MAJOR EMERGENCY STAFFING CHALLENGES

Executive Analysis of Fire Service Operations in Emergency Management

Major Emergency Staffing Challenges

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed ______________________________
ABSTRACT

Clackamas County Fire District No.1 is part of a major U.S. metropolitan area that has been identified as a possible target for urban terror attack. The area is also susceptible to several types of natural disasters. The problem was that no plan existed for the callback of off-duty personnel to major emergencies. The purpose of this research was to identify risks that would overwhelm daily staffing levels, and identify methods for improving staffing during a major regional emergency. Descriptive research was used to answer four research questions. Procedures used were a literature review and surveys relative to the research questions. Research confirmed that numerous “critical risks” exist that could immediately consume normal staffing resources. Other emergency service providers use a personnel callback system during major emergencies. One-hundred percent of respondents indicated they would be available to return to work for a disaster. The most effective method for contacting off duty employees is through the use of home and cellular phones.

Recommendations made were to utilize the willingness of off-duty personnel to meet the demands of a major emergency by developing a callback policy.
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INTRODUCTION

Clackamas County Fire District No.1 (CCFD1) is part of a major U.S. metropolitan area that has been identified as a possible target for future terrorism. The area is also susceptible to, and has a history of, several types of natural disasters. The problem is that no provision or plan exists for the recall of off-duty personnel in response to a major regional emergency. With a limited number of daily on-duty personnel, the lack of a callback policy could negatively impact service delivery due to the increased response demands during a regional disaster. The purpose of this research is to determine the potential but real risks exist that could overwhelm daily staffing levels; then to identify effective methods for improving staffing response capabilities during a major regional emergency. Descriptive research was used to answer the following four questions:

1. What are the potential risks faced by CCFD1 that would overwhelm daily staffing levels?

2. How do other emergency service providers manage staffing shortfalls during major emergencies?

3. How do other emergency service providers notify off duty personnel of a major emergency callback?

4. What percentage of off duty CCFD1 personnel would respond to a callback for a major emergency?
BACKGROUND AND SIGNIFICANCE

Clackamas County Fire District No.1 (CCFD1) is an accredited agency with the Commission on Fire Accreditation International and is the second largest fire district in the state of Oregon. CCFD1 protects approximately 165,000 citizens in an area encompassing almost 200 square miles in northwestern Clackamas County. It is part of the Portland metropolitan urban growth area that has a population of more than 1.5 million. Included in the CCFD1 service area are the cities of Milwaukie, Oregon City, Happy Valley, and Johnson City, as well as the unincorporated areas of Oak Lodge, Clackamas, Sunnyside, Redland, Carver, Holcomb, Beavercreek, Highland, and Clarkes. The Insurance Services Office in 2004 awarded CCFD1 with a district-wide rating of “3.” In 2005 CCFD1 responded to 14,500 calls for emergency service. The annual operating budget for Fiscal 2006 is $25 million. The Mission Statement of CCFD1 reads, “To protect life and property and put service above all else” (2005).

CCFD1 is organized into four administrative divisions and consists of a staff of about 200 sworn, civilian, and volunteer employees. Twelve career and two volunteer fire stations are strategically located throughout two geographical battalions: Battalion 2 in the north, and Battalion 3 in the south. Career personnel staffing includes ten engine companies, two ladder truck companies, a rescue ambulance, and two battalion chiefs. All thirteen career companies are paramedic staffed and equipped. Under the current collective bargaining agreement career personnel work a 53 hour work week in a three platoon duty cycle. Daily on-duty operational staffing is 41 firefighters (See Appendix A). The Special Operations Division within CCFD1 supports a technical rescue team that provides a regional response to swiftwater, structural collapse, vehicle extrication, high-angle rope, confined space, and trench collapse incidents.
CCDF1 technical rescue team is a member of Oregon State Urban Search and Rescue (USAR) Task Force No.1 (OR-TF1).

Following the terrorist events that took place on September 11, 2001 and the subsequent creation of the U.S. Department of Homeland Security, the Portland metropolitan area was identified along with 29 other major cities as potential targets for future terror attacks. Additionally, the Portland and North Willamette Valley region is predominated by a history of several natural disasters including floods, earthquakes, volcanic eruptions, extreme ice and wind storms, and urban interface wildfires.

Automatic and Mutual Aid resources normally available for large local incidents such as multi-alarm fires, hazardous materials releases, and aircraft crashes, may not be available in the event of a catastrophic incident of a regional scale. Mutual aid “may not always be available because afflicted communities may be so occupied with their own problems, that little or no aid can be extended at the time when it is most needed” by neighboring departments (Bahme, 1992). Fire departments in the Portland metropolitan area that have existing Automatic and Mutual Aid agreements with CCFD1 may not be able to share resources during a large-scale disaster because of increased service demands and emergency calls within their own districts. In fact, the National Fire Protection Association (2003) cautions fire departments planning for disasters about the limitations of or reliance on Mutual Aid as a resource tool. “It should be recognized that Mutual Aid tends to have deficiencies. The parties to the plan may only give help to the extent that they feel they can do so without seriously reducing their local protection.”

The potential shortage or complete absence of available incoming fire and rescue assets from neighboring fire agencies places the responsibility of meeting the demands of a regional
disaster completely with CCFD1. All emergency calls created by a large-scale regional disaster would have to be handled by internal (on and off duty) personnel resources.

