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Research Note #11

Crescent City Revisited: A Comparison of Public
Warning Procedures Used in 1964 and 1965 Emer-
gencies.

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Introduction

On Wednesday, February 3, 1965 shortly after 9:00 p. m. (P. S. T.) an earthquake of high intensity occurred in western Alaska. Because of the possibility that seismic waves might hit the Pacific Coast, the California Disaster Office issued a preliminary warning for sheriffs, chiefs of police, and Civil Defense directors of coastal areas.

In Crescent City, the emergency bulletin was received by teletype at the Del Norte County and Crescent City Civil Defense control center at approximately 10:58 p. m. In little more than an hour, organized public warning procedures were under way. However, the earthquake did not generate seismic waves. There was no recordable increase in the ocean level either at Crescent City or of any importance elsewhere along the Pacific Coast.

This contrasts sharply with the experience Crescent City had in 1964 following the March 27, Alaska earthquake. At that time, the low-lying areas of the city were struck by four successive seismic waves, the last causing considerable damage. Twenty-nine blocks were damaged with the ocean front business district being the hardest hit. At least 11 died; several transients may also have been killed.

This report considers the response of public officials in Crescent City to the seismic wave threat following the February 3, Alaska earthquake. This particular city was chosen for study from among several threatened Pacific Coast communities because the DRC had previously made a similar study there,¹ and it was felt that a second study would afford an unusual opportunity to make some comparative observations.

As it turned out, there were some interesting similarities and differences between the public warning procedures utilized in response to the more recent seismic wave threat and the response made in March, 1964.

Data on the 1965 threat were acquired during a phase of a field trip which took a DRC staff member throughout the northern California region. The field worker arrived in Crescent City on the evening of February 4, after having learned of the seismic wave alert that morning. Two and a half days were spent in Crescent City during which observations were made, and formal interviews conducted with the following officials:

Del Norte County and Crescent City Civil Defense Director
Del Norte County Sheriff
Del Norte County Deputy Sheriff
Crescent City City Manager
Crescent City Police Chief

The February 3, 1965 Alert

When the first bulletin was received at the Civil Defense control center, located in the Sheriff's station a few blocks from the downtown area, the CD Director alerted his two alternates, the County Sheriff and the City Manager by telephone. Coast Guard personnel at the harbor were also contacted, mainly to see if they had any additional information about the earthquake and potential seismic waves. At this time, the Coast Guard had not received any information about the situation. However, some time later, between 11:00 p. m. and 12:00, they returned the call with information which confirmed the first emergency bulletin Civil Defense had received.

The emergency bulletin was a seismic disturbance advisory and not a seismic wave warning. It contained three basic points: (1) That there had been

an earthquake in the Pacific Basin, (2) That it was not known if a wave had been generated, and (3) That if a wave had been generated, further bulletins would be issued by the California Disaster Office as the information was received from the U. S. Coast and Geodetic Survey. The message was interpreted by local officials as a preliminary and precautionary statement. At this time, they believed that the information received did not warrant wholesale public alerting and evacuation.

About midnight, a second bulletin was received at the control center from the California Disaster Office. Local officials labeled this bulletin, like the initial bulletin, as a seismic disturbance advisory. However, one important additional feature of this message was that it gave the estimated strike times of a wave for several points including Crescent City, if one had been generated. The estimated strike time at Crescent City was 2:45 a. m.

Upon receiving the second emergency advisory message, the CD Director notified the California Highway Patrol, the City Police, and Seaside Hospital in the local community. The Sheriff and the CD alternates were again contacted and asked to report to the control center. Shortly after 12:00 a. m., the Coast Guard called the CD control center to notify officials there that the unit was pulling out of the harbor as a precautionary measure.

A third and final bulletin was received by teletype from the California Disaster Office immediately following the second. There was some ambiguity in this third message, as an initial statement referred only to the probability of a wave and a final statement emphatically read: "This is a tidal wave warning, a wave has been generated." As in the message which preceded it, projected time of arrival was given for each of several coastal communities including

Crescent City which was again estimated to be 2:45 a.m. The final bulletin also indicated that unless subsequent messages were received, termination of the warning could be assumed two hours after the estimated time of arrival of the wave unless local conditions warranted continuation of the alert.

The Del Norte County Sheriff, upon arriving at the control center at approximately 12:10 a.m., conferred with the CD Director and communications officer. They quickly decided that upon the basis of the information received, a full-scale public alert should be implemented. Following normal procedure, the CD Director and the Sheriff assumed the responsibility for coordinating warning activities throughout Del Norte County including Crescent City. The Crescent City Police, working out of their own station a few blocks from the CD control center, maintained radio contact and had their activities directed by the Sheriff and CD Director.

