

**2011 National Earthquake Program Managers Meeting
April 5-7, 2011**

**The Grove Hotel, Boise, Idaho
Meeting Summary**

Presenters & Participants

Regional Consortia

John Schelling	CREW/Washington
Jim Wilkinson	CUSEC
Brian Blake	CUSEC
Peggy Young	CUSEC
Edward S. Fratto	NESEC
Patricia Sutch	WSSPC
Amy Lewis	WSSPC

State & Territorial Representatives

Charlisa Ussery	Alabama	Elizabeth Barton	Maine
Charles "Bud" Cassidy	Alaska	Steve Besemer	Missouri
Rod Combellick	Alaska	Jon Price	Nevada
Roger Hansen	Alaska	Ken Smith	Nevada
Mark Roberts	Alaska	Craig dePolo	Nevada
Michael Conway	Arizona	Dan O'Brien	New York
Bob Anderson	California	Bonnie McKelvey	Oklahoma
Kathryn Long	California	Althea Rizzo	Oregon
John Parrish	California	Yumei Wang	Oregon
Chris Walsh	Georgia	Derrec Becker	South Carolina
Edeine Camacho	Guam	Tammie Dreher	South Carolina
Leighton Ah Cook	Hawaii	Marsha Rutherford	Texas
Patrick Frischmuth	Idaho	Bob Carey	Utah
David Jackson	Idaho	Sheila Curtis	Utah
Heidi Novich	Idaho	Bill Lund	Utah
Bill Phillips	Idaho	Maillian Uphaus	Washington
Becky Rose	Idaho	Melinda Gibson	Wyoming
William Shawver	Idaho	Wallace Ulrich	Wyoming
Mark Stephensen	Idaho	Seth Wittke	Wyoming
Jana Fairrow	Illinois		

NEHRP Agencies

Claudette Fetterman	FEMA HQ	Gene Longenecker	FEMA Region IV
Sandra Knight	FEMA HQ	Michael Andrew	FEMA Region V
Ed Laatsch	FEMA HQ	Prince Aryee	FEMA Region VI
Mike Mahoney	FEMA HQ	Sue Evers	FEMA Region VII
Wendy Phillips	FEMA HQ	Doug Bausch	FEMA Region VIII
Mai Tong	FEMA HQ	Ray Lenaburg	FEMA Region IX
Erin Walsh	FEMA HQ	Ryan Ike	FEMA Region X
Paul Morey	FEMA Region I	David Applegate	USGS
Magda De La Matta	FEMA Region II	Keith Knudsen	USGS

NEHRP Partners

Mark Benthien	Southern California Earthquake Center
Remington Brown	Insurance Institute for Business and Home Safety
Marty Goff	U.S. Army Corps of Engineers
Michael Griffin	CCS Group, Inc.
Keith Porter	University of Colorado at Boulder
Barry Welliver	BHW Engineers

Summary of Discussion: Day 1

I. Welcome and Opening Remarks

David Jackson, Hazard Mitigation Officer for the State of Idaho, and host and moderator of the 2011 National Earthquake Program Managers (NEPM) meeting, welcomed the participants and introduced Brigadier General William Shawver, Director of the Idaho Bureau of Homeland Security.

General Shawver welcomed everyone to Boise. He remarked that there is no more appropriate time for this group to share their knowledge and expertise and establish cross-walks. The earthquake and tsunami in Japan and the earthquakes in Chile and Haiti have created teachable moments. Now is the time to work together at all levels. He added that Craig Fugate, the Administrator of the Federal Emergency Management Agency (FEMA), is doing phenomenal work for states and communities, and the new “whole community” approach of FEMA will be vitally important to continuing successes.

General Shawver also noted that the Office of Management and Budget (OMB) will be establishing metrics to demonstrate the value of the National Earthquake Hazards Reduction Program (NEHRP) cooperative agreement program. The states must heed that call and report back to the Federal Government on results. General Shawver concluded by challenging everyone to think “outside the box” this week, and to keep mitigation and preparedness on the front burner. He thanked the participants for their dedication to earthquake mitigation and awareness and wished everyone a productive meeting.

Mr. Jackson then asked all of the participants to introduce themselves.

II. NEHRP Agency Updates

A. U.S. Geological Survey, David Applegate

Dr. Applegate discussed the statutory role of the U.S. Geological Survey (USGS) in NEHRP, its work with the National Oceanic and Atmospheric Administration (NOAA), and the recent reorganization of the USGS, which is now aligned by mission areas rather than by disciplines. One area is natural hazards, including earthquakes. The USGS is launching a Hazards Science Strategy Planning Team (H-SSPT) to report to the Director of USGS on near- and long-term science goals.

Dr. Applegate commented that building codes are the heart of NEHRP. He discussed the 2012 International Building Code (IBC), which is nearing completion, and hazard maps, which are the authoritative compilation of the earthquake hazard. He also mentioned the building code controversy in the New Madrid Seismic Zone (NMSZ). The controversy is taken seriously. An independent panel created under the National Earthquake Prediction Evaluation Council (NEPEC) recently issued a draft report on the seismic risk in the NMSZ (public comments on the report are being solicited). The report emphasizes the threat to the area, stands behind the

seismic maps for the NMSZ, and should help to counter misinformation on the risk. Dr. Applegate added that the USGS is working on urban hazard maps for St. Louis and Memphis.

The USGS also is involved in the Great Central U.S. ShakeOut, which has registered more than 1.7 million people. *Putting Down Roots in Earthquake Country* for California, Utah, and now the Central United States have all been well received. In addition, the USGS is supporting FEMA in the National Level Exercise (NLE) 2011, a tremendous opportunity to build awareness and to test the USGS capabilities and the NEHRP post-earthquake investigation plan.

The third component of USGS work is early warning systems. There were Red Alerts last year resulting from the earthquakes in Haiti, New Zealand, and Chile. Three minutes after the Tohoku earthquake, officials had issued tsunami warnings. So far, several hundred casualties have been reported from the earthquake, all the rest from the tsunami. Within 42 minutes of the Tohoku earthquake, the USGS had produced a ShakeMap. The color (yellow) assigned to the ShakeMap for casualties resulting from the earthquake has held up so far. Other important USGS tools are ShakeMap and ShakeCast and the Prompt Assessment of Global Earthquakes for Response (PAGER) system. Last fall, a new version of PAGER was released which includes fatalities and economic loss estimates. Dr. Applegate acknowledged the work of Dave Wald from the USGS and Doug Bausch from FEMA Region VIII in developing the new PAGER.

Dr. Applegate provided the participants with a snapshot of funding for USGS work areas and contact information for USGS staff in each region. In FY 2012, the USGS may undergo a 10 percent reduction in funding for its earthquake activities. To address this cut, the USGS may reduce its funding for external research, grants, and cooperative agreements by about one-third. He noted that a NEHRP study recently released by the National Research Council goes in the opposite direction in encouraging more work and research, and recommends that NEHRP be funded in the range of \$300 million.

B. FEMA, Ed Laatsch

Mr. Laatsch thanked the hosts and coordinators of the NEPM meeting. He recognized his staff and staff from the FEMA Regions and described their roles in the earthquake program. Jennifer Lynette will join FEMA Region IX this month.

