Sound Shake 2010 – The Aftershock
Functional Exercise
October 6 & 7, 2010

City of Seattle
AFTER ACTION REPORT and CORRECTIVE ACTION PLAN
December 30, 2010

Executive Summary

On October 6 and 7, 2010, the City of Seattle participated in a major functional emergency exercise designed around the expected impacts of a catastrophic earthquake on the Seattle Fault. The exercise scenario of Sound Shake 2010 presented participants with a dire situation; the notional earthquake had created significant damage throughout the Puget Sound region – damaged and collapsed roads and bridges, disrupted infrastructure systems, hospitals overwhelmed with the injured and many people in need of shelter due to damaged housing. This exercise gave city departments and partner agencies a valuable opportunity to explore the challenges associated with policy issues and prioritization in the early phases of disaster recovery.

This report is an After Action Report and a Corrective Action Plan for the City of Seattle. The intent is to highlight the most important lessons learned, both in the sense of successes to replicate and improvements to make. The main body of the report is a matrix of Observations and Corrective Action Recommendations. These findings are the product of the collective reflection of participants, evaluators and exercise designers, who all contributed suggestions and observations from their unique vantage points.

Following are the highlights of the Sound Shake 2010 exercise:

- The City and partner agencies had the rare opportunity to move beyond pure response-oriented exercises and focus on short-term recovery issues following a major disaster.
- The Mayor's Emergency Executive Board (EEB) was effectively used as a body to debate and resolve policy issues that arose.
- The exercise offered a chance to test the bench depth developed in city departments, which demonstrated the benefits of the Continuity of Operations (COOP) planning undertaken.

- The new depth and strength developed within the Emergency Operations Center's (EOC) Functional Branches (Infrastructure, Health and Human Services, Police and Fire) as well as in Sections like Logistics and Planning, was evident during the exercise. The benefits of planning and training were especially clear with the ones that integrate the expertise of different departments and agencies, such as the Infrastructure Branch and the Health and Human Services Branch.
- Face-to-face problem-solving was very effective. Players were engaged in the exercise and actively sought out people in other departments and sections to get information or resolve issues.
- Inter-disciplinary sessions aimed at resolving specific problems, such as school re-opening, proved a good way of getting people out department or agency "silos" and practicing integrated problem-solving.
- The City exercised a new logistics resource requesting process, which included real-world suppliers in exercise play.
- This exercise featured an unprecedented integration of private sector players within the EOC. As part of the Advanced Planning Unit within the Plans Section, for example, players representing the insurance and health care industries brought the private sector perspective to help anticipate longer term recovery issues and community and economic impacts. Numerous private utility and service providers, such as T-Mobile and Puget Sound Energy, played as part of the Infrastructure Branch.

Exercise Overview

Sound Shake 2010 was a two-day, functional EOC earthquake exercise held in King County October 6 and 7, 2010 simulating days 2 and 3 following the first 24 hours of response. It was a continuation of the Sound Shake 2008 exercise scenario, that is, a 6.8 magnitude earthquake on the Seattle Fault that strikes the region mid-morning on a weekday. The intent of the exercise was to create a learning opportunity to solve problems and develop policies in the early phases of recovery from a catastrophic earthquake causing extensive physical damage, infrastructure disruptions and casualties across the region.

The regional exercise was sponsored by Washington State Homeland Security Region 6 and coordinated through the King County Office of Emergency Management. It served as the culmination of a series of topic-specific workshops and exercises beginning in March of 2010 designed to increase local capacity in areas such as post-disaster housing, regional people sheltering, pet sheltering and hospital evacuation. A wide range of entities participated in across the county, including the King County EOC, several city EOCs including the City of Seattle, hospitals, the Port of Seattle and external partners such as the American Red Cross.

Whereas Sound Shake 2008 was intended to test response capabilities, Sound Shake 2010 was designed to elicit play around early recovery activities that would be occurring after the fires are out and the victims are rescued. For this reason, exercise play

notionally began 24 hours after the earthquake occurred to capture the expected period when response winds down and stabilization and short-term recovery activities gear up. The regional exercise objectives established were aimed at exploring policy issues and strategic prioritization as represented by these six areas: Decision Making, Resource Management, Operational Transition, Recovery Priorities, and Communications.

