, <http://www.nbmng.unr.edu/Staff/Bonham.html>

Biography from Geological Society of Nevada Honorary Members Page [gsnv.org]

<http://www.gsnv.org/about/honorary-members.php>

► Distinguished Service Award, Jerry Walker May 2015:

By V. Ehni

The Distinguished Service Award was presented to Jerry Walker at the May 2015 NPGS Meeting by incoming President, John Snow. I attempted to compile a description of the services Jerry has performed for the NPGS since he became a member in 1989. After spending a few days going through old NPS files, I concluded that it would probably be simpler to describe Jerry's service to the Society by listing the things that he HAS NOT done, and the roles he HAS NOT held. He's basically stepped up and done anything and everything we have needed since becoming a member. I have summarized what I found; however, Jerry would probably be the only person with completely accurate records. Thank you, Jerry!!

Became a member of NPS/NPGS in 1989.

1989 Symposium Committee, 1990 Field Trip Committee

1992 Field Trip Committee, 1993 Field Trip & Guidebook Committee

1994 Oil Fields of the Great Basin Committee, 1995 Editor Field Trip Guidebook

2001 Editor Field Trip Guidebook, 2004 Contributor Field Trip & Guidebook

2007 Stop Leader & Editor Field Trip & Guidebook

2013 Co-Leader Field Trip, Co-Chair 50th Anniversary of the Discovery of Oil in Nevada

AAPG Alternate Delegate off & on since 1989, AAPG Delegate 2000-2006

Rocky Mountain Section Representative 1993-Present

Co-Chair Rocky Mountain Section Meeting, Jackson Hole, WY 2005

Co-Chair Rocky Mountain Section/Pacific Section AAPG Meeting in Las Vegas October 2016

NPGS President 1992, 2005, NPGS Vice President 2004, NPGS Secretary 2000, 2013, 2014, NPGS Treasurer 2001

NPGS Education/Scholarship Committee 1992-Present, NPGS Membership Chairman 1995-2015

NPGS Membership Directory Editor 2002-2015, NPGS Ad Hoc Parliamentarian forever....

► **New Membership Chair 2015:**

As of May 2015, NPGS has a new Membership Chair.
 Piyush Bakane has agreed to take over for Jerry Walker.
 Piyush can be reached at 775-813-7218, piyush.bakane@gmail.com
 Thank you, Piyush!!

► **Scheduled Nevada BLM Oil & Gas Lease Sales:**

Results: BLM Oil & Gas Lease Sale June 2015

124 parcels, (256,875 acres) were offered at the June 9, 2015 lease sale. There were no bids received on any parcel during the competitive sale.

Eight parcels received offers OTC after the lease sale. The parcels were sold to:

#194, T17N R52E, S1,2,12,13	Nevada Leasing Services, Las Vegas, NV
#195, T17N R52E, S19,20,21,22	Nevada Leasing Services, Las Vegas, NV
#196, T17N R52E, S23,24,25	Nevada Leasing Services, Las Vegas, NV
#197, T17N R52E, S26,27,35	Nevada Leasing Services, Las Vegas, NV
#027, T9N R38E, S33	Wes State Lands, Casper, WY
#028, T10N R38E, S3,4	Wes State Lands, Casper, WY
#106, T8N R41E, S26,27	Wes State Lands, Casper, WY
#036, T13N R36E, S8,17	Wes State Lands, Casper, WY

***Nevada's Competitive Oil & Gas Lease Sale Schedule
(Tentative)***

Sale Date	Parcels Offered for District Office at Sale	*EOIs Due	Sale Posting Date	Protest Deadline
September 15, 2015	Winnemucca/Carson City	December 19, 2014	June 17, 2015	July 17, 2015
December 8, 2015	Ely	March 13, 2015	September 9, 2015	October 9, 2015
March 8, 2016	Elko	June 12, 2015	December 9, 2015	January 8, 2016
June 14, 2016	Battle Mountain	September 18, 2015	March 16, 2016	April 15, 2016
September 13, 2016	Winnemucca/Carson City	December 18, 2015	June 15, 2016	July 15, 2016
December 13, 2016	Ely	March 18, 2016	September 14, 2016	October 14, 2016

*EOI = Expression of Interest

http://www.blm.gov/nv/st/en/prog/minerals/leasable_minerals/oil_gas/oil_and_gas_leasing/upcoming_sales.html

► **Nevada Oil Production and Drilling Activity, Summary 2014-2015:**

Summary of 2014 Nevada Oil Production and Drilling Activity

Data from Nevada Division of Minerals's "Nevada Oil Patch" and "Oil and Gas Permits"

– Compiled by Jerry Walker, 24-August-2015

2014 Bimonthly Period	Statewide Oil Production barrels	Average Statewide Daily Oil Production barrels per day	Nevada Division of Minerals Issued Drilling Permits	Wells Drilled or Drilling
Jan/Feb	49,958	847	#954: True Oil 13-31 DY-Federal, 31-T7N-R57E, Nye Co, prop TD 6,200'	2 Noble M10C-M10-11B Humboldt (Noble's 2nd Elko Shale well) Tetuan 32-30 Mariagness (Completed as D&A in 2014)

Mar/Apr	52,881	861	---	0	---
May/June	54,721	897	#955: Noble S25G-S25-33A Marys River , 25-T38N-R60E, Elko Co, prop TD 14,312' #956: Noble S25G-S25-22B Marys River , 25-T38N-R60E, Elko Co, prop TD 14,380' #957: Noble S12J-S12-23A Marys River , 12-T38N-R60E, Elko Co, prop TD 14,062' #958: Noble S12J-S12-33B Marys River , 12-T38N-R60E, Elko Co, prop TD 14,000'	0	---
July/Aug	54,202	874	#959: Noble K1L-2D Huntington , 1-T29N-R55E, Elko Co, prop TD 12,000' #960: Noble K1L-1V Huntington , 1-T29N-R55E, Elko Co, prop TD 10,192' #961: Noble K2J-1D Huntington , 2-T29N-R55E, Elko Co, prop TD 12,000' #962: Andomeda 33-1B Tomera Ranch , 33-T31N-R52E, Eureka Co, prop TD 1,200'	0	---
Sep/Oct	52,348	858	#963: Noble K2J-1V Huntington , 2-T29N-R55E, Elko Co, prop TD 10,015' #964: Noble G18C-1V Huntington , 18-T30N-R56E, Elko Co, prop TD 11,762' #965: Noble G20L-1V Huntington , 20-T30N-R56E, Elko Co, prop TD 10,869'	4	Andomeda 33-1B Tomera Ranch Noble K1L-1V Huntington (Noble's 3rd Elko Shale well; 1 st production – November 2014) Noble S25G-S25-33A Marys River (Noble's 4th Elko Shale well) SAM Oil 27-1R Pluto (Completed as D&A in 2015)
Nov/Dec	52,344	858	---	1	Noble S25G-S25-33A Marys River

2014 Statewide Oil Production: 316,454 barrels oil

2014 Average Statewide Daily Oil Production: 867 barrels oil per day

Number of drilling permits issued in 2014: 12

Number of wells drilled or drilling in 2014: 6

Summary of 2015 Nevada Oil Production and Drilling Activity

Data from Nevada Division of Minerals's "Nevada Oil Patch" and "Oil and Gas Permits"