Of the total number of CCFD1 Operations Division personnel, 90 of them (representing roughly two-thirds of the total career staff) are off duty each day. The problem addressed by this applied research project is that CCFD1 has no procedure or policy in place for the notification and recall of off-duty personnel in response to a major regional emergency. With only 41 emergency responders on duty and available each shift any major incident which is prolonged in duration or complex in nature would quickly consume normal personnel staffing resources. The lack of a plan to call back off-duty personnel during a major emergency would lead to measurable and detrimental effects including increased incident response times, reduced performance capabilities, and compromised firefighter safety. The objective of a disaster plan should be to meet the increased demands placed on the department by the event by maintaining an effective standing army of firefighters, rescue technicians, and paramedics.

This applied research project directly relates to Unit 4 “Community Risk Assessment” of the Executive Analysis of Fire Service Operations in Emergency Management class. Strong emphasis is included in that curriculum toward formal risk identification and action plan development. Responding appropriately in a timely manner to emerging issues in fire protection and emergency services, such as terrorism and disaster planning, is an Operational Objective of the United States Fire Administration.

LITERATURE REVIEW

A literature review was conducted to identify the existing body of knowledge and material published on the subject of disaster risk and personnel staffing during major
emergencies. It included a search of both fire service and non-emergency service related sources. To supplement the literature review, several in-person interviews were conducted with individuals outside the fire service to gain perspective on procedures in place in emergency service organizations other than fire departments. Each individual was carefully chosen and included the chief deputy from the County sheriff’s office, the operations supervisor from the local private ambulance service, and the staff development director of a regional hospital.

Merriam-Webster (2004) defines a “risk” as the possibility of loss caused by peril or injury. Viewed another way, risk can be seen as an exposure to a hazard or danger from natural or human causes. By comparison, a “threat” must not only have the capacity to cause peril, injury, or danger, but must also include an intent to do so (Pace, 2006). For as long as people have inhabited earth, they have been subject to the dynamic forces of nature. With time, humans have learned how to adapt to the environment and how to reduce risks associated with earthquakes, temperature extremes, storms, and fires (Davies, 2005). Terrorism is one kind of human-caused risk, and can be defined as any violent action intended to inflict harm on others to gain attention or coerce future actions for a specific cause (Wallace, 2004). Princeton University (2006) defines terrorism as the “the calculated use of violence (or threat of violence) against civilians in order to attain goals that are political, religious, or ideological in nature; this is done through intimidation, coercion, or by instilling fear.” Local fire departments have been—and will continue to be—first responders to all types of natural and human-caused disasters.

Potential threats within a community that stretch fire departments beyond their normal response capabilities are called “critical risks” (Federal Emergency Management Agency, 2005). Critical risks such as conflagrations and other disasters that overwhelm the local emergency forces must always be considered when drafting staffing and deployment plans. Current practice
allocates risk of infrastructure loss from natural hazard events to governments, such as fire departments. Existing practice is predicated on the long-standing principle that governments are best able to cope with large, uncertain risks—the types of risks that characterize natural hazard catastrophes (Freeman, 2003).

For this reason, most fire departments traditionally rely on automatic and mutual assistance agreements with neighboring departments in times of special need. A realistic and comprehensive staffing and deployment plan will include and exploit the benefits of Mutual Aid to ensure that “…reasonable objectives can be established for the timely delivery of adequate fire department resources” (International City/County Management Association, 2002). Robust Mutual Aid plans that assist fire departments to meet daily small scale operational needs, however, are intrinsically weak in the presence of large, regional events. Natural disaster risk is often insufficiently accounted for in planning and decisionmaking (Freeman, 2003). Experience with natural disasters and other large-scale incidents have focused attention on the importance of plans and organizational procedures for systematically mobilizing on and off-duty personnel forces in response to such events (ICMA, 2002). Additionally, the National Fire Protection Association (NFPA) Standard 1600 states that fire departments conducting community risk assessments should include threats posed by natural causes, technological sources, and human activities (2000).

Several recent cases can be studied to illustrate the inherent problems encountered with Mutual Aid, or lack of an adequate plan for managing a callback. In the official After Action Report, Titan Systems Corporation (2004 p. A-41) reported that prior to September 11, 2001 the Arlington County Fire Department (ACFD) in Virginia, did not have an effective policy for recalling and assembling off-duty firefighters in the event of a major emergency or regional
disaster. Instead, the ACFD depended on a self-initiated dispatch (SID) practice for supplemental staffing for such occurrences (p. A-39). During the terrorist attack on the Pentagon, off-duty firefighters were never formally notified of the event or given reporting instructions (p. A-40). Following this past, but unofficial, practice and having no plan for guidance, many retuning off-duty firefighters assembled at ACFD Fire Station 1 which caused “…unneeded congestion and turmoil” for incident commanders (p. A-41). Some ACFD firefighters even reported directly to the Pentagon. In the recommendations section, the *After Action Report* further stated that the ACFD “needs to review recall and personnel staging procedures” to prevent future problems during major events (p.A-43). The fire chief for ACFD testified before congress that off-duty firefighters following the past SID practice by responding directly to the incident “…without the knowledge and permission of the incident commander, complicated the exercise of command, increased the risks…and exacerbated the challenge of accountability” (Plaugher, 2004).

