

Summary Minutes

Nevada Earthquake Safety Council

22 August 1997

The Nevada Earthquake Safety Council met from 9:00 a.m. to 4:00 p.m. on 22 August 1997 at McCarran Airport in Las Vegas.

John Anderson chaired the meeting.

Individuals attending the meeting are members of the Council.

- John Anderson*, UNR Seismological Laboratory
- Mike Blakely*, Structural Engineers Association of Nevada and Blakely Johnson & Ghush Structural Engineers
- Craig Heidel*, State Farm Insurance
- Mike Klein*, Converse Consultants
- Mike Kloberdanz*, Nevada Public Service Commission
- Ron Lynn*, Clark County Building Department
- Greg Moss, AGRA Earth & Environmental, Inc. (representing Larry Johnson*)
- Jon Price*, Nevada Bureau of Mines and Geology
- Burt Slemmons*, University of Nevada, Reno (retired, Las Vegas consultant)
- Charles P. Watson*, Advanced Geological Exploration and Seismo-Watch
- David Weide*, UNLV Department of Geoscience
- Jim Goodfellow, Deputy Chief, Office of Emergency Management
- John Bell, Nevada Bureau of Mines and Geology
- Richard Cook, U.S. Army Corps of Engineers
- Bob Cullins, Jr., City of Las Vegas, Fire and Rescue
- Diane dePolo, UNR Seismological Laboratory
- Susan Dowty, Senior Staff Engineer, International Conference of Building Officials
- George Ghush, Blakely Johnson & Ghush Structural Engineers
- Debbie Hinman, Nevada Bell
- William Lowry, Nevada Public Service Commission
- Barbara Luke, UNLV Civil Engineering Department
- Azarang Mirkhah, Fire Protection Engineer, Las Vegas Fire Department
- Girard W. Page, Clark County Emergency Management
- John J. Perry, GIS expert
- Keith Rogers, Las Vegas Review Journal
- Bob Weber, Clark County Building Department
- Jim Werle, Converse Consultants SW

* indicates member of the Board of Directors.

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

Board Members not attending:

- Patty Cronan*, volunteer with community organizations
- Steve Drummond*, Pegasus Gold/Florida Canyon Mine

Ben Edgar*, Lyon County Public Works
 Steven Horsford*, R & R Advertising*, Nevada Resort Association
 Larry Johnson*, SEA Inc. (proxy given to Greg Moss)
 Ken Olive*, Sierra Pacific Power
 Gary Pierson*, State Department of Education
 Jess Traver*, Building Official

The minutes from the meeting on 16 May 1997 were approved.

Announcements

The next meeting of the Nevada Earthquake Safety will be Friday, November 21, 1997 in Reno.

The annual meeting of the Western States Seismic Policy Council will be held November 4 to 7, 1997 in Victoria, British Columbia. Please contact the WSSPC office by e-mail (wsspc@wsspc.org), Web (www.wsspc.org), telephone (415-974-6435), or fax (415-974-1747) for information on the agenda, registration, and pending policy considerations at this meeting.

Executive Board Report

John Anderson reported on the development of the federal fiscal year 1998 budget for the Nevada Division of Emergency Management's Earthquake Risk Reduction Program and the Nevada Earthquake Safety Council. Jim Goodfellow distributed a detailed budget. John Anderson and Jim Goodfellow's document highlighted products and activities planned for next year, including ATC training classes, possible funding (with Ron Lynn's help) from the private sector for installing and maintaining strong ground motion instruments, particularly in Las Vegas area casinos, follow-up on the *Planning Scenario for a Major Earthquake in Western Nevada*, developing more applications of FEMA's HAZUS program for damage assessment, underwriting public-access television broadcasts on earthquakes, earthquake awareness and mitigation week, and other activities.

Bob Cullins volunteered to help Ron Lynn to solicit funds for strong ground motion instruments in Las Vegas.

Mike Blakely and Jim Goodfellow discussed the possibility of an earthquake demonstration project using UNR's new large-scale engineering shake table. A video would be produced showing how a home (as a 12 x 12-foot room) and its contents would survive, with and without proper mitigation. Significant costs would be for running the shake table and for producing the video. Bob Cullins suggested that the Nevada Association of Broadcasters may be willing to help with the video. Charlie Watson noted that PBS/KUNR may be interested.

ACTION ITEM: John Anderson charged Mike Blakely and the Engineering and Architecture Committee follow through on this concept.

