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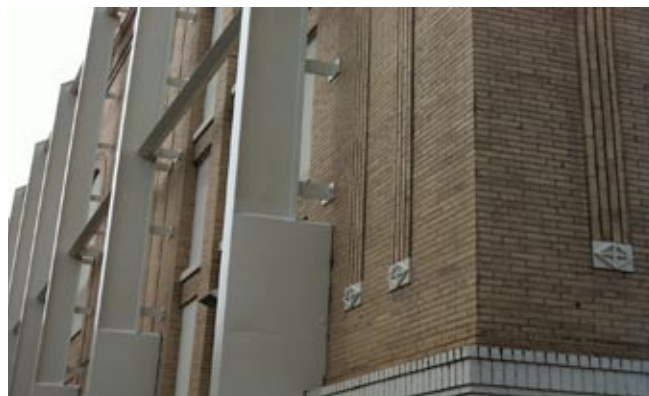
THE NATIONAL MITIGATION ALLIANCE: SPREADING THE WORD ABOUT THE BENEFITS OF EARTHQUAKE MITIGATION

by John Madden, State Director
Alaska Division of Homeland Security and Emergency
Management

The National Mitigation Alliance is a collaborative initiative providing a forum for public and private sector groups, non-profit organizations, and academia to address the importance of mitigating loss of life and property during disaster. The Alliance consists of over 20 organizations representing local, state, federal, private, and academic professionals all dedicated to the advancement of mitigation principles across the full spectrum of emergency management. The initial membership represents a significant sample of key stakeholders but the Alliance will reach out to other critical partners to enhance the mission of discussion, collaboration, and coordination.

Protecting critical investments is more than mitigating damage to life and property. It also includes understanding the critical role mitigation plays in the economy and overall resiliency of the nation. Individually, each member of the Alliance has worked to support mitigation efforts around the country. Through collaboration, the Alliance reaches across disciplines to help develop a comprehensive national mitigation framework.

The Alliance encourages diverse opinions and provides a neutral forum for the exchange of ideas. While policy discussions remain a key component to the Alliance, policy recommendations will be left to individual members, allowing the Alliance as a whole to debate, develop, and eventually provide balanced input to the federal government.



This high school was a stop on a recent field trip as part of the National Earthquake Program Managers Meeting in Boise, Idaho. Steel reinforcement bars have been placed around the school to prevent non-structural damage in the event of an earthquake. Projects like these increase community resilience from earthquakes and other disasters. CUSEC File Photo

Background

In 2009, the National Emergency Management Association (NEMA) entered into a cooperative agreement with the Federal Emergency Management Agency (FEMA) to bring together mitigation stakeholders from across the country and facilitate a white paper illustrating the growing importance mitigation has on the resiliency of the nation. The white paper was released in July of the same year and outlined many recommendations, one of which called

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for the creation of a National Collaborative Alliance to enable broad mitigation policy consideration and development.

Membership in the Alliance is open to all mitigation stakeholders. The Alliance recently developed governance documents and looks forward to continued meetings and collaboration in the future. Members of the Alliance continue as subject matter experts as needed to provide input into current mitigation policies and challenges.

Leadership

NEMA serves as the administrative arm of the National Mitigation Alliance and will serve as a permanent tri-chair as outlined in the governance documents. The remaining two chair positions are elected annually by the Alliance membership.

Vision

A collaborative effort of organizations dedicated to the advancement of hazard mitigation through shared knowledge, education, strategic partnerships, and policy in order to achieve increased resilience and disaster resistance.

Mission

To provide a forum for discussion, collaboration, and coordination of mitigation ideas, innovations, and actions that influence and encourage the development of safer environments for the American public to live, work, and play.

More Information

Since the inception of the group, CUSEC has been, and remains, an active participant in the Alliance and in the discussions to increase the implementation of mitigation strategies and programs in the United States. The Mitigation Alliance is currently administered by the National Emergency Management Association. For more information, contact Alexa Noruk, Legislative Policy Analyst at (202) 624-5381 or anoruk@csg.org.



AROUND THE REGION

New Madrid Bicentennial Activities

Earthquake Outreach Tour

Prior to the official New Madrid Bicentennial (NMB) kick-off at the “Earthquakes: Mean Business” Seminar on February 11, representatives from CUSEC and Member States, FEMA, and the Insurance Institute for Business and Home Safety (IBHS) took their earthquake preparedness message across the central U.S. on February 7-10. Months in the making the Earthquake Outreach Tour was a series of townhall meetings designed to bring community residents and local business members into a forum to learn about earthquakes, mitigation and other earthquake related topics.

