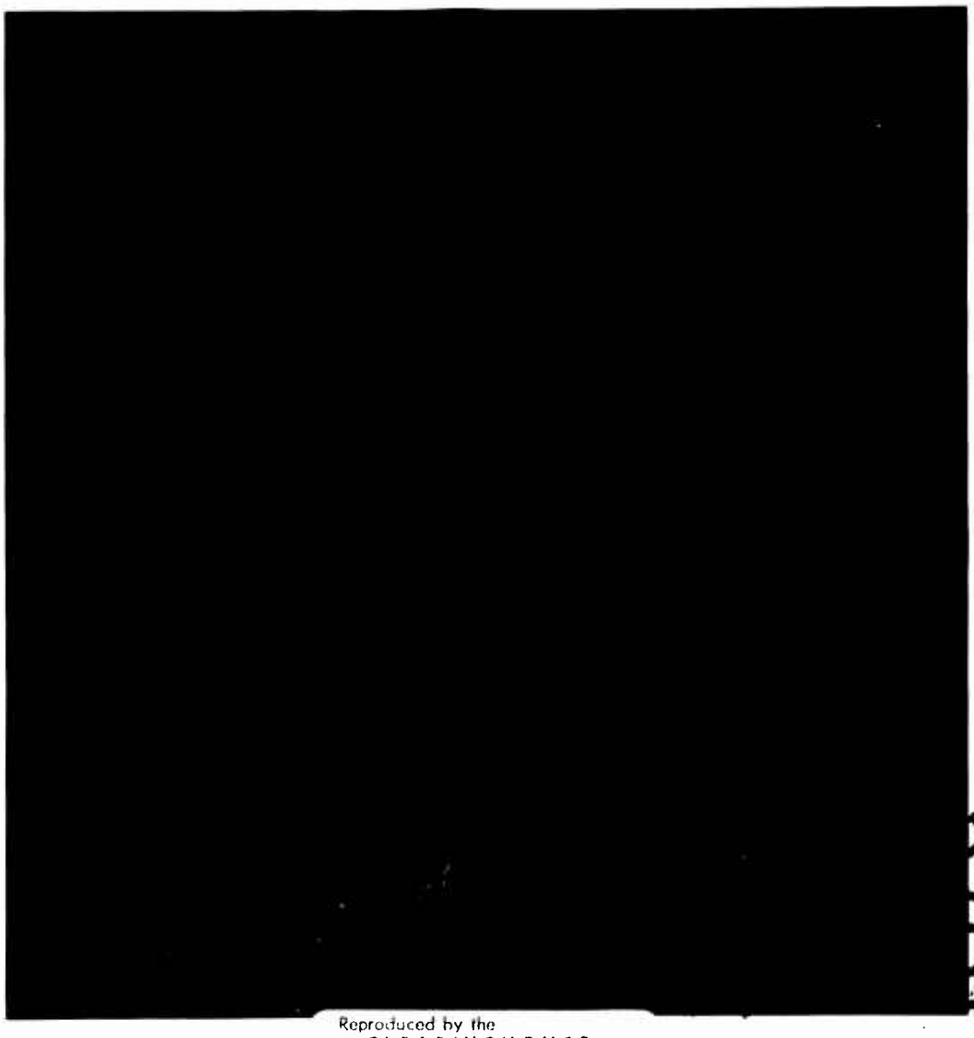
DISASTER RESEARCH CENTER SERIES

COMMUNITY PRIORITIES IN THE ANCHORAGE, ALASKA, EARTHQUAKE, 1964

DANIEL YUTZY



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Disaster Research Center Monograph Series
No. 4

COMMUNITY PRIORITIES IN THE ANCHORAGE, ALASKA EARTHQUAKE, 1964

by

Daniel Yutzy
State University of New York
at Buffalo

with the assistance of

William A. Anderson
Russell R. Dynes
Disaster Research Center
The Ohio State University

for

Office of Civil Defense
Office of the Secretary of the Army
Washington, D.C. 20310

August 1969

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Abstract

The monograph focuses on Anchorage, Alaska during the emergency period following the March 27, 1964 earthquake. The study takes the total Anchorage community as the unit of analysis. The organizational resources which existed at the time of the quake are first described. A set of priorities of community functions during an emergency were hypothesized. These were tested by an analysis of actual activities during the emergency. These activities were determined by fieldwork, involving interviewing and direct observation during and after the emergency period. The field work was supplemented by documentary materials.

The monograph provides a detailed account of emergency activity in many segments of community life. Chronologies of critical events were compiled for all major areas of community action, particularly activities relating to the preservation of life and the restoration of essential services. The priorities actually given to various community functions closely followed the hypothesized sequences. Greater attention than was initially hypothesized was given to problems of social control and somewhat less attention was given to certain aspects of search and rescue. An explanation for these "misplaced" emphases is provided in the context of the complexities which emerge from extensive emergency activity.

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FOREWORD

This document is one of a series of publications prepared by the staff of the Disaster Research Center, The Ohio State University. This aspect of the work of the Center has been sponsored by the Office of Civil Defense under Contract OCD-PS-64-46 Work Unit 2651-A. Below is a listing of the materials which have been included in the monograph and the report series.

Monograph Series

Thomas E. Drabek, Disaster in Aisle 13: A Case Study of the Coliseum Explosion at the Indiana State Fairgrounds, October 31, 1963

Russell R. Dynes, Organized Behavior in Disaster: Analysis and Conceptualization

Daniel Yutzy with William A. Anderson and Russell R. Dynes, Bad Good Friday: Community Priorities in the Anchorage, Alaska Earthquake 1964

William A. Anderson, Disaster and Organizational Change: A Study of the Long-term Consequences in Anchorage of the 1964 Alaskan Earthquake

David S. Adams, Emergency Actions and Disaster Reactions: An Analysis of the Anchorage Public Works Department in the 1964 Alaska Earthquake

Report Series

(Authored by various members of the Disaster Research Center staff)

The Functioning of Established Organizations in Community Disasters

The Functioning of Expanding Organizations in Community Disasters

The Department of Public Works: A Community Emergency Organization

Community Functions Under Disaster Conditions

Military-Civilian Relations in Disaster Operations

The Warning Process in Disaster Situations

The Police Department in Disaster Operations

The Fire Department in Disaster Operations

The Functioning of Civil Defense in Community Disasters

Salvation Army Activity in Disasters

The Local American Red Cross: Programs, Policies and Problems

The Los Angeles Fire Department Operations During Watts

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PREFACE

Several observers have suggested that, to the average combat soldier, the war is that which immediately "surrounds" him. The point being made is that, for most significant events, it is impossible for an individual to gain an overall view. This is also true for disaster experience. Observation is a luxury for those who become involved. Difficulties of movement and communications make it almost impossible to gain an "overall" view. As a consequence, most disaster accounts are from a personal or organizational viewpoint, dealing with the immediate and the proximate. In the following study, Dr. Yutzy has perhaps come the closest to an overall view of a particular disaster event, the earthquake in Anchorage, Alaska, in March 1964, that exists in the literature. No study has been able to report on simultaneous actions in so many varied aspects of a community response as the one which follows.

Comprehensive description, however, is not an end in itself but only a vehicle to achieve the purpose of analyzing the events within the framework of a particular theory. By viewing Anchorage and its response in terms of certain processes, Dr. Yutzy's analysis has a wider applicability to other communities and to other disaster events.

It is hoped that this monograph will be of some interest to several audiences -- social science professionals; persons responsible for the functioning of organizations, especially in emergency situations; and, perhaps, some having no professional or occupational motives who might read this material simply from interest. The shortcoming of such a wide appeal is, of course, that the final product will satisfy no one. Some may find this monograph too abstract and theoretical; others may think it too detailed and practical. Still we believe that the content does have value for each of these diverse audiences.

The monograph is one in a series of continuing publications, initiated by the Disaster Research Center, which will deal with a number of issues, many of them related to emergency planning and civil defense. Our thanks are due to the Office of Civil Defense since the monograph was written as a project supported by them -- OCD-PS-64-46, Work Unit 2651-A. This monograph is also available from the Defense Documentation Center and the Office of Civil Defense.

Russell R. Dynes
E. L. Quarantelli
Co-Directors
Disaster Research Center

ACKNOWLEDGMENTS

Every individual effort is based, in part, on the collective effort of others. This is certainly true in this monograph. My first appreciation should be given to the many Alaskans who so generously contributed their time and knowledge. Their willingness to share their experience of the emergency period provided the core information upon which the study is based. Their understanding and patience with our questions and our presence made the field work enjoyable as well as productive. The names of private organizations have been changed to maintain the confidentiality of some of the data.

The initial field work was conducted by William A. Anderson, J. Eugene Haas, E. L. Quarantelli, Russell R. Dynes, and the author. The late James R. Hundley, Jr. made subsequent trips. With regard to the actual writing, William A. Anderson wrote the section on organizational resources in Anchorage and Russell R. Dynes prepared the final organization and revision. James Converse assembled the material and did the initial draft of the first chapter. Drafts of the rest of the material were prepared by the author.

The actual writing tells only part of the story. The entire staff of the Disaster Research Center was directly involved in one way or another in this project. Most of the arduous work of developing the chronological references was done by Robert Whitman, assisted by Daniel Sims and others. Mrs. Mel Boggins provided valuable editorial assistance at a particular stage of the manuscript. Mrs. Elinor Shubick and Mrs. June Reed capably handled the task of classifying, filing, and coordinating the vast array of material which had been collected. Numerous staff conferences, headed by the DRC co-directors, E. L. Quarantelli, Russell R. Dynes, and J. Eugene Haas served to refine and clarify concepts and issues. I express my indebtedness to all of these people.

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CHAPTER I

THE EARTHQUAKE AND ITS LOCALE

On Good Friday, March 27, 1964, the weather was mild in Alaska. In the southcentral communities there were signs that the annual spring breakup could be expected within a few weeks, thus ending another long winter. In Anchorage, as the afternoon hours ebbed away, the last workday before the Easter weekend came to a close for most residents. At 5:30 they were either at home or en route. A few shoppers lingered in the downtown area. Some shopowners and employees were totaling the day's receipts and closing the stores.

Because tremors are commonplace in Anchorage, and indeed in all of south-central Alaska, few persons paid much attention to them at first. But as the shaking continued and built up in intensity, people became aware that this one was worse than most. Buildings swayed while falling materials crushed within them; others collapsed. Cracks, fissures, and chasms in the earth's surface appeared. In some areas it became nearly impossible to stand.

No one knows precisely how long the shaking lasted. Various reports indicate from two to five minutes. It seemed an eternity to those involved. When it was over, there was widespread damage and disruption but few deaths. What follows on these pages is a description of how a specific community, Anchorage, responded to the impact of this earthquake. This is a story unlike what is usually presented in the popular press. The popular press too often presents a picture of chaos and disorganization in depicting the human reaction to disaster. This distorts what actually happens in communities. It distorted what happened in Anchorage.

An earthquake is capable of extreme damage and destruction and, for communities which feel its impact, it can create demanding tasks with which to cope. The processes evoked by such a disaster in Anchorage are the primary concern of this monograph. In large part, the resources with which a community attempts to deal with disaster impact are those aspects of social life which are organized to cope with everyday problems, such as the fire department, the police department, hospitals, and public utilities. It is in the context of how Anchorage was organized prior to the earthquake that we initiate the discussion of what happened subsequently. Since the disaster event took place within a particular geographical and social setting, we will start with this context. In this initial chapter, there is a brief look at the geophysical and climatic features of Alaska and the political, economic, and technological history which may provide some understanding of the post-disaster behavior of Alaskans. Since the study focuses on the emergency activity in Anchorage, the second chapter will be an overview of the pre-disaster community. Since organizations play a major part in disaster activities, those which existed prior to the earthquake are described to provide some notion of their structure and resources. Subsequent chapters will deal with the elaboration of a specific theoretical view of community processes in disaster.

Alaska: Pre-Quake

Geophysical Characteristics

The forty-ninth state has a land area of 586,400 square miles, nearly one-fifth the size of the continental United States.[1] The topographical features of Alaska are so varied and demarcated that persons traveling from the southwestern panhandle to the northernmost tip at Point Barrow pass through distinctly different regions.

Topography. The many islands of the Alexander Archipelago lie off the coast of the southeastern section of the state. On shore there are glaciers, fjords, and extensive, often tree-clad, mountain ranges. Beyond these mountains is the Alaskan interior; broad lowlands and rolling highlands originate in the Yukon Territory and extend southwestward to the Bering Sea. This area is bounded on the north by the Brooks mountain range. East of the Brooks, the land descends to the tundra of the Arctic Slope, which terminates at the Arctic Ocean.

Southwest of the major land mass and off the coast of the Alaskan Peninsula lie the Aleutian Islands, Kodiak Island, and others in the chain. Off the northwest portion of the land mass, the Seward Peninsula, separated from Russia by the 55-mile-wide Bering Strait, stretches into the Bering Sea. The eastern border is a 600-mile-wide land base joining Alaska and Canada.

Climate. The Alaskan climate is influenced by: a northern latitude (three-fourths of Alaska falls in the North Temperate Zone and the remainder in the Arctic Zone), prevailing southerly winds, the warm Japanese current, and interaction between the sea's influence and mountain barriers.

