

Summary Minutes

Nevada Earthquake Safety Council

8 November 2006

The Nevada Earthquake Safety Council (NESC) met from 9:30 a.m. to 3:00 p.m. in the Harry Reid Engineering Laboratory on the University of Nevada, Reno campus in Reno. These and previous minutes are posted on the Web site for the committee (<http://www.nbmg.unr.edu/nhmipc/nesc.htm>).

Jim Reagan chaired the meeting. Individuals attending the meeting are members of the Council:

John Anderson*, Nevada Seismological Laboratory
 Elizabeth Ashby, Nevada Division of Emergency Management
 Alan Bennett*, Plans Examiner with the City of Reno
 Mike Blakely*, Blakely, Johnson, and Ghusn,
 Ian Buckle*, University of Nevada, Reno – Center for Civil Engineering Earthquake Research
 Bob Carey, Utah Seismic Safety Commission and Utah Emergency Management
 Wayne Carlson*, Nevada Public Agency Insurance Pool
 Sheila Clement
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 Gaye Coté, who held the proxy for Cathy Snelson*, UNLV
 Bob Cullins, University of Nevada, Reno
 Craig dePolo, Nevada Bureau of Mines and Geology, who held the proxy for Steve Koenig*, Bellagio Resorts
 Diane dePolo, Nevada Seismological Laboratory, who held the proxy for Greg Flanigan*, Farmers Insurance
 Sam Earman, National Nuclear Security Agency, U.S. Department of Energy
 Sherif Elfass, University of Nevada, Reno
 Mark Harris*, Nevada Public Utilities Commission
 Werner Hellmer, Clark County Department of Development Services, Building Department, who held the proxy for Ron Lynn*
 Jenelle Hopkins*, Clark County School District, Las Vegas
 Robert McCord, Federal Emergency Management Agency
 Mike McCulloch, Washoe County Building Safety
 Glade Myler, Office of the Attorney General
 Jim O'Donnell*, UNLV
 Rebecca Ossa
 Jon Price*, Nevada Bureau of Mines and Geology
 Jim Reagan*, Sierra Pacific Power Company, who also held the proxy for Marge Gunn Nutman*, Nevada Association of Counties & Lincoln County Office of Emergency Management
 Burt Slemmons*, University of Nevada, Reno (retired), consultant in Las Vegas
 Monique Smith, Nevada Bureau of Mines and Geology
 Ann Wiswell, Nevada Public Agency Insurance Pool

* indicates member of the Board of Directors.

A quorum of directors (the necessary 11) was present.

Board Members unable to attend or send a proxy included:

Bernie Anderson*, Nevada Assembly
 Warren Hardy*, Nevada State Senator
 Ed Ruttan*, American Red Cross
 Greg Moss*, The Moss Group
 Jim Werle*, Converse Consultants

The minutes of the 2 August 2006 meeting were unanimously approved.

Education and Awareness Committee

Diane dePolo reported that the committee is discussing a Web site for Earthquake Awareness Week (February 25 to March 3, 2007) and related activities. They are trying to get the schools to do an earthquake drill in 2007. They plan to use Newton's Newsletter to get the word to at least one school teacher in each school in Nevada.

Jenelle Hopkins reported that their school in Las Vegas has a check-off list for nonstructural hazards in their science classrooms, but she is not sure whether there is a policy regarding nonstructural hazards in classrooms throughout the Clark County School District.

Gaye Coté spoke about the Nevada On-Line Encyclopedia, which is looking for articles on Nevada; she is looking for help to create entries regarding earthquake hazards. She will contact D.D. LaPointe, education and outreach specialist with the Nevada Bureau of Mines and Geology, who has worked on the encyclopedia to create some entries related to geology and mining. The contact number for the encyclopedia is 1-800-382-5023.

Research Committee

Craig dePolo distributed copies of FEMA 460, a publication on "Seismic Considerations for Steel Storage Racks Located in Areas Accessible to the Public," FEMA 389 ("Primer for Design Professionals, Communicating with Owners and Managers of New Buildings on Earthquake Risk") and FEMA's publication IS-22 ("Are You Ready? An In-Depth Guide to Citizen Preparedness").

Upon request, FEMA will send copies of their publications to interested parties (call 1-800-480-2520).