Mr. Laatsch provided an overview of the structure and history of NEHRP. The Interagency Coordinating Committee (ICC), which includes high level representatives from the four NEHRP agencies, the Office of Science and Technology Policy (OSTP), and OMB, will meet on April 28 to discuss future priorities for NEHRP. FEMA responsibilities under NEHRP are to develop guidance; work with building codes and standards organizations; conduct outreach; develop and conduct training; coordinate with state and local governments and organizations; develop and support partnerships; and provide disaster support. A primary component of FEMA's NEHRP work is translating research to practice. Mr. Laatsch cited the paper developed by Mike Mahoney on the Tohoku earthquake and tsunami as an example of FEMA's work in this area.

Mr. Laatsch also discussed the NEHRP reauthorization. The House Resolution (H.R.) 3820 from last year has lapsed and both the Senate and the House now must pass a new reauthorization bill (the Senate is working on a mark-up of the bill). There is some impetus because of the Tohoku earthquake but no guarantee that the legislation will move forward. There are no significant differences between the current legislation and the legislation which lapsed, although the funding is less.

For FY 2011, FEMA reduced its NEHRP budget by about 14 percent. The cuts impact the Performance-based Seismic Design (PBSD) project, which has been zeroed out; the Natural Hazards Center; and a significant decrease in cooperative agreement funds. To accommodate this decrease, the risk-based portion of the funding has been reduced by one-half. The States of California and Washington will bear the brunt of this decrease. In FY 2012, NEHRP may sustain additional significant cuts. Travel, funding for the consortia, and several ongoing projects may be impacted. Mr. Laatsch added that he and many others understand that cuts are being felt even more deeply by the states.

Despite the cuts, FEMA continues to make progress. In about 2 months, the full NEHRP annual report will be available on www.nehrp.gov. Mr. Laatsch described some recent FEMA NEHRP accomplishments, including FEMA P-750, the 2009 edition of the *NEHRP Recommended Provisions*, a cornerstone FEMA publication and one of the most important and basic tools, and the Benefit Cost Analysis Tool (BCAT) project with the Insurance Services Office (ISO). The next step will be to translate and quantify findings into new building plans for communities which have adopted codes to assess potential savings.

Other important FEMA initiatives include the Rapid Observation of Vulnerability and Estimation of Risk (ROVER) software, QuakeSmart and its relationship with ServiceMaster, the National Earthquake Technical Assistance Program (NETAP), work on the Great Central U.S. ShakeOut, and NLE 2011. For NLE 2011, FEMA is working with the states via the Regions on scenario planning and outreach. Work also is being done at FEMA HQ to coordinate NLE 2011 activities via Work Groups on External Affairs and Recovery.

There also have been initiatives in strategic planning. There is a new FEMA Strategic Plan for FY 2011-2014 and a strategic plan is being developed for the FEMA Federal Insurance and Mitigation Administration (FIMA). The FEMA Strategic Plan is built around “whole community” approach and includes a key outcome for disaster-resilient building codes. In the next 45 days, he will develop an implementation plan to address this objective.

Mr. Laatsch thanked everyone for their contributions. He remarked that despite challenges, NEHRP is a very good and vital program. The leveraging of resources and partnerships will be critical over the new few years to sustaining Program successes.

C. Questions and Answers

A participant asked about NEHRP’s alignment with the National Mitigation Alliance. Mr. Laatsch stated that FEMA staff attend meetings of the National Mitigation Alliance. The National

Mitigation Alliance is an important group which is trying to obtain traction on mitigation issues across the hazards spectrum.

The comment was made that FEMA has conducted training and developed publications in the area of earthquake safety for schools. What more can NEHRP do to improve seismic safety for schools? Mr. Laatsch responded that much of the effort will have to be partnership-based over the next few years. During periods of budget shortfalls, better use must be made of manpower and partnerships. Dr. Applegate added that the ShakeOuts are important tools for keeping schoolchildren safe.

A participant asked Dr. Applegate if the Tohoku earthquake will lead to Congressional action on early warning systems. Dr. Applegate stated that there is an opportunity but it comes at the worst possible financial time. Advances may be made in other areas. He noted that the costs of operating a statewide early warning system would be about \$20 million a year.

Another participant asked about initiatives in urban seismic hazard maps. Dr. Applegate responded that the Intermountain West is the next target of opportunity. There is significant state and local engagement in this area. The Seattle maps have been used very effectively. Maps will be prepared for Salt Lake City and Reno. He noted that these have been large projects. One question is whether to restructure the scale of the projects to speed them up. A workshop may be convened to develop guidance and performance measures for this area. He also commented that he was pleased to see the discussion of risk in the recent National Research Council report.

The comment was made that recent hazards have exceeded expected vulnerabilities. For example, the devastation from Hurricane Katrina, the nuclear reactor problems in Japan, and the repercussions from the Gulf oil spill were not anticipated. Should the community be considering worst case scenarios? Dr. Applegate responded that longer timeframes should be considered from a probabilistic standpoint, as well as low probability, high risk events. The same participant noted that there is an entire spectrum of hazards which should be addressed. The Christchurch earthquake could occur in many areas, including the Intermountain West. Dr. Applegate stated that scenarios can make these real and are a useful tool to help people think through significant impact events and cascading impacts.

III. State Earthquake Program Best Practices

Mr. Jackson asked the state earthquake program managers to describe best practices and accomplishments.

Georgia, Chris Walsh

Mr. Walsh thanked the Central United States Earthquake Consortium (CUSEC) and FEMA, particularly Gene Longenecker, for help in setting up the Georgia earthquake program. In FY 2009, the first year of participation in the program, work was divided into three areas: response; public outreach; and multi-state coordination. Accomplishments include an Earthquake Response Plan, which was completed in February 2011, and an Earthquake

Preparedness Guide, which is now being printed. A mini Earthquake Preparedness Guide also has been developed.

Goals for FY 2010 and 2011 funds include the fostering of stronger multi-state coordination and elevation of earthquake preparedness. For earthquake preparedness, the majority of work will fall under ShakeOut; the "Preparedness Piggy" videos; ReadyGeorgia; Georgia Emergency Management Agency web site enhancements; an earthquake preparedness brochure; church bulletin inserts; and an NLE 2011 support workshop. Schools are the primary audience for the ShakeOut campaign. It is estimated that 94,000 students will participate in drills.

Alabama, Charlisa Ussery

Ms. Ussery reported that Alabama has a new Governor who is very engaged in hazard mitigation. Alabama is participating in the Great Central U.S. ShakeOut, which has been added to the earthquake curriculum for the 6th grade, and is involving the business community in the ShakeOut through local Chambers of Commerce. In FY 2010, two ATC-20 courses were led by Mr. Longenecker and a natural hazards curriculum was updated. In addition, an historic sinkhole was mapped by the Alabama Geological Survey, a strong partner in the Alabama earthquake program. By December 2011, the Alabama Geological Survey is scheduled to complete a study of landslides. Ms. Ussery added that the NLE 2011 is a priority. A "hot wash" will be conducted by state officials after the exercise. Outreach items also have been distributed to generate awareness of the earthquake risk throughout the state.