The City of Seattle participated fully in both days of exercise play. The City's EOC was in full activation, along with several department operating centers. Over the course of the two days, participation included city employees representing at least 20 different departments and offices. At the height of play, it is estimated that there were roughly 140 players in the Seattle EOC each of the two days, filling the main operations floor and using every break out room available. External partners included representatives from the non-profit agencies such as the Crisis Clinic, the private sector, utilities and transit authorities.

City Exercise Objectives

The City, while participating in the regional exercise, also developed its own internal objectives. These objectives, listed below, were crafted to focus exercise play around early disaster recovery, restoration and stabilization. Exercise injects were designed to initiate action around these issues.

City-wide Objectives for Sound Shake 2010:

Evaluate the ability of the City to **develop policy and coordinate stabilization activities** following a major disaster affecting the health and welfare of the city's population, interrupting city services, and damaging critical infrastructure. Activities requiring coordination include:

1. Providing essential **health and safety services**.
2. Providing congregate **sheltering** or other temporary sheltering solutions.
3. Providing **food, water, and other essential commodities** for those displaced by the incident.
4. Providing **disability related assistance**/functional needs support services.
5. Developing **impact assessments on critical infrastructure, essential services, and key resources**.
6. Conducting **initial damage assessments**.

7. Conducting community wide **debris removal**, including **clearing of primary transportation routes** of debris and obstructions.

8. **Restarting major transportation systems** and **restoring interrupted utilities, communication systems, and other essential services such as education and medical care**.

Major Areas of Improvements

An overarching need was identified early on in the exercise process - the need to develop a formal post-disaster earthquake recovery plan for the City. This need has not to date been properly resourced though an Emergency Support Function-14 chapter of the Seattle Disaster Readiness and Response Plan sets the initial tone for recovery activities. A recovery plan is a significantly different venture than a response plan in that many more community partners must be engaged and the substance of the plan will be much more heavily focused on policy than on operations. Nonetheless, the exercise presented an opportunity to begin discussion on those issues most important to short term community recovery and the experience will benefit our eventual planning effort.

Although the exercise highlighted many successful practices that should be replicated, every exercise or real-world event calls out areas to improve upon. Following is a brief summary of the major groupings of issues or problems that arose during the exercise. The accompanying matrices list recommended improvement tasks to strengthen current plans, procedures and capabilities. Some of the actions that will enhance our readiness for winter weather have been prioritized.

The nine major areas of improvement identified are:

 1) **Prioritization of Actions**
 2) **Sheltering**
3) **Damage Assessment**
4) **Policy Decision Making & Emergency Measures**
5) **PIO & Media**
6) **Resource Requests**
7) **Other Logistics Planning Issues**
8) **Information Technology: WebEOC and E-mail**
9) **Mapping & Visual Information**

Observations & Corrective Action Recommendations

1. Prioritization of Actions

Observation: Exercise play brought up the question of how objectives and requests are prioritized and/or coordinated between departments and agencies, and how competing priorities are de-conflicted or resolved. The earthquake scenario laid heavy emphasis on functions under Infrastructure Branch, which was subject to many competing demands, e.g. for building inspections, shelter evaluations, road clearance, utilities restoration. In some cases, related needs for the same objective, such as sheltering, were given different priorities -- shelters were placed high on the priority building inspection list, but animal shelters (required by federal law as part of people sheltering) fell farther down the priority list. In other cases, coordination appeared to be lacking in priorities between operating departments, for example road clearance prioritized snow routes, but did not necessarily cover those roads needed for access to shelter locations.

Improvement needed in the ability of departments and agencies to ensure that actions are externally consistent with stated EOC objectives and internally consistent to meet those objectives. Ensure Branches have staffing levels and positions defined well enough to handle large scale events.

