



THE CUSEC JOURNAL

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EARTHQUAKE CONSORTIUM.

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CREATING SAFER COMMUNITIES: A PARTNERSHIP EFFORT



Can we afford not being prepared?

F or a lot of people the anticipation of the next millennium conjured up some futuristic world where technological advances would radically change the way we live. To some degree this is true, but for the most part we woke up on January 1 of 2000 to our same old surroundings. The dog still needed to be walked and the trash taken out, and unfortunately the communities in which we live and work will still have many of the same problems.

Change is slow, despite our hopes for the bright shiny future of tomorrow, but this does not mean that great strides cannot be made towards improving our existence.

For the last sixteen years, since its establishment, the Central United States Earthquake Consortium has played a pivotal role in introducing earthquake risk reduction programs into this region.

Building on the success of the past, CUSEC is working to refine its role as a

coordinating organization. At the forefront of this is the recently unveiled Central United States Partnership (CUSP).

This partnership is being guided by the creation of a long-term strategic plan to reduce the risk from a damaging earthquake in the Central United States (Tennessee, Missouri, Kentucky, Illinois, Indiana, Arkansas, and Mississippi). At present, without implementation of certain strategic actions the consequences of an earthquake in the central US would be devastating.

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The genesis for this initiative came out of a meeting between the Institute for Business & Home Safety (IBHS), CUSEC, Association of CUSEC State Geologists (CSG) and Dr. Walt Hays with the American Society of Civil Engineers (ASCE). The intent of the initial meeting was to find a cooperative way to reach the political and societal conscience of those in the central U.S. in order to emphasize the need for increased preparedness and mitigation. Soon after the initial meeting, a draft plan was prepared by a working group of the Central United States Partnership (CUSP), which was formed on March 2, 1999. CUSP consists of public and private sector organizations, many of whom have worked together in the past. They are available to provide leadership, resources, and political capital for implementing a comprehensive loss reduction plan throughout the central US.

At present, CUSP, a unique partnership led by CUSEC, is comprised of the following public-private sector partners: Five core organizations: the CSG, IBHS, the Mid America Earthquake Center

(MAE), Federal Emergency Management Agency (FEMA), U.S. Geological Survey (USGS) and nine partners: a) Department of Transportation (DOT), Federal Highway Administration (FHWA), Association of Contingency Planners (ACP), Disaster Recovery Business Alliance (DRBA), Extreme Information Infrastructure (XII), Institute of Gas Technology (IGT), American Society of Civil Engineers (ASCE), and the USGS Mid Continent Mapping Center (MCMC).

As the initiative is refined and it becomes clear how each component will interact, other public-private organizations will be invited to join and help to achieve CUSP'S common agenda, which is to seek new and innovative ways to make earthquake loss reduction a public value in the central US. CUSP exists to enhance the long-term capability of each partner to carry out its basic mission and to take advantage of new opportunities for political, financial, and technical support of programs and activities that will reduce potential catastrophic losses to buildings and critical infrastructure, protect people, businesses,

and communities, and assist "Project Impact" communities and "Showcase Communities" to reach their goals.

Potentially, one of the more exciting developments of this partnership will be the creation of a regional seismic advisory council. Although not clearly defined at this point, the role for the advisory group will be to advise the CUSEC Board of Directors and the partners as to the direction they should be moving in developing a more comprehensive effort that brings the collective strengths of this partnership to bear on the seismic problems within the central U.S.

In early July the first meeting of the partnership took place at the Headquarters of the Institute for Gas Technologies, (IGT) in Des Plaines, IL. The purpose of the meeting was to get the partners input in the development of a strategic plan and for the refinement of the partnership itself. A second meeting is planned for May of 2000 that will begin to define the expectations of each of the partners around three key issues: Living with earthquakes, Building for earthquakes, and Learning from earthquakes.

Many of the articles submitted for this issue of the Journal focus on the different areas of expertise that the partners bring to the table. This partnership is not detrimental in any way to programs that each of the partners pursue as an individual agency or organization. Each operates with their own program goals and missions. The partnership simply brings their efforts to a combined focus.



IT'S ABOUT THE INFRASTRUCTURE

Public-Private Partnership from the Private Sector Perspective

Don Saracco, MLC & Associates, Inc.

In this last year of the last decade of the 20th century much is being made of the promise of public-private partnership as the means to true community-wide disaster preparedness. Without a doubt, the idea is compelling. It is, after all, a “no-brainer” that the private sector represents an essential element of total preparedness. Still, there are a number of ways to view the issue of how such partnership is achieved in its most powerful form. It is important that we all understand what motivates the private sector in this realm so that we can realize the bright promise of viable and sustainable partnership.

To understand the issue it is useful to ask the question, “If this is such a good idea, why has it not come into being before now?” Of course, there are a variety of answers depending upon who is being asked. In fact, the answers give us clues that can lead to a deeper understanding of the problem. There are those who will say that the fault lies with the inexhaustible greed of private sector business people. Others will say that the public sector has an endless desire to reach into the bank accounts of private businesses that are perceived as inadequately taxed and should contribute more to public projects. Still others will say that the separation of government and business is a fundamental aspect of our system and tampering is dangerous and inappropriate. As usual, everyone is a little bit right and a lot wrong. These perspectives merely deepen the division between those who should be natural allies. The perspective of perpetual separation is wrong because such an absolute would disallow appropriate collaboration such as is seen in the name of national security. Views of the public sector as possessed by a compulsion to tax and the private sector as a black hole of greed are equally narrow and indefensible.

A more useful answer is that where the purpose is compelling; the goals are clear and important to the mission; the roles are appropriate; and the working process is adequately developed; effective relationships are produced. Effective relationships lead directly to accomplishment. In every case where people come together to reach common goals these conditions must be present in order for success to follow. Each community must begin, however, from a perspective of appropriate ignorance rather than a set of assumptions about what motivates the other guys. If anyone thinks that they know what the others are all about, there will be no effort to learn how to build bridges across the apparent separation. People unwilling to be appropriately ignorant at the outset of a

“If this is such a good idea, why has it not come into being before now?”

relationship present demands, not questions. The inevitable result is a struggle for power in which everyone loses.

Our experience in working with business leaders from a variety of industries and from working through a community

planning process where the private sector was deeply involved have taught us a great deal about the process most likely to lead to the goal of disaster resistant communities. More importantly, we have learned what is really the core value that

“It is about the infrastructure that holds the interdependent community together.”

can motivate private sector leaders to communicate, cooperate and collaborate with the public sector. It is about the infrastructure that holds the interdependent community together. Where the shared goal is disaster resistance, a planning process that focuses on protection and recovery of the infrastructure leads to stronger public-private connectivity.