IV. Issues for Christchurch and Japan

Mr. Mahoney announced the release of two new FEMA publications, FEMA P-749, *Earthquake-Resistant Design Concepts*, and FEMA P-736A and 736A-CD, the *Catalog of FEMA Earthquake Resources*, both of which are available online in the FEMA Library and in the FEMA Publications Warehouse. Mr. Mahoney also mentioned the new FIMA Fact Sheet on NETAP, copies of which are available outside the meeting room.

The Christchurch earthquake of September 2010 was a magnitude 7.1 event which caused very little damage and no fatalities. Estimated losses are \$6 billion to \$10 billion. The February 22, 2011 earthquake in Christchurch had a much greater impact. This 6.3 magnitude event was of short duration but with much stronger ground motions. There were about 180 fatalities in this earthquake and a minimum of \$12 billion in damages. Mr. Mahoney added that there were documented cases in the February 22 earthquake where "Drop, Cover, and Hold On" saved lives; some who ran out of buildings were killed by masonry.

Some concrete buildings performed well in the February 22 earthquake, as did fully retrofitted Unreinforced Masonry (URM) buildings. The failure of concrete structures was the biggest threat to life safety. The Christchurch central business district is still closed off. About 6,000 companies or organizations with about 50,000 employees (about 25 percent of the city's workforce) were closed as a result of the earthquake. This central business district is slowly reopening, street by street. Mr. Mahoney also noted that the liquefaction area in the February 22 earthquake was huge. Sand was everywhere. About 17,000 students responded to viral

pleas and helped clean up the sand. Other effects from the February 22 earthquake include leaning buildings, which now must be torn down, and the failure of stairwells.

Mr. Mahoney discussed building codes in New Zealand, which are similar to those in the United States. An exception is that violations of the codes are not subject to penalties in New Zealand. Reinforced concrete is the primary construction method. New Zealand is now in the process of identifying buildings in danger of collapse. Almost all of the buildings are insured, although the concern is that owners will not rebuild. Nonstructural damage remains a significant issue.

With regard to the March 11 Tohoku earthquake, the length of the fault rupture and the strength of the event were not anticipated. The Tohoku earthquake was the fifth strongest earthquake ever recorded, a magnitude 9.0 event with more than 720 aftershocks. This was a subduction zone earthquake with very long shaking (about 6 minutes). As a result of the earthquake, the coast of Japan moved 2.5 feet down and 14 feet out. Most damage to buildings occurred to older structures. Collapsed ceilings accounted for a significant amount of nonstructural damage, with significant damage to industrial facilities. Issues for Japan include (1) the benefits of buildings codes, which are the best in the world; (2) damage to buildings was generally limited to older structures; and (3) the impact of extreme duration shaking, particularly for certain types of structures. Duration is not addressed in any building codes.

The tsunami countermeasures program in Japan is good; walls varied by location but were between 5 and 15 meters. The heights of the March 11 tsunami, however, topped 23 meters (75 feet) and breakwaters were overtopped. Wood buildings were almost universally destroyed, while some concrete buildings survived. Tsunami issues include (1) structural measures only work to design levels, which can fail or be overtopped; (2) reliance on structural measures can lead to a false sense of security; (3) conventional wood frame residential construction cannot survive a tsunami, but reinforced concrete can (as a result, some in Japan are calling for concrete construction only); (4) warning systems only work for distant tsunamis; for near-source tsunamis, the earthquake is the only warning; and (5) the population must be trained in vertical evacuation; going to higher ground is a goal of the National Tsunami Hazard Mitigation Program (NTHMP).

V. Improving Seismic Risk Assessments with GIS and HAZUS

This panel presentation was moderated by Gene Longenecker, FEMA Region IV. Panel members included Doug Bausch, FEMA Region VIII, Bob Carey, Utah, and Chris Walsh, Georgia.

Mr. Bausch discussed the ShakeMap and HAZUS data flow, which is being exercised as part of the NLE 2011, and the demonstration projects in Washington, Utah, and Nevada. Suites of earthquake scenarios are being developed for these states. He also reviewed HAZUS applications to mitigation strategies, the integration of HAZUS with the Homeland Security Infrastructure Protection (HSIP) infrastructure data for building stock and critical facilities, and the use of PAGER for estimating fatalities and economic losses. The goal for all of these projects is to address gaps and requirements, such as the number of building inspectors needed, extent of building and economic losses, hospital bed gaps, and the number of search and rescue teams

required. Mr. Bausch noted that more than 90 percent of catastrophic impacts (severe casualties and loss of life) result from URMs. In Utah, there are a very significant number of URMs which must be prioritized with tools such as ROVER. The next steps for most of these projects are to promote them for national application, support new state projects, and automate map templates.

Mr. Carey reported on scenario project work with HAZUS and ShakeMap in Utah. The Utah Geological Survey has helped to develop a suite of maps, starting with Level I HAZUS. The maps have been helpful in generating a dialogue about what can and cannot be accomplished. In terms of the scenarios, there are now 21 for Utah. As a result of the high profile work in Utah on the ShakeOut, a request was made to the University of Utah to expand the coverage area for the scenarios. Mr. Carey noted that an earthquake in Utah would affect 80 percent of the population, a statistic which has generated a lot of interest in the media. The scenarios also are now used in hazard mitigation plans.

Panel Discussion

Mr. Longenecker asked Mr. Walsh for his thoughts on the tools discussed by Mr. Carey and Mr. Bausch. Mr. Walsh remarked that all disasters are local; his job is to understand the hazard in terms of what would happen if it occurred “here.” He joined the Georgia program in 2005, the most prolific hurricane year on record. Much thought has been given to what would have occurred if Hurricane Katrina had hit Georgia instead of Louisiana. For the past 18 months, the same question has been posed in relation to earthquakes. Conducting HAZUS runs and understanding the level of shaking are exactly the type of information needed, and these tools are the best means for obtaining this understanding.

Mr. Longenecker asked about the role of the media. Mr. Carey stated that there has been very successful media coverage in Utah some years. In other years, there has been limited coverage. The reasons for this appear to be arbitrary. He added that without FEMA Region VIII, the program would not exist. There is now a GIS staff person on board in Utah who will begin doing county HAZUS runs (the Utah runs will be revised because of a 25 percent increase in the population). A good relationship with the University of Utah also has allowed state staff to access the ShakeMaps.

A participant asked if HAZUS will be updated with 2010 Census data. Mr. Bausch responded that this data is available. The plan is to update HAZUS next year. The updates will be done for Utah by this fall. A question also was asked about updating HAZUS with tsunami risk information. Mr. Bausch responded that that is a great idea, and could be accomplished with NOAA’s Method of Splitting Tsunami (MOST) model.

John Schelling thanked the panel members for their help in developing the scenarios for Washington, which is now working on an online portal and a database repository for all of the information. He noted that the maps shown earlier by Mr. Bausch have been tremendous. Mr. Bausch added that the Standard Operating Procedure (SOP) for implementing ShakeMap and

HAZUS is now available, as is the utility for using the products. Participants can email Mr. Bausch and he will upload the utility.

VI. State Earthquake Program Best Practices (Continued)

Nevada, Jon Price

Three state agencies support the Nevada Seismic Safety Council. The main purpose of the Council's recent quarterly meetings in rural counties has been to encourage the counties to develop their own mitigation plans and to apply for hazard mitigation projects.