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
1.1	Training	Develop **EOC Branch training** on 1) work flow, staffing, transition briefings and job aids to facilitate work and meeting load and 2) two-way communications that makes clear when conflicting priorities are arising such that city-wide objectives need to be re-analyzed and/or reinforced to make priorities clear to all in the EOC.	Office of Emergency Management (OEM)	February 1, 2011
1.2	Infrastructure Branch Roles & Responsibilities	Identify **roles and responsibilities** within the Infrastructure Branch and protocols for intra-branch coordination.	SDOT, in coordination with SPU, SCL, DoIt, FAS, DPD and Parks	February 1, 2011
1.3	Consolidated Action Plan	Review the **Consolidated Action Plan (CAP) process** for improvements to serve as a roadmap for the EOC.	Office of Emergency Management (OEM)	February 1, 2011

2. Sheltering

Observation: Opening shelters under the exercise scenario -- for 6,000 people amidst widespread damage to the built environment -- was a slow process that posed numerous coordination challenges. It required extensive coordination between the departments and agencies making up the Health and Human Services, Infrastructure and Logistics Branches on tasks such as: structural inspection of buildings, ensuring basic utility service (e.g. water, power, sewer), road access to sites, animal sheltering and logistical resource support needs. In addition, it was expected to take at least 72 hours in this scale of disaster, which created a challenge for public messaging in the interim.

Improvement needed in the integration of efforts across multiple branches towards a single goal, such as opening shelters, and in managing the expectations of media, the public, and officials on the time needed to achieve these goals.

Observation: There is currently no easy way to track Seattle shelter capacity and status for a large scale event. Seattle shelters are not yet a part of FEMA's new National Shelter System (NSS). The NSS allows users to see current status by site (people & pets), share information with partners such as the American Red Cross, generate reports useful for PIOs, etc.

Observation: Outside the Health and Human Services (HHS) Branch, there is a lack of understanding of the Federal requirements for and the importance of animal sheltering in a disaster.

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
2.1	Shelter opening policy considerations	In coordination with the Strategic Work Group (SWG), develop parallel **shelter opening policy considerations** on "green light" standards to open shelters. The policy options should address under what circumstances the City would consider opening shelters if not all the essential support services have been restored. (See Shelter Opening Checklist - Would we open a shelter without running water?) Policy options and recommendations will be brought before the EEB for consideration.	Human Services, Parks, & OEM	April 1, 2011

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
2.2	Shelter Opening Checklist	Develop **shelter opening checklist or matrix**, showing critical characteristics and essential services, such as structural safety, water, power, sanitary services, ADA accessibility, etc. This can serve as template for coordinating inspections and evaluating site options.	Human Services and Parks	Draft Checklist COMPLETED; expected date to finalize March 1, 2011
2.3	Shelter Location List	Create a list and map of **pre-identified shelter locations** for use in the EOC for building inspectors and others, to include characteristics such as which have emergency generators, are seismically-retrofit, etc., to facilitate inspections process.	DPD, in coordination with Parks and Human Services	February 1, 2011
2.4	Shelter Campus Concept	Develop **shelter "campus" concept** and identify locations that can accommodate multiple uses include animal shelters, and integrate into shelter checklist.	Parks, in coordination with Human Services & FAS Seattle Animal Control	May 1, 2011
2.5	Public Messaging	Review expectations on how quickly shelters can be opened and develop **pre-scripted public messaging** for communicating process of establishing safe and sanitary shelters, and status information (e.g. shelter that are open, closed or in process)	Mayor's Office Public Information, in coordination with Human Services and Parks	March 1, 2011
2.6	Logistical Support Plan	Develop **logistical support plan** for people and pet sheltering with detailed resource request forms, to include supplies needed, cache assets, typical food requirements, etc.	Human Services, in coordination with Parks, FAS Seattle Animal Shelter and FAS Logistics	April 1, 2011
2.7	National Shelter System	Set up Seattle's shelters on **FEMA's National Shelter System** and have designated staff complete training.	Human Services and Parks	April 1, 2011
2.8	Animal Sheltering	Via the Disaster Management Committee (DMC), educate EOC responders on the **Federal requirement to provide animal sheltering** in coordination with people sheltering.	FAS Seattle Animal Shelter and Human Services	March 1, 2011

3. Damage Assessment

Observation: There was difficulty integrating information from windshield surveys, building inspections, departmental assessments, etc., into a comprehensive damage assessment. Improvement needed defining the process for coordinating and capturing data.

Observation: Requests for building inspections exceeded DPD's limited resources. In the EOC there wasn't a starter list of key facilities likely to be high priority for inspection -- such as shelters, community centers, schools, fire and police stations and other critical facilities -- to support prioritization decisions. Although the City does have standing contracts for engineering services, there was lack of clarity about whether or not city department staff members with ATC-20 training in multiple departments have the authority to tag city buildings.