A full-scale alert procedure was under way by approximately 12:20 a.m. Sheriff's deputies were sent into the Klamath and Smith River areas located in the southern and northern portions of Del Norte County to warn residents there. County and city officials decided that in Crescent City people residing within six blocks of the waterfront area would be advised to evacuate. Sheriff's deputies and city police officers were sent into the area and went from door-to-door alerting residents. Because of the lateness of the hour, most of the stores and offices were closed; consequently, many of the owners had to be notified at their homes so that they could go to their places of business and make any preparations they felt were necessary. The businessmen were notified directly if they lived within the low-lying area that was being evacuated or, as in many instances, by

telephone if they resided outside of this area.

The public warning which involved telephoning and door-to-door notification was completed around 2:00 a. m., 45 minutes prior to the estimated impact time. Most of the merchants had been contacted by 1:00 a. m. which would have given them well over an hour in their places of business to make emergency preparations had a wave arrived at the projected time.

Station KPLY, the former CONELRAD disaster station in Crescent City, was contacted and asked to return to the air some time after midnight. Officials at the control center prepared an emergency bulletin which was aired for several hours over the radio station, beginning at approximately 12:30 a. m. The message repeated the information that had been received from the California Disaster Office, and advised residents of low-lying areas to evacuate. The emergency message also indicated that another statement would be issued by public officials indicating that it was safe to return to the waterfront area if two hours after the estimated strike time passed without incident.

It is difficult to assess the contribution of the radio broadcasts in alerting the public to the seismic wave threat. However, it seems doubtful that many persons in Crescent City could have learned of the alert in this fashion; since the radio station is normally off the air during the time the emergency broadcasts were made, it seems probable that most people would have had their radios turned off. Although the majority of residents probably initially learned of the alert from public officials or other persons, one official noted: "Somehow the word got around that people should listen to their radio." Thus residents, after learning of the alert via other means, would turn on their radios and receive instructions

as to when it was safe to return to their homes and places of business.

Shortly after the estimated time of arrival of the seismic wave had passed, the CD Director called Region II of the California Disaster Office in San Francisco and informed officials there that there was no significant change in the water level at Crescent City. He also contacted station KPLY and had the message broadcasted that two hours should elapse before residents returned to the waterfront area. At 4:45 a. m., the radio announcement was made that the alert was officially over and evacuees could safely return home. Also, the city police, Seaside Hospital, and sheriff's deputies at key points and road blocks were notified from the Civil Defense control center that it was "all clear."

Some Comparisons Between the 1964 and 1965 Response and Public Warnings.

1. The seismic wave alert of Wednesday, February 3, 1965, like that of March 27, 1964, was due to the detection of an earthquake which had occurred in Alaska. In both instances, the U. S. Coast and Geodetic Survey felt the disturbance to be great enough that Pacific Coast communities should anticipate seismic waves. Following each of the earthquakes, the California Disaster Office relayed this information by teletype in emergency bulletins to sheriffs, chiefs of police and CD Directors of coastal counties and cities. In each instance, Del Norte County and Crescent City officials were among those notified, receiving the information at the CD control center. At this broad, overall level, the organizational alerting procedure was the same in 1965 as in 1964.

2. The first bulletins received at the control center from the California Disaster Office following the 1964 and 1965 earthquakes were received late at

night at approximately 11:08 p. m. and 10:58 p. m. respectively. This meant that in each instance many of the public officials who have the responsibility for making the important decisions in such emergencies were off duty and had to be reached at home or elsewhere. Fortunately, in neither case was it reported that any of the key officials could not be reached.

Also due to the lateness of the hour during which the beginning of both alerts occurred, the waterfront business area of the city was unpopulated except for a few bars and motels. Apparently, following the March 1964 earthquake, many of the merchants sustained heavy losses to their businesses because they were in their homes outside of the area and did not learn of the threat in sufficient time to make emergency preparations. Recalling this earlier problem, public officials at the Control Center during this most recent alert decided to try to contact every merchant in his home, either directly or by telephone. This was accomplished well in advance of the 2:45 a. m. estimated arrival time of the seismic wave. It is reasonable to assume that if waves similar to those which struck in 1964 had also done so in 1965, property losses sustained by waterfront businessmen would not have been as great. For example, a car dealer thus contacted got additional personnel and drove all of his cars out of town. He had lost all of his cars in the 1964 disaster. Due to this apparent success and the need to contact merchants in their homes during such alerts, public officials anticipated incorporating this procedure into their public warning routine. Along this particular line at least, previous experience clearly changed part of the organizational response in the later threat.