With a theme of “Identify your Risk, Make a Plan and Take Action,” CUSEC, FEMA and IBHS speakers collaborated with local and state elected officials and emergency management partners to tailor their earthquake preparedness messages to residents in Arkansas, Tennessee, Kentucky, Illinois, and Missouri. At the workshops, CUSEC Earthquake Program Coordinator, Brian Blake gave an overview about the nature of earthquakes in the entire region, and earthquake history information specific to each state. He also explained what the physical and economic consequences would be in the region as well as in the nation following a major earthquake, and what steps citizens can take to be prepared when the ground begins to shake.

Claudette Fetterman with FEMA’s Risk Reduction Division showed the audience the steps to creating an earthquake resistant environment in her presentation about the agency’s QuakeSmart Program— a unique outreach program introduced by FEMA in 2008 designed specifically to encourage business leaders and owners to take actions that will mitigate the damage to their businesses, provide greater safety for their customers and employees, and a speedy recovery in the event of an earthquake.

Partnering with local Chambers of Commerce, FEMA has introduced QuakeSmart to many local businesses located in areas of the nation most at risk for earthquakes. In each QuakeSmart presentation, leading national mitigation experts have focused on protecting building

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In Jackson, TN as part of the Earthquake Outreach Tour in February of 2011 were (left to right) Candace Iskowitz, IBHS, Claudette Fetterman, FEMA, and Brian Blake, CUSEC

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contents and business continuity planning. They have also emphasized that no community can fully recover from a disaster until its businesses have recovered. Detailed information about QuakeSmart is available at www.quesmart.org

IBHS' Director of Public Affairs, Candace Iskowitz touched on several affordable ways that homeowners (and businesses) can prepare for earthquakes. "You can take control over your risk with the purchase of a few inexpensive items that will save you a lot of cost down the road," she said.

Iskowitz provided hands-on visuals such as:

- *L-Shaped Brackets: used for mounting LCDs, pictures and large speakers to the wall to prevent them from falling on someone during an earthquake.*
- *Eyebolts: used to attach cables to objects, for instance attaching a string to the back of a painting to allow the painting to hang from a nail on a wall.*
- *Straps: used to brace water heaters to prevent them from falling over in an earthquake.*
- *Wrenches: used to shut off the gas lines after an earthquake.*

She also stressed the importance of the enforcement of state building codes. To learn more about IBHS, visit their website at: www.ibhs.org



Representatives from various organizations including governmental and non-governmental agencies and academic institutions officially kicked-off the New Madrid Bicentennial (NMB) observance during the 18th annual "Earthquakes: Mean Business" Seminar held at St. Louis University on February 11.

The day long event included morning presentations by experts in the science and emergency management communities. In his presentation, Seismic Design of Structures: Philosophy and Detailing, Dr. Riyadh Hindi discussed how the design of structures in the region helps to determine how they would be impacted during a major earthquake, and specifically made references to: non-linear behavior, behavior of bridges under vehicular live load as well as cyclic and seismic loadings. USGS Geophysicist, Rob Williams gave an overview about the 7.1M earthquake that struck the Canterbury region of New Zealand on September 4, 2010. In his summary, Williams highlighted some facts pertaining to liquefaction in the New Zealand area, and the state of the country's building codes at the time of the quake. He also discussed the impacts on infrastructure such as water, fuel and power.

Moderated by CUSEC Executive Director, Jim Wilkinson, a panel of experts—which included FEMA Administrator Craig Fugate, SEMA State Director Paul Parmenter and USGS Chief Scientist Jill McCarthy—answered questions from the audience about the state of the region's readiness for a major earthquake. In his own address to seminar participants, FEMA Administrator Craig Fugate emphasized the importance of preparedness and the Great Central US ShakeOut effort.

Fugate's opening remarks began with a letter from President Barack Obama recognizing the ongoing earthquake awareness and preparedness efforts of those local, state and federal partners working to strengthen the nation's resiliency in the event of a New Madrid Seismic Zone (NMSZ) catastrophic earthquake similar to those that have occurred in other parts of the world.

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Fugate also answered questions as to how communities across the central U.S. can prepare, and what provisions are being made for those with hearing impairments and disabilities. Afternoon breakout sessions focused on the following topics:

- *New Madrid Earthquake History*
- *The 2011 National Level Exercise*
- *Preparedness, Mitigation and Sustainability*
- *Non-Structural Earthquake Mitigation Techniques*
- *Healthcare and Public Health Preparedness*
- *Tours of the Saint Louis University Earthquake Center*



Many of the seminar's 200 plus participants stopped by the CUSEC booth during the day to pickup earthquake related information. For more information about the "Earthquakes: Mean Business" Seminar, contact Phyllis Steckel at psteckel@charter.net

Great Central U.S. ShakeOut

In April of this year, communities throughout the CUSEC Member States (Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee) and Associate States of Georgia, Oklahoma, and South Carolina, took part in the largest earthquake preparedness effort in this region's history, the Great Central U.S. ShakeOut. With planning taking place over the past two years, the ShakeOut was a multi-state earthquake drill where participants simultaneously practiced the recommended action to take during an earthquake: Drop, Cover and Hold On, or,

- *DROP to the ground*
- *Take COVER by getting under a sturdy*

desk or table, and

- *HOLD ON to it until the shaking stops*

The ShakeOut has been promoted as a way for the general public to get prepared and take actions before the next damaging earthquake strikes. It was promoted through a central website, where people were encouraged to register and pledge their participation to take part in the drill. Participants were asked to use resources on the website such as: drill manuals, broadcasts, scenarios, and safety information to help develop their plans for being more prepared against earthquakes.