The USGS funded a report (Publication 36) on the 2008 Wells earthquake, including lessons learned. The report is available on the Nevada web site. Mr. Price noted that the earthquake hazard for Las Vegas is similar to Wells. In Las Vegas, however, a similar earthquake could result in \$7 billion in losses.

In 2011, Nevada will hold the Great Nevada ShakeOut on the same day as California. The Southern California Earthquake Center (SCEC) has been very helpful in organizing the event. Other activities include the completion of a project on soil classifications in Clark County by the Nevada Seismological Laboratory, upgrades to seismic stations in Nevada with USGS stimulus funds, and improved coordination with the California Seismological Network. With FEMA funds, Nevada also is updating its epicenter map, including historical earthquakes. A new strain map using geodetic measurements will go out for full scientific peer review this summer.

Oregon, Althea Rizzo

Oregon is conducting ATC training courses, including FEMA-154 training, which should help to build up the inventory of inspectors in the state. The Great Oregon ShakeOut, which started out in only one county, will cover the entire state in 2011 and will take place on the same day as the California ShakeOut. Other activities include the development of an emergency Go Kit, which includes emergency contacts, photos of family and pets, maps of the neighborhood, and information on prescriptions and insurance, among other items.

Arizona, Michael Conway

There are two primary programs underway in Arizona: the operation of broadband seismometers and public outreach and awareness. For 3 years, Arizona has been operating 10 broadband seismometers. Data is being gathered and results and outputs will be provided to counties in Arizona to assist in their planning. The data will be particularly important in emphasizing the risk to those counties decreasing or curtailing their awareness activities. For outreach and awareness, there have been successes with TV, radio, YouTube, blogs, and print messaging. Interest and awareness among the public increased significantly after the Tohoku earthquake. Next week, state staff will meet with officials at a nuclear power plant.

South Carolina, Tammie Dreher

South Carolina has focused much of its work on increasing education and awareness of the earthquake risk through the use of social media, including web sites, Facebook, Twitter,

YouTube, promotional videos, speaking engagements, and letters to schools and emergency management agencies. Bookmarks were used to encourage registrations for ShakeOut, which soared from 40,000 registrants to more than 100,000 after the Tohoku earthquake.

Ms. Dreher thanked FEMA for providing South Carolina with earthquake funds. The 2009 funds were used to update seismic hazard maps, conduct an earthquake poster campaign and workshops, and print and distribute the South Carolina Earthquake Guide. The 2010 funds were used to conduct workshops for local governments on seismic risk and mitigation; an exhibit on the 1886 earthquake; HAZUS training; a “Drop, Cover, and Hold On” video; reactivation of the South Carolina Seismic Safety Commission; ATC-20 and FEMA-154 training; printing and distribution of updated seismic hazard maps; and vulnerability assessments. The FEMA-154 virtual training was attended by more than 350 participants in South Carolina. Other activities include annual updates to the South Carolina earthquake plan, a support role in NLE 2011, regional/county earthquake exercises, partnerships with colleges, universities, and other organizations, and operation of the South Carolina Seismic Network.

Illinois, Jana Fairow

April is Earthquake Preparedness Month in Illinois. Work is ongoing to get the word out on the ShakeOut through speaking engagements, news releases, and other activities. For the last 2 years, the focus has been on awareness, including development of an exhibit, enhancing the web site with mitigation and preparedness information, the geocache project, and a contest for college students to develop a PSA on earthquake awareness (the winning entry is on the ReadyIllinois.gov web site).

Catastrophic planning also has been a priority in Illinois. The momentum from NLE 2011 is being used to involve communities in recovery planning. Recent training has included three ATC-20 courses since November and one FEMA-154 course. Ms. Fairow remarked that FEMA funds provided via the cooperative agreement and NETAP are greatly appreciated.

Utah, Bob Carey

Activities in Utah include the creation of a series of Working Groups to facilitate the planning process and address specific needs. This summer, a course of action will be developed for the Working Groups to focus on shortfalls and other areas. With FY 2009 funds, Utah committed \$50,000 for rapid visual screening of schools (ROVER has been a part of this project) and funds for publication of exercise scenarios. FY 2010 funds were used for publications, including *Putting Down Roots in Earthquake Country: Your Handbook for Earthquakes in Utah*, updating the URM Guide and developing a flyer for the URM Guide, and the purchase of smart phones.

VII. Issues for State Earthquake Programs

Jim Wilkinson led the discussion. He asked for thoughts on the most pressing issues facing the states and what can be done to advance state earthquake mitigation and preparedness.

The first comment related to the need for greater synergy between preparedness and mitigation. There was general agreement on this. Mr. Wilkinson said that the missing piece appears to be coordination so that all programs, whatever their foundation, work together. Another participant remarked that there also must be better coordination with all those involved in tsunamis, including federal partners such as NOAA.

The participants discussed the direction of NEHRP. Mr. Wilkinson stated that these issues should be taken to NIST. He commented that NEHRP is a research/engineering driven program and the emergency management aspect has very little visibility, creating a programmatic gap within the NEHRP structure. As currently configured, this gap is not closing. While there is nothing wrong with having a diverse audience, the balance is off. Mr. Laatsch agreed, but noted that the Federal Government works by bills and authorizations. With regard to NEHRP, there are specific roles and responsibilities for the four agencies. In the case of tsunamis, Congress wrote a separate bill for NOAA. There should be better interagency cooperation, but this can only be accomplished by more dialogue with those who write the legislation in Congress. Mr. Wilkinson remarked that the earthquake program within emergency management would have greater visibility if it became part of the National Emergency Management Association (NEMA) structure.

Ryan Ike stated that an objective at the Regional level is how to better dialogue with the states about multiple hazards. This multi-hazard perspective is now critical to being well informed about programs, approaches, and cooperation. Mr. Wilkinson acknowledged the need for cross-over between disciplines. Although it may be difficult to sit through meetings in areas outside of one's expertise, it is a necessary first step to beginning a dialogue with partners.

Mr. Wilkinson asked how the states can increase the visibility of NEHRP. Suggestions from participants included working through NEMA, talking with state directors, and increasing visibility within state agencies. One participant commented that a takeaway from the meeting is the need for additional state funding. Anything that state managers can do at the highest level, such as writing support letters and contacting and meeting with members of Congress, can be invaluable. Mr. Wilkinson asked if state managers are equipped to take on this advocacy role or if help and information are needed. A representative from Wyoming remarked that the population of the entire state of Wyoming, which is very large in area, is only about 500,000 people. It is important for people to pay attention to leadership and to establish partnerships with decision-makers. However, counties need help in knowing how to reach out to Congress. This takes a lot of leadership and support. He encouraged that this take place at meetings such as the NEPM, and that advocacy groups be brought in to assist.

Mr. Carey stated that officials in Utah work with many groups and speak with one voice. The relationship between the agencies has made Utah's program work, and has also helped with latitude in the use of funds. A participant commented that it would be helpful to have written guidance for earthquake managers on how to facilitate communication and better achieve good working relationships among agencies. Mr. Wilkinson stated that this is a takeaway. A first step can be to begin a dialogue with the State Hazard Mitigation Officer (SHMO). Edeine

Camacho commented that there are few resources available on Guam, and that the information provided at these meetings is invaluable to her. She thanked everyone for their support. Mr. Schelling added that quarterly state reports can serve as tools for other states. He suggested that these be included on the new CUSEC web site for state earthquake managers.