Diane dePolo discussed the preparation of a new map showing historic earthquakes in Nevada and displayed a draft of the map. This will be published by the Nevada Bureau of Mines and Geology and distributed to all the schools during Earthquake Awareness and Mitigation Week in April 1998. Suggestions to improve the draft included a lighter background for the digital shaded relief map as a base, emphasizing county boundaries and cities, putting the Seismological Laboratory name on the map along with the NBMG name, and expanding the map into Owens Valley and other nearby areas in California, such as Lake Tahoe.

Diane dePolo also discussed activities of the Awareness and Education Committee and distributed a copy of the minutes from the committee's meeting on August 18 (see attachment). She asked that people contact her with suggestions for a theme for the poster contest for the 1998 Earthquake Awareness and Mitigation Week. She also asked for suggestions for sponsors to help pay for activities of the committee. Several good suggestions are given in the committee minutes.

ACTION ITEM: The Awareness and Education Committee requests that the Council ask FEMA for additional copies of some of their curricular items. Jim Goodfellow should do this.

Jim Goodfellow discussed a week-long earthquake scenario exercise to be conducted in May 1998 in Emmitsburg, Maryland, using the *Planning Scenario for a Major Earthquake in Western Nevada*.

Bob Cullins discussed the Las Vegas Fire Department's efforts to raise the level of earthquake awareness in southern Nevada. The message was clear in the discussions that more research is needed on earthquake hazards in southern Nevada. Keith Rogers with the Las Vegas Review Journal recently has written several articles about earthquakes in Nevada.

Jon Price and Jim Goodfellow discussed a FEMA meeting on September 11-12 in Reno to get external input on the strategic plan for the National Earthquake Hazard Reduction Program (NEHRP). Members of the Council who are interested in attending are welcome to contact Jim Goodfellow; anyone from the Council who is interested in attending should be able to do so.

Ron Lynn noted that Clark County is letting a contract for \$200,000 on evaluating differential settlement characteristics of soils.

John Anderson asked that Mike Blakely, Dave Weide, and Jim Goodfellow be the Nominating Committee for next year's officers of the Council.

ACTION ITEM: The Nominating Committee should present its slate to the Council at its November 21 meeting.

Changes in Building Codes

Susan Dowty, structural engineer with the International Conference of Building Officials (ICBO), discussed the Uniform Building Code, which ICBO updates every three years. In 2000, the code will become an International Building Code (IBC), which will replace the existing three, regional building codes in the U.S. There have been two parallel efforts [by the Structural Engineers Association of California (SEAOC) blue book and NEHRP] that for 2000 will be combined. The recently released 1997 UBC code is a stepping stone to major changes in 2000.

Susan Dowty described the opportunities for technical and public input for the 2000 IBC. There is a working draft available at this time, and an official first draft will be published in December 1997.

The 1997 UBC seismic revisions are extensive, because of new data from the Northridge and Kobe earthquake and because the SEAOC blue book is moving toward the NEHRP *Recommended Provisions for the Development of Seismic Regulations for New Construction* so that the IBC 2000 will be accepted by all parties. The new 1997 code has a near-source factor for seismic zone 4. The current map has neither Reno nor Las Vegas within seismic zone 4; the 1997 zone maps are the same as the 1994 UBC maps. Other major changes are understanding damage to members of non-lateral-force-resisting systems, need for more redundancy, and improved anchorage between concrete/masonry walls and diaphragms.

The maps proposed for the 2000 IBC will be contour, rather than zone maps, and the near-source factor that is in the 1997 UBC will probably be replaced by these gradations in contours. With the maps currently under consideration, the 2000 IBC will likely represent much of Nevada with a lower hazard than the current code. There was much debate about the validity of the preliminary NEHRP maps that will be part of the 2000 IBC.

Geomatrix has been contracted to complete mapping of faults in Nevada for the 1997 UBC effort. John Bell noted that most seismogenic faults in Nevada are in UBC category B (likely to have magnitudes > 6.5 but with slip rates less than 5 mm/yr.) Jon Price noted that a major concern with the 1997 UBC approach may be the limiting the faults under consideration to ones that have moved during the Holocene (within the last 10,000 years old). He noted that at the WSSPC Basin and Range Seismic Hazard Summit in May 1997, Craig dePolo demonstrated that more than half of the major earthquakes that have occurred in historic times in the Basin and Range province were on faults that had not moved previously in the Holocene. George Ghusn noted that the current UBC seismic zonation map is heavily weighted on historic seismicity. John Bell, Burt Slemmons, John Anderson, David Weide, and others noted what appears to be missing information on the 1997 NEHRP draft spectral acceleration maps

presented by Susan Dowty. These maps imply a much higher level of knowledge than exists.