The region of Southwestern Indiana, where CUSEC was a partner in the community effort, was one of the very first to pursue a partnership of equals involving the public and private sectors in disaster recovery planning and mitigation. Several fundamental characteristics of an effective relationship that will transfer to any community grew from this work. First, the compelling purpose of creating a disaster resistant community provided a solid foundation for planning and goal setting. Second, the goals of organizing first, planning second, and acting third proved to be a useful hierarchy. Third, the roles of the business, government, and non-profit

CUSEC Partner Receives U.S. Trademark

The United States Patent Office has granted the National Institute for Urban Search and Rescue, NIUSR a trademark for its development of **Extreme Information Infrastructure or XII**. “It sets apart our architecture for an international network for interlinking crises communication in times of emergency. During non-crisis times the same XII network will provide, through its directory based architecture, a redundant network for day-to-day connectivity.” Louis Clark McCoy, President National Association of Urban Search & Rescue.

For additional information on XII see page seven.

organizations that participated were defined in a way that each found acceptable. No reasonable boundaries need to be violated. Fourth, planning that defined the community event management structure as well as specific procedures for emergency preparedness, response and recovery, increased the buy-in from all involved. Fifth, the very process of cooperative planning and direct communication between the sectors resulted in stronger relationships among the participants that will extend beyond the planning process. Sixth, the clear message from the process was that what makes sense to the private sector is not getting help with their individual business continuity issues, but the defense of the infrastructure upon which they all depend equally. Last, the process demonstrated the power of performing a regional impact analysis (RIA). Data collected on the financial risks associated with site-specific damage projections will allow much more rapid reporting to and reimbursement from government and insurance organizations.

It is the utility services, the roads and bridges, and other elements of the community infrastructure that are crucial to the private sector. Without power, virtually no business organization can operate today. Without a transportation system, employees cannot get to work when

needed. Without communication systems, business grinds to a halt and the regional economy follows. The sales revenues that fuel business operations translate into tax

“It is the utility services, the roads and bridges, and other elements of the community infrastructure that are crucial to the private sector.”

revenues for the public sector, income for individual employees, and further fuel for the economic cycle through the spending of organizations and individuals. The economic engine of creation, production, and consumption is not a function of individuals or individual businesses, but a process dependent upon the existence and ability to operate of each segment. The infrastructure is the connective tissue that enables the system to continue.

Of course, the plans that they developed in Southwestern Indiana provided for mutual support among business and government organizations to aid in response and recovery, but the plans do not challenge the roles of public agencies such

as the local and state Emergency Management Office, Fire Protection Services, and Police. We know from long experience, however, that the resources of public responders are quickly exhausted in a regional disaster. Pre-positioning decisions and communication mechanisms for resource sharing extends those resources where lives and safety are at stake and where the infrastructure is challenged. Of even greater importance, though, is the dialogue regarding infrastructure mitigation that grew out of their planning process. Over the last year, leaders from all segments of the community have been participating in a process aimed at designing a technology infrastructure for the region that would ensure that robust communication and information management systems are available to serve the integrated common purposes of disaster resistance and community planning. Perhaps the most important part of this process is in the integration of what might be considered separate functions. The citizens of Southwestern Indiana have truly come to realize the importance of strategic thinking about the overall economic and social system of their region. And they doing it together in a partnership of equals where everyone can win.

Mark your calendars now— September 5-8, 2000

In 1811 and 1812 a series of major earthquakes occurred near New Madrid, Missouri which devastated early settlements and realigned the Mississippi River, causing it to flow backwards at one point. A similar earthquake near New Madrid today would result in thousands of deaths and injuries and massive property damage affecting several states.

To prepare for such an event, the Missouri Division Office, the Missouri Department of Transportation, the Missouri State Emergency Management Agency, and the Central United States Earthquake Consortium is sponsoring a Mid-America Post-Earthquake Highway Response and Recovery Conference. This conference will focus on problems faced by personnel and agencies should a major earthquake occur. We encourage you to attend this very important meeting.

Mid-America Post Earthquake Highway Response and Recovery Conference

Purpose: In Mid-America, much of the private and public infrastructure, including highways, was not built with seismic design considerations and there is much to lose in life, public welfare, and our economy if a well planned, organized, and coordinated response is not made. This conference is intended to assist State and local highway agencies in Mid-America in understanding the many issues related to emergency preparation and response to a major earthquake. The impact of disrupting public and private utilities such as pipelines that go through and beyond Mid-America will be felt throughout the United States. Minimizing response and recovery time for restoring operations on our highways is essential for all communities, utilities, and businesses attempting to recover from a major earthquake.

Target Audience: Upper and mid-level State DOT construction and maintenance personnel, bridge inspectors, public relations personnel, public works directors, city or county engineers, and emergency management personnel responsible for planning and responding to an earthquake disaster and reestablishing the highway system.

Post-Earthquake Conference and Call For Papers:

Papers for both presentation and/or handout at the conference will be accepted by the technical committee through February 2000. For submission contact: Glenn Fulkerson

(gfulkers@fhwa.dot.gov)
573/636-7104

Anticipated Attendance:
300 - 500

Date: September 5-8, 2000
Arrival September 5,
meetings September 6-8,
departure September 8

Location: Adams Mark Hotel
314/241-7400 Fourth and
Chestnut St. Louis, Missouri
Sponsoring Agencies:
FHWA, FEMA, MoDOT,
Missouri SEMA, CUSEC,
Others....



CUSEC-SREMAC TRANSPORTATION CONFERENCE

Robert W. "Bobby" Moseley
EMAC Task Force Chairman

Memphis, Tennessee was the host city for the first meeting of key state and federal emergency operational personnel who came together to initiate a cooperative and coordinated transportation related response to a major disaster in the Central and Southeastern regions of the United States.

One of the first actions taken by the SREMAC Task Force was to change its name to the EMAC Task Force. As a result of this, the Task Force's publication will now be referred to as the "EMAC Transportation Response Plan". This will allow the Task Force to extend an invitation of participation to any state transportation agency whose state legislature has enacted EMAC Legislation. It was also agreed that the entire response plan would be updated, an additional section would be added, and the Task Force Chairman would pursue a funding mechanism to cover the cost to routinely update, print and distribute the response plan. The Chairman is presently discussing the funding issue with representatives from the National Emergency Management Association who have expressed an interest in providing such services.