The Memphis City School district in Memphis, Tennessee took the lead in this educational preparedness campaign by conducting their district-wide earthquake drill at 10:15 a.m. on Friday, March 11, which was, by coincidence, just hours after the devastating M9.0 earthquake and tsunami in Japan. Indiana held their earthquake drills at 10:15 a.m. on Tuesday, April 19, due to conflicts with in school testing schedules. More than 600,000 in the Hoosier State participated in the ShakeOut drill.

Leading up to the ShakeOut, which was scheduled for April 28, there were a number of storms, floods, and devastating tornadoes which caused widespread destruction and killed hundreds of people in several states. Many who originally intended to participate in the ShakeOut were forced to alter their plans because of the real-world disasters. Those who could continue with their plans were encouraged to do so. CUSEC continues to offer our thoughts and prayers to those who have been affected by these tragic events.

For those who were able, many drills were held at 10:15 a.m. on Thursday, April 28. There were several media and press conference events held at locations in the states, and in all, more than 3 Million (including those in Indiana) across nearly 10,000 sites were expected to participate in the event. One of the higher profile media events held in the states was in St. Louis, Missouri at Carnahan High School of the Future.

At this event, U.S. Dept. of Homeland Security Secretary Janet Napolitano and U.S. Dept. of Education Secretary Arne Duncan observed students and staff participate in the ShakeOut and held a question and answer session, which was broadcast across the entire

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school. Also attending the event were Missouri Governor Jay Nixon and U.S. Congressman Russ Carnahan. Each emphasized the importance of preparing for any kind of disaster, even those that we do face every day.

Despite the recent challenges of the ongoing disasters in the region, the ShakeOut can still be considered a success as it achieved the goals of:

- *Engaging millions of people across all sectors in earthquake and disaster preparedness activities*
- *Increasing earthquake readiness among the citizens in the region*
- *Causing people to take action towards being prepared for disasters*

The Great Central U.S. ShakeOut has been modeled after similar efforts in California, where ShakeOut drills have been held each year since 2008. CUSEC has worked closely with the Southern California Earthquake Center and the Earthquake Country Alliance to develop the central U.S. ShakeOut effort. It was also linked event of the New Madrid Bicentennial and the National Level (Earthquake) Exercise 2011 (NLE 2011) and was coordinated by CUSEC and our Member and Associate States, the Federal Emergency Management Agency, the U.S. Geological Survey and dozens of other partners throughout the country. There are too many names to list individually, but we would like to thank the thousands of individuals in the region for their efforts in making this event a success.

To read more about the ShakeOut, including stories and news about the recent drills held throughout the region, visit www.shakeout.org/centralus

Photos from the Great Central U.S. ShakeOut



Clockwise from the top: 1. Students at Carnahan High School of the Future in St. Louis, Missouri practice Drop, Cover, and Hold On during the Great Central U.S. ShakeOut on April 28, 2011 (CUSEC File Photo); 2. L to R: Missouri Governor Jay Nixon, U.S. Dept. of Education Secretary Arne Duncan, and U.S. Dept. of Homeland Security Secretary Janet Napolitano field student questions at Carnahan High School during the ShakeOut (CUSEC File Photo); 3. Members of the Jackson Township Fire Department participate in the ShakeOut in Nashville, Indiana (Photo Courtesy Glenn Elmore) 4. Students at Tekoppel School in Evansville, Indiana take part during a safety assembly during the ShakeOut on April 19, 2011 (CUSEC File Photo);

RECENT CENTRAL U.S. EARTHQUAKE ACTIVITY

DATE	LOCATION	MAGNITUDE
2/16/11	Greenbrier, AR	3.5
2/17/11	Greenbrier, AR	3.8
2/23/11	Guy, AR	3.4
03/08/11	Anniston, MO	2.7
3/16/11	Valley Hill, NC	2.3
3/18/11	Youngstown, OH	2.6
3/19/11	New Market, AL	2.5
3/21/11	Chesterfield, SC	2.9
3/22/11	Greenbrier, AR	3.3
3/25/11	Massac, KY	2.4
3/31/11	Paden, OK	3.4
4/7/11	Greenbrier, AR	4.0
4/24/11	Dayton, TN	2.5
5/2/11	Jayton, TX	3.9
5/3/11	Mitchell, GA	2.6

IF YOU FEEL AN EARTHQUAKE, REMEMBER TO: DROP, COVER, & HOLD ON FOR MAXIMUM SAFETY



Visit <http://www.dropcoverholdon.org> to learn more ~ Image Courtesy Southern California Earthquake Center

DID YOU FEEL IT?