Ms. Fetterman remarked that state earthquake funds from FEMA are not a grant but a cooperative agreement. As such, this entails substantial involvement of all parties throughout the life of the agreement. The cooperative agreements provide the opportunity to both FEMA and the states to improve these partnerships and to sustain them over the long term.

After further discussion, the participants identified the following action items:

- There should be more synergy and coordination between preparedness and mitigation.
- There should be more interagency cooperation with federal agencies, including NOAA on tsunamis.
- The emergency management component of NEHRP should have greater visibility.
- Written guidance should be developed for state earthquake managers on how to facilitate communication and better achieve good working relationships among agencies.
- State earthquake program managers need to increase the visibility of NEHRP by working with NEMA and talking with their state directors and other decision-makers. Other activities include writing support letters for NEHRP and contacting Congressional representatives. The expertise of groups which know how to reach decision-makers should be solicited.

VIII. State Earthquake Program Best Practices (Continued)

Maine, Elizabeth Barton

Ms. Barton discussed the seismic risk in Maine, which is not significant. There are five earthquakes a year, on average, with a 1-3 magnitude. For FY 2009, goals include promoting the adoption of the IBC to company CEOs; training staff in HAZUS-MH; and developing a public earthquake awareness brochure, which will be distributed to earth science teachers and emergency management directors and made available online. FY 2010 goals include offering educational opportunities to CEOs; inviting Weston Observatory staff to conduct a class; updating the state database for critical facilities; enabling a Level 2 risk assessment in HAZUS-MH; and continuing outreach activities.

New York, Dan O'Brien

New York officials participated in a LANTEC 10 Atlantic Coast exercise with the NTHMP. The exercise provided the opportunity to talk with experts on areas such as the worst case scenario of a landslide off the Continental Shelf. Mr. O'Brien also discussed the 2008 report on the Indian Point Nuclear Power Facility, the most controversial nuclear power plant in the United

States. Governor Cuomo wants to close the plant, which provides about 25 percent of the power to New York City. The 2008 report cited an increased seismic hazard in the area. New York used its FY 2009 funds to conduct a vulnerability assessment of state facilities. Other activities included a pilot test of ROVER for screening buildings in Albany. Mr. O'Brien thanked FEMA for NETAP funding and for the ROVER handheld devices.

IX. Adjournment

Mr. Jackson adjourned the first day of the meeting at 5:00 p.m.

Summary of Discussion: Day 2

I. FEMA Earthquake and Mitigation Program Update

Mr. Laatsch introduced Dr. Sandra K. Knight, Deputy Administrator for FEMA Mitigation, and provided an overview of her professional background, which includes 27 years with the U.S. Army Corps of Engineers and 3 years with NOAA.

Dr. Knight began by citing statistics on recent earthquakes, including the Haiti earthquake (7.0 magnitude, more than 230,000 fatalities), the earthquake in Chile (8.8. magnitude with about 800 fatalities), the Christchurch earthquake (6.3 magnitude with about 180 fatalities), and the Tohoku earthquake (9.0 magnitude with at least 18,000 fatalities). In terms of cost, 10 of the top 20 disasters have been earthquakes.

Dr. Knight remarked that her work has been focused on research as a hydraulics engineer. Although she does not have a background in earthquakes, she will be an advocate for NEHRP and for the states, and will be the champion of the states whenever and wherever possible. She added that the entire FEMA HQ and Regional team wants to increase awareness of the earthquake risk among stakeholders. To further the NEHRP agenda, she will look for every opportunity to discuss NEHRP with senior leaders, All FEMA programs are facing cuts and there is an urgent need to be both an advocate and a partner. She will be both.

Dr. Knight reviewed FEMA strategic priorities, all of which are supported by NEHRP. A key priority in the FEMA Strategic Plan for 2011-2014 is the "whole community" approach to emergency management. Mr. Laatsch's team will present to the Steering Committee on Whole Communities in a couple of weeks. Another priority is stabilizing communities after events, which can undergo losses well after 72 hours. A third priority is unity of effort to help move programs closer together and foster a multi-hazard approach. Outreach also is linked across all programs. Dr. Knight emphasized the need to get out of comfort zones and establish partnerships. Enhancing FEMA's ability to innovate is a fourth priority. Mitigation leads in this area, with NEHRP playing an important role.

Dr. Knight also discussed the strategic goals for FIMA. These include valuing people and relationships, including an internal focus on retaining people; enhancing credibility, which NEHRP speaks to; and advancing hazard mitigation in support of sustainability. Dr. Knight added

that research to practice is the crux of FEMA's role in NEHRP. This has been done very well. She mentioned the "valley of death," the chasm between research and practice. It takes champions to breach this chasm and the FEMA NEHRP team is getting the job done. Thought also should be given to the focus of research in terms of what will revolutionize the practice. She encouraged everyone to reach out to the research community to answer this question and to provide feedback on translating research into practice.

Dr. Knight commented on the FEMA NEHRP report for FY 2010. She read the report and was impressed by state accomplishments, including the many ShakeOut campaigns and drills across the United States, the extensive training conducted by the states, all of the work being done in support of NLE 2011, and the work to promote building codes.

She concluded by asking everyone to think about the future direction of NEHRP. Today's budget constraints require everyone to accomplish more with less. To do this, the focus must be on priorities. One way to identify priorities is to ask: what keeps me up at night? Partnerships also must be established, including non-traditional partnerships. Now is the time to roll out NEHRP with other groups, to enhance communication, and to leverage resources. She challenged everyone at the meeting to define their priorities and to be bold in addressing them.

Dr. Knight awarded Certificates of Appreciation from FEMA to David Jackson and Patricia Sutch for their efforts in hosting this year's NEPM and for all of their work over the years in earthquake mitigation. Dr. Knight also thanked the FEMA HQ and Regional staff for their support and work in making NEHRP as effective as possible.

Questions and Answers

A participant commented that learning about activities such as the Steering Committee on Whole Communities is valuable. She asked about ways to better coordinate work with other programs. Dr. Knight discussed ways to leverage relationships. There are many task forces and steering committees which FEMA is using to coordinate work. FEMA recently met with the USGS to discuss ways to tighten the connections between their programs. She commented that we are in a budget era where we must "rub two nickels together" to make something happen.

Another participant asked if there are plans to include earthquakes in the Hazard Mitigation (HM) Summit. Dr. Knight responded that there are opportunities for both NEHRP and the National Dam Safety Program (NDSP) to become engaged in the HM Summit. She will take this recommendation back to FEMA for consideration. She noted that the Summit may change to biennial from annual because of budget cuts.

A participant asked about the security policies of the Bureau of Reclamation (BoR) in relation to dams. There have been difficulties in accessing inundation maps and other information because of BoR policies. Dr. Knight commented that the dam safety community must take a close look at data security and transparency issues and policies. She will raise the issue with the National Dam Safety Review Board at its meeting in early May.