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
3.1	Damage Assessment Plan	**Develop damage assessment plan** for Earthquake Annex to include: • High priority buildings inspections list based on earthquake scenario; • Identification of requirements and resources for additional building inspectors; • DPD process and communications protocol for ATC-20 "Advisory Tagging" by authorized city staff and private building owners; • Consolidation and analysis of damage information in the EOC. Incorporate into the Earthquake Annex of the Seattle Disaster Readiness and Response Plan.	Office of Emergency Management (OEM), in coordination with DPD and SWG	April 1, 2011

4. Policy Decision Making & Emergency Measures

Observation: The exercise elicited extensive policy discussion within the Mayor's Emergency Executive Board (EEB) concerning many important issues such as building inspections, enforcing tagging, debris removal, personnel issues, and city-support to spontaneous tent cities, Mayoral emergency measures proclamations, etc. The EEB requested improved information to support policy deliberations, which was noted would be especially helpful under the pressures of a real-world event. In addition, there's a risk that the outcomes of these scenario-based policy discussions might be lost if not adequately captured.

Observation: There was a lack of clarity on the preferred process for developing, reviewing and filing Emergency Orders and Proclamations. Coordination and communication is required between the Mayor's Office, the City Council, the City Clerk and the Law Department.

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
4.1	EEB Policy Recommendation Template	Create new **policy recommendation template** for issues brought to the EEB. In addition to showing the issue, the lead agency and the recommended course of action, also list alternatives considered but not recommended with pro's and con's of each in order to show the wider context of the issue.	Office of Emergency Management (OEM)	COMPLETED
4.2	Institutionalize EEB Policy Discussions	**Incorporate policy deliberations into the Earthquake Annex** of the Seattle Disaster Readiness and Response Plan to serve as reference of pre-considered positions on policy issues.	Office of Emergency Management (OEM)	February 1, 2011
4.3	Emergency Proclamation Process Memo	In coordination with the key partners identified, **develop an emergency proclamation and orders process memo** that meets legal and legislative requirements.	Mayor's Office	February 1, 2011

5. PIO & Media

Observation: Heavy media pressure for immediate information on the status of city services highlighted the difficulties in identifying correct and timely public information to release in complex situations. For example, shelter opening takes time, because the City needs to make sure locations are safe and sanitary and have utility support, but the Joint Information Center (JIC) still needs to provide accurate and useful information to the media and public.

Better strategic coordination is needed within the EOC to authenticate information in complex situations, including coordination in advance of deadlines such as press conferences and EOC Situation Reports.

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
5.1	EOC Information Coordination	Improve **strategic information coordination and authentication** between the JIC, Operations and Plans Sections in the EOC.	Office of Emergency Management (OEM) & Mayor's Office Public Information	COMPLETED
5.2	Identification of Vetted Information for Release	Determine process for **identifying information that is vetted**, 100% correct and ready to share with media within the WebEOC PIO board and/or other tracking systems.	Mayor's Office Public Information	February 1, 2011
5.3	Press Release review procedure	Define the **approval process to ensure press releases are reviewed by the EOC director**; Train PIOs on procedure.	Mayor's Office Public Information	COMPLETED
5.4	Pre-scripted public messages	Develop pre-canned messages on key topics such as sheltering, city services, traffic advisories, etc.	Mayor's Office Public Information	February 1, 2011

6. Resource Requests

Observation: The Facilities and Administrative Services Department (FAS) tested a new resource requesting process for managing requests for supplies and services in the EOC. Although it represented a huge improvement to have a defined process, many participants found the resource request process within WebEOC confusing to use and/or had not been trained on the system. Questions arose as to how to order supplies, request GIS maps (see mapping section), about what resources are available from other city departments, and how to access outside resources from the County/State/Federal government. FAS staff noted that some requests made in the exercise would be unrealistic in a real-world situation.