Rainfall in the southeastern portion is fairly heavy, ranging from an annual average of 60 to 150 inches in some parts. This decreases rapidly as one moves inland. The city of Anchorage has an average annual precipitation of fourteen inches and the interior region as a whole averages from five to twenty inches of rainfall. Farther north on the Arctic Slope rainfall averages less than five inches.

Summers in the southeastern area average fifty-five degrees Fahrenheit, with a winter average in the thirties. The interior has the most extreme temperature ranges, particularly toward the northeastern portion where the ocean has a less moderating effect. Mean temperatures, which in summer rise to the upper sixties, fall to seventeen to forty degrees below zero in the winter months. The Arctic Slope, moderated by the Arctic Ocean, has a summer average ranging from the thirties to the low fifties, with the winter average from three to sixteen below zero.

A Brief History of Alaska

From Discovery to Statehood. A Russian scientific expedition discovered Alaska in 1741.[2] The first attraction to the area was mainly the fur trade, which gave little impetus to the rise of settlements. Later, English trappers and

traders entered through Canada and concentrated their efforts in the southeastern area. The purchase of Alaska in 1867 by the United States curtailed these activities and fostered a small-scale immigration of several hundred American pioneers who hoped to be among the first to share in the development of this area. They were disappointed because no government was established and little development was encouraged for many years.

The fur trade remained one of the major bases of the economy in the early period of American settlement. Later, the establishment of highly mechanized and specialized fish canneries led to the development of numerous fishing communities. With the discovery of gold came mining camps. Homesteading did not proceed rapidly, as it had on the earlier American frontier, because there was much less of a market to supply. Some of the miners turned to farming, but the overall effect of the depressed conditions during World War I resulted in wide abandonment of the land. The Matanuska Colony settlement of 1935 again encouraged some mainland families to try farming in Alaska.

The bombing of Pearl Harbor and occupation of the western Aleutians by the Japanese resulted in a heavy defense establishment in Alaska. This defense establishment has been maintained since this time due to the cold war situation. Developments since World War II have included several hydroelectric plants, new roads and airports, a growing tourist industry, and an increasing number of settlers who have come to regard the land as their new home. Another wave of people came both with the oil boom of the mid-fifties and as a result of xcitement stimulated by statehood. Some of them became permanent residents.

According to the United States census, Alaska has grown in population from 32,167 in 1890, of which about 23,531 were natives (Eskimos, Indians, and Aleuts), to 226,167 in 1960, of which 43,081 were natives. Population density was approximately one person per two and one-half square miles in 1960. (The continental United States had a density of slightly over fifty-seven persons per square mile in 1957.) Density figures give a somewhat distorted picture due to the large uninhabited areas and the heavy concentration around several major population centers. Thus, a disaster affecting the land mass could either be a severe blow to the state, or it could be of practically no consequence, depending upon the area of impact.

The Statehood Movement. For seventeen years following its purchase, Alaska had no legal status. At first it was subject only to customs collection; later it became a military district. From 1884 to 1912 Alaska was a civil district under the jurisdiction of the Department of the Interior. In 1912 it became a territory. Although the first bill proposing Alaskan statehood was introduced in Congress in 1916, statehood was not achieved until June 30, 1958. Johnson and Jorgenson comment upon some effects of this period as follows:

> At no time during this long period had Alaskans been provided the kind of government and services they thought essential to their situation and their needs. These constant frustrations and the resultant efforts to overcome them, probably were the greatest unifying factors among the scanty and widely-scattered population.[3]

Many factors contributed to this frustration. The role of the federal and the territorial governments in economic development was probably one of the major sources of discontent, as the latter could discharge only those functions delegated to it by the former. Concerning this situation Rogers comments:

> When desired development was not forthcoming, or when it came in a way which was not deemed desirable by Alaskans, or in the exploitation of the salmon fisheries, then full blame was laid at the door of the appropriate federal agency, regardless of the real reasons. Eventually, it became much simpler to denounce federal management as a whole, disregarding individual merits or demerits, and the entire territorial system of government.[4]

Other complaints were leveled at the lengthy delays and the amount of red tape necessary to accomplish even minor matters. Sheer physical separation from Washington added to the feeling of being ruled by absent powers who did not appear to understand the problems involved.

The federal government seemed to be involved in nearly every major aspect of the Alaskan scene. A count by the National Resources Committee in 1937 showed at least fifty-two federal agencies exercising authority in some way.[5] The territorial government in attempting to deal with the various demands and pressures put upon it both by calls for increased revenue and for less interference in activities also developed an extensive number of boards and commissions. The limited success of attempts to reform and combine functions, both at the territorial and federal levels, led many to advocate statehood as the best, if not only, solution.

The campaign for statehood took the form of a black and white argument: Statehood was justified by some "moral principle" and opposition was considered "un-Alaskan," or at best, a representation of outside interests. Rogers analyzes the resultant attitude as:

> . . . one which looked upon economic development as essentially political in nature requiring only changes and manipulations in the forms of institutions; which devoted itself to the devising of plausible sounding explanations placing the blame for lack of development on outside groups and things (the federal government and absentee salmon canning, gold mining, and Seattle shipping "interests"), impatient with any suggestion that serious and objective chought was needed to seek real causes and more realistic solutions.[6]

The provisional "Constitution of the State of Alaska" was ratified April 24, 1956, in a territorial primary election. Public Law 85-508, enacted by the 85th Congress and signed by the President of the United States on July 7, 1958, was accepted by Alaskan voters on August 26, 1958. The Presidential proclamation on January 3, 1959, admitted Alaska to the Union, and made its constitution the basic legal framework for the state of Alaska.

While in many ways resembling those of states admitted earlier, the "Constitution of the State of Alaska" differs in several major aspects. Probably the most significant of these was the extensive authority given to the governor, granting him full executive and appointive power over the department heads, and power to accept or reject appointments for other offices made by the legislature.[7] The intended outcome of this centralization of powers was a flexible government that could quickly bring about reforms needed to stimulate economic growth.

The economic growth stimulus expected as a result of statehood was much less than many people had hoped. The high cost of establishing and operating the state government absorbed much of the capital that the state had planned to use for economic expansion. Large tracts of land were available for the state to sell, but the cost of surveying it was prohibitive. While statehood did bring more settlers and industry, the influx was smaller than statehood advocates had anticipated. After the initial increase, the number of tourists declined as interest waned.

Questions were raised by an increasing number of people as to whether the economy had been ready for statehood. In 1961 a petition was circulated in Nome and Fairbanks asking Congress to permit the northwestern and interior regions to secede from the state and revert to territorial status. However, although many Alaskans now feel that they were not ready for statehood, they accepted it as being their own choice and realized that it would provide a framework within which to work.[8]

One of the many consequences of the statehood movement was of some importance. As a result of the political history of Alaska and the role the federal government played in its development, there was a tendency to view nearly all problems first as political in nature, and only later as economic, social, industrial, etc.

The Resources and Development of the Alaskan Economy

Furs and Fishing. Trapping and fur trading was the principal occupation in Alaska until the late 1870's when the first fish cannery was established. Natives were the main suppliers of fish. As the canneries expanded, fishing villages developed, and commercial fishing became a major source of income for many natives.

Overexploitation of fish and wildlife resources soon caused a drop in output. After much controversy between so-called "outside interests" who wanted a short-term maximum yield policy and "Alaskan home interests" who were concerned more with a sustained yield policy, the Department of Fish and Game was created to regulate fish and wildlife uses.

Rogers points out that fish and wildlife resources comprised the major part of the nonmilitary, nonconstruction economy in 1952:

> The total value of fish and wildlife is estimated at more than $118 million and the number of persons employed in full- or part-

time occupations dependent upon these resources at 50,000. In comparison, total mineral production (including estimated value of sand and gravel used in construction) was only $25½ million, forest products slightly more than $6 million (including a valuation of free-use permit cutting), agricultural prices slightly under $3 million and total wages paid in construction about $85 million.[9]

Since 1952, overexploitation has reduced the amounts caught, especially in salmon and fur seals. Subsequent trapping and fishing agreements, mainly between Japan, the United States, and Canada, have resulted in a more conservation-oriented approach and a partial recovery in yield. Rogers predicts that both the fur and fishing industries will continue to be important to Alaska's economic development. He also cites the potential for tourist trade based on fishing, hunting, and the unexplored wilderness areas which may be the "last frontier" in the United States for the sportsman.[10]

The fur trapping and processing industry was widely dispersed over the state and would not be greatly affected by a major disaster in any particular area. However, the fish industry, although relying to some extent on scattered fishing villages, was vulnerable because most of the fishing fleet and processing plants were concentrated in the southcentral ports (Kodiak, Seward, Valdez, Cordova, and others).

Oil and Gas. Oil drilling and refining and natural gas have become productive industries since 1957, mainly in the Kenai Peninsula area. Large increases in crude oil production and the subsequent construction of refineries by Standard of California and Union Oil Company (with the Ohio Oil Company) have led to increased exploration. This has added $43 million to the state treasury, through gas royalties, lease rentals, and production taxes.[11] Continued exploration for oil is necessary before the future of this industry can be predicted.

The concentration of wells and refineries in the Kenai Peninsula makes this industry somewhat vulnerable to disasters.

Minerals. Gold was responsible for opening up much of Alaska, and more than $730 million worth has been mined since 1880. The value of other minerals discovered during the search for gold has provided much more revenue.[12] Although supplies are not depleted, gold production has decreased, primarily because the increased cost of mining coupled with a selling price set by the U.S. Treasury has made it less profitable. High wages in construction and defense work have lured prospectors to more secure incomes. The high cost of locating deposits has tended to limit mining operations. Wage competition has driven up labor costs.

Alaska has thirty-one of the thirty-three minerals regarded as strategic for national defense. These are not presently being mined in large quantity because it is not profitable to do so. Concerning the emphasis many put on these minerals, Rogers comments: " . . . both the statement and the maps take no account of the nature or size of the deposits. Despite several decades of interest in Alaska's minerals, their extent and ultimate commercial value are still unknown."[13]

The Battelle report comments that: " . . . any assured metal or mineral developments of major size in the area are quite completely dependent on finding deposits that are bigger and/or higher grade than those now known."[14]

Most of the minerals now used in large quantities are for the construction industry or for other local consumption (coal, sand, gravel, stone). The impact of disaster on any given area would not greatly affect this industry because there are few large processing plants, and deposits are widely scattered. Possibly the greatest problem would be the disruption of transportation systems which distribute the minerals now being used.

Transportation. Transportation in this vast area varies greatly with the location and type of commodity being transported. Early in Alaska's history, dog sleds and small fishing boats were the major means. Larger ships came later, plying both the numerous rivers crossing the country and the waters off the islands and coasts. Shipping continues to be one of the major means of transporting commodities. Many shipping companies have bases on the west coast of the continental United States, especially in the state of Washington. This aspect of Alaska's transportation system would be affected mainly by a disaster striking the harbor areas.

The construction of The Alaska Railroad following World War I provided an alternate link from Seward to Anchorage to Fairbanks. Feeder lines branch from it, but it is the only rail system in the state. The highway system mainly linked the major cities in the Anchorage-Cook Inlet area, with smaller branch roads to lesser towns, villages, and some agricultural areas -- primarily in the Matanuska Valley. Much attention has been directed to enlarging this road system to cover other areas in the state, but a series of complicating factors have caused delays. Alaska shares in the federal highway support program on the basis of eighteen dollars of federal funds to one dollar of state funds, the most favorable ratio of any state in the nation. However, road construction is expensive due to the terrain, climate, and the high cost of labor. Also, the scattered centers of population and the small number of people living in rural areas make large investments in farm-to-market roads impractical.

Since both the rail and highway portions of the transportation system are centered in Anchorage and Fairbanks, these arteries would be most affected by a disaster in those areas.

Aviation is a vital part of the transportation picture. Bush pilots carry passengers and high-value, low-bulk cargo to outlying villages. Placing large defense fields at various points in Alaska stimulated the development of air transport. Some of these fields were phased out following the change to longer range jet bombers and missiles. The establishment of trans-Arctic flights by several major airlines and the use of great wide courses have made Anchorage a major refueling stop. A disaster in this area could severely reduce polar flights. But there are many small planes; bush pilots accustomed to difficult landing conditions could still bring aid to stricken communities.

Construction. The construction industry has been rather closely linked to the amount and type of military activity in Alaska. Prior to World War II, construction activity consisted of building a few roads, railroads, factories, airports, etc. Rogers notes the increase of military personnel and the accompanying increase of defense-related construction workers:

> The number of military had increased to approximately 9,000 by July 1, 1941. The Alaska Employment Security Commission recorded that average monthly covered[15] employment in construction rose from 1,225 workers during calendar year 1940 to 10,521 during 1945 as work was rushed on the defense establishment. Military personnel reached 152,000 by July 1, 1943 and with the cessation of hostilities dropped to 19,000 in 1946, while covered employment in construction dropped to 1,650 workers per month in calendar year 1946. The disturbing years since then saw a rapid and sustained recovery in the military economy, military personnel being close to 50,000 for most of the period and construction employment ranging around a 7,000 to 9,000 monthly average. . . . The trend of covered employment in construction reached a peak of 10,475 per month in mid-1951 and has steadily trended downward to 5,539 at the end of 1960.[16]

Construction is a highly seasonal industry in which many were either unemployed or employed in a service or trade area during the winter or returned to the mainland until the next summer. In August 1963 there were approximately 7,200 employed in the construction industry; in January 1964 this number had shrunk to 1,900.[17]

While state and local government employment accounted for nearly half of the total personal income Alaskans received, construction was the largest private source of income, ranging from one-third to one-fifth of all private industry in the 1950-1960 period. By way of comparison, this industry accounted for 7.5 percent of the income from private industry in the United States as a whole in 1959. Also, the major part of the construction in Alaska was defense-related, while in the nation as a whole it was much more varied.[18]

Because it is widespread, the construction industry is not especially vulnerable to the effects of a disaster in a specific locality. It would have an important role in long-term rehabilitation after a disaster; however, the amount of labor available would depend on the season of the year. Minor to fairly large demands for short-term labor could be met by using the seasonally unemployed if this demand came at an off-season time. In the event of a demand for specialized construction workers or for a large number of workers, some would have to come from the mainland.