– Compiled by Jerry Walker, 24-August-2015

2015 Bimonthly Period	Statewide Oil Production barrels	Average Statewide Daily Oil Production barrels per day	Nevada Division of Minerals Issued Drilling Permits	Wells Drilled or Drilling	
Jan/Feb	47,218	800	#966: Petro-Hunt 1 Jake's Valley , 6-T16N-R60E, White Pine Co, prop TD 11,020' #967: Tetuan 12-29 Mariagness , 29-T15N-R57E, White Pine Co, prop TD 2,500'	0	---
Mar/Apr	48,906	802	---	0	---
May/June	47,655	781	#968: Makoil 12-23X Munson Ranch , 12-T9N-R56E, Nye Co, prop TD 5,000' #969: Makoil 13-34 Munson Ranch , 13-T9N-R56E, Nye Co, prop TD 5,200'	1	Tetuan 12-29 Mariagness (Completed as D&A in 2015)
July/Aug					
Sep/Oct					
Nov/Dec					

2015 Statewide Oil Production (thru June): 143,779 barrels oil

2015 Average Statewide Daily Oil Production (thru June): 794 barrels oil per day

Number of drilling permits issued in 2015: 4

Number of wells drilled or drilling in 2015: 1

► **Career Prep Day for Engineering & Sciences, UNR, Sep 9, 2015:**

From:

Katia P. Albright, M.A., GCDF

I invite you to participate in a UNR "Career Prep Day" for engineering and science students. The goal of this event is to help engineering and science students become better prepared job seekers and candidates. We think your knowledge of the industry would be extremely helpful for our students. The details of the event are as follows:

CareerPrepDay for Engineering and the Sciences

University of Nevada, Reno

Wednesday, September 9th

HREL 109/110 between 2pm – 5pm

We need people to volunteer between 1.5-3 hours. If you are able to help out our students by critiquing student resumes or conducting mock interviews (all materials and questions are provided) please RSVP here: <http://bit.ly/Careerprep-F2015>

We will provide parking passes and snacks to all volunteers. Thank you so much for considering this request and/or passing it on to a colleague that might be able to help!

Best regards,

Katia P. Albright, M.A., GCDF

Coordinator of Career Development

Mackay School of Earth Sciences and Engineering

College of Science | University of Nevada, Reno

Reno, NV 89557 | 775-682-8370

kalbright@unr.edu | www.unr.edu/mackay/career-services

Mackay Science Disciplines: Geography | Geology | Geophysics | Hydrogeology

Mackay Engineering Disciplines: Geological Engineering | Metallurgical Engineering | Mining Engineering

► **Hydraulic Fracturing, Executive Summary from EPA:**

From Thomas Gallagher, PE

Executive Summary from the EPA on Hydraulic Fracturing

<http://www2.epa.gov/hfstudy/hydraulic-fracturing-study-draft-assessment-2015>

► **Mineral, geothermal and oil/gas potential maps in Sagebrush Focal Areas:**

Subject: Mineral, geothermal and oil/gas potential maps in Sagebrush focal areas of BLM LUPA/ EIS.

The Division of Minerals has posted several maps of mineral, geothermal and oil & gas potential within the areas defined as "Sagebrush Focal areas" in the June BLM LUPA/EIS. These may be of use to those who are evaluating impacts to projects and considering protest letters to the LUPA/EIS. These maps were developed by NBMG at the request of NDOM.

The link is on the web page of the Division at: <http://minerals.nv.gov/>

► **News from Nevada Bureau of Mines & Geology:**

From: Charlotte Stock

The following information is taken directly from emails provided by Charlotte Stock, Nevada Bureau of Mines & Geology

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Subscribe to our blog <http://nbgm.wordpress.com/>

“Like” our Facebook page <https://www.facebook.com/pages/Nevada-Bureau-of-Mines-and-Geology/106397989390636>

You can place an order for other publications or check for shipping charges through our shopping cart at <http://pubs.nbgm.unr.edu>

➤ **New Server for NBMG Website—please note new links**

The NBMG website has been moved to a new web server. This web server migration was critical since the old server was running the Microsoft Server 2003 operating system, which becomes unsupported on July 14, 2015.

The URLs have changed for the “Free Downloads” links on the [Publications](#) page, so please be sure to update your bookmarks. Here is an example of the new URL format (for *Nevada Mineral Industry 2013*):

Old URL: <http://www.nbgm.unr.edu/freedownloads/mi/mi2013.zip> (no longer works)

New URL: <http://data.nbgm.unr.edu/public/freedownloads/mi/mi2013.zip>

You can locate these Free Downloads links by clicking on the blue publication title on the listing of [NBMG publications](#) on the shopping cart. When you click on the title, you will then be on the publication landing page which includes options to purchase the item or download it for free if that option is available. If there is no Free Downloads tab to the right of the Description tab on the landing page, then there is no free download available. The Description and Free Downloads tabs are located on top of the gray text box under the thumbnail images.

Note that some pages in our website have moved as a result of this server migration, particularly from our cleanup and organization of the web server files in order to make updating the website more efficient. We also had to eliminate php code in order to move our website to the University’s server.

Here are some of the main pages affected by the changes:

- GBSSRL page—now at <http://www.nbgm.unr.edu/GBSSRL/index.html>
- The Free Download links in the shopping cart—changed to data.nbgm.unr.edu URLs as noted above
- Analytical Lab page—now at <http://www.nbgm.unr.edu/AnalyticalLab.html>
- Interactive Maps page—combined the Interactive Maps page with the Data Downloads page and made it a [Maps & Data](#) page. The Geologic Mapping tab now goes to this page too.
- Collections—now at <http://www.nbgm.unr.edu/Collections.html>
- Mining Districts—now at <http://www.nbgm.unr.edu/Collections/MiningDistricts/MiningDistricts.html> with link to the new web application. The old mining district search engine was built with php code so could not migrate over.
- Science of the Comstock—now at <http://www.nbgm.unr.edu/ScienceEducation/ScienceOfTheComstock/>
- Specimens database—this will be down for a while since it was a php-driven database and has not yet been migrated into a new web application. It will become available again in the future. The homepage for the Specimens database is now at <http://www.nbgm.unr.edu/Collections/Specimens/Specimens.html> .

There is limited space on the new web server, so to organize our data and ensure there is plenty of room for growth we moved our large static data (mining district scans, historical air photos, etc.) to a new location that includes “<http://data.nbgm.unr.edu>” in the first part of the URLs. While data.nbgm.unr.edu is not an open server to browse through, all public data that sits at data.nbgm.unr.edu is accessible through links in various web pages throughout our website and interactive web applications.

If you have any questions about this migration, please contact Jennifer Vican, Manager, NBMG Cartography & GIS group mauldin@unr.edu

Phone (775) 682-8759

➤ **New Geologic Map—Welcome Quadrangle**

Title: Geologic map of the Welcome quadrangle and an adjacent part of the Wells quadrangle, Elko County, Nevada

Author: [Allen J. McGrew\[udayton.edu\]](#) and [Arthur W. Snoke\[juwyo.edu\]](#)

Year: 2015

Series: Map 184

Format: plate: 51 x 32.5 inches, color; text: 40 pages, color
Scale: 1:24,000; inset: 1:12,000

Located in central Elko County, the Welcome quadrangle and an adjacent part of the Wells quadrangle expose a remarkable array of critical relationships for understanding the geologic history of the state of Nevada and the interior of the southwestern U.S. Cordillera. Covering the northern end of the East Humboldt Range and adjacent Clover Valley and Clover Hill, this map includes the northern terminus of the Ruby Mountains–East Humboldt Range metamorphic core complex.