Craig is working with the USGS to update information on active faults in Nevada. Ones that have average recurrence intervals on the order of once every 3,000 to 6,000 years (or more frequently) are considered in the USGS probabilistic seismic hazard analysis. This criterion eliminates all but 16 to 20 of the 250 to 300 active faults in Nevada. Many of the faults with longer average recurrence intervals are nonetheless significant earthquake hazards. Those that have been active during the Quaternary Period (the last 1.8 million years) are considered active by policies of the Western States Seismic Policy Council and the Nevada Earthquake Safety Council.

Craig recently spoke to the Joint Information Center, a group of public information officers, about earthquake hazards in Nevada.

Craig noted that the Utah Geological Survey and Utah Seismic Safety Commission have discussed the Top 10 Earthquake Actions from the 1906 San Francisco earthquake centennial (see the Council's minutes from the May and August meetings) and are leaning toward a Top 3 list.

ACTION ITEM: Terri Garside will add to the agenda for the 7 February 2007 NESC meeting an item to discuss the Top Earthquake Actions for Nevada (Craig dePolo and John Anderson will take the lead on this).

Policy Recommendation Committee

Wayne Carlson stated that there is a bill draft request for the Nevada Legislature regarding seismic issues (Bill Draft Request 716), but the details will not be released until the legislative session begins. Wayne mentioned that NESC may want to follow WSSPC's lead in developing a rigorous process for the adoption of policy-recommendations.

ACTION ITEM: Terri Garside will add to the agenda for the 7 February 2007 NESC meeting an item to approve a process for the adoption of policy-recommendations. Wayne Carlson and the Policy Recommendation Committee will draft the proposal.

Strategic Planning Committee

Jim Reagan formed a Bylaws Committee to examine the NESC Bylaws. (Jim Reagan, Chair; other members: Wayne Carlson, Jon Price, Jenelle Hopkins, John Anderson; Glade Myler as counsel).

ACTION ITEM: Terri Garside will add to the agenda for the 7 February 2007 NESC meeting a time for the Bylaws Committee to report its findings, with an option to approve changes to the bylaws at that time.

If you have information to contribute to the annual report for NESC, which is normally pulled together from minutes of NESC meetings during the previous year, please alert Jim Reagan.

Discussion of a Joint Meeting with the Utah Seismic Safety Commission and the NESC

Jon Price previewed a draft agenda for the 10 May 2007 meeting of NESC, which will be a joint meeting of NESC and the Utah Seismic Safety Commission in St. George, Utah, less than a two-hour drive from Las Vegas. The draft agenda starts at 8:00 a.m. and ends at 5:00 p.m.. Nevada participants will need to travel to St. George on May 9 and can get back to Las Vegas in time to catch the last plane to Reno on May 10, or they can stay over a second night and participate in an earthquake-hazards field trip on the way back to Las Vegas on May 11. The draft agenda includes a summary of organizational structure, activities, funding, priorities, and major successes and failures of the two councils/commissions; discussions on how well prepared we are and should be for a major earthquake; and planning for the future, including discussion of top priorities for action.

Division of Emergency Management (DEM) Update

Elizabeth Ashby reported that DEM has moved to its new address (2478 Fairview Drive in Carson City) and has a new general telephone number (775-687-0300). They expect a new calendar of training sessions to be up on their Web site by the end of November. Rick Martin is trying to find year-end funds for NESC projects. Ursula Powers is a new planner on the DEM staff. The new Pre-Disaster Mitigation grant cycle is about to begin. A new Web site focusing on disaster preparedness (PlanAheadNevada.com) will run until June.

Glade Myler noted that there is now a mutual assistance and aid compact among all Nevada counties and most cities (except Reno, which expects to sign soon). This provides a vehicle for reimbursement of expenses after a disaster. Such a compact will be required by the U.S. Department of Homeland Security by the end of 2007, so Nevada is well ahead of the deadline.

ACTION ITEM: Terri Garside will work with Elizabeth Ashby to schedule the 1 August 2007 NESC meeting at DEM's Emergency Operation Center in Carson City.

Glade Myler noted that Homeland Security funding is now coming in competitive grants with "investment justification" requirements. It might be a good idea for NESC to lobby with DEM to get an "investment justification" for NESC and its projects. Jim Reagan is a representative on the committee that reviews proposals for the Nevada Commission on Homeland Security. Guidelines for the next cycle of DHS funding and investment justification will be out in early December. Each year there is generally a favored category, such as mass evacuation and shelter.