Susan Dowty suggested that the Council contact Joe Hunt, who chaired the committee to prepare the NEHRP spectral acceleration maps that will be used in the 2000 IBC. She also suggested that the Council contact Bob Bachman regarding concerns about the 1997 UBC.

John Anderson will follow up with concerns about the 1997 NEHRP spectral acceleration maps by contacting the USGS and/or other appropriate individuals. Jon Price will also pursue this issue with the USGS. There may be opportunities to also discuss these concerns during the NEHRP strategic planning meeting on September 11 and 12.

ACTION ITEM: John Anderson will contact Geomatrix, Ed Lyndecker, and Bob Bachman to invite them to come to the Council to discuss the mapping of seismic hazards for the 1997 NEHRP and 2000 IBC, particularly the methodology and how it can be altered with additional input from experts.

Ron Lynn predicts that few local jurisdictions will be able to technically handle the complicated 2000 IBC and will probably default to zones. Ron Lynn volunteered to send copies of the IBC approach to anyone who wants (Call Gabrielle Schilling in his office, 702-455-7416, to get a copy).

Risk Management

Craig Heidel, Divisional Claim Superintendent, State Farm Fire and Casualty Company, introduced the field of risk management, which is increasingly being used in the private sector, such as in the insurance industry, and government. State Farm has had over 2,000 claims adjusters working in the Northridge area to handle 108,000 claims. Northridge cost State Farm Insurance \$2.6 billion. Less than 5% of Nevada State Farm policy holders have earthquake insurance; approximately 25% of California policy holders have it.

HAZUS

John Perry provided an overview of FEMA's regional loss estimation methodology, the HAZUS computer program. He and Ron Hess of the Nevada Bureau of Mines and Geology have been trained by FEMA in the use of the program.

HAZUS is a geographic information systems (GIS) based program that allows creation of earthquake scenarios. The intent of FEMA is to expand it to flood and wind modules. HAZUS has a good inventory of building stock and other information. The data base is national in nature and therefore isn't necessarily accurate for a particular location. For example, the Clark County GIS office has

better information on building stock than what is in the HAZUS inventory. Another potential problem is that HAZUS uses census tracts that are often too large in much of Nevada.

John Perry ran HAZUS with a magnitude 6.0 earthquake along the Frenchman Fault on the southeast side of Las Vegas. The program produces over 500 output files, including such factors as damage by building type, hospital functionality, emergency response facilities functionality, school functionality, physical damage to lifelines (transportation systems and utility systems), induced damage (such as debris that would need to be picked up, hazardous materials, inundation, fires following the event), losses from casualties at different times of day, and economic losses, including losses over time and unemployment.

John Perry estimates that it will take about one year to test this program, acquire the ARCVIEW version of the program, which will interface with most state and local agencies, and acquire better data on building stock and other information from Clark County and other local agencies. At that time, more accurate scenarios could be run.

Jon Price noted that in the long term, the possibility exists to link HAZUS with automated earthquake epicenter, depth, and magnitude estimation computer programs. This would allow quick (say, one hour) preliminary estimation of damage from an actual event and assist emergency managers in state and local agencies in their responses.

Craig dePolo plans to use HAZUS to assist in producing earthquake scenarios, particularly in rural communities. Craig Heidel indicated much interest on the part of the insurance industry in using HAZUS for multiple hazards.

Barbara Luke and others expressed concern about calibration and validation of the program. Bob Cullins emphasized the importance of acquiring local data. George Ghushn and Ron Lynn warned that programs like HAZUS will never substitute for post-disaster damage assessment.

John Anderson suggested that use of the strike-slip option of the HAZUS program is closer to the effects of normal-slip earthquakes (currently not an option in HAZUS but one of the typical types of earthquakes in the Basin and Range province) than the other option, reverse slip. He also said that these types of programs at best have accuracies of a factor of four or so.

John Anderson suggested that one possible product from HAZUS should be a comparison with the *Planning Scenario for a Major Earthquake in Western Nevada*. If the physical damage looks reasonable, compared with the scenario, the Council may want to publicize the value of monetary loss, qualified with our understanding of the probability of such an event actually happening. Ron Lynn thinks this will be fun.

ACTION ITEM: Time permitting, Craig dePolo will make the comparison of HAZUS with the *Planning Scenario for a Major Earthquake in Western Nevada*.

Jim Goodfellow offered to try to get additional copies of the HAZUS program from FEMA for any Council member who wants it.

