

CREW Conference Summary

"The Business of Earthquakes - What We Learned from the Nisqually Earthquake"

By Robert Freitag, Executive Director Cascadia Region Earthquake Workgroup

The Cascadia Region Earthquake Workgroup (CREW - www.crew.org) is a coalition of private and public representatives working together to improve the ability of Cascadia Region communities to reduce the effects of earthquakes.

How did businesses fare from the Nisqually earthquake, what lessons were learned from the event, and most importantly what actions are being taken?

These were the questions that drove the Cascadia Regional Earthquake Workgroup (CREW) conference held last November 27th and 28th. About half of the 150 who attended were from the Puget Sound greater business community. The others were equally split between the scientific, engineering and government emergency management disciplines.

Several themes emerged from the conference that helped answer these questions.

1. The Nisqually earthquake was not "the big one", but was what people in the region have come to expect every 30 years or so.
2. The risk reduction actions being taken by the business community appear to be the result of increased worry from the sum total of the many events that have recently affected the region.
3. Those business risk reduction programs that were successful were balanced and comprehensive, taking advantage of all phases of emergency management.
4. Partnering may offer opportunities to reduce vulnerabilities that are otherwise outside of a business's control.

Nisqually was not "the big one"

The Nisqually earthquake occurred on February 28th at 10:54 a.m. and was a 6.8 magnitude event centered 52 km below the surface in the Benioff Intraslab Zone. Damage was light to moderate. As Craig Weaver from the USGS stressed and others supported, including Ron Sims, King County Executive, that although the Nisqually earthquake was a repeat of the '49 and '65 earthquakes, it must be understood that it was not "the big one." The Cascadia region is also at risk from a Juan de Fuca plate event as well as crustal earthquakes emanating from several known fault systems.

Glen Woodbury, Director of the Washington State Emergency Management Division, illustrated that the impact included casualties and damage to homes, businesses, lifelines, transportation, communications and government. The greatest losses were to infrastructure and non-structural elements of buildings with chimney failures being the most common damage to homes.

John Conrad, Assistant Secretary with the Washington Department of Transportation, Don Ballantyne, ABS Consulting, and Bill Heubach of the Seattle Public Utilities emphasized that Nisqually caused damage but that the transportation system remained functional. But these presenters concurred that the system will remain extremely vulnerable for some time and that this earthquake is not an indicator that the systems will survive a significant crustal or subduction zone event.

Tim Walsh of the Washington DNR and Linda Noson, consultant, presented a scenario of a Cascadia event

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that according to a HAZUS model would result in tens of times the damage experienced by a Nisqually-type event. (Maps of these scenarios will be available on the CREW web site this spring and through the University of Washington Nisqually Clearinghouse – for information contact Bill Steele at bill@geophys.washington.edu).

Multiple events spur businesses into taking action

According to Jacqueline Meszaros, University of Washington professor, people take action, such as mitigation, when they are worried, but their worry is not entirely an effect of experience.

It was difficult to assess whether this moderate earthquake had a lulling effect (We did okay so why worry) or was a call to action. However, it probably doesn't make any difference when seen within the context of other recent events. During the past few years, the region's contingency planning community has had much to worry about and as a result there has been a heightened interest in how to apply the lessons learned from this real event.

Successful risk reduction programs are balanced and comprehensive

Case study after case study voiced the need for mitigation within the context of a balanced risk reduction approach taking advantage of opportunities within all phases of emergency management. Mitigation worked where implemented and where not complicated by external vulnerabilities.

Preparedness: Practiced preparedness measures saved lives and reduced adverse business impacts – nothing "earth shaking" here. However, as Wendy Freitag of Washington Mutual Bank pointed out, it is extremely important for an institution to incorporate their culture into the planning process, empower their employees, and partner with the larger community.

This point was emphasized by the presentations of representatives from two very different cultures – Harlan Patterson, Vice Provost of the University of Washington and Ross Bogue, Vice President of The Boeing Company (see Sidebar).

Response: Most of the response actions that proved successful for the Nisqually earthquake would have worked well for a wide range of hazard-related incidents, including a localized terrorist attack. Rick Arthur,

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Community Culture & Preparedness

The University of Washington had over a million dollars in



non-structural damage directly caused by the Nisqually Earthquake and they are accordingly instituting extensive mitigation measures. In contrast, they suffered many times this amount when the University Horticulture Center was destroyed this past May. As described by Vice Provost, Harlan Patterson, their challenge is to rebuild the facility and institute a preparedness plan within the context of a culture that demands openness, access and a free exchange of information. On balance, consider the high-tech community where the culture demands the protection of intellectual property.



The Boeing Company has evolved a different culture. Anyone who knows a Boeing airplane worker understands that they love to

work on airplanes and have wonder for the product they produce. It should not be a surprise therefore that Ross Bogue, Boeing Vice President, during his luncheon address, cited the heroic actions of Boeing employees instrumental in reducing loss. This was followed in importance by the company's effort in preparedness planning and in its partnering with the larger community.

Bogue described how within minutes, Boeing activated 8 Emergency Operations Centers and these centers were fully operational and staffed in 45 minutes. Emergency generators kicked in and within 42 seconds, the company's Computing Emergency Response Center transferred computing control to a backup center in Wichita, Kansas. But Bogue was most excited when he told of how individuals stayed behind to ensure that the gas was shut off within minutes and water within the first half hour. He told of how an overhead crane operator remained at his post until the fin of a large commercial aircraft was no longer a hazard thereby saving lives and millions of dollars in product.