3. Following the March 1964 earthquake, public officials in Crescent City

received two emergency bulletins from the California Disaster Office, whereas, following the February 1965 earthquake, three bulletins were received. The first bulletin received during the 1965 alert was unlike either of the two received in 1964 in that it was a preliminary notification. It was sent before more complete information was available from the U. S. Coast and Geodetic Survey to provide local officials with early notification that a sizable earthquake had occurred. In Crescent City, this meant that local officials could be contacted from the control center and advised to remain where they could be reached in case further information warranted a full-scale alert. This particular change in specific procedure of providing early information was highly functional: it meant the availability of key organizational or public officials who might otherwise have made plans to leave the community on other business.

4. According to one high official, if information indicating the estimated arrival time of a seismic wave becomes available, this is sufficient basis for justifying a public declaration of a state of emergency. The two bulletins received by public officials during the 1964 alert, and the final two received during the more recent one were similar in that information was provided regarding estimated arrival times of possible seismic waves. This was the basis for a declaration of a state of emergency. In both instances, moreover, public officials did not publicly suggest evacuation until after the final bulletins had been received. In the 1964 situation evacuation was suggested after the second bulletin, and in 1965 after the third. However, there was little real delay in the 1965 alert because the third bulletin followed the second almost immediately. Essentially this means that the state of emergency in one sense was really

initiated by officials quite distant from the local scene. This may or may not be the intent of the originating source of the seismic wave information, but this is the way the situation was defined at least in Crescent City.

5. Seemingly, there was less hesitancy in declaring a public emergency following the February 1965 earthquake than after the March 1964 one. Within a matter of approximately ten minutes after the Sheriff arrived at the control center and conferred with other officials present, a full-scale alert was initiated involving sheriff's deputies and police officers. Also, radio station KPLY began broadcasting the alert some several minutes later. This contrasts with the response made in March 1964. In that instance, it was approximately thirty minutes after key officials had assembled at the control center that deputies and police officers were sent into the threatened area. This preceded the arrival of the first seismic wave by only ten minutes.

The delay by local officials in beginning warning procedures following the March, 1964 earthquake has been attributed to the ambiguity in the wording of the emergency bulletins and to officials prior experiences.² Both of the bulletins indicated only that a wave was probable. In fact, the first bulletin stated that the probability evaluation had not been confirmed.

Local officials during the 1965 alert as in 1964 also had the problem of evaluating ambiguous information. The second bulletin received from the California Disaster Office stated: "This is not a tidal wave warning... it is still not known that a wave has been generated." This bulletin was immediately followed by the final one which contained both the following confusing statements in this order: "The U. S. Coast and Geodetic Survey reports the probability of a tidal wave..."

and "... Repeat this is a tidal wave warning, a wave has been generated."

Local officials need to evaluate the information that is made available to them and then make the decision whether or not to issue a public warning. If they do not make the proper decision, they may be subject to public sanctioning. If, for example, after receiving information of an emergency nature, however ambiguous it may be, and they fail to call for evacuation they may be held publicly responsible for loss of life and property. On the other hand, if they call for evacuation too frequently and there is a long period when disasters fail to materialize, they may be held up to public criticism and ridicule with a resultant loss of effectiveness. The hesitancy with which public officials decided upon initiating alert procedures in March, 1964 can be in part attributed to their having had a number of "false alarms" that year.³

Such a problem is well documented in the disaster literature. For example, Fritz has taken note of it:

When people have had no recent experience with disaster or cannot actually perceive the danger in their immediate surroundings, successful public warning is much more difficult. The difficulties often start with the persons or agencies who are responsible for detecting the danger and for issuing the warnings. These agents are usually reluctant to issue a specific warning until they are reasonably certain that the danger will actually materialize. In many cases, waiting for this degree of certainty only delays the warning until it is too late.⁴

While Crescent City public officials in 1964 did not wait until it was too late to issue a public warning, they did have only ten minutes from the time they received the second bulletin and acted, and the arrival of the first seismic wave. Fortunately, the first wave was relatively mild. If it had been as large as the fourth, loss of life and property would probably have been considerable.

Local officials initiated public warning procedures more rapidly in 1965 than in 1964. Since, as in 1964, there was still ambiguity in the bulletins received by officials, the difference in response can, to a considerable degree, be attributed to the prior experience with the March, 1964 disaster. Having had this experience, local officials in 1965 were especially sensitive to disaster cues and, consequently, were less reluctant to issue a public warning.