The Military in Alaska

Until Alaska became a civil district in 1884, the military provided some semblance of government, a responsibility which shifted back and forth between the Army and the Navy. From 1884 until well into the twentieth century, military activity was somewhat varied but involved only a small number of men and

officers. Rogers cites a report of the National Resource Committee of December 1937 as reflecting the then prevalent evaluation of Alaska's strategic military importance:

> . . . /Alaska is a/ "distant and difficult to defend outpost, of possible minor value in the event of war as an uncertain and costly source of a few strategic raw materials." The only military forces in Alaska on June 30, 1937 were 298 infantry men and officers . . . and 134 men and officers of the Army Signal Corps performing an essentially civilian function of operating Alaska's major communications system.[19]

The World War II military expansion and its effect upon the construction industry have been mentioned. This buildup had many other consequences in nearly every major sector of Alaskan life.

At the peak of military activity in 1943, census report estimates showed 152,000 military personnel as compared to a civilian population of 81,000.[20] The number of servicemen declined to a low of 26,000 in 1950, but hostilities in Korea and the cold war resulted in an increase to 50,000 in 1953. With the change to a more missile-oriented defense program, the number declined to 34,000 in 1960, which has been the average level up to the present. However, in the late 1950's military personnel were permitted to bring their families to Alaska, which substantially increased the state's population.

Income from the military alone has played a highly important part in the development of the economy. Combined with other government expenditures, the impact was impressive. A study of the total employed labor force in Alaska for the years 1956 to 1957 indicated that of the monthly average of 110,400 employed persons, 42 percent were military government employees and 18 percent were civilian government employees (a total of 60 percent on government payrolls). Six percent were in construction (largely of defense and other government building projects), and 24 percent were in distributive industries other than government, such as services, trade, transportation, etc. (all of which did much of their business with government employees). Employment directly related to producing and processing Alaska's natural resources comprised the remaining 10 percent.[21]

The rotation of servicemen and their families resulted in a large number of transients who were often not interested in the long-term betterment of the state. This offset some of the benefits brought about by their presence. While most of these families returned to the mainland after the tour of duty was completed, some remained or returned to Alaska to become permanent residents. This helped to restore the sex ratio from its historic imbalance, the result of the early activities and life which had been especially attractive to single young men.

The demand for social and community amenities by these people, who were more accustomed to urban life in the "lower forty-eight" than to the more Spartan conditions found in Alaska, had both beneficial and harmful consequences. There was an expansion of schools, public utilities, hospitals, etc.

The drain on the already limited state budget further reduced funds available for industrial expansion and investments that would make the area more attractive to industry. High prices paid for defense construction labor raised local wage rates, increasing the already high cost of living.

Rogers cites other consequences of the presence of the military:

> The large military establishments near Anchorage and Fairbanks and the greatly expanded civilian population they attracted have created local markets which have kept Alaskan agriculture alive and even encouraged some modest expansion. Many of Alaska's homesteaders are in reality full-time or seasonal workers on military bases or in related construction work. Without these jobs it is doubtful that any new settlement would have taken place. The expansion of the road systems from 2,634 miles of unpaved roads on June 30, 1937, to 5,196 miles, much of it paved, on June 30, 1958, and its linking to the continental United States system can be attributed in large part to defense justification, as can the modernization of The Alaska Railroad, the expansion of the system of air fields, and many of the other public works present in Alaska today. The new income brought with it greater amounts of local capital, some of which might be available for future home owned industrial expansion. . . . Finally, without the influx of new population and prosperity, brought in by Military Alaska, it is doubtful that Alaska today would be a state. At one point in the campaign "military necessity" was strongly advanced as an argument in favor of granting immediate statehood.[22]

While the earthquake affected many different communities in Alaska, Anchorage was chosen for the focus of this study. There were several reasons for this. It was in the center of the most populated area of Alaska and it was the economic and trade center of the state. This meant that it possessed a number of organizations and groups with resources which could be used in coping with disaster which would not be found in smaller communities in Alaska. For example, compared to most Alaskan communities, Anchorage had relatively large fire and police departments with modern facilities. In addition, there were several state and federal agencies in the community, e.g., Alaskan State Civil Defense and the Alaskan District Corps of Engineers. Such organizations could provide the community with relatively rapid access to state and federal resources. In addition, Fort Richardson and Elmendorf Air Force Base, with their vast resources, were located just outside the city. Aside from these resources, Anchorage, which was approximately 30 miles west of the epicenter of the earthquake, received the greatest amount of property damage of any Alaskan community. Unlike places such as Valdez and Kodiak, there was no damage in the Anchorage area from seismic waves, but both seismic shock and landslides created extensive property damage. (See fig. 1.) The extent of the damage plus the availability of organizational resources made Anchorage the logical locale for study since it provided the best parallel to the response that might be expected in other modern urban communities to such disaster events. A brief description of the history of development and the organizational resources available in Anchorage will be discussed in the next chapter.

FOOTNOTES: Chapter I

1. This discussion is based mainly on George W. Rogers, The Future of Alaska: Economic Consequences of Statehood (Baltimore: The Johns Hopkins Press, 1962).

2. This discussion is based largely on Hugh A. Johnson and Harold T. Jorgenson, The Land Resources of Alaska (New York: University Publishers for the University of Alaska, 1963).

3. Ibid., p. 4.

4. Rogers, The Future of Alaska, pp. 153-154.

5. Ibid., p. 155.

6. Ibid., p. 170.

7. Ibid., pp. 174-175.

8. Ibid., p. 183.

9. Ibid., pp. 33-34.

10. Ibid., p. 34.

11. Ibid., p. 237.

12. U.S., Department of Commerce, Alaska: Its Economy and Market Potential (Washington: Government Printing Office, 1959), p. 38.

13. Rogers, The Future of Alaska, p. 35.

14. Battelle Memorial Institute, An Integrated Transport System to Encourage Economic Development of Northwest North America (Columbus, Ohio: Battelle Memorial Institute, 1960), pp. 65-68.

15. "Covered" refers to the number of employees covered by Alaska Employment Security Act.

16. Rogers, The Future of Alaska, pp. 93-94.

17. Office of Emergency Planning, Impact of Earthquake of March 27, 1964 Upon the Economy of Alaska, A Report Prepared by OEP, Executive Office of the President, Edward A. McDermott, Director (Washington: Office of Emergency Planning, April, 1964), p. 3.

18. Rogers, The Future of Alaska, p. 115.

19. Ibid., p. 93.

20. U.S., Department of Commerce, Bureau of the Census, Current Population Reports, Series P-25, No. 80 (Washington, October 7, 1953), p. 2.

21. Alaska Employment Security Commission, Financing Alaska's Employment Security Program, Vol. II (Juneau, October 1, 1958), p. 19, cited by Rogers, The Future of Alaska, p. 94.

22. Rogers, The Future of Alaska, pp. 96-97.

CHAPTER II

ANCHORAGE: BEFORE THE QUAKE

History and Economy

Anchorage, located in the southcentral region, is the largest city in Alaska and the center of much of its economic life. Of the state's 226,000 population in the 1960 census, 100,000 lived in the Anchorage area; 25,000 were military personnel.[1] Approximately 50,000 persons resided within the Anchorage corporate limits.

The Development of Anchorage and Its Frontier Spirit. Anchorage was founded in 1914 and incorporated in 1920. Rogers summarizes its rapid development.

> Anchorage has had a shorter history than most other Alaskan communities. It came into being as the result of a conscious decision of government planners that this would be the location of the headquarters . . . of The Alaskan Railroad. Its site had no previous history of human settlement. The spectacular expansion of the last two decades resulted from decisions by government planners to locate the major military installations in its vicinity and the Alaskan Command Headquarters just outside its corporate limits. Aside from its strategic location, the forces and elements of Anchorage's creation and growth came from outside the area. As if to illustrate this underlying character, the community does not grow naturally from its physical setting, but appears to be forced upon it. . . . Having little history of its own, drawing the bulk of its residents from non-Alaskan sources, the essential spirit of Anchorage does not look back for inspiration. It reaches aggressively and greedily to grasp the future, impatient with any suggestion that such things take time.[2]

Perhaps because of this short history, those in Anchorage shared with others in Alaska a characteristic attitude and posture which might be called the "frontier spirit." This is what its citizens would call community pride and what outsiders might call chauvinism. Those in Anchorage liked to see themselves as the modern version of the pioneers. Having little past history, the future was seen as bringing only opportunity. Those in Anchorage were opening up new frontiers at a time when most people were content to enjoy the benefits initiated by earlier pioneers. The emphasis was on rugged individualism, heroic deeds, and success stories. The local culture heroes are those who came to Alaska and made good on their own.

These attitudes were perhaps strengthened in the battle for statehood. Those in Anchorage are quick to remind the "outsider" of his error when he speaks of the "States." In their own speech, Anchoragites underscore both their inclusion and their uniqueness by references to the "lower forty-eight." They want it understood that they are an integral and equal part of the larger American society, but they also want it known that they are different -- more

adventuresome, more individualistic, more self-sufficient -- than the average American. In the emergency activity after the earthquake, these "frontier" attitudes and analogies were constantly expressed to imply there was a special mystique of emotional resources which Anchorage had that would be absent in other American communities faced with similar problems.

This frontier spirit, however, was not expressed in rural terms. Much of the population is urban-oriented, especially the more recent arrivals. Thi has resulted in demands for expanded public services and other amenities which draw heavily on public financial support. These improvements have given Anchorage a progressive appearance and have made it a better place in which to live.

Rogers cites a reporter's observations which illustrate what some residents think are the city's assets:

> It has not only parking meters but radar controlled traffic lights and radio equipped taxis, to say nothing of forty-four churches, and a high school that cost five and a quarter million dollars -- just about two million less . . . than the United States paid Russia in 1867, for Alaska in toto. The school's facilities include a Link trainer for fledgling pilots and a hydraulic stage elevator. "When Mary Martin was here she said our stage had everything Radio City's has," an Anchorage official told me. Anchorage also has close to three thousand licensed pilots, eight air fields, and four seaplane bases. . . . By and large, the people who live in Anchorage are delighted with their town. "Places this size outside couldn't touch the cultural activities we have here," a wholesale merchant told me. "We've got our little theatre and our community chorus, and we had Jan Peerce last year, and we brought in . . . /the/ first professional wrestler. Oh, there's something going on here all the time! We have three Lions Clubs, and we have the Soroptomists, and Rotary and Kiwanis, and the Elks and the Moose, and the Legion and the Knights of Pythias and the Sons of the Revolution and I forget who-all else. We have just about everything. I could take you to two hundred and fifty homes where the standard of living is just as good as that of any upper middle-class home in the States. Our coke bottler has wall-to-wall carpets and a grand piano. And as for our high school! When Bob Hope was here, he said its stage was just as good as Radio City's."[3]

However, there have been suggestions that the spending of public funds should be directed toward more productive investments. The arguments are often presented in terms of contrasting projects -- e.g., widening the main street of Anchorage or building roads to make some of the possibly productive mining areas accessible.

About 50 percent of the employment and the value of improved land in Alaska is in Anchorage. The majority of the economic activity in the city and the surrounding region is based on government spending. One report states: "Private economy here is largely oriented to serving the direct requirements

of government or the personal consumption requirements of federal personnel and their dependents."[4] Many retail merchandising and service industries have developed because of this demand. Construction has become a major industry due to military-base work and the many new houses and commercial establishments needed to handle the large population influx.

Although federal funds have been an important economic factor since the advent of World War II, some Anchoragites have not wholeheartedly acknowledged it -- perhaps because of their background. As the pursuits of some of the pioneers declined in importance, many went to Anchorage. Later settlers seeking land for farming or hoping to discover gold and other valuable minerals often found the land less generous than anticipated. The military buildup in the Anchorage area drew many into the construction and service industries.

The shift from a self-sufficient type of living to dependence upon governmental spending produced some interesting attitudes. There persists among many a slight disdain for government-financed activity. Some persons try to convince themselves and others that because construction is done by private firms it has no relationship with the government -- even if the government pays for the project.

However, the outlook of many people in Anchorage has undergone a substantial change in recent years, especially with the coming of statehood. It would seem that the role of federally financed operations will remain large, but many more people accept it and realize that it is important to the continued growth of the economy. In fact, cutbacks in defense spending in Alaska raise complaints that range from imperiling the security of the nation to consciously trying to impede the economic growth of the area.