If you recently felt an earthquake, remember to go to the USGS website and log your experience on the “Did You Feel It?” webpage. The information you provide helps scientists understand how the ground shakes at different locations and helps show the wide reaching effects of earthquakes. Visit - <http://earthquake.usgs.gov/dyfi> for more info



The Road to NLE 2011



by Paul Hogue
 CUSEC Exercise/Training Officer

The CUSEC states continued working on planning for the Tier One National Level Exercise scheduled for May of 2011, commonly known as NLE 2011. This is a huge undertaking involving many participants, planning conferences, strategy sessions, working group meetings, lead-up and follow-on events taking place through the summer of 2011. The exercise will test local, state, and federal plans and annexes that were either modified or created as a result of the Catastrophic Planning Initiative in the CUSEC states over the last few years. To keep readers of our newsletter well-informed of these activities, this regular column lists major news and events pertaining to the exercise. This will be the ninth and final article in this series, as NLE 2011 will take place on May 16-20, 2011. Due to recent disasters in the CUSEC States, as mentioned previously, some states may not fully participate in the NLE as they originally intended.

CUSEC State Exercise Officers

The CUSEC Exercise Officers' Working Group held a conference call on February 7. The call was to see if there were issues that needed to be raised before a planned meeting of the CUSEC Board the following week. Among the topics discussed was how the states were planning to use the Emergency Management Assistance Compact (EMAC) in NLE 2011. The National Emergency Management Association (NEMA), which coordinates EMAC, has offered to send Advance Teams, or A-Teams, to the CUSEC states as part of exercise play. These teams "normally consist of two or more personnel from any Member State who are knowledgeable about and prepared to implement EMAC procedures."

CUSEC Technology Working Group

The CUSEC Technology Working Group agreed to implement the Virtual USA system, or vUSA, to share vital information that can be viewed graphically using standard map viewer software. For more information, please see the article "CUSEC Technology Working Group to Join Virtual USA Information Sharing Initiative."

CUSEC Communications Officers' Working Group

This group agreed in March to pursue a CUSEC-wide commex on April 1 and create a new MARS voice net. This will help improve chances for state-to-state communication in case of a major loss of commercial communications and connectivity. For more information, please see the article, "Communications Officers' Agree on MARS and Multi-State Commex."

Recent & Upcoming Events

The CUSEC Member States have and continue to conduct state-level Final Planning Conferences (FPC's) and MSEL (Master Scenario Events Listing) Conferences throughout March and April.

- *April 6-7, 2011: Final Planning Conference (FPC), NLE 2011, Georgetown University Hotel and Conference Center, Washington, D.C.*
- *April 13, 2011: NLE 2011 National Tabletop Exercise (TTX), Washington, D.C.*
- *April 19, 2011: The Great Central U.S. ShakeOut (Indiana Only)*
- *April 28, 2011: The Great Central U.S. ShakeOut (CUSEC-wide)*
- *April 28, 2011: National MSEL Synchronization*
- *May 16-20, 2011: National Level Exercise (NLE)*
- *June 13, 2011: Recovery Workshop*
- *July 20-21, 2011: National After-Action Conference (tentative)*
- *September 20-22, 2011: National Recovery Tabletop Exercise (NOTE: The CUSEC states are having their state recovery exercises during the summer before the national exercise.)*

CUSEC Technology Working Group to Join the “Virtual USA” Information-Sharing Initiative

At the January meeting of the CUSEC Technology Working Group, the state representatives agreed to cooperate in sharing data leveraging the capabilities provided through the newest generation of “Virtual USA”. The program, also known as vUSA, was created by the Department of Homeland Security’s Science and Technology Directorate. It is a “cross-jurisdictional information sharing and collaboration” tool that the state emergency operations centers (EOC’s) can use to share vital information quickly during exercises and real events. “This system gives the states a great tool in order to share information quickly and with as little impact as possible on other vital EOC missions,” said BG John Heltzel, Director of Kentucky’s Division of Emergency Management (KyEM) and CUSEC Board Chair. “We are really excited about this opportunity and the potential that exists with future use of the system.”

The states’ first major use of the data will be for NLE 2011. For the exercise, the states agreed on seven primary areas to share, which are transportation, EOC status, shelters, hospital status, power, emergency communications, and fatality information. The states will have the ability to view the shared data using map viewer software in their state EOC’s. S&T’s First Responder Technologies Program (R-Tech) has provided a technical assistance team to support information sharing efforts at the state and regional level.