A participant remarked that he is encouraged to hear of the push to bring agencies together. The FEMA and NOAA work on design structures for vertical evacuation is one example. The states, however, are in a different position. Dr. Knight stated that engagement at the HM Summit and working with others can further assist the states. She discussed grant programs at FEMA. Proposals for earthquake work have received some funding from the Pre-Disaster Mitigation (PDM) grant program. However, the PDM grant program is over prescribed; there are many more proposals submitted than can be funded. Funds from other grant programs, such as the Emergency Management Performance Grants (EMPG), may be available for earthquake projects. She encouraged everyone to contact FEMA grants staff.

A follow-up question was asked about the guidance for mitigation programs, including grant programs. For example, only tornado shelters are referenced, not vertical evacuation. Mr. Laatsch responded that FEMA HQ provides input on earthquakes each year to the guidance for the EMPG grants.

II. Regional Consortia Updates

Northeast States Emergency Consortium, Edward Fratto

Mr. Fratto, Executive Director of Northeast States Emergency Consortium (NESEC), described the membership of NESEC (Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont) and current activities and initiatives. These include the production of ShakeMaps for earthquakes in the Northeast; Level 2 HAZUS-MH earthquake loss estimation for the Boston area; building code awareness via a zip code online tool; updating of the study funded by FEMA in 1992, Seismic Provisions of State/Local Building Codes; and a URM building inventory and mitigation strategy, which should help in raising awareness of these types of buildings and their location across the United States.

Central United States Earthquake Consortium, Jim Wilkinson

Mr. Wilkinson, Executive Director of CUSEC, provided the background on CUSEC. CUSEC was established in 1983 and includes 8 member states and 10 associate states represented in FEMA Regions IV, V, VI, and VII. The CUSEC Board of Directors includes the heads of the emergency management agencies of the eight member states: Alabama, Arkansas, Illinois, Indiana, Kentucky, Missouri, Mississippi, and Tennessee.

CUSEC is currently sponsoring projects in awareness and education. These include brochures, newsletters, and pamphlets; Earthquake Awareness Week; Town Hall meetings; work with state and local groups to encourage adoption of building codes; and the 1811/1812 Bicentennial. For the 1811/1812 Bicentennial, CUSEC participated in the Kick-Off in St. Louis on February 11, 2011, and will be involved in events throughout the course of the year. CUSEC's partnership with St. Jude's Children's Hospital is a highlight of its activities for the Bicentennial.

Mitigation activities include non-structural training for schools, hospitals, and child care facilities; training in Rapid Visual Screening (RVS); promoting the adoption of building codes; application of research via workshops; and post-earthquake clearinghouse planning. CUSEC is

also focused on multi-state response and recovery coordination with other groups. Activities in this area include the development of better response plans; NMSZ catastrophic planning; NLE 2011 and Virtual USA, which will be held as part of the NLE 2011 exercise.

Western States Seismic Policy Council, Patricia Sutch

Ms. Sutch, Executive Director of WSSPC, provided an overview of WSSPC, which was established in 1979. Thirty-nine agency members of WSSPC include the directors of the geological surveys and emergency management agencies from 13 states in the western region, British Columbia, the Yukon Territory, American Samoa, Guam, and the Northern Mariana Islands, and representatives from 7 seismic councils and commissions. Affiliate members include private corporations, local governments, non-profit organizations, universities, and individuals who share the common goal of reducing losses from earthquakes. Ms. Sutch reported that Mexico has expressed interest in joining WSSPC.

The primary work of WSSPC is developing policy. WSSPC develops policy recommendations via three standing Committees: the Basin and Range Province Committee, the most active Committee; the Tsunami Hazard Mitigation Committee; and the Committee for Engineering, Construction, and Building Codes. Ms. Sutch described the process for developing policy recommendations and for follow-up annual surveys to assess how the policies are being used by the states. WSSPC recently developed a policy recommendation for the seismic design of new schools. Other policy areas include earthquake early warning, earthquake monitoring networks, and evacuation. She remarked that developing and promoting policy are critical in the West, which has 85 percent of the seismic risk in the United States.

Ms. Sutch also discussed the WSSPC Awards in Excellence program; conferences and workshops, including the earthquake early warning workshop; planning for the upcoming National Earthquake Conference; seismic councils and commission meetings; annual state reports on earthquake program activities; and the WSSPC web site.

Cascadia Region Earthquake Workgroup, John Schelling

Mr. Schelling, a Board member of the Cascadia Region Earthquake Workgroup (CREW), reported that Bob Freitag has left his position as Executive Director of CREW but will remain on the Board of Directors. Mr. Schelling described the mission and goals of CREW, established in the mid-1990s and the youngest of regional earthquake consortia. A focus of CREW is to bridge the “valley of death” between research and practice with emergency management. Another important focus of CREW is enhancing its partnership with Canada.

CREW products focus on business survival after an earthquake. These include reports, guides, videos, papers, and the Disaster Resilient toolkit. CREW education and outreach activities include support to the British Columbia inaugural ShakeOut and support to the tsunami warning system symposium and a tsunami vertical evacuation workshop in Cannon Beach. CREW also has been involved in the development of a crustal earthquake scenario and has supported the Resilient Washington State Initiative, the Cost-Benefit of Seismic Mitigation Forum, and the Teachable Moments Forum (Haiti and Chile).

III. State Earthquake Program Best Practices (Continued)

Idaho, David Jackson

Mr. Jackson discussed work funded by the cooperative agreement. *Putting Down Roots in Earthquake Country: Your Handbook for Earthquakes in Idaho* was printed for a second time this October and distributed in Sunday papers throughout Southern Idaho. Other activities include soil classification mapping, planning initiatives, and exercises. Idaho is starting an advisory group and held an exercise in November 2010. This year, a Mitigation and Recovery tabletop exercise will be conducted and a full-scale exercise will be held in 2012.

Mr. Jackson also discussed work in data collection, HAZUS, and the activities of the Idaho HAZUS Users Group (HUG). He emphasized the importance of partnerships in Idaho. Partners include the Idaho Geological Survey, the Idaho earthquake program's strongest partner, the Citizens Corps, and the Idaho Association of Structural Engineers, among others.

Washington, John Schelling

Earthquake work in Washington is focused on public education and awareness. Activities include specialized training, support exercises, two "Drop, Cover, and Hold On" drills each year, and special projects. A ShakeOut may be conducted. Other important projects include educating the hospitality industry on the tsunami threat, a toolkit for the media, and an earthquake scenario catalog. Mr. Schelling noted that cooperative agreement funds allowed Washington to conduct a school needs assessment. The Resilient Washington State Initiative is the focus of the Washington Seismic Safety Committee and is based on a smaller effort for the City of San Francisco. Other activities include the Project Safe Haven Planning Process for vertical evacuation and the Tsunami Train-the-Trainer Program.

California, Kathryn Long

Ms. Long provided an overview of the staffing and resources for the earthquake program in California, which has 75 percent of the earthquake risk in the United States. The biggest event this year was the 7.2 magnitude earthquake in Baja which caused about \$50 million in damages. Ms. Long commented that California learns from other states just as the states learn from California. She thanked the regional consortia in particular for all of their help in getting the word out on the earthquake threat.