The oldest rocks in the state of Nevada (the gneiss complex of Angel Lake), and Nevada's only exposures of Archean rock, form the core of a multi-kilometer scale, southward-closing recumbent fold-nappe, the Winchell Lake nappe (WLN). Although intensely metamorphosed and profoundly ductilely attenuated, the WLN folds a series of pre-metamorphic thrust allochthons that collectively form an essentially complete sequence of Paleoproterozoic to Mississippian metasedimentary rocks. The WLN transported what may be Nevada's most deeply exhumed rocks, with peak pressures ranging to 10 kb, peak temperatures in excess of 750 °C, and widespread partial melting and stromatic migmatization, all related to Late Cretaceous to Paleocene tectonism.

Overprinting the metamorphic core is a WNW-directed kilometer-scale shear zone that, together with the detachment fault that forms its roof, accommodated tens of kilometers of extensional displacement in mid- to late Cenozoic time, diachronously exhuming the terrain from mid-crustal depths by late Miocene time. In addition, the high-grade rocks are extensively intruded by one of the Nevada's most diverse suites of magmatic rocks, ranging in age from Archean to Miocene and in composition from mafic to felsic. On the west flank of Clover Hill, a west-dipping detachment-fault system separates the high-grade metamorphic core from an overlying plexus of brittlely deformed, partly correlative but lower grade to non-metamorphosed Paleozoic rocks. In turn, a sequence of partly syntectonic volcanic and sedimentary rocks ranging in age from Eocene to Miocene structurally overlie the fault-bounded Paleozoic units. The Cenozoic sequence includes late Eocene and Oligocene ignimbrites and volcanoclastic rocks, Miocene sedimentary rocks and megabreccias, a Miocene rhyolite complex, and younger sedimentary rocks and vitric tuffs. The presence of the most distal northeasterly exposure of a key Oligocene volcanic marker, the 29 Ma tuff of Campbell Creek, suggests that a broad, low-relief (unfaulted) terrain was dissected by paleo valleys that extended at least 200 km to the west. Bracketed between the tuff of Campbell Creek and a 15.5 Ma tuffaceous sandstone at the base of the Miocene Humboldt Formation is a proximal sedimentary sequence known as the sedimentary sequence of Clover Creek that includes conglomerate, sedimentary breccia, sandstone, and megabreccia as well as intercalations of fossiliferous lacustrine strata. The megabreccias consist of unmetamorphosed mid-Paleozoic rocks (chiefly Upper Devonian Guilmette Formation) interpreted as rock-avalanche deposits shed from evolving normal-fault scarps inferred to have bounded the basin to the east. Disconformably overlying the sedimentary sequence of Clover Creek is a thick sequence of Miocene Humboldt Formation that is tilted steeply down against the detachment fault system, documenting large-scale displacement on the detachment system extending to at least as young ca. 9 Ma.

Finally, bounding the range today on both east and west are large, normal-fault systems that were active in Quaternary time, including the Clover Hill fault, which may represent a southerly extension of the blind fault that caused the 2008 Mw 6.0 Wells earthquake.

This map was prepared with support from the Geological Society of Nevada; National Science Foundation; University of Wyoming, Laramie; and the University of Dayton, Dayton, Ohio.

View or purchase Map 184 here:
<http://pubs.nbmgs.unr.edu/product-p/m184.htm>

➤ **New Geologic Map—Heelfly Creek Quadrangle**

Title: Preliminary geologic map of the Heelfly Creek quadrangle and adjacent parts of the Tent Mountain, Soldier Peak, and Secret Valley quadrangles, Elko County, Nevada

Author: [Seth M. Dee](#), Gregory M. Dering, and [Christopher D. Henry](#)
Year: 2015
Series: Open-File Report 15-4
Format: plate: 31 x 33 inches, color; text: 5 pages, b/w
Scale: 1:24,000

A 1:24,000-scale geologic map of the Heelfly Creek 7.5-minute quadrangle and adjacent parts of the Tent Mountain, Soldier Peak, and Secret Valley quadrangles, Elko County, Nevada. The map area covers the westernmost part of the East Humboldt Range, foothills west of the range front, and lowlands of Starr Valley. The quadrangle is traversed by numerous creeks flowing from the high topography in the east across lowlands occupied by ranching and farming communities toward the Humboldt River. New mapping has been integrated with data from previous bedrock and neotectonic studies to elucidate the structural and stratigraphic framework of the region. The relative timing and varying modes of Cenozoic extension documented here provide context for seismic hazard assessment as well as hydrocarbon and metallic mineral exploration.

Middle Proterozoic through Devonian sedimentary and metamorphic rocks (Ely Formation, Diamond Peak Formation, Guilmette Formations, Eureka Quartzite, Horse Creek assemblage and Proterozoic crystalline basement) are exposed along the high relief East Humboldt range front. These rocks are part of the Ruby Mountains–East Humboldt Range metamorphic core complex, a package of complexly deformed Proterozoic orthogneiss interfolded with Paleozoic metasedimentary rocks exhumed from mid-crustal depths along several low-angle faults during Tertiary extension. The crystalline and Paleozoic sedimentary rocks of the East Humboldt Range front are juxtaposed against middle Miocene sedimentary and volcanic rock along a north-striking, high-angle normal fault. The fault is locally buried by a megalandslide deposit of presumed mid-Pleistocene age. Activity on this fault likely ended in the middle Pleistocene when uplift stepped 4–5 km west to the currently active frontal fault trace. Late Quaternary uplift along the active frontal fault trace exposed a section of largely northeast-dipping tuffaceous sandstone, shale and conglomerate of the Miocene Humboldt Formation. The stratigraphically lowest Cenozoic deposits, exposed near the southern map boundary in a broad anticline, may be as old as Eocene and equivalent to the Elko Formation. The Miocene sediments are locally overlain by coarsely porphyritic lavas chemically correlated with Jarbidge Rhyolite, which is widely distributed across northeastern Nevada.

Quaternary deposits in the map area include numerous inset Pleistocene surfaces beveled onto the Miocene sediments, early Pleistocene to Tertiary lacustrine and fluvial basin deposits, glacial outwash likely from the Lamoille and Angel Lake glaciations, and several inset late Pleistocene through Holocene alluvial fan and fluvial terrace deposits. Repeated late Quaternary surface-rupturing earthquakes along the active trace of the frontal fault system are recorded by increased uplift of Quaternary surfaces as a function of relative age.

This map was prepared with support from the Nevada Division of Minerals.

View or purchase Open-File Report 15-4 here:
<http://pubs.nbmgs.unr.edu/product-p/of2015-04.htm>

➤ **New Geologic Map—Robinson Mountain Volcanic Field / NW Huntington Valley**

Title: Preliminary geologic map of Cenozoic units of the central Robinson Mountain volcanic field and northwestern Huntington Valley, Elko County, Nevada

Author: [Jens-Erik Lund Snee\[earth.stanford.edu\]](mailto:jens@earth.stanford.edu) and [Elizabeth L. Miller\[earth.stanford.edu\]](mailto:elizabeth@earth.stanford.edu)

Year: 2015

Series: Open-File Report 15-2

Format: two color plates and color text; plate 1 (geologic map): 41 x 54 inches, plate 2 (cross sections): 43 x 21 inches, text: 42 pages

Scale: 1:24,000

Huntington Valley is situated east of the Piñon Range, in the hanging wall of a shallowly west-dipping detachment system bounding the west side of the Ruby Mountains–East Humboldt Range (RMEH) metamorphic core complex. This geologic map of Cenozoic sedimentary, volcanic, and subvolcanic rocks of the central Robinson Mountain volcanic field and northwestern Huntington Valley provides important information about the history of Cenozoic crustal extension, magmatism, sedimentation, and paleogeography near the RMEH.