“The DHS, Science and Technology Directorate is excited to partner with all eight CUSEC member states to support their participation in NLE 2011. In May, the CUSEC states will showcase to the nation how they have improved regional situational awareness and coordination efforts that will ultimately assist the emergency operations staff to make better informed decisions,” said Jose Vazquez, Director of the R-Tech Program at DHS S&T.

The CUSEC Technology Working Group has been in existence in some form since 2008. Its main mission is to “leverage existing technology and geographic information systems (GIS) found within the member state emergency management agencies.” The group is presently chaired by Kenny Ratliff, GIS Manager for KyEM.

CUSEC Communications Officers Agree on MARS and Multi-State Commex

The CUSEC Communications Officers’ Working Group met on March 15-16 in Memphis, Tennessee. The group reached agreements on a MARS voice net and a CUSEC-wide communications exercise during the conference. This was the first meeting of the group to include federal regional counterparts from FEMA and DHS.

The group spent much of the time on the first day receiving and discussing a brief from Bob Stephens, Communications Supervisor with Kentucky Division of Emergency Management, and Chair of the group. The group plans to use Kentucky’s state commex on April 1-2 and test communications across the multi-state CUSEC region. Although Kentucky will test a variety of systems, the multi-state portion will focus on MARS (Military Auxiliary Radio System), satellite communications, and FNARS (Federal National Radio System). FEMA Region IV is working with Stephens on using their regional FNARS frequencies for this commex.

“With communications being a big part of the upcoming NLE 2011 exercise, the state exercise officers have been working for some time to confirm their abilities to communicate not just vertically but laterally,” said Paul Hogue, Exercise/Training Officer for CUSEC, who helped facilitate the meeting.

The group received a presentation on the second day from Steve Waterman, who works with FEMA Region IV communications and is the Winlink network administrator. He talked about MARS and Winlink, a system that enables amateur radio operators to send email via radio. Most of the CUSEC states have made investments in MARS capability in the last few years, and more are using Winlink as a robust and resilient communications tool. As part of that conversation, the group agreed to the creation of a MARS CUSEC voice net. The net will be conducted weekly after the multi-state commex until NLE 2011, and will likely continue after.

Member State Spotlight

Indiana Geological Survey

Located in the city of Bloomington, the Indiana Geological Survey's (IGS) mission is to provide geologic information and counsel that contributes to the wise stewardship of the energy, mineral and water resources of the state. Geologic work at IGS official began in 1837 with an act approved by the Indiana legislature on February 6. IGS fulfills its mission by working on several projects such as Geologic mapping, which is used to help in making informed decisions about land-use changes that help to locate waste disposal sites for solid and hazardous wastes. Other current projects include:



- *the development of a statistically valid program for monitoring pesticides in ground water in the state of Indiana, and*
- *the evaluation of ground water in LaGrange County*

While focusing its research initiatives and cooperative investigations with governmental agencies, businesses and educational organizations, IGS also specializes in geologic sampling, data collection and archiving. Collected information and research findings are distributed to the public through maps, reports, databases and educational outreach programs.

Dr. John Steinmetz has been the Director of the Indiana Geological Survey and State Geologist of Indiana since 1998. During that time, he has been active in the development of earthquake awareness and response policy with both CUSEC-SG and the Indiana Department of Homeland Security. Prior to his service in Indiana, he served in a similar capacity at Montana's geological survey, the Montana Bureau of Mines and Geology. While at MGMG, John was active in CUSEC's Western counterpart, the Western States Seismic Policy Council (WSSPC). Dr. Steinmetz received his bachelor's and master's degrees in Geology from the University of Illinois and his doctorate in Marine Geology and Geophysics from the University of Miami.

For more information about IGS visit: <http://igs.indiana.edu>

UPCOMING CONFERENCES, TRAINING, WORKSHOPS, ETC.

WHEN	WHAT	WHERE
May 16-20, 2011	National Level Exercise 2011	Central U.S. States
June 9, 2011	ATC20 Post-Earthquake Safety Evaluation	Mt. Home, AR
June 9-11, 2011	Quake Summit 2011	Buffalo, NY
June 13, 2011	NLE Recovery Workshop	TBD
July 9-12, 2011	Natural Hazards Workshop	Broomfield, CO
July 20-21, 2011	NLE After-Action Conference (tentative)	TBD
September 20-22, 2011	National Recovery Tabletop Exercise	TBD
November 17-18, 2011	IBHS Annual Conference	Tampa, FL
April 11-13, 2012	EERI Annual Meeting	Memphis, TN
April 11-13, 2012	National Earthquake Conference	Memphis, TN

Associate Member State Spotlight

Iowa Department of Natural Resources

Iowa Geological & Water Survey



In its mission to implement programs focused on water supply developments and monitoring the effects of environmental impacts on the state's water quality, the staff at the Iowa Geological & Water Survey (IGWS) dedicates their efforts to enhance the state's economy through enlightened development and management of their geological and hydrological resources, while providing a clean and healthy environment for Iowa's citizens. 1855 marked the official beginning of this survey's geologic work. Studies of the IGWS surround the following specific topics:

- *Drinking Water Protection Programs*
- *Economic Geology*
- *Environmental Geology and Hydrogeology*
- *Mapping*
- *Paleontology*
- *Stratigraphy*
- *Structural Geology*

Even though Iowa is at a low-risk for seismic activity, the state does have a history of earthquakes. The first known seismic event occurred in 1867 near Sidney in southwest Iowa, the most recent in 1948 near Oxford in the east-central part of the state. The largest (Mercalli magnitude VI) occurred near Davenport in southeast Iowa in 1934.