Highlights of work in California include participation in the NTHMP; the California Integrated Seismic Network; an earthquake preparedness study; the Southern California Catastrophic Earthquake Response Plan; scenarios; Guide and Checklist for Non-Structural Hazard Mitigation for California Schools; a PBS documentary; and the California Enhanced Hazard Mitigation Plan. NEHRP funds have been used for the Great California ShakeOut, a product of the Earthquake Country Alliance and an extremely important California initiative vital to enlisting support from scientists to Scout troops, and the California Earthquake Authority Messaging Project. The purpose of this project is to identify the most compelling personal values in the individual decision-making process. A series of workshops will be held to roll out this research.

IV. ROVER Update

This panel presentation was moderated by Mai Tong from FEMA HQ. Panel presenters included Keith Porter, University of Colorado at Boulder, Barry Welliver, BHW Engineers, and Doug Bausch, FEMA Region VIII.

Dr. Tong provided an overview of ROVER, which converts the paper-based RVS procedure into an electronic version for smart phone devices. ROVER greatly reduces the work involved in data collection, storage, processing, and management and provides a faster and more efficient way to conduct field evaluation of large numbers of buildings to determine their seismic risks. By the end of 2010, ROVER had been tested through several demonstration projects. FEMA is preparing for a public release of ROVER this summer and would like the community to use the tool for their projects. ROVER eventually will be a Free Open Source Software (FOSS).

Mr. Porter discussed the use of ROVER for end-to-end seismic risk management. He gave a brief overview of FEMA-154 RVS, the one-page form with scores of 1-6 based on risk that is used by building owners. The 2011 CD release of ROVER this summer will include installation software. Demonstration projects for ROVER include the Los Angeles Unified School District, the University of Utah, the Utah Seismic Safety Commission, and Salt Lake City structural engineers.

Mr. Welliver reviewed lessons learned from ROVER demonstration projects, including the Utah School Pilot RVS study. This study was very successful and ROVER will continue to be used in Utah to survey schools.

Mr. Bausch presented on the URM inventory and assessment of 3,000 buildings in Salt Lake City. The project started on October 1, 2010 and is scheduled to conclude this October. The project is using the ATC-13 inventory, an inventory of buildings from the 2002 Olympics, and Salt Lake City assessment information. The data will be integrated with a FEMA MapViewer tool, Bing Maps, and Google. Mr. Bausch also discussed the integration of RedROVER with HAZUS and ShakeCast.

V. ShakeOut!

Mark Benthien of SCEC gave a brief history of ShakeOut, which was created by the Earthquake Country Alliance in 2008 and was the largest earthquake drill in U.S. history. He discussed the best motivators for preparedness actions, such as seeing and hearing consistent and frequent information about what to do, in many forms, and from many sources. It also is important for people to see others like themselves getting prepared and to talk about preparedness with their family, friends, and co-workers.

The goals for ShakeOut include participation by millions of people; shifting the culture about earthquakes; and a significant increase in readiness. On October 21, 2010, 7.9 million people participated in the California ShakeOut. So far, 4.7 million people have signed up for the 2011 California ShakeOut. There are now more than 1.7 million people signed up for the upcoming Great Central U.S. ShakeOut, and it is estimated that more than 2 million will participate.

Mr. Benthien reviewed key elements of a ShakeOut: public and private partners; “whole community” approach; a ShakeOut web site; drill manuals; school drill resources; Preparedness Now movie and videos; drill broadcasts (audio and video); radio, TV, print ads, and PSAs; and comprehensive news media resources and coordination. He also listed metrics for a ShakeOut, including the number of registrants, photos submitted, stories and news stories, media advisors, proclamations, support letters, presenters, emails, and fairs.

VI. CUSEC ShakeOut Experience and New State Web Site

Brian Blake with CUSEC stated that the goals for the Great Central U.S. ShakeOut are similar to those for the California ShakeOut: engage millions of people in a new activity to enhance earthquake preparedness. The involvement of schools is an important focus of the Great Central U.S. ShakeOut. To date, everyone involved has done a tremendous job. Funding and resources have been contributed by FEMA, USGS, and the states. Products and resources for the ShakeOut are similar to those in California and include drill manuals, postcards, and brochures and web sites. Mr. Blake showed the ShakeOut web site and acknowledged the help of SCEC in creating it. He also showed an innovative and creative PSA video to promote the ShakeOut. Lessons learned to date include the need to get started as early as possible, get buy-in from as many people and groups as possible, and listen to the advice of Mr. Benthien.

Mr. Blake also provided an overview of the new CUSEC web site for state earthquake program managers (eqprogram.net). The web site will include a List Serve/Bulletin Board; state and FEMA points of contact; links to clearinghouses; NEPM meeting information; collaborative materials; program tools; and best practices and case studies. A prototype of the web site will be completed this summer and feedback from the states will be solicited.

VII. U.S. Geoscience Information Network (USGIN) Overview

Mr. Conway from Arizona discussed the USGIN, a national network for geoscience data. The USGIN is funded by the National Science Foundation (NSF), with additional support from the USGS and the Association of American State Geologists (AASG). The Arizona Geological Survey is performing the majority of work on the USGIN, which will be ready for release in 6 months to 1 year. The data integration project is needed because there are now more than 1,000 databases, 1,000 collections, and 80,000 geologic maps. The project will be accomplished through a distributed, web-based interoperable open source. Mr. Conway emphasized the USGIN will not be a clearinghouse; its purpose is to build protocols to enable users to go out and locate information.

VIII. FEMA Regional Updates

Region I, Paul Morey

Mr. Morey discussed the effectiveness of the partnerships in Region I, including those with NESEC, the states, USGS, the West Coast/Alaska Tsunami Warning Center, and the Weston Observatory at Boston College, among others. Training also has been very successful this year. NETAP-funded training in FEMA-154 was conducted in Maine for 50 participants. Additional

courses will be held at the end of April in Maine and in Vermont. HAZUS training also will be offered in Maine and Vermont. Another important activity is Mr. Morey's work with the HAZUS and ShakeMap integration project. The next step in this project is to complete the scope of work with Mr. Bausch and staff from the USGS and Weston Observatory.

Region II, Magda De La Matta

Ms. De La Matta reported that cooperative agreement funds have been vital for Puerto Rico and the Virgin Islands since the Haiti earthquake. There are good partnerships between FEMA and the Puerto Rico Emergency Management Agency (PREMA) and the Virgin Islands Territorial Emergency Management Agency (VITEMA). This year, PREMA will reach more than 400 schools. NETAP-funded training classes held in Puerto Rico include FEMA-154, FEMA P-767, *Earthquake Mitigation for Hospitals*, FEMA 593, *Seismic Rehabilitation Training for One- and Two-Family Wood-Frame Dwellings*, ATC-20, and ROVER. Ms. De La Matta noted that Puerto Rico has very high seismic activity. There were 118 seismic events in March, including 11 "felt" events.

Region IV, Gene Longenecker

Mr. Longenecker reported that Region IV is working on enhancing relationships with its partners. Since the earthquake in Haiti, the focus has been on NLE 2011. He is working closely with the CUSEC Working Group on NLE 2011 and with the Regional Administrative Officer on notification systems and PAGER connections. The value of this work was demonstrated by a recent Thunderbolt exercise in Region IV. Work also is continuing on the Great Central U.S. ShakeOut. There is a friendly, intra-divisional competition in Region IV to see which division will have the most employees participate in the ShakeOut.