The Seismo-Watch Outreach Contract

Jim Goodfellow expects FEMA to approve use of funds to help underwrite the Seismo-Watch public-access television programming with panels on earthquakes occurring in the region. Charles Watson noted that he has had difficulty finding private-sector sponsors to match the FEMA funds.

Homebuyers' Guide to Earthquake Hazards

Charles Watson suggested that Nevada develop a homebuyers' guide to earthquake hazards, similar to what has been produced in Utah. He suggests this idea be referred to both the Education and Awareness Committee for the outreach/marketing aspects and to the Geoscience Committee for technical parts. He suggests putting together a NEHRP grant on this for the April 1998 deadline. The Council's committees would also estimate costs.

Jim Werle asked about the cost. Utah had a \$30,000 grant for their efforts, which included some hazard mapping. They spent about \$14,000 to produce the booklet and sell it for about \$3 per copy.

Greg Moss suggested that AEG would help to distribute the book. John Bell noted that the real estate industry is interested in these issues, because of a 1995 Nevada law related to disclosure at the time of sale.

Jim Goodfellow warned against putting the Council in a position of being perceived as backing mandatory disclosure. Ron Lynn echoed these concerns from the standpoint of skyrocketing litigation and legal costs.

ACTION ITEM: John Anderson charged both the Education and Awareness Committee and the Geoscience Committee to evaluate the homebuyers guide proposal as well as other, similar products, such as "Putting Down Roots in Earthquake Country."

Geoscience Committee

John Bell reported that the Subcommittee to Consider Seismic Zonation has met and reported to the committee and that a new subcommittee to examine the status of liquefaction studies (and guidelines for the evaluation of liquefaction hazards) has been formed (see copy of John's written report). Gary Norris is

chairing the liquefaction subcommittee. Greg Moss urged, on behalf of Larry Johnson, that liquefaction guidelines be developed. Ron Lynn suggested that the subcommittee engage the Association of Engineering Geologists in this effort. Barbara Luke, Mike Klein and Burt Slemmons volunteered to assist with this effort for southern Nevada.

Ron Lynn moved and the Council unanimously approved the following-

ACTION ITEM: The Council recommends that the Geoscience Committee and Association of Engineering Geologists jointly pursue development of liquefaction guidelines similar to what was produced for faults.

Old Business

Greg Moss noted that he is attending in part on behalf of the Emergency Services Committee of the Associated General Contractors. He volunteered to be a liaison with the Council. John Anderson volunteered to meet with their group to explain the *Scenario*. Jim Goodfellow offered to put anyone from their group on the mailing list for the Council.

Dave Weide was asked to report on the status of emergency medical services in Las Vegas. A group, headed by Dr. Anthony Serfustini, was formed several years ago to be ready for major emergencies. At the time they chose a terrorist bomb at a casino as their worst case scenario. The group functions like a MASH unit and worked well during the PEPCON explosion. Ron Lynn noted that a major earthquake scenario would be significantly larger in scale than the terrorist scenario or the PEPCON explosion. Bob Cullins noted that there will be a major exercise, with the scenario being an airline crash, in the near future.

Future meetings of the Nevada Earthquake Safety Council are scheduled as follows:

Friday, November 21, 1997 in Reno = NEXT MEETING
 Friday, February 27, 1998 in Las Vegas
 Friday, May 16, 1998 in Reno
 Friday, August 21, 1998 in Las Vegas
 Friday, November 20, 1998 in Reno.

submitted by Jon Price, Secretary, Nevada Earthquake Safety Council

Attachments: Reports of the Education and Awareness Committee and of the Geoscience Committee



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Geoscience Committee Report

John Bell, Chair

22 July 1997

In spring 1997, the Geoscience Committee formed a subcommittee to examine the Uniform Building Code seismic zone 3 and 4 issue in western Nevada. This subcommittee has met and provides the following progress report:

The Subcommittee to Consider Seismic Zonation, composed of George Ghusn, Webb Brown, David Sanders, Gary Norris, and Larry Johnson (absent) met on 15 August 1997 to consider what approach to take in addressing the issue of seismic zonation in western Nevada. The principal question to the group was "What should be done regarding the present status of UBC zones 3 and 4?" However, it was quickly realized that this question would become moot by the year 2000 when the IBC 2000 becomes the design standard for the U.S. Therefore, it was decided to pursue the consideration of the proposed 0.2 second and 1.0 second spectral response acceleration contour maps so that the community would be in a position to respond once the first draft of the new code was issued. The question to be addressed now is "Do these maps make sense for our western Nevada area, and if not, what should be proposed in their place?" The effort will be in regard to the population centers of Reno, Sparks, Carson City, Fallon, and Fernley, and to a lesser degree, the remainder of western and northern Nevada. The next step will be to gather these maps as well as NEHRP and other available ground motion maps, convene an expanded group of individuals that have the time to work on this question, and start to plan for a forum which would present these issues to the professional community. The goal will be to gain a consensus as to where our communities, once informed, stand on the seismic design issues. The next subcommittee meeting is scheduled for September.