With degrees in Geology from the University of Wisconsin at Superior and Indiana University, Bob Libra has worked with IGWS since 1982. His work at the survey has included a wide range of geologic, hydrologic, land use and water-quality investigations. In addition, he has provided technical assistance on water resources, water quality, waste disposal and environmental; geology to state and local governments, and to Iowa citizens and businesses. During his tenure at IGWS, Libra became supervisor of the Surveys Groundwater and Environmental Geology program in 1999, and was appointed State Geologist of the survey in 2002.

Visit www.igsb.uiowa.edu to learn more about IGWS.

NMSZ Catastrophic Planning Project Update

by Mike Calvert
CUSEC Planner

Several major transportation arteries bisect our nation north to south and east to west through the states that would be affected by a New Madrid Seismic Zone (NMSZ) earthquake. If even one of them was rendered useless, it would disrupt our national distribution system. Take out several of those arteries and there could be disastrous disruptions to commodity distribution, the power grid, the national transportation system, and the national economy.

Leah Russell, USDOT Regional Emergency Transportation Representative – Southeast, realized this after attending a meeting of the CUSEC State Transportation Task Force last summer. She saw a need to better educate private and all levels of government transportation stakeholders in the southeast region, which includes four of the eight CUSEC states, and also to encourage them to participate in NLE 2011. She set up a meeting for March 9 to do this. Other regions found out and asked to participate, so she ended up hosting a central United States workshop in Atlanta with video-teleconference (VTC) attendance from 25 satellite locations. She worked with the CUSEC State Transportation Task Force members and the national transportation community to invite key national, state and local transportation stakeholders. Nearly 400 individuals attended.

Briefers included the Federal Aviation Administration, CUSEC, Pipeline and Hazardous Materials Safety Administration, Maritime Administration, Tennessee Department of Transportation, CSX Transportation, and FEMA. After the initial briefings, the main and VTC locations each had separate breakout sessions to discuss local issues. Then they reassembled and each location shared breakout results. By design, a lot of material was covered in a short time. This allowed us to educate the transportation community on the NMSZ threat and maximize the number of participants by minimizing time away from the job. The consensus was that the workshop was a huge success and that similar gatherings of the transportation community are needed to make more players aware of the threat and increase preparedness. Following are some points made in the workshop:

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New Madrid Seismic Zone

- Historical evidence of large earthquakes every 400-500 years
- Same magnitude quake in NMSZ affects much larger area than in California because soft NMSZ soils transmit shaking better
- 12M people live in the high risk area, including Memphis and St. Louis
- Probability of magnitude 7.5 – 8 quake 7-10% in a 50 year period
- Probability of magnitude 6 or greater 25-40% in a 50 year period
- Over 125 local, state, and regional NMSZ catastrophic planning workshops held over last 4 years; level of preparedness increased but we have much more to do
- Unlike floods, tornadoes, and hurricanes, earthquakes are no-notice events!

Aviation

- 80% of Federal Express shipments pass through Memphis
- Memphis and other major air hubs (St. Louis, Mid-America/Scott AFB) could be affected by liquefaction, power outage, lack of fuel/ruptured tanks
- Air traffic in the area impacted by quake will have Temporary Flight Restrictions
- States and Federal working group addressing air traffic control issues

Pipelines

- Heavy NMSZ pipeline presence; petroleum, natural gas, other hazardous materials.
 - *Possible rupture in ground, crossing rivers, and on rail/highway bridges*
 - *Provide power to many power plants; could affect power in eastern half of US, fuel for heating and transportation, and cause HAZMAT spills*

Maritime

- Hundreds of millions of tons of commodities move by barge through NMSZ on Mississippi, Ohio, Arkansas, and Missouri rivers and Tennessee-Tombigbee

waterway

- *Petroleum products, chemicals, aggregates for road construction, grains (primarily during fall/early winter), coal, oversize/outsize/heavy cargo*
- NMSZ area is backbone of our domestic waterway system!
 - *Paducah and other Ohio River ports in KY*
 - *Memphis TN*
 - *MS River and Tennessee-Tombigbee ports in MS*
 - *River traffic could be disrupted by landslides, ground deformation, liquefaction, fallen rail/highway bridges or other earthquake-related debris and hazardous spills*