Mr. Longenecker reported on the HAZUS webinar. Last spring, Region IV conducted a virtual HAZUS class which resulted in a five-fold increase in participation. In early February, Region IV did a virtual roll-out in Kentucky of FEMA-154 training. The training was very successful and reached more than 420 participants. Mr. Longenecker and Mr. Bausch are also working on a tsunami methodology based on NOAA's MOST model.

Region V, Michael Andrew

Mr. Andrew reported that Region V is preparing for NLE 2011. As a result of the Tohoku earthquake, some impacts must be changed, including those relating to radiological impacts. He thanked everyone for their help with the Great Central U.S. ShakeOut.

Region VI, Prince Aryee

Mr. Aryee, who joined the Region VI program this January, reported on training courses in Oklahoma, Texas, and Arkansas; Region VI plans to provide training in New Mexico. He also reported on the Region VI role in the NLE 2011, which so far has been limited to the National Response Coordination Center (NRCC).

Region VII, Sue Evers

Ms. Evers, who works closely with Mr. Besemer in Missouri, reported that NLE 2011 has contributed to partnerships with states in her Region. The Tohoku earthquake has increased

the interest in the ShakeOut and in nuclear power plants and other types of power plants. She also noted that efforts are once again underway to counter the “Triangle of Life,” which has been back in the news. Region VII staff is also participating in the NLE 2011 Planning Committee and a Long-Term Recovery Workshop.

Region VIII, Doug Bausch

Mr. Bausch discussed the outreach portion of the 2012 exercise in Region VIII. Work involves customizing the Preparedness Now video for Utah, among other activities. He also reported on the scenario work being done by Wyoming and the earthquake threat to rural counties in Region VIII. Although there is a lot of discussion of ongoing work in the Salt Lake City area, rural areas face the most significant seismic risk. Mitigation strategies should be implemented in these areas before they become more populated.

Region IX, Ray Lenaburg

Mr. Lenaburg reported that Region IX has filled the junior earthquake position. The new staff person, Jennifer Lynette, will start work on April 11. The senior position is still being held up because of the hiring freeze. Jeff Lusk continues to provide expert assistance.

Mr. Lenaburg commented that Region IX is very involved with the states and with organizations such as the Earthquake Country Alliance. Clearinghouses are vital to these partnerships, as is NETAP training. Three ATC-20 and FEMA-154 training courses were conducted in Guam in January and ATC-20 training will be offered this year in Nevada. Hospital training will be conducted this summer in southern California and in Sparks, Nevada.

Region X, Ryan Ike

Mr. Ike thanked Mr. Jackson, Mr. Benthien, Ms. Rizzo, Ms. Fetterman, and Ms. Phillips for their support and assistance. He reported that Tamra Biasco, who has been on maternity leave since December, will return to work soon.

Region X has been developing scenarios along with questions and answers to facilitate information sharing at all levels. A recent Thunderbolt exercise in Region X went so well in terms of communication and coordination that secondary and tertiary effects are being reviewed. Mr. Ike also discussed the problems at Howard Hanson Dam. The multiple hazards facing Howard Hanson Dam provide a good example of the need to address problems from a real estate rather than a programmatic (NEHRP and NDSP) perspective.

IX. Washington State Earthquake Policy Study and Report

Mr. Schelling reported on the work of the Washington State Seismic Mitigation Policy Group to compare legislation across the United States. He reviewed the study methodology, which is primarily a literature search of state legislation and state mitigation plans. Products include a catalog of policies categorized by seismic mitigation (the catalog is available on the Washington State web site).

A participant asked about plans to increase the visibility of this type of research. Mr. Schelling responded that he may work through the regional consortia to determine the best fourth and fifth generation product to be derived from the project. Mr. Schelling also asked the participants to send him state data that should be included in the database and catalog.

X. Social Media as a Tool for State Earthquake Programs

Derrec Becker with the South Carolina Emergency Management Division discussed the explosion of social media in American society and how government organizations can best keep pace with it. An important initiative in South Carolina is training for its Public Information Officers on social media and its uses.

Mr. Becker reviewed the rapid increase in technology and media formats over the past few years, including Twitter, YouTube, and Facebook, which now has more than 500 million users. He provided examples of why the public sector must keep pace with these advances in social media. Transparency, rapid response, and situational awareness are now very important. In terms of government social media, policies and standard operating procedures are needed to provide parameters and direction.

XI. State Earthquake Program Best Practices (Continued)

Missouri, Steve Besemer

Mr. Besemer reported that Missouri is preparing for the Great Central U.S. ShakeOut on April 28 with outreach and education activities, particularly those targeted to schoolchildren. The initiative has been a successful learning experience. He thanked FEMA and CUSEC for their support. Missouri plans to keep the momentum going after the ShakeOut and NLE 2011.

Missouri is also preparing for NLE 2011 (activities include ramp-up table top exercises) and continues to collaborate with the S.A.V.E. Coalition on ATC-20 training and other projects. Each year, Missouri conducts about six to eight training classes. Work also is continuing with the Missouri State Seismic Safety Commission, which has been very involved in the February Earthquake Awareness Month activities. Mr. Besemer commented that FEMA cooperative agreement funds have been invaluable to Missouri.

Guam, Edeine Camacho

Ms. Camacho shared accomplishments, including the development of new outreach materials for schools, tourists, and residents; the conduct of "Drop, Cover, and Hold On" drills; the completion of a hazard mitigation plan by April 28; and ATC-20 and FEMA-154 training through NETAP. She thanked Mr. Benthien for his help in the Great Guam ShakeOut, which had more than 38,000 participants. For the 2011 ShakeOut, some materials will be translated into Japanese. Guam also plans to issue a Proclamation this August on earthquake awareness.

Hawaii, Leighton Ah Cook

Mr. Cook provided an overview of the mission and structure of the Hawaii earthquake program. The program is part of the State Civil Defense located on Oahu inside Diamond Head Crater. Mr. Cook discussed the seismicity of Hawaii, noting that earthquakes pose the fourth greatest risk to Hawaii (the top three are water hazards). He also discussed the 6.7 magnitude earthquake on October 15, 2000. The earthquake damaged the Big Island but did not cause a tsunami.

Mr. Cook discussed the multi-hazard planning in Hawaii and the importance of partnerships. Activities include technical assistance, earthquake information products, assistance with exercises, promoting the adoption of building codes, implementation of a Post & Pier project via a web-based expert system, and teacher training workshops. In the area of assessing regional hazards, Hawaii is conducting GIS mapping of soil types for Maui County and is mapping landslide areas.

Alaska, Mark Roberts

Mr. Roberts referred the participants to the Alaska and WSSPC web sites for highlights of accomplishments and ongoing work in Alaska.

XII. Closing Comments and Adjournment

Mr. Jackson reminded everyone of the agenda for April 7: the FEMA E-74 training, *Reducing the Risks of Nonstructural Earthquake Damage*, with Michael Griffin and the field trip to study seismic hazards in the Boise area, conducted by Bill Phillips with the Idaho Geological Survey.

Mr. Jackson thanked everyone for their participation and for their contributions to the NEPM. He then adjourned the meeting at 5:00 p.m.