The Geoscience Committee has also formed another subcommittee which will examine the status of liquefaction studies in Nevada, a subject brought before the council at a previous meeting. The subcommittee will be chaired by Gary Norris who has extensive expertise in liquefaction research and oversaw a similar group examining the problem in Washoe County several years ago. It will address the state-of-the-art for liquefaction studies in the geotechnical community, and it will assess the need for a set of liquefaction hazard guidelines similar to those adopted by the council last year for fault hazard studies. The subcommittee membership is not yet completely established, and it will ideally include someone from southern Nevada.

August 18, 1997

Education & Awareness Committee Meeting Minutes

Chairman - Diane dePolo, Craig dePolo, Judy Dietrich, D.D. LaPointe, Jim Regan
(Absent) John Perry, Gary Pierson, Charlie Watson

EARTHQUAKE AWARENESS AND MITIGATION WEEK

Discussed theme for Earthquake Awareness and Mitigation Week poster contest.
-possible theme "Do You Know A Safe Spot"

Would like to make this an **action item** for the Council any other suggestions please email me
diane@seismo.unr.edu or call (702) 784-4976 or 4977.

Poster Contest:

Four Categories:

Grades 1-3

Grades 4-6

Grades 7-8

Grades 9-12

County Winners / 1 or 2 Over-all State-Winner

Prizes will be Certificates signed by Governor and Personal / Family Earthquake Kits

Timing:

October/November 1997	Meet with School Superintendents
January 1, 1998	1 st mailing to schools
January 31, 1998	Deadline for posters
February 15, 1998	Judge posters
	Turn over to NBMG to produce
April 1, 1998	Final mailing to schools
	Proclamation
	Seismicity Map
	Poster
	Drill Information

D.D LaPointe suggested contacting Eric Anderson (state science coordinator) to help facilitate.

Contact Nevada Broadcasters Association - Adrian Abbott - aid with broadcast of the state-wide synchronous drill. Possibly make cassette tapes or set up a dial up recording. Ask if someone from the Nevada Broadcasters Association (Adrian Abbott) would be willing to sit on the Education and Awareness Committee.

Prepare a media kit for Earthquake Awareness and Mitigation Week.

Suggested that the 1999 Nevada State Legislature should be "run through a mock earthquake". This should possibly be the task of the Emergency Management Committee.

EDUCATION CURRICULUM

Moving toward getting earthquake information into the middle and high schools curriculum. Bill Durbin (Nevada Industrial Minerals) contacted Mark Johnson (O'Brien Middle School) to design a Nevada Geology curriculum for Middle Schools. Mark contacted me and we put together a chapter called "Shake, Rattle and Roll". I'm, attempting to contact Janelle Hopkins to see if she would consider including a preparedness section for the High Schools.

Mendive Middle School (Sparks) is planning a Earthquake Day. They will be closing off a wing of their school to do a mock scenario including 3 large quakes (mainshock and two aftershocks).

OUTREACH

Look into preparing videos of:

Nevada Earthquake History

Shake Table Demonstration (Work with Mike Blakely's committee)

Suggested that we contact the Journalism school possible student project.

John Perry suggested the Education and Awareness Committee make a generic guide for Nevada schools based on the Caughlin Ranch Plan.

John also suggested that we develop a "mobile earthquake display" including a portable seismometer, oscilloscope, computer, slinky... to be used by people giving presentations to schools and other groups. Jim Regan said we need to write down specifically what we need and then go about getting it.

Charlie Watson would like to prepare a "Home Owners Guide to Nevada" based on California's and Utah's.

Education and Awareness Committee suggested it could be a publication from the Council and that people on the Council and others (poss. a subcommittee) could work with Charlie to determine the content (science, geology, preparedness, mitigation etc).

OBJECTIVES

Briefly discussed our objectives and decided that they only need minor modifications.

OTHER ACTION ITEMS

Request that the Council send a letter of request to FEMA for 70 Seismic Sleuths and 50 Tremor Troops. Need to ask FEMA for appropriate contact.

— high school — K-6