Depositional rates in the Elko Basin were minor from Cretaceous to Oligocene time, and became rapid in the middle Miocene. Late Cretaceous(?)–Eocene(?) conglomerate, sandstone, siltstone, and limestone “redbeds” (TKCs) and limestone (TKI) are exposed at the base of the Cenozoic section in places, where they each reach thicknesses of ~600 m, but they are not exposed at all in other locations. The overlying Eocene Elko Formation is only ~180 m thick at its greatest in the map area. Detrital zircon geochronology conducted on two samples collected near its base yields a maximum depositional age of 45.9 ± 1.0 Ma, and a third sample collected near the top of this unit yields a maximum depositional age of 37.9 ± 0.5 Ma.

The calcic to calc-alkalic Robinson Mountain volcanic field records early peraluminous to weakly metaluminous “ignimbrite flare-up” volcanism of basaltic andesite to trachydacite and rhyolite composition, which occurred mostly between about 38.5 and 36.8 Ma. Early eruptions were roughly synchronous with the end of deposition of the Elko Formation, and no significant unconformity is observed beneath the volcanic units. The only Eocene–Oligocene sedimentary rocks exposed above the Eocene Elko Formation are thin, fluviolacustrine deposits interbedded within the volcanic rocks. For this reason, the “Indian Well Formation” name for Eocene–Oligocene volcanic and sedimentary rocks has been abandoned. The rhyolitic, Oligocene-age tuff of Hackwood Ranch is significantly younger than the Eocene deposits of the Robinson Mountain volcanic field. This tuff was erupted at ~31.1 Ma, which coincides with a lull in regional volcanism, but could represent far-traveled deposits from a distant volcanic center.

Significant, approximately westward tilting developed a shallow angular unconformity between ~37.3 and 33.9 Ma (10–15°). Subsequently, between ~31.1 and 24.4 Ma or later, 10–15° additional westward tilting occurred. These westward tilting events were likely associated with slip on east-dipping normal faults in the Piñon Range. Following the second episode of westward tilting, a basin rapidly developed near the present-day RMEH, as recorded by thick deposits of the mostly Miocene Humboldt Formation that dip gently eastward toward the RMEH. Greater than 1 km of the sedimentary strata previously mapped as Eocene–Oligocene age has been reassigned to the Miocene Humboldt Formation as a result of our geologic mapping and supporting geochronology.

Detrital zircon geochronology yielded a coherent age group at ~24.4 Ma for one tuffaceous pebble conglomerate and sandstone sample at the base of the Humboldt Formation, but it is unlikely that this maximum depositional age constrains the timing of the start of basin sedimentation. Deposition accelerated at ~16–15 Ma, when most of Humboldt Formation pebble conglomerate, sandstone, siltstone, marl, and air-fall tuff were deposited in Huntington Valley. Locally, pre-Tertiary rocks were exposed by faulting by ~16 Ma (although this depositional age is not well constrained), and RMEH provenance is not detected until ~14 Ma, suggesting that the metamorphic core complex was not exposed until about this time. Greater than 2100 m of Humboldt Formation strata were deposited in the study area alone (thickening further eastward toward the RMEH), and deposition continued until at least ~8.2 Ma, but the rate apparently decreased before ~12 Ma.

Miocene or later fault slip occurred along a well preserved, east-dipping normal fault system exposed at the east side of the Piñon Range, partially synchronous with faulting at the RMEH. Uplift and erosion of Eocene- to Quaternary-age sedimentary and volcanic deposits on the west side of Huntington Valley support a significant magnitude of slip on west-dipping normal faults west of the study area during or after Miocene time. Open folding of the Humboldt Formation occurred during or after the middle–late Miocene, perhaps due to normal fault slip offsetting underlying Paleozoic basement.

This geologic mapping study thus supports the hypothesis that surface-breaking extensional faulting in and near the mapped area was minor from the Late Cretaceous(?) through the early Miocene, and that most surface-breaking extension and sediment deposition occurred in middle Miocene time.

This map covers all of the following 1:24,000-scale quadrangles: Robinson Mountain, Cedar Ridge, and Red Spring and a portion of the following quadrangles: Bailey Mountain, Bullion, and West of Lee.

This map was prepared as part of the EDMAP component of the National Cooperative Geologic Mapping Program in cooperation with the U.S. Geological Survey and with support from the Geological Society of Nevada.

View or purchase Open-File Report 15-2 here:
<http://pubs.nbmq.unr.edu/product-p/of2015-02.htm>

➤ **New Interactive Mining District Map**

Rachel (Wearne) Micander, GIS Specialist with the NBMG Cart/GIS group, has created a new interactive mining district map, and you can view the beta test of that map here:

<http://www.nbmq.unr.edu/mdfiles/mdfiles.htm>

New: [Beta test](#) of the interactive mining districts web mapping application and [how-to guide](#).

Please send any comments and suggestions that you may have to Rachel Micander:

rwearne@unr.edu

Creation of map services and interactive maps are an important component of the Nevada Bureau of Mines and Geology mission. Interactive maps are developed as a tool for users who may not have access to their own datasets or GIS

software. Users can download specific databases, excel files and PDF's, search layer information, and view updated data without any special skill other than internet familiarity.

The Mining District Files consist largely of historical and current maps, reports, articles, photographs, correspondence, assays, production reports, and reserve information on all aspects of mining in Nevada. These have largely been donated to the NBMG over the years from individuals, companies, and other government agencies.

Over the last several years, Nevada Bureau of Mines and Geology has undertaken the digital conversion of these paper documents into scanned images. The files contained in the mining district files are in PDF file format. The digital file conversion project at NBMG is ongoing. Some records are copyrighted and have no link associated with them in the search results. However, these documents are available for viewing at NBMG's [Great Basin Science Sample and Records Library](#).

See other interactive maps created by the NBMG Cart/GIS group here:

<http://www.nbmgs.unr.edu/Mapping/InteractiveMaps.html>

Take a five minute vacation with this geologic photo tour of Nevada:

[http://nbmg.maps.arcgis.com/apps/MapTour/?appid=32bc91f8e5b84522828663f9b6516410#\[nbmg.maps.arcgis.com\]](http://nbmg.maps.arcgis.com/apps/MapTour/?appid=32bc91f8e5b84522828663f9b6516410#[nbmg.maps.arcgis.com])

➤ **New USGS Publication:**

Hydrocarbon Reservoir Potential of the Mississippian Chainman Shale, Western Utah

http://ugspub.nr.utah.gov/publications/misc_pubs/mp-15-4.pdf

➤ **Nevada Today Article—Cutting-Edge Geothermal Research at UNR**

Forging new geothermal resources through research:

U.S. Department of Energy project calls on University expertise in geologic modeling and geothermal exploration

8/5/2015 - By: John Seelmeyer, *Nevada Today*

<http://www.unr.edu/nevada-today/news/2015/forging-new-geothermal-resources-through-research>

RENO, Nev. – Researchers from the University of Nevada, Reno are poised to play a key role in a project that holds the potential to unlock massive new resources of power generated from geothermal sources.

The project dubbed “FORGE” – short for Frontier Observatory for Research in Geothermal Energy – seeks to dramatically widen the number of potential locations where power could be produced from geothermal resources. University professors Jim Faulds and Wendy Calvin, among the world’s leaders in the understanding of geothermal systems, are providing their expertise to the project funded by the U.S. Department of Energy.

Researchers from the University will provide geologic modeling of two potential FORGE sites – one near Fallon and a second near Coso, California. This geologic modeling is critically important to the FORGE project, Faulds, director of the University’s Nevada Bureau of Mines and Geology, explained. “The feasibility studies will help determine where best to establish the FORGE project.”