Several other changes have occurred recently. A growing number of military families have decided to settle in the area rather than "fill out their two years and leave." While some commercial and industrial firms want only to make a quick profit and leave, an increasing number plan their activities in terms of future growth. Apparently Anchorage will continue to be a major factor in the economic growth of the southern region and of the entire state.

Over the years, Anchorage has developed many of the customary patterns of organization which characterize all American cities. In this development, it could model itself on the experience of older communities but at the same time, could avoid the mistakes which often come from a long history and an encrusted tradition. The following sections present a picture of the organizational resources which were available at the time of the earthquake in Anchorage. These were the "materials" with which Anchorage had to cope with the impact of March twenty-seventh.

Organizational Resources in the Anchorage Area

Organizational Interdependence and Growth. Like many other features of the Anchorage community, the structures and normal functions of its organizations and groups prior to the earthquake were, to a considerable extent, shaped by

the socio-economic and geographic factors previously alluded to. It is desirable to illustrate the important relationship between a few of these factors and certain general characteristics of groups and organizations in the community.

Integration of the Military. The military establishment and civilian groups were interwoven in more than an economic sense. The children of military personnel attended the public schools; the wives taught in Anchorage schools, worked as nurses in the hospitals, and served as secretaries in various organizations and agencies.

The military and civilian organizations frequently found it necessary to cooperate with each other. For example, Anchorage area fire departments had mutual aid agreements with their military counterparts.

Furthermore, some military personnel retired and became employed in important positions in Anchorage. Their prior relationships in the military and their knowledge of its operation enabled them to act as effective liaison persons between the two elements of the community. Thus, a basis for cooperation existed between the military and civilian spheres of the community which could be drawn upon during a period of emergency such as that following the earthquake.

Size of City and Money Attract Organizations. That Anchorage was the financial and population center of the state had some bearing on the characteristics of organizations found there prior to the quake. Many organizations which had important resources that were used during the emergency would not have been found in smaller Alaskan communities, or would not have had the same kind of capability. For example, compared to most communities, Anchorage had relatively large and modern police and fire departments. Several state and federal agencies had offices in Anchorage -- for example, the state Office of Civil Defense and the Corps of Engineers. Such organizations could provide the community with speedy access to state and federal resources.

Increasing Urbanization. Although population growth leveled off between 1960 and the time of the disaster, the city's organizational resources continued to expand and develop. For example, at the time of the disaster, there was a new hospital and an old one which had recently expanded its operation. There was a new gas utility and a new port facility. The school system was in the process of being changed and its operation expanded.

These factors influenced the normal structures and processes of Anchorage organizations. This introduction will provide the context for the subsequent analysis of specific pre-disaster organizational structures and functions.

Anchorage City Government

Legislative and Administrative Levels. The city of Anchorage had a council-mayor form of government. The city council was composed of eight councilmen and a mayor elected at large in a nonpartisan election; three members of the

council were elected each year. The chief function of the mayor and council was to determine governmental policy by enacting ordinances and resolutions. The council appointed a city manager to implement its policies.

The city manager was the chief administrative officer of the city and was responsible for coordinating the activities of the municipal departments. He had authority over all employees in the municipal departments, even under disaster conditions. The city manager's office included the positions of assistant to the manager and management analyst; the latter performed research tasks, worked on special projects, and generally advised and assisted the city manager.

The mayor and council also appointed a city clerk and city attorney. The city clerk conducted elections, served as clerk to the council, maintained official city documents, and served as voter registrar. The city attorney had two assistant city attorneys. His office was responsible for representing the city in court proceedings and for providing legal advice to the council and other city employees. Commissions and boards established to help the council carry out its policies were as follows: Transportation Commission, Board of Gas Fitters Examiners and Appeals, Parks and Recreation Advisory Board, Planning Commission, Parking and Traffic Commission, Port Commission, Electric Utility Commission, Board of Examiners and Appeals, and the Telephone Commission.

City council meetings were held once a week, at which time the mayor and council studied the recommendations of the city manager, city attorney, city clerk, and the commissions and boards.

The following departments met the operational needs of the city: library, finance, planning, civil defense, port, police, fire, telephone, parks and recreation, public works, and municipal light and power. All department directors reported to the city manager. The city's public health services were provided through contract with the state of Alaska's Department of Health and Welfare.

This, then, was the general structure of the policy-making, administrative, and operating levels of the municipal government at the time of the disaster. Following is a more specific consideration of those municipal organizations whose resources were particularly crucial for rescue and relief functions during the emergency period of the disaster.

Anchorage Civil Defense Department. The Anchorage Civil Defense Department[5] was established in 1962 and a retired Army lieutenant colonel became director. It operated with a staff of two, the director and a secretary, until the director resigned a few weeks before the March 1964 earthquake.

The Civil Defense program followed the usual guidelines established by the federal government. The city received matching operating funds from the federal government, administered through the state of Alaska. The program included identifying and stocking public shelters, installing and maintaining public warning facilities, and providing the public with Civil Defense training and education.

In addition to the two regular employees, heads of the various city departments such as fire, police, telephone, and light and power were expected to cooperate with the Civil Defense director in developing plans and other programs and activities. Other persons involved in Civil Defense programs were individual volunteers and members of various community groups and organizations.

The "Cuban crisis" occurred shortly after Civil Defense was organized, and for a brief period thereafter an unusual amount of interest in Civil Defense preparedness and programs was felt in Anchorage. During this period many persons volunteered their services and numerous groups and organizations asked the director to present talks on topics concerning individual and community Civil Defense needs.

The interest generated in Civil Defense programs by the "Cuban crisis" was almost entirely in terms of war-caused rather than natural disasters. The public expected officials to be similarly oriented and indeed most of the activity of the Civil Defense department was related to the threat of nuclear attack. The director was able to publish an eighteen-page pamphlet of CD emergency instructions for the community as a result of the Cuban scare. This pamphlet covered such topics as: "How to Take Cover," "Facts About Radioactive Fallout," and "Public Fallout Shelters." Only the following paragraph considered natural disaster and interestingly enough, this was about earthquakes:

> Severe Earthquake: If you are indoors, remain inside. Protect yourself by crouching under a well-built table or by standing in a doorway, closet or hallway. This will prevent walls, ceiling or other debris from falling on you. If you are outside: avoid standing by ornamented, faced, or brick walls which might fall or drop. If possible, get into a doorway, or stand in the middle of the street.[6]

The director believed CD should have a program which was also geared for natural catastrophes. However, he felt such a program would receive little support because most people in the community perceived Civil Defense's role as limited to man-made disaster.

Under state law, Anchorage is part of the Greater Anchorage Civil Disaster District, an area of approximately 800 square miles. The Anchorage Civil Defense director also functioned in the same capacity for the district.

The director kept a list of key community persons that were to be notified in the event of disaster. This group, called the Civil Defense Emergency Action Group, was composed of the following persons: mayor of Anchorage, city manager, police chief, manager of the city telephone department, the city health officer, a state police divisional commander, and representatives from the local school system, from the official Civil Defense radio station, and from the amateur ham radio group known as RACES (Radio Amateur Civil Emergency Service). These persons were expected to become a part of the greater Anchorage area emergency Civil Defense organization and would be responsible for

coordinating the activities of their respective groups and organizations with the overall emergency effort.

The Greater Anchorage Civil Defense District also had a dispersal and evacuation plan which was geared for nuclear disaster. The plan called for the evacuation of metropolitan Anchorage residents, if sufficient prior warning was received, along predetermined travel routes. Such communities as Homer, Whittier, and Seward were designated as reception areas for specific categories of persons. For example, the plan indicated that Air Force and state employee dependents should seek refuge in Seward. The Anchorage Civil Defense Department stored emergency hospital facilities in the southern reception area.

An emergency broadcast center was established at Civil Defense headquarters which was located in the basement of the Public Safety Building. Under the new Emergency Broadcast System, KFQD-AM was designated as the official Civil Defense radio station and was connected to the emergency broadcast center at CD headquarters by a direct phone line. It was planned that in times of emergency, Civil Defense information and directives from the communications center could be broadcast by the Civil Defense station, then rebroadcast by the other stations. At the time of the quake then, Anchorage Civil Defense and the community did have a limited emergency broadcast capability. It was not until after the earthquake that area Civil Defense and radio officials, along with state and national officials, began to systematically consider the development of an adequate emergency broadcast organization.

The intensification of interest in Civil Defense resulting from the "Cuban crisis" was short-lived. When the memory of the threat waned, some people began questioning the need for providing funds for the department. On one occasion, the director requested the addition of an assistant director to his staff but the city council failed to approve the position. When the 1964 city budget was submitted to the city council for approval, some councilmen were opposed to continuing the department. There was enough support, however, and the department was given operating funds.

On March 15, 1964, less than two weeks before the earthquake, the Civil Defense director resigned to enter private business. The city manager began recruiting for a replacement. There were some city councilmen who felt that a new director should not be appointed and that out of financial considerations, the office should be discontinued. So at the time of the disaster, the city had no Civil Defense director and the status of the department was indefinite.

Anchorage Police Department. At the time of the earthquake the police department was organized into four divisions: operations, service, vice investigation, and training. The largest division was operations, which consisted of three bureaus: traffic and records, investigation, and patrol. The operations division was supervised by a captain who was assisted by five lieutenants -- one in traffic and records, one in investigation, and three in patrol. The service division, supervised by a sergeant, operated the city jail, the prison farm, and the city animal shelter. The police chief was in charge of the department.

The police station was located in the city's Public Safety Building as were Civil Defense headquarters and the central fire station. All police vehicles had two-way radios, but the police department could not communicate with other city departments because they were all assigned different frequencies.

The department had no written disaster plan prior to the earthquake. Some policemen felt that it would be impossible to effectively preplan for a disaster. Others thought that disaster demands would differ from routine emergencies primarily in a quantitative rather than qualitative sense, so most disasters could be handled by using basic procedures and more men.

When major emergencies occurred, off-duty policemen were expected to report to the station. During the "Cuban crisis," a procedure was established whereby all off-duty officers were supposed to listen for instructions over the radio, call the station, or report for duty.

Prior to the disaster, the department had eighty-nine full-time employees, forty of whom were patrolmen. There was no auxiliary police force. This meant that in the event of a major disaster in which more manpower was needed, assistance from external sources would be required.

Anchorage Fire Department. The upper echelon of the department consisted of the fire chief, two assistant chiefs, and a fire prevention officer. The actual fire operations were normally coordinated by the assistant chiefs. The chief generally became familiar with each fire call but unless the operation was unusually large he did not become directly involved. The department was divided into two shifts: each shift was on duty during alternating twenty-four-hour periods.

At the time of the earthquake, the department employed fifty-two firemen but was considered to be undermanned. It was felt that high operational costs due to special problems experienced by communities in Alaska were primarily responsible for the inability of the department to keep manpower up with demands.

The department's manpower shortage affected the Anchorage fire insurance rating. Prior to the disaster, the Pacific Board of Fire Underwriters surveyed the city and gave it a somewhat unfavorable rating. Fire officials pointed out that many of the deficiency points received were due to the manpower shortage.

To ease their manpower problem, the fire department used volunteers, who received a specified fee for each call they made. The turnover rate for volunteers was rather high and they were not always available for duty. Generally, about ten volunteers responded to a call.

The fire department operated out of four fire stations strategically located throughout the city. The downtown station located in the Public Safety Building was also the headquarters. Volunteer firemen were quartered in each of the four stations to increase the availability of manpower. Both operational and reserve fire fighting equipment were housed in the stations.

All vehicles were equipped with two-way radios. The base station and dispatching room for the department's communication system were located at the headquarters. Headquarters received all alarms and dispatched fire equipment from any of the four stations to the area of emergency. When the department became involved in major fires, off-duty personnel were called in. At the time of the earthquake, the only method for calling them was by telephone.

Fire department personnel were accustomed to working with city policemen. When firemen made a call, it was routine procedure for the police to dispatch men to the same area to maintain traffic and crowd control and to generally provide assistance.

In addition to its fire fighting function, the department also operated an emergency ambulance service with three vehicles. The department would call the mortuaries when assistance was needed and on many occasions fire personnel used the mortuaries' vehicles.

The fire department had mutual aid agreements with the two local military installations, Elmendorf and Fort Richardson, which involved the use of men and equipment. For example, prior to the disaster the fire department did not have a rescue vehicle which carried heavy jacks, cutting torches and the like, but such equipment could be acquired from the military through the mutual assistance pacts. The pattern had evolved that the Anchorage Fire Department would cover the fire stations at Elmendorf and Fort Richardson when their fire units were handling a large fire.

A fourteen-square-mile section of Anchorage known as the Spenard-Turnagain area received added fire protection from the Spenard Volunteer Fire Department, a unit operating under a $40,000-$50,000 contract with the city. The Spenard Volunteer Fire Department had a permanent staff consisting of a chief, two assistant chiefs, and four additional paid men; there were thirty-six volunteers.

The Anchorage Fire Department never anticipated or planned for a natural disaster such as an earthquake. There had been discussion about the possibility of a nuclear catastrophe and the needs for evacuation. In considering these contingencies, fire department personnel had worked with Civil Defense officials.