6. Limited information upon which to base a crucial decision was another problem officials had in 1965 which was like that experienced in 1964. For example, in 1964 no information was provided by an official outside source regarding the size of the earthquake that had occurred or of the probable height of the wave. In 1965, the only information received from an official outside source about the size of the earthquake was from an official at Region II, California Disaster Office, who advised that the information which he had received indicated that it was a large one. Nothing was said about the probable height of the wave. Clearly such information would affect the degree of evacuation thought necessary. DRC has discovered that in other societies subject to seismic waves generated by earthquakes, such as Japan, the warning system not only indicates the time but height of the wave that could be expected in any given region.

7. Fritz makes the following observation: "People who have recently had direct experience with disaster become hypersensitive to signs of its recurrence, and warning under these conditions usually insures adequate protective actions."⁵ This observation seems to hold true for the two situations discussed here. For example, when asked to compare public response to warnings during the 1964 alert with a year later, local officials expressed the belief that residents of the

threatened area were more willing to evacuate during the 1965 emergency because they recalled the disaster the year before. One official noted: "Everyone was extremely cooperative and they moved very promptly. We didn't have to enter any arguments."

8. Finally, in both instances, officials did not order an evacuation of the threatened areas. Apparently, it would not have been legal to do so. Thus, persuasion rather than authority had to be used.

Some Concluding Observations

Local officials often find themselves in a very difficult position as they attempt to prepare their communities to meet an anticipated disaster. Frequently, as in the case of seismic waves, there will be few or no danger cues observable at the local level for either officials or residents to interpret. Consequently, responsible local authorities often have to depend almost entirely upon outside source for information regarding such threats. This means that the action taken by these local officials will be in part a consequence of: (1) the speed by which information is sent to them and (2) the clarity and completeness of the information. Any inadequacy in either of these makes it the more difficult for local authorities to take appropriate action.

Apparently state officials in California are aware of the problems local officials experience as they attempt to take the most appropriate actions in meeting a threat to their communities. Following the 1964 seismic wave disaster, a series of meetings were held in San Francisco. They were sponsored by the California Disaster Office and attended by CD personnel throughout the state. One of the

main topics considered was the problems that local community officials have in evaluating bulletins and messages sent to them by the CDO. The content of such bulletins and messages was discussed along with the need that they contain certain kinds of information. At one such meeting a group of scientists provided basic information about the nature of earthquakes and seismic waves.

Such efforts as these are necessary if the problems are ever to be satisfactorily handled. That they are still formidable ones, however, is indicated by the fact that there continued to be some ambiguity in the bulletins received by officials in Crescent City from the CDO. In fact, during the recent alert, several newsmen called the control center and provided officials there with information received from various news agencies. Ideally, the information used by local officials in determining local needs ought to come from official sources. However, when such information is ambiguous or incomplete, unofficial sources provide additional, though less firm, bases for evaluations.

Local officials must also face the problem of maintaining public willingness to comply with their suggestions. This may be especially difficult during periods in which there have been many false alarms. As indicated by the recent alert in Crescent City, people are willing to evacuate, and warning is easier, when there has been a recent disaster.

There also seems to be greater public tolerance for false alarms for a certain period following an actual disaster. It is during such periods of public "disaster sensitivity" that officials often find themselves able to introduce previously resisted emergency procedures. For example, one high official in Crescent City said that they are going to adopt a fan out alerting procedure

which would involve people in the low-lying areas and greatly reduce the time it will take to warn residents of an approaching seismic wave. This same official noted: "We would have had it before, the only thing is most people concerned are quite individualistic and they objected...."

However, high public sensitivity to the possibility of disaster is difficult to maintain. Public officials in Crescent City are aware of this, and they anticipate tolerance to the false alarms to decrease as the period between disasters lengthens. Anxiety concerning the consequences of future periods of decreased public sensitivity is reflected in the following statement by one official: "If nothing occurs you feel like an idiot and you can be laughed at and it doesn't necessarily as an individual bother me to be laughed at, but it destroys basically a regard for future warnings."

FOOTNOTES

1. Daniel Yutzy, "Aesop, 1964, Contingencies Affecting the Issuing of Public Disaster Warnings at Crescent City, California," (Columbus, Ohio: Disaster Research Center, Research Note #4, May 21, 1964).
2. Ibid., pp. 5-6.
3. Ibid., p. 5.
4. Charles E. Fritz, "Disaster," in Contemporary Social Problems, edited by Robert K. Merton and Robert A. Nisbet (New York: Harcourt, Brace and World, Inc., 1961), p. 664.
5. Ibid., p. 664