ACTION ITEM: An ad hoc committee on DHS funding (Elizabeth Ashby and Jim Reagan, Co-Chairs, other members: Wayne Carlson, Craig dePolo, Jenelle Hopkins; Glade Myler as counsel) is charged with examining the process for approval of projects for U.S. Department of Homeland Security (DHS) funding

through DEM. The committee should also evaluate whether any of the projects approved at the 10 May 2006 meeting of NESC for possible DEM year-end funding could be eligible for DHS funding and whether it would be appropriate for NESC to consider soliciting proposals for endorsement at its 7 February 2007 meeting.

ACTION ITEM: Terri Garside should add to the agenda for the 7 February 2007 NESC meeting an item regarding possible endorsement of earthquake-related projects for U.S. Department of Homeland Security funding through DEM.

ACTION ITEM: Terri Garside should add to the agenda for the 1 August 2007 NESC meeting the setting of priorities for proposed projects for year-end DEM/FEMA funding and for other U.S. Department of Homeland Security funding.

Update on Recent Earthquakes

John Anderson opened his discussion with illustrations of the recordings of the recent North Korean nuclear explosion by the Nevada Seismological Laboratory's network.

John described ongoing efforts to update the national earthquake hazard maps to be released in 2007 (produced by the U.S. Geological Survey as the National Earthquake Hazard Reduction Program, NEHRP, hazard maps). There are likely to be changes in Nevada, because new models for attenuation of seismic waves show more attenuation (meaning less hazard) for earthquakes on normal faults than for earthquakes on strike-slip or reverse faults. Nevada has both normal and strike-slip active faults. There may also be changes related to assumptions about soil conditions. There is quite a bit of controversy among the ground-motion experts in the seismological community regarding what should be done regarding proposed changes. The final maps may show a significantly lower hazard in Nevada.

John described a publication that is scheduled to be released next week (in the November/December 2006 issue of the journal *Seismological Research Letters*) on ranking states by seismic activity. The UNR press office is scheduling a press release on the paper on November 20. In the paper's analysis, Nevada is tied with Hawaii as the third most seismically active state in the United States. Nevada is clearly the second most seismically active state in the lower 48 states. The paper summarizes different ways of ranking states. Using numbers of earthquakes larger than magnitudes 3.5, 5, 6, and 7, Alaska is clearly the most seismically active, and California is clearly second. For magnitudes 7 and 5, Nevada is third, and Hawaii is fourth, but for magnitudes 6 and 3.5, Hawaii is third, and Nevada is fourth.

John also discussed the National Science Foundation's temporary deployment (for 18 to 24 months) of seismometers across the country as part of its EarthScope Program. It would be valuable to Nevada to keep many or all of the stations (a total of approximately 53 in Nevada), which allow for recording of small earthquakes that otherwise are not recorded with the current seismic networks funded by the U.S. Geological Survey, Nevada Seismological Laboratory, and other agencies. A denser network would also help in real-time warning of distant earthquakes, for which electronic signals could be sent to a community before the most damaging seismic waves hit. The intermountain west group of seismic network operators has requested that the USGS add to its budget funds to cover picking up some of these stations. This would lead to approximately 15 new stations each in Nevada, Utah, and Montana and about 10 new stations in most other western states.

John also described the earthquake-related instrumentation needs for Nevada, which are being advocated by the University of Nevada, Reno. These include retaining all the EarthScope seismic instruments, completing the installation of strong-motion instruments in populated areas as described in plans for the Advanced National Seismic System (ANSS) of the USGS, acquisition of portable seismometers to be deployed to measure aftershocks, densification of high-quality GPS instruments to add to data needed for seismic hazard analysis, and increases to the USGS external grants program, including additional funds for studies in areas of the intermountain west.

John noted that the Board of Regents of the Nevada System of Higher Education has a proposal for a budget enhancement by the Nevada Legislature for reducing risks from natural hazards. This initiative would add positions to the UNR statewide programs: three new staff at the Nevada Seismological Laboratory, two at the Nevada Bureau of Mines and Geology, and one in the Nevada State Climate Office. These positions would greatly improve operations of the Nevada seismic network, evaluation of earthquake faults and other geologic hazards, integration of geodetic information into earthquake-hazard analysis, and improve drought and flood forecasting.