The establishment of FORGE at these two sites will provide the geothermal community a field laboratory where the science and engineering needed for widespread commercialization of EGS, enhanced geothermal systems, can be developed and refined.

Traditionally, geothermal power plants have been built at locations where they could tap into a naturally occurring source of steam heated under the earth’s surface. After the hot water is used to generate power, it is re-injected back into the earth and re-heated to be used again and again.

The FORGE project, however, seeks to develop enhanced geothermal technology for use at locations where heat is available but water doesn’t naturally flow through the underground rock. Those locations are widespread through the Great Basin.

“The potential is enormous,” Faulds said. The Department of Energy, which is funding the FORGE program, estimates that enhanced geothermal systems could power 100 million homes in American with clean and renewable energy.

But the geological challenges are difficult, he said, because researchers need to find ways to open formations sufficiently so that water can move through the heated rock and become steam to drive generating units. "We know that there are huge resources in the subsurface," the geologist said. "Finding that fluid flow is the trickiest part."

The researchers based in the University's College of Science bring valuable experience to the FORGE team: experience that will make that job easier.

"We have a long history of working with the geothermal systems in the region and understanding the geologic setting of those systems," Faulds said.

Participation in the FORGE project provides an opportunity for University researchers to widen their knowledge of geothermal operations and maintain the state's position on the cutting edge of development of the geothermal industry.

"FORGE will lay the groundwork for new methods, expand our exploration from surface to the subsurface and allow us to include new projects in reservoir modeling and 3D data synthesis," said Calvin, a professor in geophysics and remote sensing who serves as director of the Great Basin Center for Geothermal Energy [gbcge.org] headquartered at the University.

The program also draws the spotlight to other University research.

"The FORGE project offers the University and the State of Nevada a huge opportunity to showcase our cutting-edge research capability in enhanced geothermal systems," said Mridul Gautam, the University's vice president for research and innovation. "I thank the Department of Energy for recognizing the leadership and commitment demonstrated by this University and the state to advanced research and development of clean-energy technologies, in general, and geothermal energy, in particular."

The two FORGE projects in which the University was selected to participate are among five sites under analysis that will share \$2 million in Department of Energy funding.

In this first phase of the project, researchers will examine the feasibility of each of the five sites. Up to three of the sites then will be selected for further research, totaling up to \$29 million, during the next two years. From that second phase work, one site will be selected for FORGE research and development.

Sandia National Laboratories is leading both FORGE research teams in which the University is participating. Other key partners in both the Fallon and Coso research include Lawrence Berkeley National Laboratory, U.S. Geological Survey, GeothermEx/Schlumberger, the U.S. Navy and Itasca Consulting Group.

In the Fallon project, Ormat Nevada, Inc. of Reno is a key partner. In the Coso project, the Coso Operating Company LLC is a key partner.

For more information, visit www.unr.edu.

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➤ **NBMG Earth Science Week Field Trip, October 17 and 18, 2015**

Fire and Ice—Geology of the Mount Rose Quadrangle, Lake Tahoe, and the Carson Range

Save the date! Sign-ups will be available in September.

NBMG participates in Earth Science Week, the second full week in October, by coordinating annual geologic field trips for the general public. In 2014, NBMG also held an open house during Earth Science Week and plans to do so again in 2015. Information on both events will follow in coming weeks. Sign-ups for field trips are made available in the fall during the few weeks prior to the trips. Past field trip guides are available on our [website](#).

This year's Earth Science Week will be held from October 11-17, 2015 and will celebrate the theme "Visualizing Earth's Systems." Check back later for information about our annual NBMG Earth Science Week field trip and open house! Both events are free to the public!

Nevada Petroleum and Geothermal Society; Sep 2015

Proclamation by the Governor:

<http://www.earthsciweek.org/proclamations/nevada>

Earth Science Week website:

<http://www.earthsciweek.org/>

“Earth Science Week is an international event which takes place during the second full week of October. The American Geosciences Institute organizes the event for the geoscience community and publicizes the event, distributes materials, and provides guidance to those interested in participating in Earth Science Week. Earth Science Week is a "grass roots" effort that depends on local geoscience and education groups to plan those events.”

➤ **Job Announcements from BLM**

We are pleased to announce new, exciting positions available at BLM - BUREAU OF LAND MANAGEMENT. It is our hope that qualified, career oriented individuals at your organization or other professionals known to you will actively consider this position and apply accordingly. Efforts on your part to disseminate this information are greatly appreciated.

Position Information:

Job Description: Rangeland Management Specialist;

Announcement Number: NV-DEU-2015-0165;

Location(s) of position: Winnemucca, NV, US;

Salary: \$39,570 - \$76,131;

Applications will be accepted until: **09/05/2015**.

For additional information on this job posting, please go to:

[https://jobs.mgsapps.monster.com/blm/vacancy/viewVacancyDetail!execute.hms?orgId=3&jnum=113085\[jobs.mgsapps.monster.com\]](https://jobs.mgsapps.monster.com/blm/vacancy/viewVacancyDetail!execute.hms?orgId=3&jnum=113085[jobs.mgsapps.monster.com])

Position Information:

Job Description: Land Law Examiner;

Announcement Number: NV-DEU-2015-0164;

Location(s) of position: Tonopah, NV, US;

Salary: \$48,403 - \$62,920;

Applications will be accepted until: **09/03/2015**.

For additional information on this job posting, please go to:

[https://jobs.mgsapps.monster.com/blm/vacancy/viewVacancyDetail!execute.hms?orgId=3&jnum=113073\[jobs.mgsapps.monster.com\]](https://jobs.mgsapps.monster.com/blm/vacancy/viewVacancyDetail!execute.hms?orgId=3&jnum=113073[jobs.mgsapps.monster.com])

Position Information:

Job Description: Administrative Support Assistant;

Announcement Number: NV-DEU-2015-0170;

Location(s) of position: Tonopah, NV, US;

Salary: \$35,256 - \$45,828;

Applications will be accepted until: **09/09/2015**.

For additional information on this job posting, please go to:

[https://jobs.mgsapps.monster.com/blm/vacancy/viewVacancyDetail!execute.hms?orgId=3&jnum=113104\[jobs.mgsapps.monster.com\]](https://jobs.mgsapps.monster.com/blm/vacancy/viewVacancyDetail!execute.hms?orgId=3&jnum=113104[jobs.mgsapps.monster.com])

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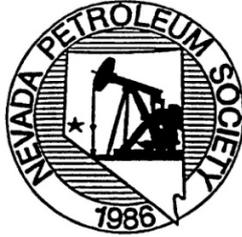
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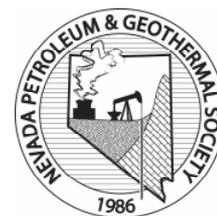
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Publication Price List - October 2013