Immediately after the attack on the World Trade Center (WTC) in New York City, many television and radio stations broadcast unauthorized requests for first responders to return to work. Many off-duty personnel in New York City reported directly to the WTC incident site, instead of a pre-arranged mobilization site, mimicking the Arlington County SID practice. FDNY Fire Commissioner Nick Scoppetta stated that hundreds of off-duty firefighters rushed back into the city, retrieved their gear from fire houses, and then proceeded to the WTC site “…to do what they could to help…” on-duty crews (O’Donnell, 2005). But, as in Arlington County, confusion resulted because no plan was in place. It was identified by a federal commission later that “personnel may need to be recalled to duty during the early stages of a major incident…” but further recommended that fire departments should “…develop a formal, organized policy for the orderly recall of organizational personnel” (FEMA, 2004).
The Phoenix, Arizona, Fire Department practices a Concentric Proximity Callback (CPC) for the recall of off-duty personnel in response to disasters and other major emergencies. Off-duty employees assigned to fire stations closest to the incident location are notified by alpha pager and telephone and are directed to report to their regular duty stations. Once there, employees will staff reserve or supplemental apparatus to support or replace on-duty crews (PFD, 2005). The fire department in Pike Township, Indiana, validated the risk assessment for major emergencies in their community and then developed a standard operating procedure for the callback of off-duty personnel (Cave, 2002). The response capabilities of firefighters in the City of Eugene, Oregon, were negatively impacted after several station relocations and apparatus changes. The fire department had no clear policy for the recall of off-duty personnel to major emergencies. That department analyzed several critical staffing issues and identified that it had a responsibility to recall off-duty personnel to supplement on-duty firefighters (Robertson, 1999). Firefighters in Casa Grande, Arizona, had no official recall policy for large-scale extended emergencies. A research project identified the problem that “without sufficient personnel resources, fire operations can be severely hampered and cause undo injury or death to fire personnel operating at the scene of an emergency.” Effective procedures and methods for calling back off-duty personnel during disasters were illustrated. A recommendation was presented to the city council for adoption of a callback policy (Miller, 2005).

Included among the risks that warrant the need for a plan to recall personnel resources are those posed by impending regional natural disasters. Geologist Dwight R. Crandell (1980) wrote that contingency plans should be made for actions to be taken in the event of a volcanic eruption of Mount Hood. The primary goals of such plans should be to “anticipate hazardous events
before they occur and to prepare responses to such events that would mitigate their impact on people and property.”

PROCEDURES

Research Methodology:

Descriptive research was used to obtain the answers to the four research questions. A search for all published material available on the subject of risks and threats to the community, and staffing challenges during disasters was conducted. The review of literature began at the Learning Resource Center (LRC) at the National Fire Academy (NFA) and subsequently led to several visits to local public libraries in the Portland area. A number of structured personal interviews were conducted with emergency service providers representing agencies outside the fire service. To determine the availability and willingness of off-duty personnel to respond to back to work for a major regional emergency, an internal survey of all CCFD1 operational employees was accomplished. The survey also identified the most effective and preferred method for notification of off-duty employees of an emergency callback.

Research Process:

Step One: Literature Review. While on campus at the National Emergency Training Center, the online card catalog at the LRC was explored using the subject terms: “disaster, staffing, personnel, recall, emergency, and callback.” Additionally, a general internet search was conducted using a popular search engine with the same subject terms. Several visits to local city, county, and college libraries in the Portland area were conducted to research Questions #1 and #2 regarding risks and threats faced by the community.

Step Two: In-class NFA Survey. A draft “Off-Duty Career Personnel Callback Survey” instrument was created while on campus at the NFA (See Appendix B). This survey instrument
was given to fellow students in the Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM) class. Distributing the survey instrument to classmates in the class EAFSOEM accomplished two things: First, it validated the survey instrument for content and readability. Second, because all NFA resident courses are comprised of firefighters from across the United States, a solid foundation of preliminary data was obtained relating to research questions #2 and #3 relating to off-duty employee notification and recall.

Step Three: Structured Personal Interviews. Several personal interviews with representatives from law enforcement, hospital, and ambulance services were conducted to ascertain if each had a plan to meet increased service demands during major emergencies (See Appendix C). Furthermore, each person interviewed was asked what methods were used by their agency to summon off-duty employees back to work in the event of a disaster.

Step Four: Internal Survey. To determine how many off-duty CCFD1 career personnel would be available and willing to respond back to work, if requested, for a major emergency, the validated internal survey instrument was distributed to all 140 Operations Division employees using the departmental e-mail distribution system (See Appendix D). In addition, the email survey asked each employee to indicate the most effective method of notifying him/her of an emergency callback.

Step Five: External Survey. An external fire department survey was mailed to six fire departments to ascertain how other departments notified and recalled off-duty personnel to major emergencies (See Appendix E). The fire departments selected for the external survey were carefully chosen because of either their close geographic location, or similarities in organizational structure to those of CCFD1.
Assumptions and Limitations:

It is assumed that the potential risks or events identified in Research Question #1 would consume normal staffing levels related to responding to fires, structural collapse, medical emergencies, hazardous materials leaks, etc. This research does not attempt to predict specific resource demands to specific events. Rather, it is understood that any long-term, regional emergency would quickly expend all on-duty personnel to various emergencies throughout the district.