The CUSEC-SREMAC Transportation Conference, held on June 28-30, 1999, was attended by representatives from the following agencies or organizations:

State Transportation Agencies (16 states)
 State Emergency Management Agencies (8 states)
 Federal Highway Administration (5 states)
 U.S. Department of Transportation
 Federal Aviation Administration
 Federal Emergency Management Agency
 U.S. Army Corps of Engineers
 First U.S. Army
 Fifth U.S. Army
 American Red Cross
 Central United States Earthquake Consortium
 Association of CUSEC Geologists

The SREMAC Transportation Response Plan has proven itself to be a valuable tool to the participating states during times of disaster. It was reported at the conference that the plan has been utilized a minimum of 15 times since it was distributed in February of 1997. The state of Florida alone has used it a minimum of 5 times during the past two years. This confirms the willingness of a state transportation agency to come to the aid of another state transportation agency when need arises.

Representatives from each of the seven state transportation agencies that are located within the New Madrid Seismic Zone presented a brief overview of their state's Earthquake Response Plan. The presentations opened the eyes of some attendees as to the degree of planning and preparation required of a state transportation agency in order to be adequately prepared to respond in a timely, efficient and effective manner when a major earthquake occurs.

Communications between key emergency operations personnel is one of the critical components of a

successful emergency response. If initial responders are unable to communicate their findings and needs to their support personnel in a timely manner, excessive delays could result in the needless loss of lives. The conference attendees discussed the various emergency communication systems that will be utilized at this time by the affected states. Satellite radio/telephone systems, portable radio towers in conjunction with existing mobile radio systems, or a combination of these systems are the backbone of the states' emergency communication systems. It was clear to those present that additional discussion of this issue will be appropriate at future meetings.

The closing session dealt with the role of the support agencies in assisting a state transportation agency in preparing for or recovering from a natural disaster. Each state and federal agency has the capability of bringing a myriad of expertise and resources to the table. By knowing the role and capabilities of each key support agency, the state transportation agencies will have the knowledge to orchestrate a comprehensive response.



It is the goal of the EMAC Task Force to meet on an annual basis to discuss relevant issues, share ideas, and indoctrinate uninformed emergency operations personnel as to the purpose of the EMAC Transportation Response Plan.

Representatives from the U.S. Department of Transportation, Office of Emergency Transportation, have established a dialog with the Task Force Chairman to explore possible monetary assistance which will enable the Task Force to reach its goal.



Medical Response Exercise Planned for September 2001

QUAKEX 01 is one of several Federally sponsored exercises (past and present) to test all medical elements and procedures regarding the federal medical response to a catastrophic event. The Federal government is committed to a total and rapid response to a major earthquake in the central United States in order to save as many lives as possible, reduce suffering of the injured, control contagious diseases, and protect property. To reduce error and to speed response, Federal and State agencies established the Central United States Earthquake Consortium (CUSEC), consisting of seven states likely to be affected by an earthquake in the central United States, and have undertaken intensive planning and conducted several exercises in the area. QUAKEX 01 is part of the ongoing efforts to improve medical response posture.

Scientists agree that during the next 50 years the Central United States can expect at least one significantly destructive earthquake along the New Madrid Seismic Zone, which extends from Cairo, Illinois to Marked Tree, Arkansas. This area of the United States was the scene of the most severe earthquakes to occur in the history of our nation. Not only were the magnitudes of the earthquakes large, but the low rate of attenuation of earthquake energy extended their damage 25 times greater than similar events in the western United States.

QUAKEX 01 will allow testing of the State Emergency Operations Plan, enhance coordination and communications within federal departments and agencies involved in the response efforts, and provide realistic ***Federal-State-Local interface.***

In order for this exercise to be a success we are requesting the participation of any county or local Emergency response agency.

Because of the magnitude and devastation an earthquake could have it is imperative that everyone be prepared. Your support could help save the lives of thousands of earthquake victims.

If you wish to volunteer to participate in this momentous exercise please contact: Billy B. Conner, Emergency Manager, Office of Emergency Medical Preparedness

Phone: 501-257-1015

Fax: 501-257-1018

Cel: 501-351-4399

e-mail: Billy.Conner@med.va.gov

Pager: 1-888-765-8051

NATIONAL INSTITUTE FOR URBAN SEARCH AND RESCUE PIONEERS NEW EFFORT IN EMERGENCY MANAGEMENT

The National Institute for Urban Search and Rescue (NIUSR), with Lois Clark McCoy, as president, has led a pioneering effort to develop a nationwide Emergency Response, Management, and Control System, connecting potential assistance centers with civil and military resources for rapid, mutual interaction. This effort has both public and private sector support.

The thrust is to use existing World Wide Web and in-place network protocol direct and re-routable connectivity to share data efficiently, amongst resource users and chartered providers. The intent is to use middleware solutions thus limiting reinvention of new wheels.

This process, part prototype but mostly, so far, conceptual, is termed the Extreme Information Infrastructure or XII. The XII premise is creation of a system to link ALL responders in a wide variety of scenarios (fires, floods, earthquakes, Weapons of Mass Destruction- terrorism, etc.). The goal is the sharing of all relevant data, amongst critical officials, during the inevitable chaos of a stressed civil-federal-state/local environment. NIUSR has been engaged with various federal organizations, including the:

Defense Information Systems Agency, (DISA), MCI WorldCom, CISCO, Defense Threat Reduction Agency, U. S. Marine Corps Warfighting Lab, at

Quantico, VA, and Tactical Systems Support Activity, San Diego, CA., USAF Electronic System's Center (ESC) at Hanscom AFB, MA, U. S. Navy, 3rd Fleet Medical Component, National Emergency Management Association (NEMA), The State of California, and The Association for Contingency Planners.

“The XII premise is creation of a system to link ALL responders in a wide variety of scenarios (fires, floods, earthquakes, Weapons of Mass Destruction- terrorism, etc.).”

These organizations are about to enter into a new phase of demonstrations. The focus of these demonstrations is the incorporation of the use of satellites as a major backbone of the system. It is the intention of XII/2000 to field a prototype this year. Meetings are underway on final decisions as to scenario, location, and lead agency and industry players.

Recent, if partial, successes have been shown in demonstrations this past January, in a series of tests with the Marines on the West Coast (as part of MEF-TEC at Camp Pendleton); with the Air Force at Hanscom AFB, MA; and the 3rd Fleet in its “Forward From the Sea” exercise in April '99.

What XII could be with effective support:

An overarching matrix to support existing Commercial-Off-The-Shelf (COTS) Emergency management Software Applications for interlinking communications.

A Network solution to the need for interlinking communications.

Additional things that XII could provide with effective support.

Additional Things That XII Could Provide with Effective Support.