John also described the October 2006 Hawaii earthquake (Magnitude 6.7, 40 km deep). The “Did You Feel It” tool of the USGS worked well in recording effects that people felt and posted on the USGS Web site. The USGS ShakeMap product was not available until more than 24 hours after the earthquake. The Hawaii Volcano Observatory initially recorded this earthquake as a magnitude 4.7, because their instruments were saturated and unable to accurately measure large events, and the USGS early on reported the event at magnitude 6.3, then revised it to 6.7. The USGS is using the lack of ability to create a timely ShakeMap and its problems in measuring the earthquake as further justification for completing the ANSS. The Hawaii earthquake was not a volcanic tremor, although its origin was likely related to volcanic stresses. It was a brittle failure (making it a tectonic rather than volcanic earthquake).

Update on the Earthquake Engineering Laboratory

Ian Buckle, Director of the Center for Civil Engineering Earthquake Research, assisted by Sherif Elfass, Chad Lyttle, and Patrick Laplace, discussed earthquake engineering at the University of Nevada, Reno, and led of tour of their laboratory. He stressed that life safety is the principal objective of building codes. Although there is some success in meeting this objective in the United States, economic losses from earthquakes in the United States are enormous. Ian described research on design of seismic elements for bridges (including the new bridge across San Francisco Bay), shake tables that simulate earthquake motions, and the National Science Foundation’s George E. Brown Jr. Network Earthquake Engineering Simulation (NEES) network, of which UNR is a part. Partners in NEES are connected by the high-speed broadband Internet 2. The Center does considerable work with its shake tables on bridges and other structures.

The Earth as a Classroom (TEAC) 2006 Teacher’s Program

Ken Smith described the collaborative program between the Nevada Seismological Laboratory and the UNR College of Education. Jacque Ewing-Taylor from the College of Education’s Raggio Research Center for Science-Technology-Engineering-Math (STEM) explained that the program has been running for a few years. It begins with a Saturday in the spring followed by another Saturday and six days in the field in the summer. Most teachers, who teach science or other disciplines (language arts, K-6 general education, etc.) are from Washoe County School District, although last year the program included a teacher from the Lyon County School District and two teachers from the Clark County School District. The science content provided by Ken includes tectonics of the Sierra Nevada and western Nevada and earthquake hazards in the region. Teachers are required to write a report based on their experience. Ken and Jacque feel that the teachers learn much with this intensive course. They do a pre-post test on content. The teachers scored a low of 2 and a high of 28 from a total of 40 on the pretest but 22 to 38 on the post-course test.

Ken described the program in 2006. Day 1 started in Reno and investigated the Mohawk Valley fault. Days 2 and 3 focused on the geology of Lake Tahoe; Day 4 hit the Fairview Peak fault and 1954 earthquake. Days 5 and 6 visited more faults in the Walker Lane portion of Basin and Range and ended in the Long Valley caldera near Mammoth Mountain, California. Funding for the program comes from the federal Department of Education.

FEMA Update

Robert McCord passed on information from Jeff Lusk regarding FEMA's response to the Hawaii earthquake. The majority of the damage was non-structural in schools and hospitals; more injuries would have occurred had the earthquake not been on Sunday, at a time when schools were not in session. The county activated seven ATC 20 teams of engineers to examine buildings. Neither the state nor the USGS created a clearinghouse on earthquake data. Doug Bausch (from FEMA Region XIII) was tasked to run HAZUS, and Jim Buika (formerly with FEMA Region IX) with the Pacific Data Center (see pdc.org) also ran HAZUS using updated information for Hawaii.

The Hazard-Mitigation Grant Program is coming back to FEMA (instead of being run through the preparedness part of the Department of Homeland Security).

The applications close for the pre-disaster mitigation program on February 5th, although the announcement for the program came out today.

Western States Seismic Policy Council – International Code Council Joint Annual Meeting

Jon Price and Craig dePolo described the draft agenda for the first joint annual meeting of the Western States Seismic Policy Council (WSSPC) – International Code Council (ICC), Sunday, 30 September 2007 through Wednesday, 3 October 2007. Items include WSSPC committee meetings Sunday morning and options for three field trips Sunday afternoon; an Expo of Exhibitors, including a Seismic Safety Zone, Sunday and Monday; technical and policy sessions on Monday and Tuesday, and WSSPC business meetings, including final adoption of policy recommendations, Wednesday morning.

Review of Action Items from Previous Meeting

Jim Reagan reviewed action items from the previous meeting. All have either been done or will be handled soon.

Old Business

None.