Definitions & Terms:

Automatic Aid: An agreement between two fire departments to dispatch the closest fire and rescue resources to an emergency regardless of jurisdictional boundaries.

Concentric Proximity Callback (CPC): Procedure for calling back personnel based on their residential location and proximity to their normal duty station. This plan provides for the fastest response of off-duty personnel.

Demand-Measured Callback (DMC): Procedure of calling back personnel based on the magnitude of the disaster and need for off-duty employees. This plan takes into consideration such factors as employment seniority, special skills, and number of personnel needed.

Mutual Aid: The dispatching of fire and rescue resources upon request of one fire department to an incident within the jurisdiction of another fire department.

Self-Initiated Dispatch (SID): Undesirable and unofficial practice where off-duty personnel return to work for greater alarms without being requested.

Total Callback (TC): Procedure when all off-duty personnel are alerted and requested to return to work.
RESULTS

Results from the applied research conducted in the literature review, structured interviews, and surveys, provided the specific answers to the four research questions.

Research Question 1: What are the potential risks faced by CCFD1 that would overwhelm daily staffing levels?

1. Terrorism: In response to the terrorist attacks of 2001, Congress approved under House Resolution No. 5005-8 the “Homeland Security Act of 2002” which subsequently led to the creation of the U.S. Department of Homeland Security (DHS). Shortly thereafter, the DHS identified 30 urban centers across the United States as potential targets for future terror attacks, specifically from chemical, biological, radiological, nuclear, explosive (CBRNE) methods. The Portland metropolitan area (including North Clackamas County) was included on the potential targets list. Over the next three years the DHS distributed in excess of $13.1 billion in grants to state and local governments on the potential targets list to prepare for and respond to CBRNE attacks and other disasters (Slepski, 2005). Under a program called the Urban Areas Security Initiative (UASI) these funds were used to improve communications interoperability, purchase equipment, and provide training to help first responders save lives. The UASI grant program reflects the intent of Congress and the Administration to enhance and quantify the preparedness of the nation to combat terrorism (DHS, 2003). Initial and recurring eligibility for UASI grant funding is clear evidence that CCFD1—as part of the Portland metropolitan target area—is at risk for future terror attacks, as identified by federal intelligence and counter-terrorism officials.

2. Earthquake: Although scientists have long tried to predict earthquakes, no reliable method has been discovered. Seismicity in the Pacific Northwest has only been extensively
studied for a couple of decades. Geologists are still trying to understand the frequency and hazards of earthquakes in our region (University of Washington, 2006).

One-hundred-forty miles off the Oregon coast, a major fault zone lies where the huge Juan de Fuca tectonic plate is sliding eastward beneath the North American tectonic plate, in a zone called the “convergent margin.” The frequent earthquakes that occur beneath the Portland metropolitan area occur along faults in the earth's crust that are part of the North American tectonic plate.

The U.S. Geological Survey (USGS) conducted an airborne laser magnetic survey in September 1992 to investigate and map the extent of these faults and possibly to help identify other seismic and volcanic hazards in the area (Blakley, 1995). The two primary faults that have been identified by geologists using the airborne laser magnetic method are the Portland Hills Fault and the East Bank Fault. The Portland Hills Fault runs northwest-southeast and is situated between the Tualatin Mountains (also known as the Portland Hills) and the Willamette River in downtown Portland. The longer East Bank Fault extends southeast to the Clackamas River drainage, a distance of 20 miles and considerably beyond the mapped extent of the fault (Blakley, 1995). Both faults are considered by geologists as active. In March 25, 1993, an earthquake of magnitude 5.6 (called the “Spring Break Quake”) struck an area about 20 miles south of downtown Portland and caused about $30 million in damages. Others quakes have followed with affects felt in the Portland metropolitan/Clackamas County area (USGS, 2003).

- August 21, 1993, magnitude 6.0
- January 16, 2003 magnitude 6.2
- July 12, 2004, magnitude 4.9
3. Volcanic eruption: Just 40 miles to the east of Portland lay the Cascade Range, a geologically young chain of 13 active volcanoes which are part of the Pacific “Ring of Fire.” Included in the chain are Mount Rainier in central Washington, Mount St. Helens in southwestern Washington, Mount Hood in Oregon, and Mount Shasta in northern California. The most well-known of all the Cascade volcanoes is Mount St. Helens which violently erupted in May of 1980 killing 72 people. Prevailing westerly winds dumped 350 pounds of ash fallout per square acre on southwestern Montana, over 400 miles away (Meyers, 1980). Being only 50 miles northeast of Portland, Mount St. Helens constitutes an ever-present and ominous risk from ash fallout if another major eruption were to occur while the winds were from the northeast. The volcano became active again in September 2004 with a series of earthquakes, dome building events, and minor eruptions which continue today.