Rail

- 40% of US rail cargo moves through NMSZ
- Major north/south and east/west railroads could be affected by liquefaction, ground deformation, landslides, damaged or fallen bridges, earthquake-related debris, etc.
- Major rail interchanges in St. Louis and Memphis
- Significant producer and consumer markets, oversize/outsize/heavy cargo

Roads/Highways

- Major E/W (Interstates 40 and 70), N/S (I-55) interstates as well as US highways
 - *Significant reliance on trucking industry by our national distribution system*
 - *Many logistics/supply systems, rely on "just-in-time" goods deliveries (i.e., low local inventories)*
 - *Memphis is a major trucking and trans-modal distribution point*
- Liquefaction, ground deformation, landslides, fallen bridges, earthquake-related debris, etc., could make major highways and local roads impassable
 - *Could make some first responder travel and deliveries of post earthquake relief supplies impossible, as well as self/medical/mandatory evacuations*

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Take-aways from the Workshop

- “We need to continue to do this in the future”
- USDOT is working the temporary bridge issue
- Security, fuel, personnel safety and communications (satellite phone) capabilities are concerns
- Local, state, regional and national plans need to be deconflicted
- There may be conflicting staging areas, several jurisdictions assuming they can use the same secondary airports, etc.
- More coordination and involvement with the private sector is needed
- Sharing information (common operating picture) will be a major challenge

Conclusion

Our thanks go out to Leah Russell at FAA and her supervisor, Pearlis E. Johnson, Region III and IV Regional Coordinating Official USDOT, as well as the CUSEC State Transportation Task Force and all who attended for making this event a tremendous success. The national transportation community can do a lot to mitigate the effects of an NMSZ earthquake and to plan their response in advance. They will be extremely critical for delivering life-saving first responders and relief supplies into the impacted area following an earthquake. We hope to continue working with the national transportation community to broaden their understanding of the NMSZ threat and their capability to rapidly provide assistance.

Other News

NEHRP Releases FEMA 2010 Accomplishments Report from www.fema.gov

As the four National Earthquake Hazards Reduction Program (NEHRP) agencies work in close coordination to improve the Nation’s understanding of earthquake hazards and to mitigate their effects, NEHRP is recognizing one of its agency’s hard work during the year of 2010 with an announcement of the release of a special report that is now available to the public on the

FEMA website.

The National Earthquake Hazards Reduction Program (NEHRP): FEMA Accomplishments in Fiscal Year 2010 highlights a cross-section of successful FEMA NEHRP projects and programs in Fiscal Year (FY) 2010. Some of the more exciting activities and accomplishments include ROVER, a new IT-based data collection and evaluation tool developed with the Applied Technology Council; FEMA’s QuakeSmart program to assist local businesses mitigate earthquake losses; continuing work on the Performance-Based Seismic Design project; and engineering field work in Chile after the 8.8 magnitude earthquake. The report also includes many successful state, local, and regional activities in earthquake training and awareness, seismic safety inspections, building codes adoption, the development of multi-state groups, and public outreach (i.e. ShakeOut).

The accomplishments described in the FY 2010 report show how FEMA and its partners, working in collaboration, are continuing to make progress toward earthquake loss-reduction nationwide. Work completed in 2010 will have applications immediately or in the near term in reducing earthquake risk. Work advanced in 2010 also is creating a strong foundation for realizing similarly effective outcomes in future years. FEMA is also responsible for developing effective earthquake risk reduction tools and promoting their implementation, as well as supporting the development of disaster-resistant building codes and standards.

NEHRP: FEMA Accomplishments in Fiscal Year 2010 can be downloaded at <http://www.fema.gov/library/viewRecord.do?id=4619>



SSA Holds Annual Meeting in Memphis, Tennessee



Members from various business industries and the scientific community convened in Memphis, Tennessee on April 13-15 for the 2011 annual Seismological Society of America (SSA) Meeting. Organizers of this event gathered information for sessions that covered topics ranging from Understanding on the New Madrid earthquake

sequence to Seismic Siting for Nuclear Power Plants. There were more than 250 oral presentations and 150 posters planned for the three day conference. Tom Hanks, a seismologist with USGS in Menlo Park, California delivered this year's Joyner Lecture on "Extreme Ground Motions." Outgoing SSA Board President, Rick Aster gave the president's address at the Annual Luncheon on Wednesday, 13 April. His topic was "SSA and Seismology in the Early 21st Century."

Organizers of the SSA, along with the US Geological Survey and the Center for Earthquake Research and Information, also held a special townhall meeting from 7:00pm-8:30pm on Wednesday, April 13. "Before there was a Memphis: the New Madrid Earthquakes of 1811-1812" was the topic of the public meeting designed to understand the early history (1782-1810) of southwest Tennessee and large sequences of earthquakes that have occurred several times in the central U.S. over the past 1500 years. More than 100 people attended this event. An overview of the New Madrid Bicentennial events in the Memphis area was also given. This event was open to the public for the purpose of informing the general population and public officials about earthquake-related issues.