Paper	CD-ROM	Download from Dropbox	Title
SPECIAL VOLUMES			
NPS1 n/a	NPS1c \$80.00	NPS1y \$65.00	Oil Fields of the Great Basin (1994) R.A. Schalla and E.H. Johnson, editors, 31 papers on regional and field specific geology, 5 plates, soft cover with plastic comb binding, 380 p.
NPS2 n/a	n/a	n/a	Membership Directory (only available free on the Web at http://www.nbmg.unr.edu/nps/membershipdir.htm)
NPS15 \$20.00 \$5.00	n/a	n/a	TerraScan's Geologic Map of the Eastern Great Basin, Nevada and Utah (1978, rev. 1987) compiled and edited by E.L. Howard, 3 sheets (includes cross-sections) \$20.00/NPS or \$25.00/non-NPS, order by phone for discounted price of \$5.00
NPS21 n/a	NPS21c \$35.00	NPS21y \$20.00	Carboniferous–Permian (Late Paleozoic) Hydrocarbon System, Rocky Mountains–Great Basin Region, U.S., Major Historic Exploration Objective (2001, updated 2003) J. Peterson, RMAG Open-File Report, 54 p., 45 illustrations
FIELD TRIP GUIDEBOOKS			
NPS3 n/a	NPS3c \$35.00	NPS3y \$20.00	Oil Fields, Production Facilities and Reservoir Rocks of Northern Nye Co, Nevada (1989) compiled by W.J. Ehn and D.M. Evans, 8 abstracts and papers, 30 p.
NPS4 \$15.00	NPS4c \$35.00	NPS4y \$20.00	Oil Fields and Geology of the Pine Valley, Eureka County Area, Nevada (1990) D.M.H. Flanigan, L.J. Garside, and M. Hansen, editors, 15 papers and abstracts, 74 p. (xerox copy only – unbound)
NPS5 n/a	NPS5c \$35.00	NPS5y \$20.00	Geology of White River Valley, the Grant Range, Eastern Railroad Valley and Western Egan Range, Nevada (1991) D.M.H. Flanigan, M. Hansen, and T.E. Flanigan, editors, 10 papers and abstracts, 74 p.
NPS6 \$25.00	NPS6c \$40.00	NPS6y \$25.00	Structural Geology and Petroleum Potential of Southwest Elko County, Nevada (1992) J.H. Trexler, Jr., T.E. Flanigan, D.M.H. Flanigan, M. Hansen, and L.J. Garside, editors, 9 papers, 2 plates, 96 p.
NPS7 \$33.00	NPS7c \$48.00	NPS7y \$33.00	Structural and Stratigraphic Relationships of Devonian Reservoir Rocks, East Central Nevada (1993), C.W. Gillespie, editor, 15 papers, 3 plates, 203 p.
NPS8 n/a	NPS8c \$40.00	NPS8y \$25.00	Dating of Pre-Tertiary Attenuation Structures in Upper Paleozoic and Mesozoic Rocks and the Eocene History in Northeast Nevada and Northwest Utah (1994) C.H. Thorman, C.J. Nutt, and C.J. Potter, editors, 11 papers, 125 p.
NPS9 n/a	NPS9c \$55.00	NPS9y \$40.00	Structural and Stratigraphic Investigations and Petroleum Potential of Nevada, with Special Emphasis South of the Railroad Valley Producing Trend (1994) S.W. Dobbs and W.J. Taylor, editors, two volumes bound as one, 13 papers, 22 plates, 281 p.

Paper	CD-ROM	Download from Dropbox	Title
NPS10 \$25.00	NPS10c \$40.00	NPS10y \$25.00	Mississippian Source Rocks in the Antler Basin of Nevada and Associated Structural and Stratigraphic Traps (1995) M.W. Hansen, J.P. Walker, and J.H. Trexler, Jr., editors, 16 papers and 7 abstracts, 166 p.
NPS11 \$25.00	NPS11c \$40.00	NPS11y \$25.00	Cenozoic Structure and Stratigraphy of Central Nevada (1996) W.J. Taylor and H. Langrock, editors, 11 papers, 122 p.
NPS12 \$25.00	NPS12c \$40.00	NPS12y \$25.00	The Roberts Mountains Thrust, Elko and Eureka Counties, Nevada (1997) A.J. Perry and E.W. Abbott, editors, 4 papers, 2 abstracts and reference papers/abstracts, 86 p.
NPS13 n/a	NPS13c \$40.00	NPS13y \$25.00	Hydrocarbon Habitat & Special Geologic Problems of the Great Basin (1998) D.E. French and R.A. Schalla, editors and co-chair
NPS14 \$35.00	NPS14c \$50.00	NPS14y \$35.00	Cenozoic Geology of the Northern Colorado River Extensional Corridor, Nevada and Arizona: Economic Implications of Extensional Segmentation Structures (1999) J.E. Faulds, editor, 183 p., 3 color plates
NPS16 \$30.00	NPS16c \$45.00	NPS16y \$30.00	Structure & Stratigraphy of the Eureka, Nevada Area (2001) Marilyn S. Miller and Jerome P. Walker, editors, 108 p., 11 color plates
NPS17 n/a	NPS17c \$50.00	NPS17y \$35.00	Detachment and Attenuation in Eastern Nevada and its Application to Petroleum Exploration (2002) W. Ehni and J. Faulds, editors, 163 p.
NPS18 \$25.00	NPS18c \$40.00	NPS18y \$25.00	Oil, Gas, and Geothermal Occurrences in Northwestern Nevada (2003) S. Foster, editor, 102 p.
NPS19 n/a	NPS19c \$50.00	NPS19y \$35.00	Megabreccias and Impact Breccias of East Central Nevada (2004) C.W. Gillespie and S. Foster, editors
NPS20 n/a	NPS20c n/a	NPS20y n/a	Great Basin Paleozoic Carbonate Platform: Facies, Facies Transitions, Depositional Models, Platform Architecture, Sequence Stratigraphy, and Predictive Oil and Gas Reservoir and Mineral Host Models (2006) H.E. Cook and J.J. Corboy, 129 pages, out of print (report from USGS Open-File Report 2004-1078, free on Web at http://pubs.usgs.gov/of/2004/1078/)
NPS22 n/a	NPS22c \$40.00	NPS22y \$25.00	Geology, Geothermal Resources and Petroleum Exploration of Neogene Basins in the Reno, Nevada Area (2007, 2nd ed., includes two papers not in 1st ed.) S. Limerick, editor, 7 papers, 3 reprints, and roadlog, 140 p.
NPS23 \$25.00	NPS23c \$40.00	NPS23y \$25.00	Sedimentology and Tectonic Setting of the Late Cretaceous to Eocene Sheep Pass Formation in the Southern Egan Range (2008) P. Druschke, trip leader; J. Trexler, Jr., editor
NPS24 \$30.00	NPS24c \$45.00	NPS24y \$30.00	Geothermal and Petroleum Developments in Several Extensional Basins of the Central Walker Lane, Nevada (2013) L.J. Garside, editor, 11 papers, 131 p.

These publications are only available from the Nevada Bureau of Mines and Geology (NBMG). If a publication is out of print or unavailable, it is marked "n/a" (not available). **Please check with us for the most current prices.** Thanks.

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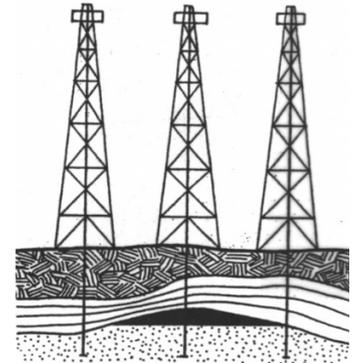
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Oil and gas resources from NBMG

The following publications are available from the Nevada Bureau of Mines and Geology. Many of these are available free on the Web. Go to the publications website and look for the "Free Downloads" link on the individual publication landing pages: <http://pubs.nbmj.unr.edu/>

Oil and gas information page on the NBMG website
<http://www.nbmj.unr.edu/Oil&Gas/index.html>



Bulletins

B104 Oil and gas developments in Nevada: Garside, Hess, Fleming and Weimer (1988) for updates, see OF01-7, OF04-1, and M162

Educational Series

E-6 Oil and gas in Nevada (Student book for grades 4-8, 23 pages) \$3.45
E-24 Nevada oil: Division of Minerals (Brochure, 1996) free

Lists

L-8 List of oil and gas wells drilled in Nevada since 1907: Hess, Davis, and Boldi (2001, updated 2003) superseded by OF04-1, see also OF01-7
L-12 Nevada oil and gas well catalog (NVOILWEL), superseded by OF04-1, see also OF01-7
Complete list of Nevada oil and gas well exploration data, 1906-present. Listed logs and cuttings are housed at NBMG. Shows, geologic tops and tests are given when available.