Anchorage Public Works Department. With 169 employees at the time of the disaster, public works was the largest city department and had multiple functions. It seemed as if the other city departments were established and assigned functions first, then all the remaining ones were grouped under public works. To a considerable degree, then, public works lacked the functional specialization which frequently characterized such departments in larger communities.

The following were the major assigned functions of the department: the maintenance of streets, sewers, and city buildings; the engineering and construction of streets, water and sewer lines; engineering for other city departments; the maintenance and operation of the municipal airport and water utility; traffic engineering; building inspection.

The director of the department also served as the city engineer; the director's assistant was also the assistant city engineer. The department had six divisions and the heads of the divisions reported to the director of public works. The assistant director was in charge of the engineering division, a chief building inspector was head of the building inspection division, a traffic engineer supervised the traffic engineering division, an airport manager supervised the airport division, a water utility manager was head of the water utility division, and a superintendent of public works was responsible for the maintenance division which consisted of three sections -- mechanical equipment, sanitation, and general maintenance.

The department had undergone a number of major changes prior to the earthquake in an attempt to enhance its operating efficiency. In October 1963 the water utility division was formed. Previously, the responsibilities of the utility were divided among various city agencies. The building construction and maintenance section, unofficially established in 1963, became an official unit of the engineering division when it was allocated operating funds in the 1964 city budget. The new section was supervised by an engineer. One of its responsibilities was the repair and maintenance of the eighty-six city-owned-and-operated buildings. Before the unit was formed, repair and maintenance of each building was taken care of by the department which used it.

The public works department did not have a disaster plan, nor had there been any recent emergency or disaster drills and exercises. Many of its employees, however, did have specialized skills and experience which were relevant to emergency rescue and restoration activities. For example, personnel in the maintenance and water divisions had prior experience responding to minor crises. Also, employees in the building inspection, the engineering, and the maintenance divisions possessed skills which could be utilized to lessen the danger of a secondary disaster.

In addition, the department had internal resources -- heavy equipment, emergency parts, radios, etc. -- which would be vital during a disaster. Finally, their work had brought the personnel in contact with members of other organizations whose resources would be needed following a community disaster. The employees were able to establish informal aid agreements.

Anchorage Municipal Light and Power Department. This department (ML&P) was headed by a manager; a chief electrical engineer was second in command. Fifty persons were employed by ML&P just prior to the earthquake. The department had five divisions: accounting and service, operations, engineering, construction, and sales. In recent years, ML&P averaged over 8,000 customers -- most of whom lived within the Anchorage city limits.

The department received power from its own two turbine generators and six smaller diesel engines, and from a U.S. Bureau of Reclamation hydroelectric plant. Each of the turbine generators had a 15,000 kilowatt capacity and could be operated by using either gas or diesel oil. The second dual-fuel generator had been installed a little more than two weeks before the disaster. The six diesel engine generators each had a capacity of 1,000 kilowatts. The Bureau of Reclamation hydroelectric plant at Eklutna, fifty miles outside of Anchorage, had a contract to supply ML&P with an additional 16,000 kilowatts.

The municipal light and power department did not have a written disaster plan. Officials believed that departmental personnel were geared to emergencies as a matter of routine. They felt, for example, that an effective pattern of response had evolved among emergency crews due to the vulnerability of the power system to the elements, which resulted in frequent minor crises. All sixteen of its vehicles had mobile radios. The department also had a radio link with the Bureau of Reclamation generation station and with the Chugach Electric Association, operators of the other major power system in the Anchorage area.

Anchorage Telephone Department. Unlike most cities, Anchorage owned its own telephone system, which was operated by a municipal department. Prior to the disaster the department employed 134 persons. There were eight divisions: administration, traffic and equipment, construction, plant extension, commercial, sales and service, outside wire, and inside wire. The department had twenty-three vehicles which had mobile radio units.

There were four exchanges: Fairfax, Diamond, Federal, and Broadway -- the largest. At the beginning of 1964, the utility served 4,187 business and 12,919 residence lines. The system was operating at maximum capacity and could not keep up with the demands for new installations. Except for high priority requests, the exchanges had been closed for new service since December 1963. Before the earthquake, the department was holding about 2,500 requests for service.

The telephone department had a disaster recall plan which was developed approximately a year and a half prior to the earthquake in anticipation of a possible Civil Defense emergency. The plan, based on where the employee lived, designated the particular exchange building where he was to report following a disaster. Emergency supplies were stockpiled at the exchanges. Telephone officials did not base the recall procedure on the use of the telephone system because previous experience suggested that it might not be very reliable. For example, during one period of the "Cuban crisis," the telephone load increased at such a rapid rate that it blew out the system's main fuses.

Anchorage Port Department. Much of the actual work of the port department, such as stevedoring, was done under contract. Of the department's full-time staff of eight, the director, business manager, and terminal manager were the key positions. The business manager was the director's administrative assistant. The terminal manager was primarily responsible for operations. He handled the assembly of cargo at the terminal area, supervised the operation of cranes, engaged the stevedore gangs, and performed some maintenance duties for the port facilities.

Privately Owned Utilities

Chugach Electric Association. The association is a member-owned cooperative financed by the Rural Electrification Administration. It was founded in 1948 to provide a source of central station power for people living outside of Anchorage.

Most of the 15,000 consumers served by the association prior to the earthquake lived in the Anchorage area; about 6,000 resided within the city limits. In addition to its retail sales the association sold wholesale power to such areas as Seward and the Kenai Peninsula.

The members of the cooperative annually elected from among the membership a seven-man board of directors. The directors appointed a general manager who was responsible for the operation of the association. His staff consisted of an assistant, a legal counselor, and managers of the four departments: office service, operations, engineering, and production.

Chugach Electric operated three plants -- the Knik Arm plant in Anchorage, and the Bernice Lake and Cooper Lake plants on the Kenai Peninsula -- which had a combined generation capacity of over 37,000 kilowatts. The association, like the Municipal Light and Power Department, bought power from the Eklutna Bureau of Reclamation plant. Nine thousand kilowatts were purchased from this source. The lines of the three power systems -- CEA, ML&P, and Eklutna -- were joined in one substation owned by the Bureau, thus enabling the transfer of power among them. There had been times prior to the earthquake when CEA and ML&P found it necessary to borrow power from each other.

The Chugach Electric Association did not have a written disaster plan but due to the frequent occurrence of power emergencies, standard procedures and routines had been worked out. One official reported that an average of two complete area-power outages a year were experienced due to climatic and geographic conditions, and because the systems were still in the process of being developed. The association had mobile radio units in its vehicles.

The general manager had been appointed state utility coordinator for Civil Defense. He had participated in planning discussions with state Civil Defense officials.

Anchorage Natural Gas Corporation. At the time of the disaster, the corporation had been established for only three years. The company operated 130 miles of gas distribution mains and provided service for 5,000 customers in the Anchorage area.

Prior to the earthquake, Anchorage Natural Gas employed sixty-four persons. An executive vice-president and treasurer, and a vice-president and general manager were responsible for the overall operation of the organization. The corporation's six major divisions were technical staff group, controller's department, distribution, customer service, customer installation, and sales.

There was no written disaster plan; it was felt that the best preparation for disaster was the experience acquired in meeting the frequent intraorganizational emergencies. Like the other utilities, Anchorage Natural Gas had a mobile radio system. A standby generator was available for emergencies.

Mass Media

Radio and Television. There were five commercial broadcasting organizations in Anchorage prior to the earthquake; three organizations had affiliated stations in other Alaskan communities. The broadcasting industry throughout the state was going through a period of development. Like other industries and services, broadcasting was affected by the isolation and small size of most communities. Several persons in the industry commented that, to a certain extent, broadcasting personnel in Alaska were out of touch with some of the recent developments. As one Anchorage radio official commented:

> . . . I realize that we are, to a greater degree isolated up here and that this is still . . . what I consider to be pioneer country. /There is/ a certain amount of professionalism lacking in the general media, which includes newspapers and radio stations.

One indication of this lack was the absence of a state or city association of broadcasters, which would enable radio and television media personnel to meet and discuss problems of mutual interest. An association was formed on the state level some months after the disaster, but Alaska was among the last states to be so organized.

The most powerful commercial station in Anchorage had been designated as the community's official Conelrad station when this system was still operative. Prior to the disaster, only preliminary steps had been taken to extend the new Emergency Broadcast System to Anchorage, but the station had been reappointed as the official Civil Defense station. One of the station's announcers was the public information officer for Anchorage Civil Defense. Two emergency generators were maintained by the station.

Newspapers. Anchorage had two daily newspapers prior to the disaster which were published in the afternoon six days a week. The larger of the two had a daily circulation of 27,000 and about 62 employees. The organization was divided into departments typical of newspapers: circulation, advertising, accounting, and the newsroom. An editor-publisher was responsible for the operation. The other paper had an average daily circulation of 12,700. Structurally, the newspaper followed the usual lines for this type of organization, with the publisher as its head. Prior to the disaster, plans had been made to convert the newspaper from an afternoon to a morning publication.

Medical and Health Services

Hospitals. The largest civilian hospital of its kind in Alaska had 155 beds. An administrator was responsible for the overall operation; she had two administrative assistants. Prior to the earthquake, the hospital employed nearly two hundred full- and part-time persons including one hundred registered nurses. The medical staff consisted of fifty-seven physicians who were almost equally divided between specialists and general practitioners. It did not have a resident staff; patients were admitted through private physicians and clinics.

There had been written disaster plans for the old hospital building which were being revised to fit the new hospital situation. The disaster coordinator for the medical staff had completed a first draft only a week before the earthquake. The hospital had an auxiliary generator which could provide some power in the event of an emergency. Food stores which could meet the needs of the hospital for four days were also available.

A second hospital opened in June 1963, founded by a nonprofit corporation. The fifty-bed hospital leased its quarters in the basement and third and fourth floors of an Anchorage medical-dental building from the group of doctors who owned the building. There were no doctors in residence at the hospital. Patients were referred by many of the doctors who were shareholders in the building and had offices on the first two floors of the building. Other local doctors also used the hospital's facilities.

Prior to the disaster, several key staff positions were occupied by new personnel. The hospital administrator, who had held his position for about a month, was still in the process of familiarizing himself with hospital operations and the community when the disaster occurred. The comptroller, who was being groomed to be the assistant administrator, had started work only a few days before the quake. The director of nursing had been there just a few hours.

Before the new administrator took over, the hospital had experienced a series of financial crises. In December 1963 such difficulties had forced a layoff of some personnel. Before the earthquake, the hospital was operating at a deficit.

This hospital did not have a disaster plan. A small auxiliary power unit was not operative when the disaster struck. It had never been tested.

The Alaska Native Health Service -- part of the U.S. Department of Public Health Service -- was established by the federal government to meet the health needs of Alaska's native population. The function of the service's area office was to administer and coordinate the state-wide health program for natives.

Alaska Native Hospital (ANH) was the largest of the Public Health Service hospitals in Alaska which came under the jurisdiction of the Alaska Native Health Service Area Office. It was also the major referral hospital in the state. All complicated cases from other Public Health Service hospitals were sent there.

Treatment at the 301-bed hospital was free to all persons defined as descendants of Alaska natives -- Aleuts, Eskimos, and Indians. Alaska Native had a large tuberculosis and pediatric patient load as well as an active surgical, internal, and general medical program. It. medical staff and the staff of the adjacent area office also worked at the village level, holding clinics and instituting preventive and direct treatment programs.

Just prior to the disaster the medical staff at ANH consisted of approximately twenty-two persons with various specialties. The service unit director

was responsible for the overall operation of the hospital. He was assisted by a clinical director and a hospital administrator. The clinical director supervised all the clinical service departments such as surgery, medicine, pediatrics, X ray, nursing, and medical records. The nonmedical departments such as maintenance, housekeeping, laundry, and building and grounds were directed by the hospital administrator. At the time of the disaster there was no administrator. The former administrator had transferred to a different hospital and his replacement had not yet arrived.

The hospital had had no previous experience with disasters. A committee had been organized to write a disaster plan for the hospital. The plan, which was primarily oriented toward nuclear catastrophe, was completed before the earthquake but had not been distributed to the hospital staff. Personnel turnover had been very high and all of the disaster committee except the chairman had transferred to other hospitals. Thus, the hospital personnel who had known the most about emergency plans and procedures were no longer with the organization when the disaster occurred.

Alaska Native had an emergency generator with a ten kv. capacity which could provide lighting for the operating and emergency rooms. This generator had been regularly inspected.

The Alaska Division of Public Health, one of four in the Alaska Department of Health and Welfare, met the health needs and problems of the state. Prior to the disaster it had about 240 personnel such as physicians, public health nurses, engineers, biologists, statisticians, and social workers. There were three levels -- divisional, regional, and local offices. Each level was organized as a team with a physician, generally called a health officer, directing it. The direct service was often carried out by sanitarians and public health nurses.

At the division level there were five branches headed by branch chiefs: environmental health, nursing service, maternal and child health, laboratories, and community health. The division office had a very elaborate emergency plan which was to serve as a supplement to the state Civil Defense plan. This plan indicated the format for the state's emergency health structure and the positions and responsibilities of units and individuals. Regional and local offices were expected to develop complementary plans for their assigned geographic areas.

The state was divided into three regions. The southcentral regional office was in Anchorage, the southeastern in Juneau, and the northern in Fairbanks. At the time of the earthquake, which primarily affected the southcentral region, that regional office had a written disaster plan.