An effective employer of available connectivity, for distribution of key data

A repository/distribution agent to provide critical data elements of interest to emergency managers during crises and to planners for crises preparation.

A fully developed Concept of Operations, with a mature set of procedures.

A Robust training vehicle and model for future growth.

Point of Contact:

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PO Box 91648
Santa Barbara, CA 93190
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RHODE ISLAND: FIRST SHOWCASE STATE FOR DISASTER RESISTANCE AND RESILIENCE

By Michele Steinberg

The smallest state in the U.S., Rhode Island is also one of the most densely populated¹. With 420 miles of coastline, Rhode Island is vulnerable to hurricanes and winter coastal storms that have the potential to cause extensive loss of life and property and severely disrupt essential human services. In the past century, two major hurricanes (1938 and 1954) killed 281 people and inflicted over \$1 billion in damage (in today's dollars). Today, residential and commercial coastal property in Rhode Island, valued at more than \$83 billion, is at risk from damage in a repeat of the 1938 or 1954 hurricanes or in the event of a 100-year flood.

In consideration of these and other factors, Rhode Island Governor Lincoln Almond declared the state a "Showcase" for disaster resistance and resilience by Executive Order in December 1998. This order directs state agencies to work together around a specific set of elements designed to reduce Rhode Island's future vulnerability to natural hazards. The initial partners in this effort were the Institute for Business & Home Safety (IBHS), Rhode Island Sea Grant at the University of Rhode Island Coastal Resources Center, the Rhode Island Emergency Management Agency (RIEMA) and the Federal Emergency Management Agency (FEMA). Much of the Showcase State effort builds on work accomplished by Sea Grant/URI Coastal Resources Center and RIEMA since 1991 on the Rhode Island Hazard Mitigation Project (see "The Rhode Island Hazard Mitigation Program" in the Fall 1998 issue of *Intercoast Network*). This strong foundation and the state's small size have been advantages in the piloting of a statewide strategy for disaster resistance and resilience.

IBHS and its partners created a set of 14 elements, or working areas, to achieve the goals of the Showcase State. These goals are:

- to help a state and its citizens help themselves by reducing vulnerability to natural disasters;
- to generate a "me too" attitude among other states throughout the nation by showcasing the successful efforts of particular states; and
- to learn what works and what does not work to reduce the emotional and financial devastation caused by natural disasters.

In Rhode Island, the Showcase State partners face the challenge of working in a state that, while it is vulnerable to a number of hazards, has not experienced a major disaster in several decades. The Showcase State initiative is intended to help institutionalize loss reduction actions as part of everyday decision-making. Until people believe that a disaster can happen to them, they will do little to change their actions to protect themselves. In the past eight months, the Showcase State effort has made a great deal of progress in changing the way Rhode Island deals with natural hazards.

Milestones

A Showcase State Steering Committee has been formed from the state agencies and private-sector entities responsible and accountable for implementing various actions that will help the state become more disaster resistant and resilient. The Committee has met quarterly through 1999 and has developed a first-year action plan, and the framework for a five-year plan. A year-end report will be provided to the Governor.

A subcommittee on hazard identification and risk assessment will meet this fall to set parameters and a starting point for a statewide risk assessment. Priorities of the five-year plan will depend on the results of this assessment. Rhode Island state agencies and private entities are already doing a great deal in this arena. Some communities have already begun to assess risk at the local level and incorporate it into their comprehensive plans.

The Showcase State partners recognize that if businesses do not recover after a natural disaster, communities do not recover. Private entities including the Rhode Island Joint Reinsurance Association (FAIR Plan), Narragansett Electric, and AT&T Wireless Services provided initial funding to establish a statewide Disaster Recovery Business Alliance. This private-public link is intended to improve coordination on disaster preparedness, mitigation, response and recovery. The majority of businesses in Rhode Island are small (97 percent have 500 or fewer employees), so working with existing organizations such as Chambers of Commerce has been important to reach businesses with the disaster resistance message. Workshops and informational materials have been tailored to small business sectors. The Rhode Island Manufacturers Extension Service and a major workers compensation insurer have been supportive of efforts to make businesses disaster-ready. On the public sector side, the Rhode Island Department of Administration received a \$92,000 grant from the U.S. Economic Development Administration (U.S. Department of Commerce) to work on Showcase State initiatives and to participate in training on disaster-resistant economic development.

¹ 1990 U.S. Census data lists the Rhode Island population at 1,003,464, with a 1998 estimated total at 987,263. The U.S. Geological Survey lists Rhode Island land area at 1,054 square miles.

Two of the most important aspects of creating disaster-resistant communities are improving the way structures are built to withstand natural hazards, and ensuring that development decisions take natural hazards into account. Rhode Island has a state building code with high standards for wind, water and seismic hazards. The Rhode Island Building Commission is working to improve education on hazards for builders and enforcement officials, and to change the code to promote simple, inexpensive upgrades for wind hazards when buildings are renovated. Rhode Island has a State Guide Plan for development, and mandates comprehensive plans at the local level. The State Guide Plan includes consideration of the flood hazard in its land use element. When the land use element is updated next year, state officials hope to include broader policies on multiple hazards. State agencies as well as local communities must agree to and abide by these policies. In the next several months, Rhode Island communities will pilot test an IBHS self-rating form designed to gauge how well their local plans incorporate natural hazards concerns.

Coordinated, effective emergency response is vital in the immediate aftermath of a disaster. State, local and federal government officials are working cooperatively to improve emergency response capability, standards and training, and shelter capacity. IBHS is working with the state to develop an early access system for insurance adjusters, to speed the post-disaster insurance claims process and thus improve quick recovery for residents and businesses.

The Showcase State effort supports and in turn is supported by FEMA's Project Impact initiative. In

Rhode Island, the cities of Warwick and Pawtucket received seed funds from FEMA to reduce their vulnerability to natural hazards. Showcase partners are working with the two communities to pilot various initiatives, including the retrofit of nonprofit child care centers. An IBHS

Indiana Holds Workshop focused on the Wabash Valley Seismic Zone

The largest earthquakes in the Central United States in the last 20 years have occurred in the Wabash Valley Seismic Zone. This area includes Indiana, Illinois and Kentucky. These earthquakes were a 5.5M in 1968 and a 5.0M in 1987. What if these earthquakes were 6.0M or larger? The late Otto Nuttli, a seismologist from the University of St. Louis suggested that we could expect a 6.8M earthquake to strike this region. Over the last 10-15 years geologists have found evidence of even larger ancient earthquakes along the Wabash River near Vincennes and New Harmony Indiana.