It is important to note that the Nisqually earthquake caused damage to the Boeing plant but that product orders were not affected and no product delivery was delayed. If you were a customer and you hadn't read the press you wouldn't know Boeing had damage.

Starbucks Vice President, reported that even though their headquarters had to be abandoned, their business remained uninterrupted. Starbucks' use of classic contingency planning measures would have helped save the business for a wide range of hazards (see below).

The Washington State Adjutant General, Timothy Lowenberg, reinforcing the theme during his lunch address, said that we must know what to do at all levels – individual, home, work environment, region, state and as a nation.

Recovery: Outside of losses from nonstructural failures, the recovery of small businesses was stifled as much by externalities as by failures within their own facility. Large companies with significant markets outside of the Region did not suffer a loss in business from the earthquake.

In a survey of 107 businesses located in the older commercial areas near Seattle's downtown, Stephanie Chang, University of Washington Professor, found that the most often noted impact was not damage but from factors external to business operations. A loss in customer base was caused by street closure, media perception, loss of parking and ongoing city repairs in the area.

Mitigation: Mitigation measures taken by individual businesses worked, and they worked best when combined with more traditional business resumption practices.

This was true for non-structural mitigation as Barry McDonnell, Contingency Planners and Recovery Managers (CPARM), stated in his presentation. McDonnell interviewed over 100 businesses and captured what worked and what didn't. His report cites many very practical examples (see www.crew.org/papers/nisqually%20lessons.html). The success of non-structural mitigation measures was mentioned often.

David Swanson (Washington Association of Structural Engineers) told of the advantages of performance-based design and encouraged business owners to view the concept as a tool for their use, and to follow the lead of The Boeing Corporation and Starbucks.

Partnering is vital in business resumption planning

There appears a missed opportunity in that mitigation should be expanded through partnerships to include mitigating external vulnerabilities. As previously mentioned, much is outside of the control of a given business. This emphasizes the need for partnering and partnerships.

Stephanie Chang raised the issue when she stated that her business survey indicated that the greatest types of problems encountered were caused by factors external to business operations. Chang was talking about small business; however, Ross Bogue of The Boeing Company suggested an approach, although at a different scale, to address this problem when he discussed the success The Boeing Company has achieved in reducing risk by partnering with the larger community.

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Avoiding Interruption

The Starbucks headquarters occupies a retrofitted Seattle historic landmark. The earthquake caused very little structural damage to this facility. In the Starbucks' presentation, Rick Arthur, Vice President, described how the building still had to be vacated because of the failure of non-structural elements - principally light fixtures and a broken water pipe. Many business resumption actions were undertaken (e.g. staff was relocated to a temporary facility, data was backed up). However and most importantly, if you hadn't seen some rubble alongside the Starbucks trademark "Sirens" in the local press, you wouldn't have known that this coffee giant's headquarters had been abandoned. Their business remained uninterrupted. Their use of classic contingency planning measures would have helped save the business for a wide range of hazards, including a local terrorist attack.

At right: Exterior cracks in the Starbucks Corporate Headquarters Building - Image Courtesy A. Sanli & M. Celebi, U.S. Geological Survey

Recovery

The Seattle Chocolate Company nearly faced the loss of its customer base when their building suffered structural and non-structural damage. Terry Wakefield, company owner, described how the loss of power threatened production and delivery of their chocolate. Auxiliary power was obtained in time to avert losses and the Company has since relocated to a new building outside of the affected area and created redundancy for their critical systems.

At right: Significant structural damage at the Seattle Chocolate Company - Image courtesy Michael Lienau

Small service businesses located in Pioneer Square (Seattle's historic district) that occupied retrofitted buildings, found their businesses closed because the debris from other non-retrofitted structures prevented customer access. For most businesses their limited sphere of influence made them dependent on the traditional preparedness, response, and recovery tools.

A large corporation like The Boeing Company appears to be different in scale only. Having spent millions on mitigation, The Boeing Company survived the earthquake with no loss in business only to find themselves in need of letting go of tens of thousands of employees because of an event in New York that had absolutely no effect on any of the Boeing facilities.

This suggests the need for businesses to consider a much wider range of vulnerabilities to functions critical to their business — to look to their neighborhood, city and even region and to develop partnerships, mutual aid agreements, and neighborhood-wide mitigation efforts.

Jim Mullen, Director of Seattle Emergency Management, stated that the city is a very strong proponent of the need for, and success of, partnerships at all levels. Inés Pearce, Coordinator of the Seattle Project Impact Program, cited numerous examples of how partnering has reduced the risk for schools, businesses, business districts, and neighborhoods.

Developing a holistic risk reduction strategy, with mitigation as its cornerstone, must include the development of partnerships, and at the risk of using overly used words and concepts, achieving a sustainable risk resistant environment.

Additional Resources

John Nelson of the Washington Insurance Council presented insurance tools as elements of a comprehensive risk reduction process.

Additional tools to reduce the vulnerability of businesses to disasters were presented by Dexada Jorgensen, BC Telecommunications Canada and Rick North, contingency planner for the Bon Marché; Carl Cook, FEMA Region 10 Flood Insurance and Mitigation Director (see also the FEMA web site (www.fema.gov)); and the IBHS "Open for Business Toolkit" touted by Rick Jenkins (SBA), Michele Steinberg of the Institute for Business and Home Safety (IBHS) and Andre Le Duc, University of Oregon.

Where do we go from here?

This conference was by no means the culmination of a process – it is a beginning and I join Robert Zimmerman and Gail Dreckman, our President and Vice president, in encouraging your support and partnership. I invite you to visit the CREW website to see next year's work program, coming activities and opportunities for involvement.