

Drilling Toward a New Level of Preparedness

The Great Southern California ShakeOut

Drills and response exercises are vital components of earthquake preparedness. Drills teach behavior that helps people protect themselves once the ground starts shaking, and in response exercises, trained personnel practice what to do when the shaking stops.

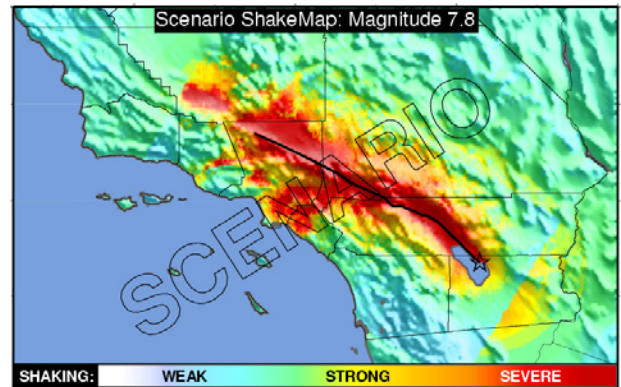
Preparedness can be heightened when it is understood that preparation is the responsibility not just of trained responders but of everyone in earthquake-prone regions, and that it involves not only learning what to do when earthquakes strike, but also doing things before they strike to mitigate their effects on people and property. Depending on how they are designed and executed, drills and exercises can help cultivate such understanding.

Grounded in Science

The Great Southern California ShakeOut was an unprecedented combination of events held in and around the week of November 12–18, 2008, in Los Angeles and other communities across the eight counties of southern California. The objective was to conduct drills, exercises, and associated events in a coordinated, innovative, and science-based manner so that collectively, they would begin to transform the public's understanding of preparedness.

Organizers utilized cutting-edge expertise from the physical and social sciences in designing the "ShakeOut." First, a multidisciplinary team of more than 300 experts drawn from government, academia, and industry developed the ShakeOut Earthquake Scenario, the most comprehensive earthquake scenario ever created. Issued in May 2008, the ShakeOut scenario revealed how a very large, but plausible, earthquake would impact southern California, describing in detail what would happen if the southernmost 200 miles of the San Andreas Fault were to rupture at 10 a.m. on November 13, 2008, producing a magnitude 7.8 earthquake. The size, scope, plausibility, and credibility of the effects described made the scenario a rich and compelling resource for preparedness planning.¹

Social scientists evaluated how this information could be used to help shake people out of an all-too-common attitude toward preparedness characterized by "it won't happen to me" passivity. ShakeOut organizers then planned a



Simplified ShakeMap of the ShakeOut scenario earthquake, designed by USGS for the news media. Colors denote intensity of shaking across southern California. Courtesy of USGS.

group of events that reflected the scientists' recommended principles for motivating behavioral change.

Innovative Pieces of a Motivational Puzzle

The ShakeOut events, which provided a framework for applying these principles, included a southern California-wide earthquake drill, state and local response and recovery exercises, an international earthquake conference, a public preparedness rally, and several novel follow-on activities. The Earthquake Country Alliance organized these events using managerial and technical support provided by the U.S. Geological Survey (USGS), which had earlier led development of the ShakeOut scenario, and the Southern California Earthquake Center, a joint National Science Foundation-USGS multi-institution collaboration. The Alliance came together as a southern California-wide, public-private partnership of individuals and organizations representing government, the business community, disaster responders, academics, and media representatives. The partnership launched www.shakeout.org, an online clearinghouse of ShakeOut information for organizers, participants, the news media, and the public.

The signature event of the ShakeOut was the earthquake drill, held as the scenario earthquake "struck" southern California at 10 a.m. on November 13. With more than 5 million participants, the drill lived up to its billing as the

¹ The ShakeOut Earthquake Scenario is described more fully in "A Hypothetical Disaster Comes to Life," the June 2008 issue of *SeismicWaves*.

largest such event ever held in the United States,² and served as a successful vehicle for educating the public about what to do during an earthquake (drop, cover, and hold on) and for getting individuals to model and practice this potentially lifesaving behavior in homes, schools, and workplaces throughout the region.

Golden Guardian 2008, the State of California's fifth annual disaster preparedness exercise, was conducted November 13–18. More than 5,000 personnel from dozens of local, state, and federal agencies and private organizations tested the state's capabilities for responding to and recovering from the scenario earthquake. Many local government agencies, schools, universities, hospitals, and businesses held complementary exercises, coupling participation in the ShakeOut drill with workplace evacuations, search and rescue simulations, medical triage exercises, and evacuee sheltering activities.

The Los Angeles International Earthquake Conference, held November 12–14, brought together more than 400 academics, policy makers, emergency managers, and disaster response experts from the United States and abroad to discuss the latest policies, practices, and tools for earthquake preparedness, response, and recovery. "The L.A. Earthquake Get Ready Rally," held in downtown Los Angeles the evening of November 14, featured the premiere of "Preparedness Now." This short film, developed by USGS and Pasadena's Art Center College of Design, depicts the consequences of the scenario earthquake in a way designed to inspire and empower viewers to prepare.

The ShakeOut also included several follow-on activities for the public. "After Shock" was an online, interactive simulation of how the public might respond in the aftermath of the scenario earthquake. For 3 weeks after the mock earthquake of November 13, participants received daily missions challenging them to develop and share strategies for coping with the quake's effects. The public was also urged to "Take One More Step" over the weekend of November 15–16 by beginning to implement the preparedness actions listed on www.shakeout.org.

ShakeOut Fallout

With the participation of about 1 in 4 residents of southern California, the drill of November 13 succeeded in injecting a massive dose of earthquake awareness into the public consciousness. This was reflected in the response to a magnitude 4.7 earthquake that struck near the epicenter of the scenario quake in March 2009. USGS noted that this event generated hundreds of news reports and inquiries from the public, while the agency received no inquiries following a similar quake in 2001. A chain of home improvement stores reported that its southern California sales of QuakeHOLD! earthquake safety supplies were 260 percent higher in November 2008 than in November 2007. In addition, a survey of ShakeOut participants found that among the messages they took from this experience were "earthquake damage can be prevented," "secure your space to prevent loss," "store more water," and "get a fire extinguisher."³

This success has persuaded many leaders that California should make the ShakeOut drill an annual event and expand it statewide. Plans are now under way for the next drill, the statewide Great California ShakeOut, which is scheduled for October 15, 2009. In support of these developments, the Earthquake Country Alliance is expanding into a statewide organization.

The process of creating and applying the ShakeOut scenario demonstrated the value of comprehensive scenarios; yielded innovative communication principles and products that motivate preparedness; illuminated resource, planning, and training needs and interdependencies among responders; and brought together organizations critical to response and recovery, opening channels of communication and cooperation. It also revealed the unaffordable response and recovery burden that such an earthquake would generate, emphasizing the need for heightened preparedness. In sum, there is ample evidence that the ShakeOut successfully jump-started ongoing efforts to heighten earthquake preparedness in California, and established new benchmarks for disaster preparedness in the United States.

² U.S. Geological Survey. "Results Are In: Great Southern California ShakeOut Successful, Sets U.S. Record!" USGS News Release, December 19, 2008. Accessed at http://www.usgs.gov/newsroom/article.asp?ID=2098&from=rss_home.

³ Dr. Lucile Jones (Chief Scientist, USGS Multi-Hazards Demonstration Project), e-mail message to NEHRP, May 1, 2009.

For more information, visit www.nehrp.gov or send an email to info@nehrp.gov.