On September 2 and 3 the Indiana State Emergency Management Agency in partnership with the CUSEC State Geologists, CUSEC and the Indiana Department of Transportation conducted a day and half Earthquake Awareness Conference on the Wabash Valley Seismic Zone at the Indiana Department of Transportation District Office in Vincennes Indiana. The purpose of the conference was to raise the awareness of the Wabash Valley Seismic Zone and why this region should become more prepared and to take the proper mitigation measures.

Speakers presented topics on recent seismic activity in the region, geology updates, mapping, The Central United States Partnership (CUSP), HAZUS, bridge retrofitting and post earthquake bridge inspection to name a few of the topics that were covered. As well as a panel discussion session at the end of the first day to openly discuss any topics that were addressed during the day.

There was overwhelming response of participants for this conference. 75 people were registered and on the day of the conference the numbers swelled to well over 100 signed in. There were local, state, and private sector representatives that both attended and made presentations.

On the second day an optional field trip was conducted by boat to show anyone interested liquefaction features along the Wabash River near Vincennes. This gave an opportunity to show participants these features and an explanation of how liquefaction occurs.

Additional contributions to help make this conference a success came from the Knox County American Red Cross and the Knox County Emergency Management Agency.

program, "Protecting Our Kids from Disasters," helped raise public awareness about natural hazards by gathering insurance company volunteers and others

to make the Boys & Girls Club of Warwick and the Pawtucket Day Nursery safer places for children. Volunteers secured bookshelves and picture frames to walls, placed protective sleeves over fluorescent

bulbs, and installed safety latches in cabinets and drawers. A local window-film distributor installed safety film on windows that will keep glass shattered by wind or debris from flying indoors. Future public outreach efforts are planned, including more childcare retrofits.

"The Showcase State...partners recognize that if businesses do not recover after a natural disaster, communities do not recover."

Rhode Island has proved to be an excellent pilot for the Showcase State idea. In less than a year, the goal of generating a "me too" attitude among other states has been met. IBHS will work with two more states in 2000, and is considering requests for designation from three additional states. The value of protecting public and private assets from natural hazards becomes more evident as work proceeds in Rhode Island.

For further information contact: Michele Steinberg, Assistant Director of Showcase Programs and Special Projects, Institute for Business & Home Safety, 175 Federal Street, Suite 500, Boston, MA 02110-2222 USA. Tel: 617-292-2003. FAX: 617-292-2022. E-mail: msteinberg@ibhs.org.

NEW MADRID RAPID EARTHQUAKE INFORMATION SYSTEM

By Gary Patterson, Mitch Withers, Paul Bodin

Staggering earthquake losses over the last decade have compelled seismologists to improve relief efforts by providing rapid earthquake information transfer from seismic networks to emergency managers. A number of rapid earthquake processing systems exist with "earthworm" being the most widely used rapid processing system in the U.S. Earthworm was originally developed by the U.S. Geological Survey at Menlo Park, CA, as a warning system for northern California.

Other similar systems include CUBE in southern California, Antelope (proprietary package developed by Boulder Real-time Technologies), SIL in Iceland, GA for CTBT monitoring, and UrEDAS in Japan. It is prudent to apply similar technologies in the areas affected by the New Madrid Seismic Zone (NMSZ) given the historical recurrence of large central U.S. earthquakes and the continued, relatively high level of seismicity. To this end, the Center for Earthquake Research and

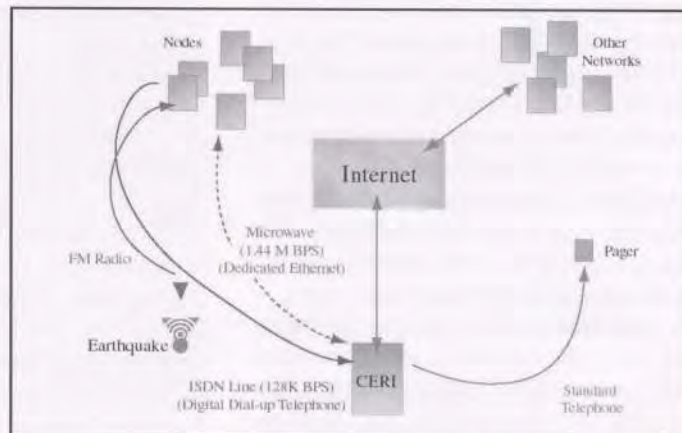
on the recipient (waveforms to other seismic networks within seconds; time, location, and magnitude to emergency response agencies and industry within minutes; archives and bulletins to researchers and the public within hours or days). The system relies on a community of users and

developers to provide continuous improvement and technical support. It exploits standard internet protocols and provides a practical method to bring a new level of inter-regional and national seismic network cooperation by combining networks into a more cohesive system.

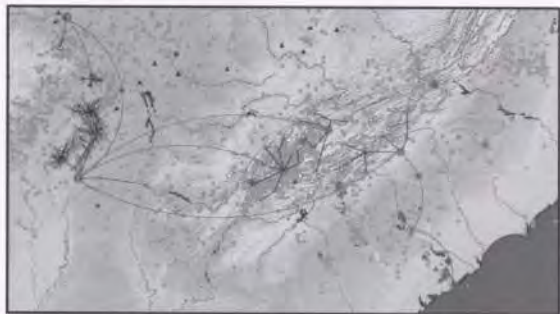
With the installation of a digital microwave backbone, CERI will have the ability to provide rapid information transfer from its seismograph networks to emergency managers in a matter of minutes.

The CERI seismic networks Rapid Earthquake Information System currently under development is designed to provide information to scientists, government and private institutions, and the public within sufficient time to allow effective response to a potentially damaging earthquake. Continuous monitoring of smaller earthquakes provides

necessary data for seismic hazard estimation and scientific research. Historical damaging earthquakes in the central U.S. suggest a need for seismic mitigation efforts in the New Madrid Seismic Zone. Lessons learned from other seismically active regions (most recently



Taiwan and Turkey as well as Northridge, CA and Kobe, Japan) have revealed a need to mitigate collaborative damage (e.g. ruptured gas-lines and associated fire hazard). This active mitigation is made possible by rapid, automated determination of earthquake source characteristics. Emergency managers, rescue workers, and structural engineers can be served by rapid information on the amplitude, duration, and frequency of ground shaking. Availability of this information will allow efficient and productive deployment of resources within several minutes. To increase the probability of reliable operation on large events, the automated system must be continuously exercised and tuned using smaller, more frequent earthquakes. Collaboration between 15 academic institutions allows shared development, standardized data exchange, and a wide test-bed for discovering points of failure. Successes to Date Continuous recordings of earthquake ground motions are available via the world wide web at <http://folkworm.ceri.memphis.edu/heli>. These images are updated every ten minutes. For knowledgeable users, they provide a mechanism for verifying system operation, for quickly verifying whether an alarm is real, and for estimating an appropriate level of response. Real-time inter-network data exchange has been established between the New Madrid