There were thirty-four local health units in the state. Each had a health officer, public health nurses, and sanitarians. The local office in the Anchorage area was called the Greater Anchorage Health District. The city had no health department; public health needs were provided for by contract through the Alaska Department of Health and Welfare. Under the contract, the Greater Anchorage Health District supplied communicable disease control, vital

statistics, environmental sanitation, health education, and laboratory services. The health officer for the district also functioned in the same capacity for the city.

An emergency plan for the Greater Anchorage Health District had been completed only a few weeks before the disaster but had not been distributed throughout the organization. As a result, when the disaster occurred there were persons in the local units who were unfamiliar with it.

Service and Welfare Organizations

Southcentral Red Cross Chapter. This chapter, one of three in the state, had its headquarters in Anchorage. Compared to other American Red Cross chapters it was considered to be small and relatively weak.

Southcentral's organization followed the usual pattern for Red Cross chapters and was supported by local contributions and resources. It was the only Alaskan chapter with paid personnel -- an executive secretary, and a secretary. The remainder of the chapter was made up of volunteers. Southcentral's territory encompassed 65,000 square miles. There were representatives in outlying communities who made available to their areas such services as disaster relief and who reported to the Anchorage headquarters.

Like other Red Cross chapters, southcentral had a disaster committee headed by a local volunteer. This committee was responsible for surveying the community to determine the kind of disaster planning needed.

The chapter, as recommended by the national organization, had a "plan for action" to be followed during emergencies. One Red Cross official, referring to this procedure, said:

> It starts with assembling the committee and making a survey of the disaster, contacting the government officials and immediately setting to work to provide the services that the Red Cross gives traditionally -- food, clothing, shelter -- which is our first responsibility in an emergency.

Accordingly, the local chapter was expected to use its organizational resources to meet immediate emergency relief needs. Representatives of the large American National Red Cross organization, when they arrived in the community and set up operation, were expected to begin long-term family rehabilitation.

In addition to the local chapter personnel in Anchorage, there were Red Cross personnel from the national staff who were assigned to Elmendorf and Fort Richardson. The two staffs assisted and cooperated with each other on certain occasions.

Alaska Salvation Army. Prior to the earthquake, there were fourteen Salvation Army corps centers in the state, including one in Anchorage. In these centers, professional Salvation Army personnel provided the customary programs, such as

welfare assistance and religious services. In addition, several Salvation Army extension units were administered by committees of local lay people.

Anchorage was the hub of The Salvation Army activity in the state. Both the head of the organization in Alaska, the divisional commander, and his second in command, the divisional secretary, worked out of the Anchorage headquarters. There was a staff of twelve in the city. Two institutions were operated in Anchorage -- a home for unwed mothers and a social rehabilitation center for men.

During major emergencies, Anchorage Salvationists, similar to The Salvation Army units elsewhere, supplied the personnel of emergency organizations with food and drink. Most SA personnel were trained in disaster service.

In January 1964 men who were beneficiaries of the rehabilitation program and who resided at the rehabilitation center were organized on a volunteer basis into emergency crews which would respond in the event of a community disaster. These teams had several functions: food preparation, housing or relocation, transportation, and communication or phone answering. Each team had a leader and five men working under him. The members of the emergency teams changed from time to time, but there was always a nucleus of experienced persons available. Those teams were activated under the guidance of a professional Salvation Army worker when a major community disaster occurred.

State Police and Military Organizations

Alaska State Police. The Department of Police, a division of Alaska's Department of Public Safety, had about 110 officers prior to the disaster. The division had three districts, each supervised by a commander.

Anchorage was the headquarters for the western district, which had nine state police outposts. Before the disaster there were about fifty officers in this district; they were divided into a service section and enforcement. The state troopers assigned to the service section were involved in such matters as serving writs, bailiff operations, and transporting persons to and from court and jail. When major emergencies occurred, the service section officers dropped their normal duties and became involved in enforcement functions.

The state police did not have a written disaster plan. Officials believed that the standard operating procedure normally used would be more adequate than a written plan.

The state police had mobile radio units in their vehicles. With their radio system they could communicate between cars, and between a car and a base station.

Alaska National Guard. The Air and Army elements of the Alaska National Guard both came under the authority of the Alaska adjutant general. The Air unit, the 144th Air Transport Squadron, had its headquarters at the Anchorage

International Airport. One of the Army's three battalions, the 3rd, also had its headquarters in Anchorage.

When the earthquake occurred, the Guard had just completed its two weeks of training and active duty at Fort Richardson. This represented a force of some 1,300 men and officers. Included in this group were the 1st and 2nd Scout Battalion, composed primarily of Eskimos and Indians from villages along the Arctic rim; the 3rd Battalion, 297th Infantry; the 216th Transportation Company; the 910th Engineer Combat Company; and smaller Signal, Ordnance, and Special Forces detachments. The Alaska National Guard had not had any previous experience in a major natural disaster.

The United States Army, Alaska. The United States Army, Alaska (USARAL) was part of the Alaskan Command (ALCOM). This command consisted of all of the military elements which comprised the Alaska military defense structure -- units of the Army, Navy, and Air Force. The primary mission of ALCOM was to protect Alaska and to provide air defenses for the United States and Canada. Headquarters for the Alaskan Command was at Elmendorf Air Force Base. Prior to the earthquake, a United States Air Force lieutenant general was commander-in-chief of ALCOM.

Headquarters for USARAL was at Fort Richardson, adjacent to Elmendorf Air Force Base. The combat forces of USARAL were organized into two task forces. One was at Fort Richardson under the immediate supervision of the USARAL commanding general. The other was at Fort Wainwright, adjacent to Fairbanks, under the supervision of the deputy commander of USARAL who was also the commanding general of the Yukon Command and Fort Wainwright.

Stationed at Fort Richardson at the time of the disaster were the 172nd Infantry Brigade and the 4th Missile Battalion, 43rd Artillery. The major elements in the Brigade were the 1st Battalion, 60th Infantry; 4th Battalion, 23rd Infantry; and the 1st Howitzer Battalion, 37th Artillery. In addition to these combat units, there were the following subordinate commands which came under the immediate supervision of the commanding general: USARAL Headquarters Command, USARAL Support Command and Fort Richardson, Alaska Military District, USARAL Aviation Battalion, and the 33rd Signal Battalion.

Under the supervision of the deputy commander of USARAL at Fort Wainwright were the 171st Infantry Brigade and the 2nd Missile Battalion, 562nd Artillery. Elements of the USARAL Aviation Battalion and Signal Battalion were also stationed at Fort Wainwright at the time of the earthquake.

The preceding discussion has emphasized the major organizational resources which were available in Anchorage at the time of the quake. These were also the organizations which became involved in varying ways during the emergency period. While this combination of organizations was unique to Anchorage, such organizations or their prototypes in other communities carry most of the burden of emergency action in other similar situations. Since we wish to use the Anchorage experience as the base for a more general theory of how communities respond to disaster, the next chapter broadens the scope of the monograph to

the more general consideration of the nature of the community and of the nature of the disaster event. We then will return to the specific activities in Anchorage during the emergency period.

FOOTNOTES: Chapter II

1. Office of Emergency Planning, Impact of Earthquake of March 27, 1964 Upon the Economy of Alaska, A Report Prepared by OEP, Executive Office of the President, Edward A. McDermott, Director (Washington: Office of Emergency Planning, April, 1964), p. 16.

2. George W. Rogers, The Future of Alaska: Economic Consequences of Statehood (Baltimore: The Johns Hopkins Press, 1962), pp. 9-10.

3. E. J. Kahn, Jr., "The Ethnocentrics," The New Yorker, April 2, 1960, pp. 100-103, cited by Rogers, The Future of Alaska, pp. 128-130.

4. Office of Emergency Planning, Impact of Earthquake, p. 6.

5. In the most inclusive concept of "civil defense," all emergency activity subsequent to the earthquake might be included. Here we are indicating the organizational form which Civil Defense took in Anchorage.

6. Greater Anchorage Emergency Instructions (pamphlet prepared by the Greater Anchorage Civil Defense District, May, 1963), p. 17.

CHAPTER III

REFERENCE POINTS FOR ANALYSIS

While the previous chapter deals with Anchorage, it is not the intent of this monograph to view Anchorage as a unique community, nor to view the Good Friday earthquake as a unique event. In certain ways, of course, both the community and the event are unique. On the other hand, disasters occur in communities somewhere almost every day. What happened in Anchorage should not be seen as an isolated phenomenon unrelated to what can happen elsewhere. Therefore, one should seek to understand the more general process of adaptation communities go through in their responses to a disaster event. Studies of specific communities have provided knowledge which can be applied elsewhere. For example, the National Opinion Research Center (NORC) study of a tornado in Arkansas provided valuable information concerning individual reactions which is generalizable to a variety of events and types of communities.[1] Also, Moore's study of Hurricane Carla provides insight into the warning process which is applicable in other disaster events.[2] Our attempt here is to understand these more general community processes which emerge to cope with disasters. To achieve this more general perspective, it is necessary to view the community in a more abstract form, not restricting it to the particular example used here. It is also necessary to place disaster in a more abstract context, not the specific earthquake which is reported here. After this more abstract discussion of the nature of the community and the nature of disaster, we can return to our specific example.

The Community as a Social System

The word "community" is one of many in the language which is frequently used but seldom examined. This is often true among social scientists as well as among laymen. One's immediate reaction to the term "community" is to think either of a geographical area or of an aggregate of people. Neither "area" nor "people" captures the essence of the concept. Most studies by social scientists see the community as a social system.[3] The notion of system suggests that a community is a set of patterned relations among various social units so that changes in one element set up pressure for adjustment or other types of change in the remaining units.

This system "quality" of the community is seen in its functional relationships. Mercer emphasizes this idea when he defines a human community as:

> . . . a <u>functionally related</u> aggregate of people who live in a particular geographic locality at a particular time, share a common culture, are arranged in a social structure and exhibit an awareness of their uniqueness and a separate identity as a group.[4]

Another aspect of the community system which should be emphasized for our purposes is to see this "functionally related system" as being "problem solving." In fact, Nelson, Ramsey, and Verner underscore this "problem solving" dimension

when they define a community as being "the structuring of social elements and dimensions to solve problems which must be or can be solved within the local area."[5] This problem-solving and function-performing view of the community is reflected in Warren's suggestion that the community is "that combination of social units and systems which perform the major social functions having locality relevance."[6] Perhaps a useful summary to this definitional excursion is provided by Jonassen who lists six elements which most scholars would agree are present in a "community":[7]

a. a population,
b. a territorial base,
c. interdependency of specialized parts and division of labor,
d. a common culture and social system which integrate activity,
e. a consciousness of unity or belonging among the inhabitants,
f. an ability to act in a corporate fashion to solve problems.

Anchorage would meet all six of these conditions prior to the disaster event.

If we view the community as a functionally related system, it is useful to be more explicit as to what functions are being performed. When one views the myriad activities within a community, they are centered around certain functions. Warren has suggested five general community or "locality-relevant" ones, namely:[8]

1. Production-Distribution-Consumption: This is the function of producing, distributing, and consuming those goods and services which are a part of daily living, access to which is considered desirable in the immediate locality. All community institutions are involved in providing such goods and services in one way or another.

2. Socialization: This is the function of transmitting prevailing knowledge, social values, and behavior patterns to individual community members. This function is discharged primarily by the formal school system and family groups.

3. Social Participation: This is the function of providing opportunity for social interaction on a local basis. Religious and voluntary organizations are usually regarded as the most important units for channeling social participation. However, most formal and informal social units provide important avenues for social participation through their group activities.

4. Social Control: This is the function of influencing members of the community toward conformity with its norms. Formal government, the family, the school, the church, and social agencies all perform this function.

5. Mutual Support: This is the function of meeting the needs which arise from individual and family crises. Local primary groups (family, religious, friendship) provide many of these services but over a period of time there has been an increasing tendency for American communities to develop formal "social welfare" agencies to meet these needs.

To the five major community functions listed by Warren we would add a sixth:

6. Preservation of Life and Property: This is the function of protecting and maintaining life and property on the local community level. Activities are directed toward preventing harm or injury and keeping life and property in good "repair." Health and medical services and police and fire units are the major formal agencies involved. There are, however, many other private and public groups which are involved in this function, e.g., garages, repair shops, utilities, public works, and so forth.

Disaster and Social Systems

There have been few efforts to develop theories about how social systems, such as the community, respond to disaster. Perhaps the most notable has been the work of Barton who has analyzed and codified current knowledge about the effects of disasters upon social systems.[9] In the consideration of the consequences of disaster for social systems, one must move past the "simple" effect of the physical event and look for the significance of this event for the operations of the social system. Accordingly, Barton sees disaster as being a "sudden, large, unfavorable change in the inputs of a social system." They are part of a larger category of collective stress situations.[10] Others have suggested that a disaster agent creates changes in inputs in a social system. Fritz, for example, defines a disaster as:

> . . . an event, concentrated in time and space in which a society or a relatively self-sufficient subdivision of a society, undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all or some of the essential functions of the society is prevented.[11]

Thus, a disaster event creates the conditions whereby the fulfillment of all or some of the traditional community functions is threatened or prevented.