Oregon’s Mount Hood is in Clackamas County and is just 32 miles from the CCFD1 boundary. Geologists estimate that the volcano has experienced three principal eruptive periods: the Polallie, Timberline, and Old Maid. The latest of these, the Old Maid eruptive period, occurred only 200-300 years ago with the last single eruption of Mount Hood occurring in 1865 (Pringle, 1987). These eruptions discharged ash plumes (called “tephra”) thousands of feet into the atmosphere and sent flows of high-speed ice, water, and mud (called “lahar”) to the west and southeast of the mountain (Crandell, 1980). However, scientists agree that the sleeping volcano could be reawakening. Throughout June 2002, as many as 250 earthquakes (the strongest magnitude 4.5) struck beneath Mount Hood for the first time in decades. More recently, a series of earthquakes (the strongest magnitude 2.1) occurred under the mountain in July 2006 that sent geologists scrambling to set up monitoring instruments on the mountain (Hill, 2006). “Mount Hood will most certainly erupt again, possibly in the very near future…” (Crandell, 1980).
4. Severe weather: In early February 1996 a strong subtropical jet stream reached Oregon which produced record rainfall amounts in Portland and Clackamas County. Although such Pacific storms are not atypical during the winter months, for them to continue for so long with such intensity is unusual. Oregon City collected 7.51 inches of rain in just four days (Taylor & Hatton, 1999). The National Weather Service (2006) reported that low level snow packs released up to 10 inches of water in as little as 48 hours. The Willamette, Columbia, and Clackamas Rivers all swelled over their banks sending riverside residents fleeing. Region-wide damage estimates exceeded one billion dollars. Across the Willamette Valley, five people died, and nearly every Oregon county received a disaster declaration for flood relief. Thousands of people were sheltered and hundreds of homes were destroyed from overflowing creeks and rivers. CCFD1 firefighters responded to several elderly and invalid rescue calls as flood waters rose near threatened homes. The City of Portland erected a makeshift flood barrier along the banks and seawall of the Willamette River to prevent flood waters from moving into the downtown area.

The majority of the widespread destructive winter winds come from the southwest as approaching “mid-latitude synoptic-scale cyclones” take aim on Western Oregon. These warm Pacific storms commonly produce high surface winds and heavy rains. During the Columbus Day storm of 1962, winds in the Portland area were sustained at 88 and peaked at 116 miles per hour causing death, injury, and property damage. Another significant wind storm struck Western Oregon in December 1995 with wind gusts over 60 miles per hour in the Willamette Valley that resulted in four fatalities.

Local weather disturbances can have devastating effects on Portland and Clackamas County too. Strong east winds (called “Coho winds”) result when an intense pressure gradient (a
pressure gradient is the change of atmospheric pressure over some short distance) develops between a high pressure center over the Upper Columbia River Basin and a strong low pressure area over the eastern Pacific Ocean (Taylor & Hatton, 1999). The narrow opening of the Columbia River Gorge forces the winds to blow directly at the Portland metropolitan area in a meteorological phenomena called “funneling.” At Crown Point, located about 20 miles east of Portland, easterly winds routinely average more than 50 mph, with gusts in excess of 100 mph. More recently, in December of 2003 a winter storm produced wind gusts up to 50 mph in Clackamas County. These wind storms toppled trees that downed power lines which led to widespread and prolonged power outages.

Research Question 2: How do other emergency service providers manage staffing shortfalls during major emergencies?

During the interviews conducted with local police, ambulance, and hospital administrators, it was learned that all surveyed agencies have written plans in place to notify and recall off duty employees in the event of a natural or human-caused disaster. Some have a Total Callback (TC) plan where a request is made of all off-duty employees to return to work in anticipation that only a certain percentage will actually report for duty. Other agencies practice either a Concentric Proximity Callback (CPC) or a Demand-Measured Callback (DMC) to augment or replace on-duty staff. Of the 20 surveys returned by classmates in the EAFSOEM class, eighteen (90%) indicated that their departments had a disaster callback policy. Of those eighteen, all used the word “disaster” as a trigger event that would activate a recall plan for off-duty firefighters. Other descriptions or situations included by respondents were, “MCI; hazmats; large fires; 2nd alarm fire; EOC activation; 3rd alarm fire; working fire; hurricane; any incident extending beyond 12 hours.”
Of the six external surveys mailed to other fire departments, only one department indicated that it did not have a callback policy (see Appendix G). All five remaining fire departments indicated that they had written procedures for notifying and calling off-duty personnel back into work.

Research Question 3: How do other emergency service providers notify off-duty personnel of a major emergency callback? During the interviews conducted with local police, ambulance, and hospital administrators, it was learned that the primary communication method to summon employees back to work for a disaster was by telephone and alpha (text) pagers. Of the 18 surveys returned by classmates in the EAFSOEM class, fourteen (77%) stated their departments used the telephone as the primary communication device. The remaining respondents indicated that voice and alpha pagers were used. The results of the six external fire service surveys indicated that half depended on telephone notification while the other half used alpha (text) pagers. Whatever method is used, off-duty responders should begin mobilizing when notified or activated through established channels or media. A standard process should be established by the department for mobilizing personnel resources. At the time of notification, personnel should be given the following information (Walsh, et al. 2005):

- Date, time, and place to report
- Type of incident that has occurred
- Incident location
- Anticipated incident assignment
- Anticipated deployment duration

Research Question 4: What percentage of off duty CCFD1 personnel would respond to a callback for a major emergency?
Of the 140 internal employee email surveys sent 77 were returned with valid information for a response rate of 55%. Question #1 asked, “How many miles do you travel (one way) to your regular duty station?” One of the many benefits of the three-platoon duty cycle is that it allows firefighters to live considerable distances from home to work, and several CCFD1 employees take advantage of that benefit. The closest employee reported living less than a mile from his assigned fire station while the longest commutes 125 miles each way from home to work. Forty-five respondents (32%) live less than 20 miles from their regular duty station. The average distance traveled by employees from home to their regular assigned fire station is 22 miles.