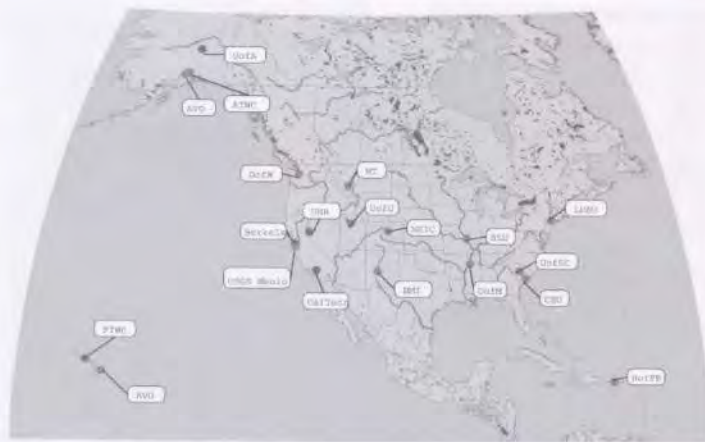


Seismic networks in the U.S. using the "earthworm" rapid processing system or a derivative of it.

Information (CERI), in cooperation with the Mid-America Earthquake Center, the Union Pacific Foundation, and the U.S. Geological Survey is developing a system for the central U.S. to rapidly provide earthquake information to various users. The type and speed of information depends

seismic network and the National seismic network operated by the U.S. Geological Survey. This real-time exchange enhances the capabilities of both networks at minimal additional costs. Future efforts for 1999 will combine other networks in the eastern U.S. (e.g. St. Louis, North Carolina and South Carolina). This real-time exchange makes possible a web of data exchange so that rapid and reliable information dissemination is dependent on no single network. This capability is critical in light of the likelihood that the network nearest to a damaging event may be compromised.

Arcs represent internet connection between seismic networks. Not shown are real-time waveform exchange between the NEIC in Golden, CO and Columbia, SC, Hickory, NC, Memphis, TN, and St. Louis, MO. Rapid page alerts have been implemented at CERI for moderate to large events. Current efforts are focused on reducing the false alarm rate and hence pages are presently only sent to CERI seismic networks staff. We will be installing higher volume, more reliable connections between CERI and the remote processing nodes. The addition of all available stations should reduce the false alarm rate to nearly zero. Rapid database



"Earthworm" rapid information processing in the Southeast.

input has been established at CERI using local information and rapid feeds from the U.S. Geological Survey's National Earthquake Information Center (NEIC). This is a development system that is not currently reviewed by analysts and may contain significant numbers of false alarms

while it undergoes testing and tuning. Nevertheless it demonstrates the ability to update a database of seismicity in near-real-time. It is searchable via the world wide web at <http://folkworm.ceri.memphis.edu/phaseIII>, and is based on commercial Oracle

Example Applications for FEMA's Seismic Rehab Guidelines Now Available

The Federal Emergency Management Agency (FEMA) has announced the publication of Example Applications of the NEHRP Guidelines for the Seismic Rehabilitation of Buildings (FEMA 276). The Example Applications volume (FEMA 276) discusses and illustrates the process for applying the Guidelines (FEMA 273) through the use of real building examples taken from around the United States.

Organized around typical building types, the volume presents descriptions of actual buildings that have been seismically rehabilitated. The buildings come from all across the U.S., representing a wide variety of expected seismicity, ages, uses, and conditions, and have been upgraded to a variety of different rehabilitation objectives.

For each building type, there is a description of the characteristic structural system, a listing of typical seismic deficiencies commonly observed, corresponding suggested rehabilitation measures, and a tabulation of typical costs of seismic rehabilitation for that building type. Each building type is then illustrated by at least two examples of real structures (one in a region of high seismicity, the other in moderate or low) that have undergone seismic rehabilitation. These mini-case studies include a photograph of the building, present a list of actual deficiencies found, and describe the rehabilitation scheme that was developed to correct the deficiencies. The mini-case studies also include several historic buildings, and examples of using innovative technologies such as seismic isolation, energy dissipation, and seismic dampers.

For each major construction material (steel, concrete, wood, and masonry), one building is presented with example calculations for a FEMA 273 analysis. These calculations provide a detailed, step-by-step illustration of the use of all of the key procedures contained in FEMA 273.

Example Applications is the third companion document to the NEHRP Guidelines for the Seismic Rehabilitation of Buildings (FEMA 273). Other volumes in the set include the Commentary (FEMA 274) and Planning for Seismic Rehabilitation: Societal Issues (FEMA 275). All four volumes can be obtained free of charge by calling the FEMA Distribution Facility at 1-800-480-2520.

software. Future Work Current communications allow a subset of approximately 15% of the New Madrid seismic stations to be telemetered to Memphis in real-time. The others are available as needed via digital telephone dialup. This system has proven to be inadequate for a reliable automated alert system and produces a large number of false alarms. We have acquired funds from the NSF and the USGS to combine with our 1999 Union Pacific grant and CERI resources to install new communications links between CERI in Memphis and the remote processing nodes at Dyersberg, TN, Marked Tree, AR, and New Madrid, MO. This system will provide sufficient continuous bandwidth to significantly enhance reliability and will allow reduction of both the false-alarm rate to nearly zero, and a lowered detection threshold (the detection threshold for the automatic locator is projected to be less than magnitude 2; the current threshold is greater than 3; other processing streams are used for smaller events). This is possible

using spread-spectrum microwave technology. We expect to have this system online by early 2000. Data exchange will be established between neighboring networks to provide redundancy in the event that any network is compromised during a large earthquake. This capability also increases the accuracy of available information by increasing the real-time availability of raw data sources. CERI and the Mid-America Earthquake Center will be hosting a workshop on April 17 and 18, 2000 to educate users on the availability of rapid earthquake information, provide an opportunity for end user input, and also provide an opportunity to form partnerships for sharing of both costs and services. Meeting attendance will be by invitation only to state and municipal emergency managers, utility managers, and various private sector interests from across the Central US. CERI Information Services 3892 Central Memphis, TN 38152 901-678-5264 F) 901-678-4734, ceri website: www.ceri.memphis.edu.