During normal times, all of the major functions within a community are carried out somewhat concurrently. There is generally little awareness among the members of a community of any overall system of priorities. While individual members of the community may be preoccupied with one or another, there is a degree of balance among the activities which relate to the various functions. At times, effort may increase in certain functional areas, particularly if it should be perceived as falling below community standards. For example, the periodic preoccupation on the part of specific communities with improving their schools or police force, recruiting new industry, forming new groups, etc., represents attempts to increase the capacity of the community to function in particular areas. While community standards may change over time, in general, at any one time such standards are determined by the value consensus which exists within the community. This consensus is, of course, conditioned by the perceptions of community members as to what is possible within the specific locality, the actual facilities which are available, and by the

definitions of local decision makers. In effect, then, the major functions within a community in normal times tend to be carried on concurrently and without much "conscious" consideration for priorities except for periodic readjustments.

It is even possible for specific communities to incorporate as routine into their ongoing social system sudden and violent environmental changes which to other communities would become "disastrous." During World War II, as bombing surveys showed, many European communities were so organized that sudden and violent bombardment became a part of their existence. Bombardment was recurrent and expected. Ways of handling losses of life and property became institutionalized to the extent that a heavy raid did not appreciably change the system. The function of protecting life and property was carried out to the degree considered desirable or possible by prior preparation and by patterned responses before, during, and after impact.

> Bomb shelters, fire control, management of debris, protection and repair of communication and utilities, and the handling of the dead and injured <u>became routine</u>.[12]

Such adaptation is possible primarily in communities which undergo repetitive stress. In most communities a physical event, such as the Alaskan earthquake, is a once-in-a-lifetime occurrence. In these communities a major disaster event upsets the social system which has developed over time. More specifically, disasters disturb communities in two different ways: (1) there is a drastic increase in the demand for certain community services and (2) there is a reduction in the capability of the community to perform certain services. In effect, the "disaster" to the social system of the community occurs when the demands made on the system greatly exceed its capability to perform. Physical events, such as the Alaskan earthquake, create a sharp increase in demands made on the community system. In turn, such events usually lower the capability of these social systems to respond. Instead of the "relative" balance which had existed between the demands and capability of the community, new adaptive strategies must be developed. These "strategies" can be termed the "emergency social system."

The Emergency Social System

When a community system is under stress, a new somewhat distinctive set of adaptive processes emerges. This emergency social system evolves with the onset of stress and it continues until the normal social processes can resume. Like the normal community system, this emergency social system is also organized to perform "desired" functions. Barton explains its operation in the following manner:

> If the environmental change is gradual and continues for a long time, the system adjusts to it through normal processes of collective decision-making and change in role systems. But if the change is rapid, it disrupts these processes and creates new ones, which call into being an "emergency social system." This is much more loosely

> organized than the normal social system, but it is by no means a state of chaos. . . . The first few hours after a sudden physical disaster therefore form a period with peculiar characteristics, deriving from the crushing overload of needs and the life and death importance of rapid action. The time-lags of normal social processes are far too long to permit the situation to be handled normally. An emergency social system has to be created to fill the "social vacuum" and meet the massive disaster needs with a flood of disaster services. People and equipment must be mobilized to do rescue work, provide medical care, give shelter, food and clothing to those who have lost theirs, reassure or reunite primary group members, and repair damaged public services essential to the community welfare. At the same time the essential maintenance activities must be continued, including the care of dependent children and the regular feeding of families, as well as maintaining public order and public utilities output.[13]

Barton suggests the importance of certain functions in the community immediately after impact. If we view the general community functions mentioned earlier in the context of this emergency social system, certain functions have become crucially important while others have become fairly "irrelevant." While this shift in emphasis is temporary, it is nonetheless sufficiently recurrent in disasters to observe. Drawing on previous disaster studies, the following shifts can be observed.[14]

The normal activities involved in the production-distribution-consumption function are drastically altered. Production units are shut down except for those which produce food or other necessities such as water, power, fuel, etc. Normal distribution and market operations are disrupted. It is not required that one pay for food dispensed at the public distribution centers. Needed goods and supplies are often requisitioned without permission or authority. Individuals and organizations voluntarily commit themselves and their resources to those services given priority, without the normal contractual arrangements.

The structure of services and activities providing for the socialization function is also shifted. Ongoing socialization patterns associated with child rearing and formal education are reduced to an absolute minimum. However, the socialization functions of the mass media become greatly expanded. Indeed, in many disasters, the mass media become the primary source of transmitting prevailing knowledge, social values pertinent to the disaster, and appropriate patterns of behavior to the community. Schools and educational centers of all kinds are closed for the duration of the emergency period. Public education programs are cancelled. Primary attention is directed to the disaster, its consequences, and how to cope with them.

The function of social control assumes new dimensions. Normal arrest and court trial procedures are often suspended. Minor infractions are likely to be ignored. What would normally be a routine burglary now becomes looting and is dealt with severely.[15] Police personnel are supplemented by volunteers or by local units of National Guardsmen and the military. Politically elected civil government officials may often be relatively inactive, and control

naturally passes temporarily to competent hired officials who are at the helm of major public agencies. City councils and mayors frequently approve the actions already initiated by city employees, which normally would require prior approval.

Social participation is also different during the emergency period following a major disaster. Clubs, associations, major social and cultural events of all kinds are suspended. If social participation occurs, it does so at the informal level and in the process of carrying out disaster-related activities. There seems to be little activity manifestly aimed at providing this function.

The mutual support function assumes great prominence. During normal times welfare agencies carry the major load of official community support of the needy; during an emergency these organizations are unable to cope adequately with the greatly increased number of community members who are in need of many services. Voluntary relief agencies such as The Salvation Army, the Red Cross, and religious organizations greatly expand their activities. Food and shelter, medical help, and transportation are also provided temporarily by public agencies such as Civil Defense and the military. Status distinctions and the normal criteria of need are often disregarded. Anyone who requests aid receives it if it is available. No one is expected to pay for services rendered.

There is a vast overload on nearly all agencies which normally perform the services associated with the preservation of life and property. If there are many disaster victims, the needs of the injured and dead may be beyond the capacity of available facilities; the facilities themselves may be rendered useless by the impact. Initially, parts of all elements of the community mobilize to implement this concern for victims. Many individuals rush into devastated areas to rescue victims, ad hoc groups form to search for the injured and dead, and police and fire departments call for additional help.

Functional Priorities in Disaster: A Hypothesized Order

This shift in community priorities is the major focus of this monograph. While the preceding observations of shifts in priorities have drawn on descriptive accounts of other disasters, no systematic observations of these shifts have been made. The basis for the hypothesized sequence suggested here is as follows: The day-to-day activities of a community reflect the collective attempt to achieve many different values. Time, energy, and other resources are normally available to achieve values without conscious choice and thus, in normal situations, the question of the relative importance of the various functions is seldom raised. A disaster event changes this drastically. No longer can community members assume that resources will be in plentiful supply. In fact, the status of existing resources may be problematic. In this context, choices have to be made. Certain of the existing functions become less salient or, at least, the achievement of them may be delayed until other more important values have been fulfilled. With the appearance of a

threat of the disaster event, certain existing community values become more critical for the survival of the community and certain functions of the community are neglected.

This "reorganization" of the priorities occurs somewhat automatically during the emergency period. For this reason, it has been called elsewhere the development of an emergency consensus.[16] In effect, the core values in this emergency consensus center around the care for victims. The relevance of other community functions tends to be judged on the basis of their relevance to these core values. This is the basis for the priorities suggested below.

Anchorage provides the opportunity to more systematically observe whether such a modification in traditional community functions actually does occur in disaster situations. It can be hypothesized, then, in Anchorage, that the following order of priorities of community functions emerged in the activity of the emergency social system:

1. Preservation of Life. Almost invariably the highest and most immediate priority would be given to the rescue and care of human victims. Extrication from entrapment and/or endangered areas, transportation of the injured to hospitals or aid stations, and provision of medical care for the injured are given the highest priority.

2. Restoration and Maintenance of "Essential" Services. If the impact has disrupted utilities, transportation and communication arteries and facilities, restoration of these would be given the next highest priority. Most immediate attention will be given to the restoration of services for hospitals, command centers, and police and fire departments.

3. Maintenance of Public Order. The third level of priority hypothesized here would be reflected in the commitment of community personnel and resources to tasks of guarding valuable property, patrolling danger areas, and controlling crowds at the centers of impact and activity. A virtually universal phenomenon following disasters is the mass movement of people, messages, and supplies toward the disaster-struck area. This "convergence action" has been documented and verified in nearly every study of disasters.[17] Considerable community effort is directed toward dealing with this problem.

4. Maintenance of Public Morale. As a result of disaster impact, the issue of its consequences for public morale emerges. Certain community organizations become involved in efforts which are intended or which have the effect of maintaining the morale of community members. As soon as mass media, especially radio and TV, can be restored to service, a continual stream of information about the effects of the disaster, emergency operations and plans, etc., will be disseminated to the public. Various official agencies will release information about their activities. The collective pronouns (we, us, our) will appear frequently in mass media discourse. Under certain circumstances, officials will go "on the air" themselves and speak directly to the community to reassure or to warn against further dangers.

5. Provision of Food and Shelter for Commun ty Members. After a major disaster, many are without food and shelter. Some structures are either partially or completely destroyed. Others which remain intact are threatened by the secondary consequences of the initial disaster agent and must be vacated. In this context, considerable community effort is devoted to providing shelter, usually by opening large public buildings (schools, auditoriums, churches, etc.) to these "displaced" people. Also, many persons are without food or the means of preparing it. Food is then often provided by local voluntary groups and by public or military agencies. The reason for the relatively low priority which is suggested for this phase is that often shelter and food are obtained on an individual or family basis from friends and relatives in the community and in nearby communities. This tends to reduce the amount of community activity necessary to fulfill this function.

6. Economic Activities and 7. Leisure and Recreation. Priorities can be seen not only in terms of increased concern for particular functions of community life but also in terms of the "withdrawal" of effort and concern. It is further hypothesized that, when compared with usual activity within the "normal" community social system, the emergency social system will place lower priority on economic activities and leisure and recreation. These are activities which can be "sacrificed" temporarily and manpower and resources can be transferred to those functions with higher priority.

It is hypothesized here, then, that the activities within the emergency social system, as it emerged in Anchorage, would reflect the preceding priorities. A methodological note should be added here to clarify the determination of priorities.

The Determination of Priorities: Field Work and Analysis

The determination of priorities within the complexity of action which followed the earthquake in Anchorage was not an easy task. Understanding the way in which this was done requires some knowledge of (1) its basis in the collection of data in Anchorage and (2) the guiding criteria in the analysis of the data which had been collected.

1. Field Work. Several hours after the disaster occurred, a field team consisting of two persons was dispatched to Anchorage. Three other staff members followed shortly. This meant that five staff members were in Anchorage during the bulk of the emergency period. Elements of this group remained in Anchorage for one week interviewing various organizational officials and collecting other kinds of data. Second and third field trips were made in May and June of 1964. During the third field trip, two organizations were selected for more intensive or in-depth analysis. These first three field trips provided most of the information contained here. In addition, three other field trips made in August 1964, March 1965, and August 1965 provided supplementary information on the emergency period even though the primary focus was on the long-term organizational change brought on as a consequence of the earthquake.

The focus of the initial field work was on the emergency response of organizations located in Anchorage. It was directed toward the determination of organizational structure and functioning during the emergency period. The organizations studied were drawn from the universe of organizations which became involved in the emergency response. This enabled us to reconstruct the overall pattern of the organized community response. The sample of organizations was purposive rather than based on probability. If it had been based on probability, drawn from a listing of all possible organizations in Anchorage, the chances would be that specific organizations which played significant disaster roles would have been excluded. Instead the identification of the organizations which were involved and were studied was achieved in the following ways:

Much of the identification came from direct observation. Several hours after arriving in Anchorage, the research team determined the location of the two principal emergency coordinating centers. Team members were able to locate themselves in vantage points in each of these and thus directly observe and identify officials of the most involved organizations that would need to be contacted later. As those officials from organizations which were most obviously involved in the emergency were contacted and interviewed later, they frequently provided the field team with leads concerning other organizations that needed to be included in the sample. Thus, the knowledge and information of organizational involvement tended to snowball as various organizational officials were contacted and members of the field team were referred to other organizations. Finally, in a few instances, as the knowledge of the presence of the research team spread through the communications channels in Anchorage, some persons from organizations the field team knew little about came to them and volunteered information which they felt would contribute to the research effort. Twenty-one organizations were contacted on the first trip while subsequent trips added two others.