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6.1	Streamline Resource Requesting within WebEOC	Re-design the Web EOC resource request process so that it is more intuitive to use.	Office of Emergency Management (OEM)	April 1, 2011
6.2	Training Plan	Create a training plan based on an updated resource request training module. Schedule training for those who use WebEOC to make requests (department representatives) and for those who process requests (Logistic Team staff).	Office of Emergency Management (OEM) and FAS Logistics	February 1, 2011
6.3	EOC Logistics Exercises	Design and begin to conduct hands-on EOC logistics exercises to practice the resource request process.	Office of Emergency Management (OEM	May 1, 2011

7. Other Logistics Planning Issues

Observation: Participants were confused over the term Community Points of Distribution (CPODs). It was unclear whether this referred to a place to distribute goods to citizens, a location for SPU's Emergency Water Distribution System, or a city staging area for materials/supplies. It was also unknown what the support requirements would be.

Observation: The identification of numerous physical locations for different response and recovery activities could lead to conflicts or missed opportunities for efficient co-location. Such sites include: shelters, points of distribution, staging areas, temporary debris storage, disaster recovery centers, volunteer centers and neighborhood hubs sites. Further planning is needed around strategic geographic placement of recovery activities.

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
7.1	Community Points of Distribution (CPODs)	Develop a work plan for emergency distribution, including a timeline for writing Standard Operating Procedures (SOP) for **CPODs**; Educate DMC on CPOD concept and work plan.	FAS	March 1, 2010
7.2	Location Planning for Multiple Recovery Sites	Working with SWG, identify site requirements and establish planning assumptions for the best geographic placement of anticipated response/recovery activities and sites. Draw on relevant work in the City, e.g. FFD Real Estate services 2009 survey. Create a related map(s) as an EOC planning tool.	Office of Emergency Management (OEM)	April 1, 2010

8. Information Technology: WebEOC and E-mail

Observation: Although there have been great improvements to WebEOC, many users found it difficult to quickly find critical incident status information and event updates. In addition, it was difficult for PIOs to determine what information was "vetted" for release (See PIO & Media). Need to improve usability of WebEOC system.

Observation: Participants found problems with the use of e-mail in the EOC. These included access limitations with the Web-based e-mail and difficulties with staff transitions when critical information resides in individual e-mail accounts.

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8.1	WebEOC Training	Provide training in **searching, tagging, filtering and sorting information** in WebEOC.	Office of Emergency Management (OEM)	February 1, 2010
8.2	Web-based E-mail	Complete **technical fixes to Outlook Web Access (OWA)** to prevent early shut-down. **Establish position-specific e-mail addresses** in OWA and train responders to use them.	Office of Emergency Management (OEM)	February 1, 2010

9. Mapping & Visual Information

Observation: Responders found there was insufficient visual/graphic information within the EOC to support situational awareness and inform geographic–based decision making. Real-time or dynamic information was desired for such things as road closures, utility outages, damage locations, sites for distributing water and other goods to citizens, shelters, etc. There was a particularly great need expressed for current status maps showing opened and closed roads and bridges, since road access impacts so many

response and recovery activities. There was also confusion among participants as to how to request maps. Improvement needed in both high and low tech methods of portraying status and geographic information to reflect changing conditions.

TASK #	TOPIC	KEY ACTION STEPS THAT WILL LEAD TO RESOLUTION OF PROBLEM	RESPONSIBLE DEPARTMENT (S)	EXPECTED DATE OF COMPLETION
9.1	Interactive Web-based Maps	Identify mapping products and available systems for developing **interactive web-based maps** featuring dynamic displays of department operations data. (Only SDOT currently provides real-time data on roadway conditions.) Develop a plan for how adopted system(s) would be utilized and how responders would be trained.	Office of Emergency Management (OEM)	June 1, 2010
9.2	Road Mapping Tool	Determine implementation steps to use **SDOT's Road Conditions and Detour GIS application** to support operations following earthquakes. Create procedure for frequency of data updates during emergencies.	SDOT	February 1, 2010
9.3	Map Requests	Create process for **requesting maps** from GIS group in EOC	OEM & GIS	February 1, 2010
9.4	Physical Maps in EOC	Create and **pre-print basic large city maps** and/or dry erase-type maps to post in EOC as a low-tech back-up to mapping programs	Office of Emergency Management (OEM)	January 1, 2010
9.5	Visual Displays of Key Information	Using the Essential Elements for Information (EEI) Strategy, identify **visual/graphic displays** for the EOC that would communicate information including but not limited to important events (e.g. closure of a major bridge) and status indicators of utilities, roads, and public infrastructure with estimates on repair or restoration.	Office of Emergency Management (OEM)	February 1, 2010