New Business

Future meetings and locations include:

- Wednesday, 7 February 2007 (Reno, at the offices of the Sierra Pacific Power Company)
- Thursday, 10 May 2007 (St. George, Utah)
- Wednesday, 1 August 2007 (Carson City, at the Division of Emergency Management)
- Wednesday, 14 November 2007 (Las Vegas).

ACTION ITEM: Jim Reagan appointed a Nominating Committee (Ron Lynn, Chair; other members: John Anderson, Jon Price, and Rick Martin). Terri Garside will add an item for a report from the Nominating Committee, with possible action to approve by the Council, to the agenda for the 7 February 2007 NESC meeting

Public Comment Period

Sheila Clement noted that Allstate Insurance no longer offers earthquake insurance anywhere in the country. According to a www.marketwatch.com/News/Story report, Allstate's reason is that there is too much uncertainty in models that are designed to predict potential losses. This could be a serious issue for Nevada and other states. Sheila urged the Council to investigate this issue.

Sheila also asked about earthquake-hazard zones in building codes. Craig dePolo and others answered that the new International Building Code (2003) uses the latest probabilistic seismic hazard maps of the U.S. Geological Survey and no longer uses zones. John Anderson replied that if we were still using the old Zone 3 versus Zone 4 maps of the Uniform Building Code (UBC), with new information about seismic hazards that we have learned in the last decade, the Reno-Carson City area would likely be in the highest hazard area, Zone 4. Reno used to be in Zone 3, although Sparks was in Zone 4. The old UBC zone maps were drawn primarily to highlight areas of historical earthquakes, particularly ones in the 20th century.

ANNOUNCEMENTS:

The Applied Technology Council (ATC) has organized an ATC-USGS Workshop on National Earthquake Ground-Motion Mapping on December 7-8, 2006, at the Marriott Hotel in San Mateo, California. For more information, see www.atcouncil.org or contact Bernadette Hadnagy at 650-595-1542 (bhadnagy@ATCouncil.org).

Mark Harris distributed pictures that he collected from the Hawaii earthquake, and Jon Price distributed pictures that Bob Cox sent from his recent trip to Hawaii, where he experienced the earthquake from the sixth floor of a high-rise condo.

REVIEW OF ACTION ITEMS

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respectfully submitted by Jon Price, 9 November 2006

Nevada Earthquake Safety Council

c/o Nevada Bureau of Mines and Geology
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NEVADA EARTHQUAKE SAFETY COUNCIL
Members of the Board of Directors and Officers
(as of 10 May 2006)

| | |
|------------------------------------------|------------------------------------------------------------------------------|
| Business and Industry, Southern Nevada | Steve Koenig, Bellagio Resorts |
| Business and Industry, Northern Nevada | vacant |
| Insurance Industry (statewide) | Greg Flanigan Farmers Insurance (Las Vegas) |
| State Government (statewide) | Mark Harris Public Utilities Commission (Carson City) |
| Local Government, City | Wayne Carlson Nevada Public Agency Insurance Pool (Carson City) |
| Local Government, County | Marge Gunn Nutman Nevada Assoc. of Counties & Lincoln Co. Office of EM |
| Seismology (statewide) | John Anderson Nevada Seismological Laboratory (UNR) |
| Geosciences, Southern Nevada | Burt Slemmons Las Vegas consultant, UNR (retired) |
| Geosciences, Northern Nevada | Jonathan G. Price Nevada Bureau of Mines and Geology |
| Engineering, Southern Nevada | Jim Werle Converse Consultants |
| Engineering, Northern Nevada | Mike Blakely Structural Engineers Association of NV |
| Education (statewide) | Jenelle Hopkins Clark County School District, Las Vegas |
| Community Organizations, Southern Nevada | vacant American Red Cross |
| Community Organizations, Northern Nevada | Jim Reagan Sierra Pacific Power Company |
| University, Southern Nevada | Catherine Snelson UNLV Geoscience Department |
| University, Northern Nevada | Ian Buckle UNR Center for Civil Engineering Earthquake |
| Research | |
| Building Official, Southern Nevada | Ronald L. Lynn Clark County Building Department |
| Building Official, Northern Nevada | Alan Bennett City of Reno |
| State Senate | Warren Hardy Nevada State Senator (Las Vegas) |
| State Assembly | Bernie Anderson Nevada State Assemblyman (Sparks) |
| Member at Large, Southern Nevada | Jim O'Donnell UNLV |
| Member at Large, Northern Nevada | Greg Moss The Moss Group |

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