Maps

M162 Petroleum data map of Nevada: Garside and Hess (2007), 1:1,000,000

Mineral Industry series

The Nevada Mineral Industry is published annually, beginning in 1979. Each volume has a section on oil and gas in Nevada. Most of these reports are available free on the Web at <http://pubs.nbmj.unr.edu/Mineral-Industry-s/1860.htm>

Open-File Reports

OF83-5 Nevada oil shale: Garside, 10 pages, \$4.00 (for more oil shale information, see also USGS MF-1546 and MF-2091)
OF86-13 Nevada petroleum production statistics, 1954-1986: Hess, Loomis and Garside, 14 pages
OF92-5 Nevada oil and gas source-rock database: Hess, compilation of source-rock analyses performed on cuttings samples taken at varying depth intervals from oil and gas exploration wells in Nevada up to 1992, complete print-out
OF96-6c Nevada oil and gas wells, 1907-1996: 1:1,000,000 color digital map of Nevada showing major roads, county boundaries, and locations of oil wells drilled since 1907, original printout, see also OF01-7, M162
OF01-7 Nevada oil and gas well database map: Hess, CD and 4 page text, \$15.00
Contains the following: L-12; updated simplified version of OF96-6 (no text), partial; L-8; B104 text; digital base layers of Nevada data in Shapefile and Arc/Info export file format designed for use at scale 1:1,000,000 (county, towns, roads, USGS topo boundaries for 1:100,000 and 1:24,000, Township and Range); georeferenced raster graphic of the Nevada state base map, B&W, scale 1:1,000,000; 18 USGS digital raster graphic maps (DRG), 1:250,000-scale, topo maps in tiffw format
OF00-2 Hydrocarbon assessment of the Yucca Mountain vicinity, Nye County, Nevada: French, 78 pages and 4 plates
OF04-1 Nevada oil and gas well database (NVOILWEL): Hess (2004)
OF07-7 Assessment of the potential for carbon dioxide sequestration with enhanced oil recovery in Nevada: LaPointe, Price, and Hess (2007), 24 pages
OF11-2 Qualitative petroleum potential map of Nevada: Garside and Hess (2011), plate 1:1,000,000 and text
OF11-6 Oil and gas well information for Nevada—2011 update: Hess, Henson, Davis, Limerick, Siewe, and Niles; portable hard drive, 105 GB, 9643 files, also free on Web at <http://www.nbmj.unr.edu/Oil&Gas/NVWellInfo.html>

Reports

R51 Preliminary assessment of the potential for carbon dioxide disposal by sequestration in geological settings in Nevada: Price and others (2005), CD-ROM or paper copy, 35 pages
R52 Assessment of the potential for carbon dioxide sequestration by reactions with rocks in Nevada: Sturmer, LaPointe, Price, and Hess (2007)

USGS

Assessment of undiscovered oil and gas resources of the Eastern Great Basin Province, 2005, Fact Sheet FS-2005-3053, free at <http://pubs.usgs.gov/fs/2005/3053/>
Basin and Range Carbonate Aquifer System Study: <http://nevada.usgs.gov/barcass/data.htm>

Geothermal resources in Nevada

The following publications are available from the Nevada Bureau of Mines and Geology. Many of these are available free on the Web. Go to the publications website and look for the "Free Downloads" link on the individual publication landing pages: <http://pubs.nbmq.unr.edu/>

Geothermal information page on the NBMG website

<http://www.nbmq.unr.edu/Geothermal/index.html>

Bulletins

- B65 Mineral and water resources of Nevada: Cornwall (1964) pp. 267-269
- B89 Geology and mineral deposits of Pershing County, Nevada: Johnson (1977) pp. 104-106
- B91 Thermal waters of Nevada: Garside and Schilling (1979) \$22.00, *for update see L-5*
- B97 Discovery and geology of the Desert Peak geothermal field—a case history: Benoit, Hiner, and Forest (1982) *see also OF03-27*
- B99B Mineral resources of northern Nye County, Nevada: Kleinhampl and Ziony (1984) p. 37-38

Educational Series

- E-7 Geothermal resources in Nevada: Student reading/activity book for grades four through eight, 27 p.
- E-15 Nevada geothermal electric power production, brochure (1992) 2 p.
- E-35 Major mines, oil fields, and geothermal plants in Nevada
- E-46 Taking the pulse of the Earth
- E-51 Life's a beach: In search of ancient shorelines and volcanoes in the Grimes Point and Lahontan Mountains area

Lists

- L-5 Index to geothermal well files housed at NBMG: Davis and Hess (2009) *updates* App. 2 of B91

Maps

- M126 Nevada geothermal resources: Shevenell, Garside, and Hess (2000), *superseded by M161*
- M141 Nevada geothermal resources (second edition): Shevenell and Garside (2005), 1:750,000, *superseded by M161*
- M146 Geologic map of the Fraser Flat quadrangle and the west half of the Moses Rock quadrangle, Washoe Co., NV
- M151 Geothermal potential map of the Great Basin, western United States: Coolbaugh and others (2005) 1:1,000,000
- M161 Nevada geothermal resources: Penfield, Shevenell, Garside, and Zehner (2010), 1:750,000, *supersedes M126 and M141*

Mineral Industry Series

MI-1979 through current year—The Nevada mineral industry is published annually and has a section on geothermal activities, varies with year, MI-1994-current year available free on Internet at <http://pubs.nbmq.unr.edu/Mineral-Industry-s/1860.htm>

Newsletters

Nevada Geology Newsletter no. 19, page 3 (Summer 1993) "Low-temperature geothermal resources in Nevada" by Larry Garside

Open-File Reports

- OF83-6 Preliminary map of thermal wells in the Moana geothermal area, Reno, Nevada: Garside
- OF87-2 Mineral resource inventory – U.S. Navy master land withdrawal area, Churchill County, Nevada: Quade and Tingley
- OF94-2 Nevada low-temperature geothermal resource assessment: 1994: Garside, with a bibliography by Davis and Garside
- OF96-2-9 Reconnaissance photogeologic map of young (Quaternary and late Tertiary) faults in Nevada: (Plate 9) 1:1,000,000, map and text
- OF03-27 Preliminary geologic map of the Desert Peak-Brady geothermal fields, Churchill County, Nevada: Faulds and Garside (2003), *see also B97*
- OF06-5 Mineral- and energy resource potential for White Pine County, Nevada
- OF06-6 Mineral- and energy resource potential for Pershing County, Nevada
- OF06-7 Mineral- and energy resource potential for Lyon County, Nevada
- OF06-12 Potential resources associated with proposed roadless areas in Nevada
- OF09-10 Preliminary geothermal potential and exploration activity in Nevada: Zehner, Coolbaugh, and Shevenell, 1:1,000,000-scale plate and text, *supersedes OF09-1*
- OF10-6 Preliminary geologic map of the Lee-Allen geothermal area, Churchill County, Nevada
- OF11-3 Preliminary geologic map of the Reese River geothermal area, Lander County, Nevada
- OF11-10 Descriptive logs, skeletonized samples, and photographs of core from Presco Energy's thermal gradient wells P3-1, P 10-1, and P 32-2 in the Rye Patch area, Pershing County, Nevada: Davis (2011, Web version only)
- OF11-11 Preliminary geologic map of the northern Lake Range, San Emidio geothermal area, Washoe County, Nevada: Rhodes, Faulds, and Ramelli, scale 1:24,000