Chart 1
Travel Distance to Fire Station
Question #2 asked, “How many minutes does it take you to reach your regular duty station?” Of the 77 respondents to the survey, 30 of them (39%) reported that it took between 5 to 15 minutes to drive to their regularly assigned duty station. Only six employees (7%) replied that it took them longer than one hour to drive to work. The average time traveled by employees from home to their regular assigned fire station is 29 minutes.

Chart 2
Travel Time to Fire Station

Question #3 asked, “Would you be willing and available to respond back to work if notified of a disaster or other major emergency?” All 77 respondents (100%) indicated that they would be available and willing to return to work if alerted to a major incident during their days off. However, even though none of the survey respondents selected the option of “no” when asked about their willingness and availability, eleven employees (14%) included the unsolicited
word “family” in their answer and stipulated that they would only be willing to return to duty if they had assurance that their family was safe and secure.

Question #4 asked, “What would be the most effective way to notify you off duty of a staffing callback?” Respondents indicated a general preference for callback notification by home and cellular telephone methods respectively. The majority, thirty-three respondents (43%) stated a home telephone was the most effective method, while thirty-one employees (40%) chose a cellular phone as the best way to reach them on their day off. A small number of employees (17%) selected an alpha pager as the best method of off-duty callback. However, respondents may have been confused as to the intent of the survey question. Current CCFD1 practice does not include issuance of alpha pagers to all Operations Division employees. In consideration of that, it is possible that respondents graded the “pager” notification option low since most of them do not have a District-issued alpha pager. Had the question been worded, “If issued a Fire District alpha pager, what would be the most effective way to notify you off duty of a staffing callback?” it is likely that more employees would have selected that option.

![Chart 3](image)

**Chart 3**
Most Effective Method for Off-Duty Notification
DISCUSSION

The Portland metropolitan and north Clackamas County areas are at risk for several human-caused and natural disasters according to the U.S. Department of Homeland Security (2003), the U.S. Geological Survey (2003), and the National Weather Service (2006). The Literature Review confirms that experts have assessed the dangers posed from urban terrorism, earthquake, volcanic eruption (primarily from two nearby mountains) and regional severe weather. Any one of the events identified in this research could act as the “prime” event, being the trigger mechanism for secondary or tertiary events in a process referred to as the “cascade effect” (FEMA, 2005). A perfect example of the cascade effect could be resultant emergencies created by a flood. The flood causes a landslide, the landslide leads to a building collapse, and the building collapse traps victims inside. Or, the flood damages a highway that results in an overturned tanker truck that causes a hazardous materials release. Other examples of the cascade effect are power outages from a windstorm; radiation sickness caused by a nuclear “dirty” bomb; fires cased by a terrorist explosion; or structural collapses caused by an earthquake. These possibilities further necessitate the need for staffing augmentation or replacement by off-duty firefighters, paramedics, and rescue technicians.

On the subject of response capabilities during disasters, the survey findings are consistent with the Literature Review. Experience with large-scale regional incidents has focused attention on the importance of plans and organizational procedures for systematically mobilizing on and off-duty personnel forces (ICMA, 2002). But Mutual Aid tends to have deficiencies. Research data concludes that fire departments in general should not entirely rely on Mutual and Automatic Aid resources when drafting contingency plans for major emergencies. Fire departments are cautioned when planning for disasters about the limitations of, or reliance on, Mutual Aid as a
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resource tool (NFPA, 2003). Rather, fire departments should plan to be more self-sufficient by utilizing off-duty personnel in the face of regional events that place higher demands on all departments.

CCFD1 responds to an average of 40 calls every 24 hours. Because on-duty staffing is only intended to meet normal daily emergency demands, it can be reasonably predicted that the 41 on-duty firefighters would be incapable of meeting the increased call volume that a large-scale disaster would create. Any regional event of catastrophic proportions as described in Research Question #1 would immediately increase the demand for service by the public. Surrounding Mutual Aid departments would be unable to share their fire and rescue resources due to the same demand increases in their own jurisdictions.

And yet another harsh and disturbing possibility must be considered: Depending on the magnitude, severity, and scope of the prime event such as a powerful explosion or widespread earthquake, some (possibly many) on-duty CCFD1 firefighters may be trapped, incapacitated, injured, or even killed. And if not immediately taken out of action, a number of other unfortunate scenarios may render responders defenseless. A popular tactic used by many terrorist groups is to plant secondary (delayed) explosive devices that are intended to kill emergency responders that have been “lured in” by an initial bomb detonation. Aftershocks to an initial earthquake could collapse buildings where emergency personnel are conducting primary searches and victim rescues. These unfortunate situations would further reduce the number of available personnel available to respond to the initial disaster.

When interviewed, several administrators of police, ambulance, and hospitals in Clackamas County all responded that they had policies in place for the recall of employees during a disaster. In addition, survey respondents of surrounding and comparable fire
departments indicated that they collectively possess the ability to call back off-duty firefighters to major regional emergencies. This discovery places CCFD1 on a very short list of moderately-sized fire departments that do not have a personnel callback plan.

