



Geological Society of Nevada

SOUTHERN NEVADA CHAPTER

Newsletter

November, 2000

Seismicity and Seismic Hazards in the Las Vegas Region

(Also a Tour of the UNLV Seismograph)

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NEWSLETTER

John G. Van Hoesen
UNLV Dept. of Geoscience

DATE: Thursday, November 30, 2000

SPEAKER: Jim O'Donnell

LOCATION: Room 102 Lillie Fong Geoscience Building

TIME: 5:30 p.m. Social hour
6:30 p.m. Presentation

Seismicity and Seismic Hazards in the Las Vegas Region (Also a Tour of the UNLV Seismograph)

Jim O'Donnell- UNLV Adjunct Research Faculty Member

Abstract (GSN- Las Vegas meeting on Nov 30, 2000)

A Review of seismic activity, (including the recent Hector Mine earthquake, M7.1), along with USGS gravity and aeromagnetic anomalies (1996, 1998, 2000), in the Las Vegas region will be presented. The USGS believes the anomalies are associated with faulting, and their interpretation is enhanced by the use of a seismic reflection survey shot along the Las Vegas Valley Shear Zone.

A review of the pertinent seismicity and ground motion studies for the Hoover Dam, published (1993, 1995) by the Seismotectonics and Geophysics Section of the Bureau of Reclamation, will be presented. Their seismicity maps, earthquake catalog, and proposed Maximum Credible Earthquakes ($M > 6.5$) for the area will be discussed.

The Department of Energy's, (DOE), Seismic Safety Program: Ground Motion and Structural Response, (1963-93), which maintained a seismic strong motion network located in the Las Vegas region, will be outlined. DOE technical reports in the early 1970's were the first to describe the anomalous high shaking that occurs in parts of the Las Vegas Valley from seismic waves, generated from underground nuclear tests. A more recent publication (1998), by the University of Nevada Seismological Laboratory determined the anomalous site amplification (anomalous shaking) for the Las Vegas Basin is even higher than previously reported. They analyzed DOE seismic strong motion data recorded in Las Vegas from the 1992, Little Skull Mountain earthquake, M5.6. They concluded that the site amplification could impose a larger earthquake risk for Las Vegas than has previously been recognized.

Furthermore, the Federal Emergency Management Agency, FEMA, has just released an Earthquake Loss Report, which estimates that Las Vegas will suffer greater losses than Reno. The FEMA report and the USGS plan for an 'Advanced National Seismic System' (ANSS), and how it will affect the Las Vegas region, will be discussed. The ANSS has proposed 100 strong motion sites for Las Vegas.

Jim O'Donnell

Jim O'Donnell attended the University of California at Berkeley (UCB) from 1959-64 where he received a BA and MA in Geophysics. He was also a NOAA visiting scientist at UCB in the Engineering Geoscience Department from 1967-70. He worked as a project chief for NOAA and the USGS, for 15 years, and developed geophysical instrumentation as well as methods for geothermal exploration. During this time he published 15 scientific papers on Resource Assessment of Geothermal Areas in the Western U. S. He worked overseas for ARAMCO in Saudi Arabia, for 5 years, supervising a borehole geophysics group, and in seismic prospecting programs for oil exploration. He joined DOE/NV in 1987 and retired in 1995 after participating in the Defense Programs at the Nevada Test Site, which included the Seismic Safety, and Nuclear Test Ban Treaty programs. He chaired the Deployable Seismic Verification System Working Group, which developed state-of-the-art, real time seismic systems to be used in verifying the Nuclear Test Ban Treaties.

Jim has been a registered geologist since 1970, and a registered geophysicist since 1974, in the state of California. He is a member of the Geological Society of Nevada, GSN, the Association of Engineering Geologists, AEG, and the Consortium of Organizations for Strong-Motion Observation Systems, COSMOS. He participates in the Nevada Earthquake Safety Council as a member of their Geoscience Committee and is involved with UNLV and local earth science high school teachers to help promote Earthquake Awareness and Education in the Las Vegas region. Currently he is an UNLV Adjunct Research Faculty Member involved in upgrading the UNLV/Geoscience seismograph. He has also installed a seismograph in Boulder City, where it can detect microearthquakes ($M < 1$) from Eldorado Valley, for the UNLV/Engineering Geophysics Laboratory, and is looking forward to installing seismographs in the local high schools.

Announcements

Look! Its a *NEW* GSN web site!

<http://www.gsnv.org>

If you know of anyone that would like to become a member of if you need to renew your membership in the Geological Society of Nevada, a membership application is attached.

Newsletter Update

Do you know someone who has moved and not told us? A few newsletters are returned because of incorrect addresses following each mailing. If you are aware of someone who hasn't received a newsletter, please have them call or email Paul Bowen at (702)247-7765 or p_jbowen@ix.netcom.com. You may also contact Donna Bloom at GSN headquarters to update this information. Thanks!