Nevada Petroleum and Geothermal Society; Sep 2015

- OF12-3 Data tables and graphs of geothermal power production in Nevada: Shevenell, Price, and Hess (1985-2011)
- OF12-05 Preliminary geologic map of the Desert Peak quadrangle, Churchill County, Nevada
- OF13-05 Preliminary geologic map of the Tuscarora geothermal area, Elko County, Nevada
- OF13-08 Preliminary geologic map of the Wabuska quadrangle, Lyon County, Nevada
- OF13-10 Preliminary geologic map of the central Lake Range, southern Fox Range, and northern Terraced Hills, Emerson Pass geothermal area, Washoe County, Nevada (second edition)
- OF13-11 Preliminary geologic map of the southern Lake Range, Washoe County, Nevada

Reports

- R21 Geothermal exploration and development in Nevada through 1973
- R25 Evaluation of geothermal activity in the Truckee Meadows, Washoe County, Nevada: Bateman and Scheibach (1975)
- R33 Papers on mineral deposits of western North America: (1979), presented at the Fifth Quadrennial Symposium of IAGOD
- R41 Precious-metal mineralization in hot springs systems, NV-CA: Tingley and Bonham (1986)
- R43 Mineral resources of the Kumiva Peak 30' by 60' quadrangle: Tingley (1989) p. 16-17
- R44 Mineral resources of the Pahranaagat Range 30' by 60' quadrangle: Tingley (1989) p. 8-9
- R45 Mineral resources of the Overton 30' by 60' quadrangle: Tingley (1989) p. 12-13
- R46 Mineral resources of the Timpahute Range 30' by 60' quadrangle: Tingley (1991) p. 30-31
- R51 Preliminary assessment of the potential for carbon dioxide disposal by sequestration in geological settings in Nevada

Special Publications

- SP4 Geology of Nevada: a discussion to accompany the Geol. map of Nevada (see below): Stewart (1980)
- 00001 Geologic map of Nevada: Stewart and Carlson, U.S.G.S. (1978) 1:500,000
available free on the Internet at <<http://keck.library.unr.edu/>> and click on "Great Basin geoscience dataset"
see SP4 for descriptive text

Urban Map Series

- 3Ah Energy and mineral resources map of the Las Vegas SE quadrangle: Papke and Bell (1973)
- 4Ah Energy and mineral resources map of the Reno quadrangle: Bingler, Bonham, and Luza (1973)
- 5Ah Energy and mineral resources map of the Washoe City quadrangle: Papke and Jones (1978)

Nevada Petroleum Society

- NPS5 Geology of White River Valley, the Grant Range, eastern Railroad Valley and western Egan Range, Nevada
- NPS18 Oil, gas and geothermal occurrences in northwestern Nevada
- NPS22 Geology, geothermal resources and petroleum exploration of Neogene basins in the Reno, Nevada area
- NPS24 Geothermal and petroleum developments in several extensional basins of the central Walker Lane, Nevada

USGS Publications

- C1249 Geothermal energy – clean power from the earth's heat: Duffield and Sass, *free on the Internet at* <<http://geopubs.wr.usgs.gov/circular/c1249/>>
- I-1701 Bouguer gravity anomalies, depth to bedrock, and shallow temperature in the Humboldt House geothermal area, Pershing County, Nevada: Schaefer (1986)
- OF74-271 Geothermal systems of northern Nevada: Hose and Taylor (1974), 30 pages
- OF74-1066 The chemical composition and estimated minimum thermal reservoir temperatures of the principal hot springs of northern and central Nevada
- OF81-918 Geothermal resources of the western arm of the Black Rock Desert, northwestern Nevada, part I, geology and geophysics: Schaefer, Welch, and Maurer (1983), 41 pages and 4 plates
- OF02-374 A helicopter-borne magnetic survey over Dixie Valley geothermal field, Nevada: A web site for distribution: Pearson, deRidder and Johnson (2002), *available free on the Internet at* <<http://pubs.usgs.gov/of/2002/ofr-02-0374/>>
- OF02-384 High-resolution aeromagnetic survey to image shallow faults, Dixie Valley geothermal field, Nevada: Grauch (2002), <http://pubs.usgs.gov/of/2002/ofr-02-0384/>

Other Resources

Great Basin Center for Geothermal Energy is at <http://www.gbcge.org/>

For more information, please contact:

Nevada Bureau of Mines and Geology
Great Basin Science Sample and Records Library
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Reno, NV 89512

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Nevada Petroleum and Geothermal Society Calendar: Year 2015-2016	
Sep 03, 2015	NPGS Monthly Dinner Meeting – Thursday Sep 03, 6:30 PM <i>Speaker: Dick Benoit, Reno NV</i> <i>Topic: Dixie Valley Geothermal Power Project</i>
Oct 1, 2015	NPGS Monthly Dinner Meeting – Thursday Oct 1, 6:30 PM <i>Details TBA</i>
Oct 17-18, 2015	NBMG Earth Science Week Field Trip, October 17 and 18, 2015 Fire and Ice—Geology of the Mount Rose Quadrangle, Lake Tahoe, and the Carson Range Save the date! Sign-ups will be available in September.
Nov 5, 2015	NPGS Monthly Dinner Meeting – Thursday Nov 5, 6:30 PM <i>Details TBA</i>
Nov 30-Dec 4	American Exploration & Mining Meeting & Expo, Spokane WA mheywood@miningamerica.org
Dec 4, 2015 Friday	NPGS ANNUAL CHRISTMAS PARTY – Friday Dec 4, 6:30 PM <i>Details TBA</i>
Dec 8, 2015	Nevada BLM Oil & Gas Lease Sale, Reno NV Ely NV District, posting date: Sep 09, 2015 http://www.blm.gov/nv/st/en/prog/minerals/leasable_minerals/oil_gas/oil_and_gas_leasing.html
Jan 7, 2016	NPGS Monthly Dinner Meeting – Thursday Jan 7, 6:30 PM <i>Details TBA</i>
Feb 4, 2016	NPGS Monthly Dinner Meeting – Thursday Feb 4, 6:30 PM <i>Details TBA</i>
Mar 3, 2016	NPGS Monthly Dinner Meeting – Thursday Mar 3, 6:30 PM <i>Details TBA</i>
Apr 7, 2016	NPGS Monthly Dinner Meeting – Thursday Apr 7, 6:30 PM <i>Details TBA</i>
May 5, 2016	NPGS Monthly Dinner Meeting – Thursday May 5, 6:30 PM <i>Details TBA</i>
Jun 19-22, 2016	AAPG Annual Convention & Exhibition, 2016: Redefining Reservoir BMO Centre @ Stampede Park, Calgary AB http://ace.aapg.org/2016
Oct 2-5, 2016	Rocky Mountain Section/Pacific Section Meeting – AAPG 2016 2016 joint RMS-AAPG/PS-AAPG annual meeting Paris Hotel, Las Vegas, Nevada. Host societies: Idaho Association of Professional Geologists and the Nevada Petroleum & Geothermal Society.

The NPGS Newsletter is provided to members of the Nevada Petroleum and Geothermal Society. For information about membership and events, see the NPGS website at <http://www.nbmgs.unr.edu/nps/>. To submit articles, corrections or suggestions for the newsletter; Contact Vicki Ehni 775-883-1107, cell 775-720-6387; email vehni@aol.com.