The Memphis-Shelby County Seismic Hazard Mapping Project

Eugene S. Schweig, U.S. Geological Survey, Memphis, TN

The U.S. Geological Survey is working with researchers, engineers, and public officials to develop a series of high-resolution urban maps for Memphis and Shelby County, Tennessee. Memphis is representative of most cities in the central and eastern U.S., having a small percentage of seismically engineered buildings and infrastructure. Previous studies have identified the Memphis metropolitan area as being vulnerable to seismic ground motion due to its high population density, proximity to capable faults, and low regional attenuation.

We consider the early inclusion of potential users and critics of the maps as critical to creating useful products. Thus, we created an Advisory Board of Users and researchers, comprising Earth scientist, engineers, emergency managers, city planners, utilities, and others. With Boards input we put together a plan that will result in a series of products through 2002. The major products envisioned include surficial geology maps, subsurface geological and

geotechnical databases, liquefaction and landslide susceptibility maps, ground motion amplification maps, and deterministic and probabilistic ground motion maps. All products will be accessible digitally. The area covered by the maps will include six 7.5 minute quadrangles.

The USGS and its partners in the Mid-America Earthquake Center, the external USGS-NEHRP program, the Central U.S. Earthquake Consortium, the Organization of CUSEC State Geologists, and university researchers are collecting and analyzing data to better define earthquake recurrence, attenuation, and site effects. Recurrence studies already underway include mapping of paleoliquefaction features and regional GPS surveys. Studies focusing on the metropolitan Memphis area include geologic mapping of surficial deposits, definition of shallow shear velocity structure using seismic reflection methods, compilation of a digital database of well-log data to characterize subsurface stratigraphy and geotechnical properties, and measurement of both microtremors and earthquakes to characterize variations in site amplification. In addition to the hazard maps and derived information, the project already has begun serving as a focal point for research on fundamental scientific questions, for community outreach, and ultimately for mitigation activities.



Central U.S. Earthquake Consortium State Geologist's Earthquake Hazard Mapping in the Midwest

Robert A. Bauer, Coordinator CUSEC State Geologists, Illinois State Geological Survey, Champaign, IL

The Central U.S. Earthquake Consortium (CUSEC) State Geologists from the Midwestern states, have gathered and used information on soils properties in the Midwest to produce maps showing where nonlithified geologic materials (NGM) would amplify earthquake ground motions. The first CUSEC seismic hazard map was produced at a scale of 1:2,000,000 or 1 inch = 31 miles for a seven state area. This map presented two units where amplification would likely occur and areas where it probably would not. The next level of soil amplification mapping was produced at a scale of 1:250,000 or 1 inch = 4 miles for twelve 1° x 2° areas that cover parts of the states of Illinois, Missouri, Kentucky, Indiana, Ohio, Mississippi, Arkansas and Tennessee using various existing geologic maps. Some existing geologic maps showed subsurface data (3-dimensional data) and others were surficial maps extrapolated in the third dimension by experts in the area. Previous researchers have shown that the amount of amplification of "soils" is correlated to the shear wave velocity of NGM. Based on this relationship, a classification has been put

forward by the National Earthquake Hazard Reduction Program (NEHRP) and used in the 1997 Uniform Building Code. In the Midwest, the state geological surveys have coordinated their effort to produce a coherent display of geology across state lines and provide a consistent use of the soil amplification classification based on a small number of measured shear wave velocity values of Midwest NGM. A comparison of approaches (soil classification based on surficial maps versus 3-D maps) showed about 60% of the map toward less amplification when the surface was considered. To supplement mapping additional shear wave velocity values are being measured on NGM to produce a classification based on lithologies of the Midwest NGMs.

These maps of soil amplification in electronic form are critical in producing realistic estimates of damage in the Federal Emergency Management Agency's (FEMA) Earthquake Loss Estimation Program (HAZUS). The next level of mapping will be at 1:24,000 (1 inch = 2,000 ft) of larger in the FEMA Project Impact communities. This will require additional detailed geologic mapping at this scale.



Arkansas Governors Seismic Advisory Council Provides Leadership to recently formed State Project Impact Advisory Council

On December 10, 1999, the Arkansas Project Impact Advisory Council (PIAC) and the Arkansas Governor's Advisory Council (GEAC) held a combined meeting in Little Rock, Arkansas. The primary purpose of the joint meeting was to expand the available resources of PIAC. The initial PIAC consisted of a membership of 24 Arkansas state agency representatives. During the first meeting of PIAC on June 1, 1999, the limits that "state agency only membership" placed upon the council was rapidly recognized. PIAC voted to open its membership to private sector and local government representatives. GEAC, which has existed since December 1984, already consisted of 45 members, with an excellent cross-sectional representation. It was determined that with the long term and successful experience of the GEAC members, the seismic program of Arkansas could provide strong leadership within the Project Impact initiative.

Readers of the last issue of the CUSEC Journal "REJUVENATING THE EARTHQUAKE PROGRAM THROUGH PROJECT IMPACT", Vol. 5, #3 Winter 1998 will recall the emphasis that was placed on the earthquake program helping to build a stronger P.I. initiative. Arkansas is the first in the Nation to join these two programs in such a dramatic way and from first indications they are a perfect compliment to each other.

CUSEC Board appoints Jim Wilkinson as Executive Director

At the time this issue of the Journal was being developed, I had no idea that I would be selected as the next Executive Director of CUSEC. This presents an exciting but challenging future for me personally and professionally and I am honored to have the opportunity.

The strength of CUSEC has always been in its ability to collaborate with other organizations in addressing the seismic hazard in the central U.S. I plan to continue along this path and place more emphasis on the idea of partnerships and collaboration. The seismic problem that we face in the central US is enormous and well beyond any one organizations ability to address. By working together, in partnership I believe we can begin to make meaningful progress in reducing our vulnerability to the seismic hazard and in the process become an integral component of an interdisciplinary, cross-hazard approach to an overall hazard reduction program.

If your not a part of CUSEC or the Central US Partnership and you would like to learn more about how you or your organization can get involved, contact CUSEC Monday through Friday 8:00am - 4:30 PM CST at 1-800-824-5817 or e-mail us at cusec@cusec.org.

Don't just watch the changes that are taking place, come be apart of this new exciting partnership.

CUSEC Web page being Revamped

CUSEC is currently underway with a complete revamp of its web page. Initial work should be done by mid February. Added features will include on line registration for workshops and seminars, a calendar of events that reflects activities of CUSEC, CUSEC States and its Partners.

In addition a large percentage of CUSEC's Publications will now be available to download, including back issues of the very informative CUSEC Journal. The web page will also continue to offer valuable information related to Mitigation, Response & Recovery, and Public Awareness as well as safety tips.