GEOLOGICAL SOCIETY OF NEVADA
MEMBERSHIP APPLICATION/RENEWAL

NAME: _____ POSITION/TITLE _____

CONSULTANT COMPANY NAME: _____

STUDENT UNIVERSITY: _____

ADDRESS: _____

CITY: _____ STATE/PROVINCE: _____

ZIP: _____ COUNTRY: _____

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CELL _____ RESIDENCE _____

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DO YOU WANT TO BE LISTED IN THE MEMBERSHIP DIRECTORY AS BEING AVAILABLE FOR CONSULTING? _____

DO YOU WANT TO BE LISTED ON THE WEBSITE MEMBERSHIP PAGE? _____

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|---|---|--------------------------|
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| | B. To receive the GSN Newsletter via the postal service. | <input type="checkbox"/> |
| 2) I authorize GSN to send to me, via e-mail, occasional GSN announcements and publication updates. | | <input type="checkbox"/> |

Regular Membership Dues \$30.00 \$ _____

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ADDITIONAL DUES

I wish to be a member of the Elko Chapter \$5.00 _____

I wish to be a member of the Southern Nevada Chapter \$5.00 _____

I wish to be a member of the Winnemucca Chapter \$5.00 _____

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Return with payment to: Geological Society of Nevada, P.O. Box 12021, Reno, NV 89510-2021
 Fax to 775/323-3599, e-mail gsn@mines.unr.edu

PROPOSED DATES FOR TALKS

30 November 2000 Jim O'Donnell

25 January 2001

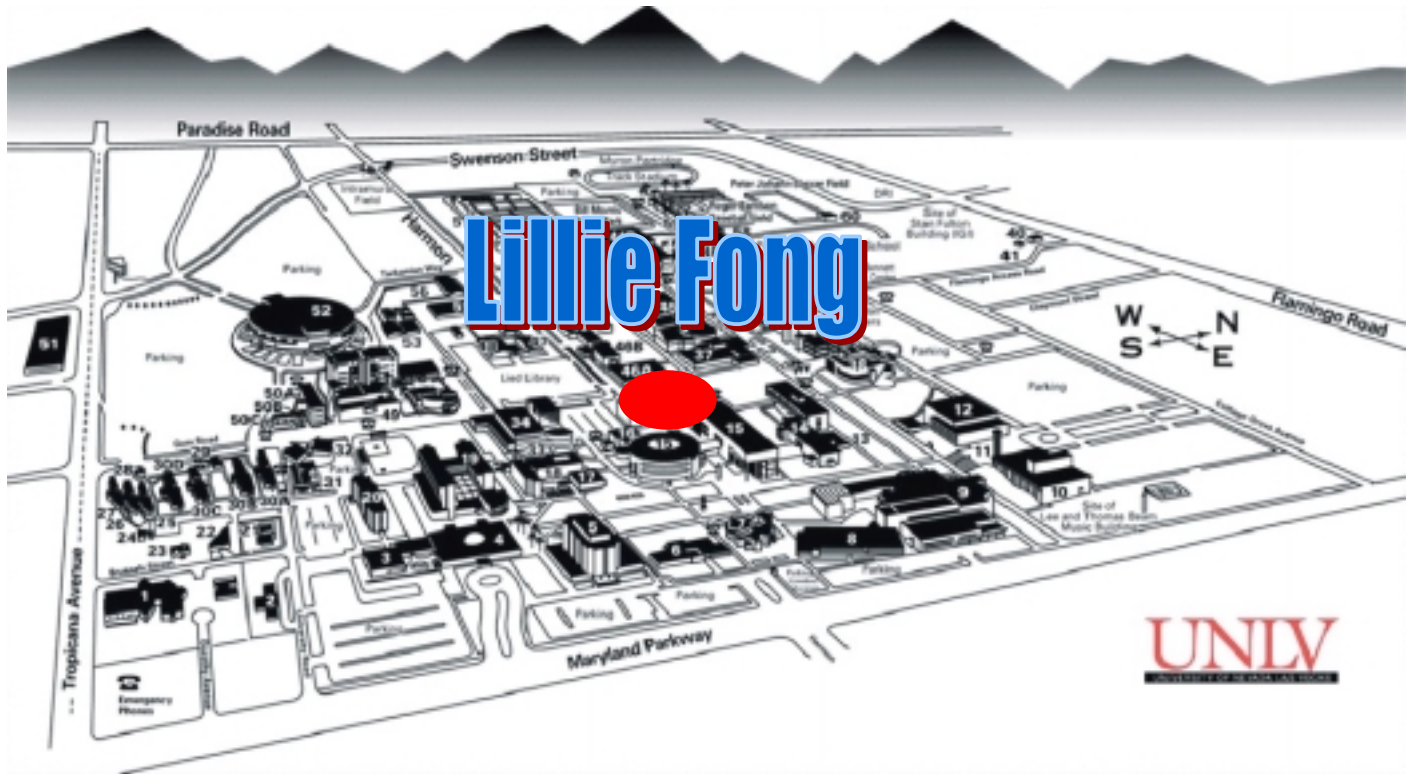
22 February 2001

22 March 2001

26 April 2001 Student Presentations

24 May 2001

As you can see we need to fill in the gaps. Also if anyone would like to volunteer to give a talk or host a discussion in December we would be open for suggestions. Some of us aren't going anywhere.



Publication and mailing of this newsletter has been contributed by The UNLV Department of Geoscience.

Come visit us online at http://www.unlv.edu/Colleges/Sciences/Geoscience/1st_page.html



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