Benjamin Franklin once said, “If you fail to prepare, you are preparing to fail” (Oxford, 1975). Research findings reveal that several ominous risks and threats exist in Clackamas County that would overwhelm normal staffing levels. It seems evident that without a policy in place for the provision of calling back off-duty personnel, CCFD1 will not be able to meet the increased demands by the public during a regional disaster or other major emergency. Moreover, the CCFD1 Mission “to protect life and property and put service above all else” will not be accomplished.

RECOMMENDATIONS

The results of this research clearly show that CCFD1 could be forced to respond to a widespread catastrophic event caused intentionally by humans, or unintentionally by nature without notice. Because other fire and rescue departments would be challenged to meet increased service demands locally and not able to share resources with CCFD1, it is recommended that CCFD1 adopt a philosophy to be more self-sufficient in a disaster. Specifically, it is recommended that CCFD1 capitalize on the willingness of off-duty personnel to meet the demands during a major regional emergency by developing a callback policy. Because one-third of all off-duty employees live within 20 miles of their regular duty station, it is recommended that a Concentric Proximity Callback (CPC) system be used to quickly summon and deploy additional forces. The most effective method for contacting off-duty employees is through the use of home and cellular phones. However, the benefits of issuing alpha (text) pagers to all Operations Division personnel should be explored.
Future researchers may want to consider the topics of pager “standby” pay, minimum time compensation, and other collective bargaining agreement issues. The reader is further encouraged to investigate specific manpower demands for certain call types. Exhaustive research has been done on the subject of casualty and damage estimates, and personnel needed for mitigation of each type of incident.
REFERENCES


International City/County Management Association (2002). *Managing fire and rescue services.* Municipal management series. ICMA University publishing. Washington, DC.


p. 85. Oregon State University Press. Corvallis, OR


## APPENDIX A
### Daily On-Duty Shift Staffing

<table>
<thead>
<tr>
<th>Company</th>
<th>Location</th>
<th>Unit Type</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine 1</td>
<td>Town Center</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Engine 2</td>
<td>Milwaukie</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Battalion Chief 2</td>
<td>Westwood</td>
<td>North Shift Commander</td>
<td>1</td>
</tr>
<tr>
<td>Engine 3</td>
<td>Oak Lodge</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Rescue 3</td>
<td>Oak Lodge</td>
<td>Rescue Ambulance</td>
<td>2</td>
</tr>
<tr>
<td>Battalion Chief 3</td>
<td>Oregon City</td>
<td>South Shift Commander</td>
<td>1</td>
</tr>
<tr>
<td>Truck 4</td>
<td>Westwood</td>
<td>Ladder</td>
<td>4</td>
</tr>
<tr>
<td>Heavy Rescue 4</td>
<td>Westwood</td>
<td>Heavy Rescue (Cross staffed)</td>
<td></td>
</tr>
<tr>
<td>Engine 5</td>
<td>Mt. Scott</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Squad 7</td>
<td>Pleasant Valley</td>
<td>Pumper (Unstaffed)</td>
<td></td>
</tr>
<tr>
<td>Engine 6</td>
<td>Happy Valley</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Engine 8</td>
<td>Clackamas</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Engine 9</td>
<td>Holcomb</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Engine 10</td>
<td>Beavercreek</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Engine 11</td>
<td>Redland</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td>Truck 15</td>
<td>Oregon City</td>
<td>Ladder</td>
<td>3</td>
</tr>
<tr>
<td>Engine 16</td>
<td>Hilltop</td>
<td>Pumper</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL SHIFT STRENGTH</strong></td>
<td></td>
<td></td>
<td><strong>41</strong></td>
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</table>
APPENDIX B
In-Class Survey

EXECUTIVE FIRE OFFICER PROGRAM
Executive Analysis Fire Service Operations

IN-CLASS STUDENT SURVEY
Off-Duty Career Personnel Callback

1. Number of career personnel in your department? ________________

2. Population served by your department? ________________

3. Does your department have a callback policy for alerting off-duty personnel to respond back to work during a major emergency? □ Yes □ No

4. When is the callback policy utilized? (Example: 3rd alarm fire, air crash, natural disaster, etc. _____________________________

5. About how many times during 2005 was the callback policy used? _______

6. How are off-duty personnel notified or alerted to a callback?
   □ Phone □ Voice Pager □ Alpha Pager □ Other ______________________

7. Has your callback policy proven effective in providing adequate staffing for major emergencies? □ Yes □ No
APPENDIX C
Interviews

Phil Moyer
Operations Supervisor
American Medical Response
Ambulance Service provider in Clackamas County

Interviewed: September 2, 2006
Milwaukie, Oregon
30 minutes

Question 1: How many EMT/Paramedics does your ambulance company have deployed in Clackamas County?

Eighty.

Question 2: Does your ambulance company have a callback policy for alerting off-duty employees to respond back to work in the event of a major emergency? Yes.

Question 3: What event (or type of event) would trigger the recall of off-duty employees back into work?

Disaster situations, special teams deployments like mountain rescue, wildfire, etc. It depends on the type of incident, who we would call in.

Question 4: How are off-duty employees notified or alerted to a callback?

Primarily through the use of telephone and alpha pagers. Most are done on specific pager groups for personnel on special teams.

Question 5: How many times was the callback policy used in 2005?

About fifteen to twenty.

Question 6: Has the callback policy proven effective for your organization?