Townhall meeting speakers included the incoming SSA President; Memphis Mayor A. C. Wharton; Jimmy Ogle, Memphis History Lecturer; Kent Moran, Historian at The Center for Earthquake Research in Information; Buddy Schweig, US Geological Survey; and Chuck Langston, CERI Director.

More information about the SSA is available at: www.seismosoc.org



RECENT CUSEC GEOCACHE COMMENTS

Geocaching, a high-tech treasure hunting game, is played throughout the world by people who try to locate hidden containers with GPS devices and then log their experiences, or "finds" online. In 2007, CUSEC placed our first earthquake geocache at our headquarters. Since then, we have placed earthquake-themed geocaches in seven of eight Member States. The caches are visited regularly, with hundreds of visits during the spring and summer months. Some comments from our cache visitors this quarter include -



- AR - "This was fun!" "Enjoyed the cache"
- IL - "We thought it was a real good hide and hope to copy it for one here"
- IN - "Very cool area I didn't know was here"
- KY - "Now I know how to survive the "big one"!"
- MO - "We were there the day after the earthquake in Japan. Just makes you start to think"
- MS - "Quick and easy find! Nice Museum"
- TN - "I grabbed a couple pamphlets to take home and show our group"

DATES TO MARK

200th Anniversary of the 1811-1812 New Madrid Seismic Zone Earthquakes In 2011-2012, there will be events held throughout the central United States observing the 200th anniversary of the great 1811-1812 New Madrid earthquakes. Many organizations will participate in the events, which will include national conferences, earthquake exercises, public outreach events, and more. For more information visit - www.newmadrid2011.org.

The National Level Exercise 2011 Created by the Federal Emergency Management Agency, NLE2011 will simulate the catastrophic nature of a major earthquake in the central United States region of the New Madrid Seismic Zone. The year 2011 is the bicentennial anniversary of the 1811 New Madrid earthquake, for which the NMSZ is named. NLE 2011 will be the first NLE to simulate a natural hazard. For more information, visit www.ready.gov/NLE2011

The 2012 National Earthquake Conference will be held in Memphis, Tennessee on April 11-13, 2012. This conference will provide national attention to earthquake hazard risk reduction and incorporate learning from historic earthquakes to protect us from future hazards. In the near future, a conference website will be established at - www.earthquakeconference.org.

The Central United States Earthquake Consortium is a not-for-profit corporation established as a partnership with the Federal government and the eight Member States: Alabama, Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee; and ten Associate Member States: Georgia, Iowa, Kansas, Louisiana, South Carolina, North Carolina, Ohio, Oklahoma, Nebraska and Virginia. The Federal Emergency Management Agency provides the basic funding for the organization.

CUSEC's purpose is to help reduce deaths, injuries, damage to property and economic losses resulting from earthquakes occurring in the central United States. Basic program goals include: improving public awareness and education, mitigating the effects of earthquakes, coordinating multi-state planning for preparedness, response and recovery, and encouraging research in all aspects of earthquake hazard reduction.

STAFF

Jim Wilkinson	Executive Director
Peggy Young	Associate Director
Brian Blake	Program Coordinator
Jennifer Brumley	Administrative Assistant
Mike Calvert	Emergency Planner
Paul Hogue	Exercise/Training Officer
Alisa Nave	Public Outreach Coordinator
Gwen Nixon	Accounting

CUSEC Phone Number: (901) 544-3570
Toll Free (800) 824-5817
Fax (901) 544-0544
Email cusec@cusec.org
Website www.cusec.org

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Please send comments and suggestions to cusec@cusec.org

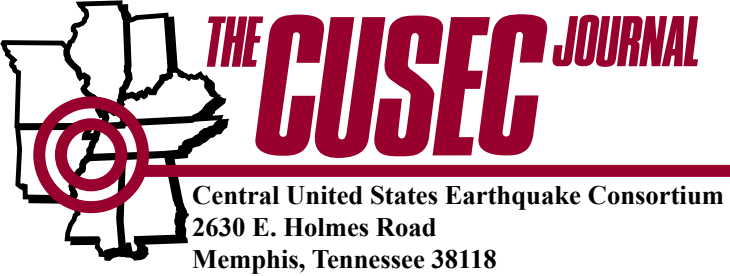
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CUSEC Partners

- American Red Cross
- American Society of Civil Engineers
- Association of CUSEC State Geologists
- Cascadia Regional Earthquake Workgroup
- Center for Community Earthquake Preparedness
- Centers for Disease Control and Prevention
- Center for Earthquake Research and Information
- Federal Highway Administration
- Federal Emergency Management Agency
- Institute for Business and Home Safety
- Mid America Earthquake Center
- National Emergency Management Association
- National Earthquake Hazards Reduction Program
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