New Brochures Just Released

CUSEC has just reissued the brochure "Yes, You Can Survive." The brochure has been updated with new information and a complete new format featuring the earthquake mascot "Seismo." Another brochure, the "Planning Process," has also just been released. Adapted from FEMA-77, this brochure has been crafted to reflect an all hazards approach to earthquake preparedness.

Currently, both brochures can only be obtained by contacting CUSEC directly but will soon be available on the CUSEC web page.

A tool for hazards educators . . .

Disaster Time Line: Selected Events and Outcomes (1965-2000).

The new Disaster Time Line provides a unique, graphic depiction of major disasters, both natural and technological, that have affected emergency management policies in the U.S. Using colorful computer graphics, the Disaster Time Line chart (roughly 11" by 32") shows not only major events and the year they occurred, but also the influence each event had on major after-action reports and analyses, federal statutes, federal regulations and executive orders, federal response plans, and major federal organizational changes.

The Disaster Time Line should prove a valuable tool for both teachers and students of emergency management; consultants who must brief clients on the history or context of emergency preparedness decisions; emergency managers at all levels of government who need to educate junior staff regarding significant disasters, their outcomes, and their influence on disaster policy; and any other persons interested in the recent history of hazards and disasters in the U.S.

The Disaster Time Line costs \$20.00, including postage within the U.S. Contact the address below for details about bulk purchases, international mailing costs, or other mailing arrangements. Orders must be prepaid by check or money order and should be directed to:

Disaster Time Line
Claire B. Rubin and Associates
P.O. Box 2208
Arlington, VA 22202
(703) 920-7176
e-mail cbrubin@aol.com.

For more information, see <http://www.disaster-timeline.com>.



CUSEC'S LONGEST SITTING BOARD MEMBER RETIRES

J.E. "Jim" Maher, the last original founding director of the Central United States Earthquake Consortium, has retired as Director of the Mississippi Emergency Management Agency, a post he has held through the administrations of five governors.

Maher, who was first appointed on February 16, 1980 by then-Governor William F. Winter, has the distinction of being the longest serving state director in the nation and is dean of the National Emergency Management Association.

At age 70, he said he was ready to pass the gavel to another. "I've enjoyed my service to the people of Mississippi, but it's time for someone else to answer the fire bell," Maher said. "For sure, I won't miss my pager at all."

Born in Sioux Falls, S.D. on Oct. 21, 1929, Maher was appointed Midshipman (USNR) in 1947 and graduated from the University of Mississippi in 1951. (Maher later earned masters degrees in Public and Business Administration from Mississippi College.) That same year he was commissioned as a second lieutenant in the United States Marine Corps. He saw combat in Korea and Vietnam and served in other areas of the Far East and Middle East. Additionally, he served at posts and stations in the United States. He retired from the Marine Corps in 1971 as a Lieutenant Colonel who had received many military decorations and awards, including the Bronze Star with Combat "V" and the Meritorious Service Medal.

During his 20 years of service, Maher saw the face of emergency management evolve from the civil defense program of the 1950's to the comprehensive program it is today. The Mississippi Emergency Management Agency has seen dramatic changes as well.



"In 1969 when the recovery operation began after Hurricane Camille, employees had to take their private automobiles into the disaster area to work. Their 'communications equipment' consisted of a roll of dimes and finding a pay phone that was working," he said. "Today, MEMA has a fleet of vehicles that are equipped with satellite radiotelephone units."

During his tenure as director, Maher has represented Mississippi in numerous national and regional organizations. He has been president of the National Emergency Management Association, chairman of the Central United States Earthquake Consortium, and chairman of the Advisory Council for the National Institute of Urban Search and Rescue. He is currently a member of the National Task Force on Emergency Response and serves as chairman of the Mississippi Emergency Response Commission, the Nuclear Waste Technical Review Committee, the Mississippi Automated Resource Information System (MARIS), and the Hazardous Waste Technical Siting

Committee. He is also a member of the State Mapping Advisory Committee, the Marine Corps Association, and the Retired Officers' Association.

Maher and his wife of 48 years, the former Elizabeth Brown of Greenwood, reside in Clinton, Mississippi. The Mahers have five children and two grandchildren.

Everyone within the CUSEC organization wishes Mr. Maher the very best in his retirement years.

Robert R. Latham appointed Director of MEMA

Recently elected Mississippi Governor Ronnie Musgrove has appointed Robert R. Latham, Jr., of Senatobia, Mississippi to be the next Director of the Mississippi Emergency Management Agency (MEMA), replacing the retiring J.E. "Jim" Maher. Mr. Latham was previously Director of the Tate County Emergency Management Agency.

CUSEC wishes to extend a warm welcome to Mr. Latham. Everyone in the organization is looking forward to meeting and working with him.



DATES TO MARK

February 25- March 2: National Emergency Management Association Mid Year Conference, Arlington, VA. Look for additional info on the NEMA web site: www.nemaweb.org

HAZUS Training Workshops. Offered by: Federal Emergency Management Agency. Emmitsburg, Maryland: February 7-10,

2000; April 17-20, 2000; June 19-22, 2000. Contact: Lillian Virgil, FEMA, Emergency Management Institute, (301) 447- 1490; e-mail: lillian.virgil@fema.gov.

May 23-24, Lake Barkley, KY - CUSP Workshop - The Next Decade for Creating Safer Communities

Mississippi Earthquake Conference. May 24-26, Sam's Town Hotel and Resort in Tunica, MS. Contact Patrick Wanker at (601) 960-9976.

May 31-June 3: EERI Annual Meeting, Adams Mark Hotel, St. Louis, MO. Contact: Jim Beavers, 217-244-4671

The Central United States Earthquake Consortium is a not-for-profit corporation established as a partnership with the Federal government and the seven member states: Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri and Tennessee; and ten associate member states: Alabama, Georgia, Iowa, 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. CUSEC supports the International Decade for Natural Disaster Reduction.

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Jana Fairrow
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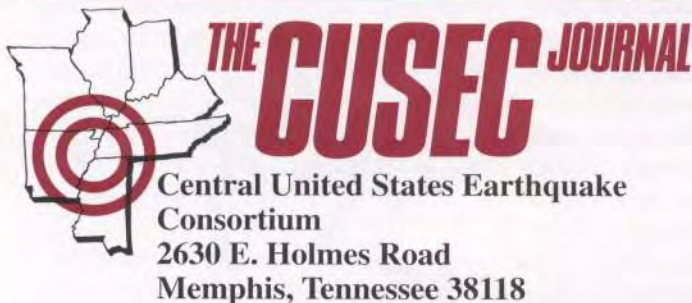
Patrick Wanker,
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Cecil Whaley
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 Federal Highway Administration
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