Yes.
Interview

Charlie Bowen
Chief Deputy (Undersheriff)
Clackamas County Sheriffs Department

Interviewed: August 28, 2006
Clackamas, Oregon
45 minutes

Question 1: How many employees are employed by the Sheriffs Department?

There are two-hundred-eighty-three sworn deputies including the Corrections division.

Question 2: Does the Sheriffs Department have a callback policy for alerting off-duty personnel to respond back to work in the event of a major emergency?

Yes.

Question 3: What event (or type of event) would trigger the recall of off-duty employees back into work?

Riots, SWAT callouts, fatal accident reconstruction team, major crime investigations.

Question 4: How are off-duty employees notified or alerted to a callback?

We use a Demand-Measured Callback with three levels depending on the situation. They are called on the telephone and paged at the same time.

Question 5: How many times was the callback policy used in 2005?

There were one-hundred-ten Level-Two callouts last year.

Question 6: Has the callback policy proven effective for your organization?

Yes.
Interview

Virginia Lundquist
Staff Development Director
Critical Care Department
Willamette Falls Hospital

Interviewed: July 17, 2006
Oregon City, Oregon
45 minutes

Question 1: How many employees make up the medical staff at the hospital?

*There are eight-hundred full-time employees that work at the hospital, sixty-percent of them make up the medical staff. The others are support and administrative staff.*

Question 2: Does Willamette Falls Hospital have a callback policy for alerting off-duty employees to respond back to work in the event of a major emergency?

Yes.

Question 3: What event (or type of event) would trigger the recall of off-duty employees back into work?

*Disasters, mass casualty accidents that overwhelm the emergency department, EOC activations by the County.*

Question 4: How are off-duty employees notified or alerted to a callback?

*We use a telephone calling tree, where the hospital calls specific people. Then, those people call other specific people, say from their own department, and so on. It’s a total callback type of system.*

Question 5: How many times was the callback policy used in 2005?

*None in 2005 to my knowledge.*

Question 6: Has the callback policy proven effective for your organization?

*Yes, in the past several years.*
APPENDIX D
Internal Career Personnel Survey

Brothers and Sisters:

As part of a school project, I am doing some research on disaster staffing for the Fire District. Specifically, I am trying to determine how many operations personnel would be available and willing to respond back to work in the event of a major emergency for supplemental apparatus staffing. Please answer the following four questions and email back a reply. This project is for a research paper only, and in no way an indication of future plans by labor or management to address the issue of a “Callback Policy.”

**Question #1:** How many miles do you travel (one way) to your regular duty station?

**Question #2:** How long in minutes does it take to reach your regular duty station?

**Question #3:** Would you be willing and available to respond back to work if notified of a disaster or other major emergency? (Yes/No)

**Question #4:** What would be the most effective way to notify you off duty of a staffing callback? (Home Phone/Cell Phone/Pager/Radio/TV)

Thanks everybody for your time. I appreciate your input.

_____________________________

*Chris S. Geiger*
Captain-Paramedic
Truck 4/Heavy Rescue 4
Clackamas County Fire District 1
(503) 314-8237 Cell
(503) 271-2146 Page
APPENDIX E
External Fire Service Survey

NATIONAL FIRE ACADEMY
EXECUTIVE FIRE OFFICER PROGRAM

Disaster Callback Staffing Survey

1. Career personnel in your department? _____________________

2. Population served by your department? _____________________

3. Does your department have a callback policy for alerting off-duty personnel to respond back to work during a major emergency? □ Yes □ No

4. When is the callback policy utilized? (Example: 3rd alarm fire, air crash, natural disaster, etc. _________________________________

5. About how many times during 2005 was the callback policy used? ______

6. How are off-duty personnel notified or alerted to a callback?
   □ Phone □ Voice Pager □ Alpha Pager □ Other _______________________

7. Has your callback policy proven effective in providing adequate staffing for major emergencies? □ Yes □ No
APPENDIX F
External Fire Service Survey Respondents

Chief Ed Widdis
Snohomish County Fire District No.1
12310 Meridian Avenue
Everett, WA  98208

Chief Gary Curmode
Sedgwick County Fire District No.1
4343 N. Woodlawn
Wichita, KS  67220

Chief Ross Chadwick
Denton Fire Department
332 E. Hickory
Denton, TX  76201

Chief Jeff Johnson
Tualatin Valley Fire & Rescue
20665 SW Blanton Street
Aloha, OR  97007

Chief Dave Sprando
Portland Fire & Rescue
55 SW Ash Street
Portland, OR  97201

Division Chief Arthur F. Hatch
Redmond Fire & Rescue
341 NW Dogwood Avenue
Redmond, OR  97756
# APPENDIX G
External Fire Service Survey Results

<table>
<thead>
<tr>
<th>Department Surveyed</th>
<th>Population Served</th>
<th>Career Staff</th>
<th>Callback Policy</th>
<th>Policy Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snohomish County FD1</td>
<td>160,000</td>
<td>150</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Sedgwick County FD1</td>
<td>134,000</td>
<td>133</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Denton Fire Department</td>
<td>110,000</td>
<td>149</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Tualatin Valley Fire &amp; Rescue</td>
<td>418,000</td>
<td>300</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Portland Fire &amp; Rescue</td>
<td>556,390</td>
<td>665</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Redmond Fire &amp; Rescue</td>
<td>36,000</td>
<td>40</td>
<td>Yes</td>
<td>No</td>
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</tbody>
</table>