Several means of data collection were used during these field trips and provide the basis for the analysis which follows. They were (a) unstructured and semi-structured interviews with organizational members, (b) on-the-scene direct observations of organizations in operation during the emergency period, and (c) various kinds of organizational documents (e.g., operation reports, policy statements, written disaster plans, logs, budgets, newspaper and radio reports). The interview data were most important but it was supplemented by the other two forms.

a. Interviews. An attempt was made to interview persons at more than one level of each organization. As far as possible, persons interviewed were those thought to be most familiar with the emergency operations of the organizations. In most instances, these included the administrative head of the organization as well as the "operations" official who was in charge of organizational activities at the time of impact. The initial interviews were relatively unstructured. Such an approach maximizes the opportunity for acquiring a rich descriptive account from the respondent about significant organizational patterns. These interviews, conducted by field staff members, were intended to elicit from the respondents a comprehensive narrative account of their activities and the activity of their organization during the

emergency period. The flexibility allowed the respondents to talk freely about their recent experience and seemed to complement the desire of many of them to share their experiences with an interviewer who was able to assume the role of sympathetic listener. The interviewer, of course, guided the respondent to provide information in several broad areas. The interviews varied from one-half to two hours in length. The interviews were tape recorded, then transcribed verbatim and analyzed. Subsequent field trips and interviews provided new and additional information. Also two of the organizations, the Anchorage Department of Public Works and the Alaskan State Civil Defense, were studied more intensively in subsequent field trips. A total of ninety-four interviews was obtained in these two organizations.

b. Direct Observation. In addition to the interviews with organizational officials, direct observation of organizational activities was another source of data utilized. DRC field team members arrived in Anchorage during the emergency period and made direct observations of emergency operations as they were occurring and, in some instances, even when they were being organized. As a result, less reliance had to be placed on reconstructive interviews. Field team members were present at the principal emergency coordinating centers and also attended organizational and city council meetings. In a few instances, e.g., city council meetings, proceedings were tape recorded but the usual procedure was to take handwritten notes on significant activity. Such observations not only served as a check on respondents but also made the research effort less sterile and more meaningful because of this involvement.

c. Documents. Various kinds of documents were the final source of data. The major sources of documentary materials used are the following: (1) Organizational officials were asked to make available to field team members minutes of meetings, policy statements, disaster plans, communications, logs, after-action reports, and recorded messages of various kinds. As a result, an extensive body of such data was acquired. (2) Another source of supplementary data was several tape-recorded radio broadcasts which were made during the emergency period. (3) Numerous newspaper accounts were used as supplementary information. Anchorage newspapers were obtained and information concerning the emergency period was cut and filed. While the major reliance here is placed on our primary interviews, these other sources of information provided valuable supporting and supplementary information. In the subsequent analysis we have attempted to keep notations of data sources to a minimum but all such materials are on file at the Disaster Research Center. While disaster conditions never provide the optimum conditions for data collection, all references to the timing of events, their locale, and significance were carefully cross-checked against our available material and are accurate to the best of our knowledge. Since our informants were promised anonymity, no interviews are footnoted. Personal names are eliminated while place names have been retained.

2. Analysis. The actual determination of the priorities which were revealed in the emergency period was made by the author as he handled the material accumulated by the field work. This was checked against the experience and observations of other staff members at DRC with specific experience in Anchorage and general experience in a wide variety of other disaster events. While this is essentially a judgmental process, such judgments were based on

two primary criteria -- timing and importance. The first criterion was time, i.e., when something was done suggested priority. In the following chapters, chronologies of events have been constructed to allow the reader an idea of the sequence of events which occurred in the community's emergency activity. The second criterion has been the importance which was attributed to the activity. This is more difficult to assess. Several guidelines are available, however. When two or more activities were in progress at the same time, one way to assess priority was to observe whether an activity was attended to by only one organization or more than one. More widespread involvement of community organizations indicated greater priority. Another way to assess the priority of importance was the involvement of organizations and persons of particularly high status and power. For example, when the mayor, city manager, a city department, and the military all focus on an activity, the "standing" of these organizations and persons within the community indicates a high priority. Another way of assessing importance is by some measure of intensity of involvement. This is extremely difficult because it requires evaluating the subjective states of persons. An approximation could be obtained, however, when persons said they thought a matter was important and then they acted as though it were. These major criteria of time and of attributed importance guided the delineation of the priorities which emerged in the emergency social system. So that the reader can participate in the judgmental process, in the subsequent chapters the various events are arranged in terms of a chronology and are supplemented by a discussion of the involvement of various community personnel in specific activity.

The major focus of the observations of the emergency social system which follow is on the "total" community of Anchorage but more specifically on the organizations which existed in Anchorage at the time of the earthquake. Of course, almost every individual in Anchorage took actions which were intended to cope with those consequences of the earthquake which were most relevant to them. For example, they ascertained the safety of family members and friends. They made temporary repairs on their dwellings or those of their neighbors. They pulled fallen trees out of the road. Almost every individual did something to contribute to the overall emergency response. Individual actions and resources, however, are not sufficient to cope with such a widespread disaster as occurred on March 27th. The major and most crucial activities within the community were carried on in the context of the patterns of social organization which existed in Anchorage prior to the earthquake. These community organizations had resources of manpower, equipment, and knowledge which necessarily involved them in the emergency activity. In any disaster, it is not the individual heroic act which is significant in the long run. Such individual acts often become the object of mass media attention which distorts their significance. The "real" work is done by community organizations and their personnel. The activities of such organizations were significant in Anchorage and serve as the major source of information here for the determination of the priorities which did appear in the emergency social system in Anchorage.

The Emergency Period

It is perhaps necessary to be more explicit as to what is meant by the emergency period. A community response to a disaster event tends to follow a fairly well-defined time sequence. This time sequence was first discussed by Powell, Rayner, and Finesinger. Later, Wallace made slight modifications in it.[18] While this model will not be discussed extensively here, it is illustrated in table 1 which presents eight stages with a brief description of each. Since the model is intended to cover a wide variety of disaster events, the second and third stages, warning and threat, were absent in the Anchorage situation. There was no warning stage and threat was not perceived until actual impact. The emergency period in Anchorage upon which we focus here would include stages four through six -- impact through rescue. We will not extend the analysis here into the rehabilitation and change stages.[19]

TABLE 1

DISASTER TIME SEQUENCES WITH TYPICAL ACTIVITIES OCCURRING IN EACH STAGE

Stage	Typical Activities
1. Steady State	Normal balance; regular energy distribution (action) keeps individual and aggregate stress to a tolerable level; repetitive and predictable action.
2. Warning	The presentation of generalized cues -- a probability greater than normal that a general kind of impact may occur at a particular place within a given span of time. Some preventive action occurs.
3. Threat	Cues perceived as unmistakable; certainty of impact, where and approximately when; definite preventive action.
4. Impact	Physical destruction by the disaster agent; primary destruction is only by the impact agent; secondary impact follows.*

*Primary impact is distinguished from secondary impact by the fact that the latter can be partially manipulated and ameliorated. For example: the impact of a severe windstorm leaves many "hot" wires exposed and shorted. Secondary impact occurs when persons are electrocuted by the exposed wires or when a fire is kindled by a short. In some disasters there is far more damage from secondary impacts than from the primary.

TABLE 1 -- Continued

Stage	Typical Activities
5. Isolation	The impact area is on its own until outside personnel and equipment arrive. Secondary impact does its greatest damage during this time. Impact survivors reduce or neutralize many dangerous secondary impacts. Inventory and rescue begin in the impact area. Outside areas begin learning about the disaster, begin making reconnaissance (inventory) and initiate rescue activity. Selective notification and mobilization occurs outside the impact area radiating out from communication centers.
6. Rescue	Begins when aid arrives from areas outside the impact zone. Three types of personnel are involved: impact area survivors, unorganized spontaneous volunteers chiefly from the area adjacent to the impact area, and organized security units (fire and police, etc.); these work to combat the secondary impact within the impact area. Chief functions are extrication, first aid, evacuation, emergency hospital medical care, termination (neutralization) of such secondary impacts as fire and "hot" wires. There is an increasing tendency for involvement to be highly selective and aimed at organizations rather than populations.
7. Rehabilitation	Begins when the secondary impact has been reduced to a minimal point, e.g., equilibrium has temporarily been re-established. Effort is made to bring the system back to its original state. Extensive welfare and reconstruction activities occur; the longest and most expensive period. Rescue organizations reduce and finally terminate their operations and new organizations take over.
8. Irreversible Change	When a new steady state has been established; somewhere between the situation at the end of secondary impact and the pre-disaster situation. Rehabilitation activities are aimed at establishing this equilibrium.

The precise delineation of these time stages is difficult. To a certain extent, one has to be arbitrary. In the subsequent chapters, we have considered the emergency period to extend from the time of impact on Friday evening, through Saturday, Sunday, and Monday. Most of the chronologies are built on this basis, although in a few areas activities "ceased" prior to that time

and in others extended beyond that time. This "arbitrary" cutoff, however, is supported by subtle types of evidence. On Tuesday, the banks were opened and Anchorage was moving toward "business" as usual. In the offices around town, clean-shaven faces appeared as did white shirts and ties, lipstick, and high heels. Most organizations were moving back to normal hours and normal shifts. And those in Anchorage were beginning to reflect on their experiences of the previous three days.

In using Anchorage as the focus of a study which will have applicability to other communities under somewhat similar conditions, it is recognized that the specific emergency social system which develops within communities other than Anchorage may vary somewhat. This variation would be dependent upon two factors: (1) characteristics of the disaster agent, and (2) characteristics of the specific community.[20] Disaster agents vary on a number of dimensions which have meaning for the human response to them. For example, disaster agents differ in their speed of onset, the length of possible forewarning, their duration, scope of impact, and their destructive potential. Too, communities differ as to their prior experience with disaster agents, their planning and preparation for such events, and the nature and type of emergency resources which are available to them. It seems doubtful, however, that such variations would necessarily distort the emergency priority system which has been hypothesized here. A disaster event with a narrow scope of impact and with forewarning might result in fewer tasks and in earlier mobilization but not in the priority of functions. A community with previous experience with a disaster agent and with much planning and preparation might re-establish equilibrium more quickly and easily but the sequence and priority of activities would be similar to what is hypothesized here.

Anchorage had experienced, over the years, many shocks but never the intensity of the quake on Good Friday. It came without warning on late Friday afternoon. The earthquake not only affected Anchorage but much of southcentral Alaska. Anchorage had had little prior experience with such events and, while some planning and preparation had been done, it was not extensive. In one way, Anchorage was "typical" of most American cities. It had the usual resources but it was not ready for the unusual event that occurred that Friday. The extent of the damage it experienced is detailed in the next chapter.

In effect, what has been suggested here is that a community can be seen as a social system, both a need-satisfying and a problem-solving entity. A disaster can be seen as having a major impact upon the community and its resources since it threatens the performance of its functions. When a disaster taxes the resources of a community, distinctive social processes of adaptation are created. This "emergency social system" may be in existence for a short period of time -- a few hours or a few days -- although it may be longer depending on how rapidly normal processes can take over the adaptive task. During this emergency period, certain functions or services are given priority and concerted effort is devoted toward carrying them out. Only when these functions are achieved does the community return to a routine life pattern with its normal hierarchy of functions. After the next chapter, which details damage, we will return to these processes as they were revealed in the activities in Anchorage.

FOOTNOTES: Chapter III

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2. Harry Estill Moore et al., Before the Wind: A Study of the Response to Hurricane Carla (Washington: National Academy of Sciences-National Research Council, 1963), chap. ii.

3. G. A. Hillery, Jr., "Definitions of Community: Areas of Agreement," Rural Sociology 20 (June 1955): 111-123. This survey of the literature lists ninety-four definitions without claiming to cover all the conceptions used by community scholars. Of these, sixty-eight were "in accord that social interaction, area, and a common tie or ties are commonly found in community life."

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5. L. Nelson, C. E. Ramsey, and C. Verner, Community Structure and Change (New York: Macmillan Company, 1960), p. 24. (Italics mine.)

6. Roland Warren, The Community in America (Chicago: Rand McNally and Company, 1963), p. 9.

7. Christen T. Jonassen, "Community Typology," in Community Structure and Analysis, ed. by Marvin B. Sussman (New York: Thomas Y. Cromwell Company, 1959), p. 20.

8. Warren, The Community in America, pp. 9-11.

9. Allen H. Barton, Social Organization Under Stress: A Sociological Review of Disaster Studies (Washington: National Academy of Sciences-National Research Council, 1963). Other recent treatments are found in Charles P. Loomis, "Social Systems Under Stress -- Disasters and Disruption," Social Systems: Essays on Their Persistence and Change (Princeton, N.J.: D. Van Nostrand Company, 1960), pp. 129-167; George W. Baker and Dwight W. Chapman, Man and Society in Disaster (New York: Basic Books, 1962), see especially part four, "Methodology and Theory: Other Views"; not so theoretically oriented is William H. Form and Sigmund Nosow, Community in Disaster (New York: Harper and Brothers, 1958), pp. 11-21. See also Charles E. Fritz, "Disaster," in Contemporary Social Problems, ed. by Robert K. Merton and Robert A. Nisbet (New York: Harcourt, Brace and World, 1961), chap. xiv, pp. 651-694.

10. Barton, Social Organization Under Stress, p. 3.

11. Fritz, "Disaster," p. 655.

12. Loomis, "Disasters and Disruption," p. 130.

13 Barton, Social Organization Under Stress, pp 19-20

14 For a more detailed discussion of this, see Russell R Dynes, Organized Behavior in Disaster: Analysis and Conceptualization, Disaster Research Center Monograph Series (Columbus: Disaster Research Center, The Ohio State University, 1969)

15 In reality, in the aftermath of a natural disaster, looting occurs rarely although it is expected by nearly all control agencies For further explanation, see Russell R Dynes and E L Quarantelli, "What Looting in Civil Disturbances Really Means," Trans-action 5 (May 1968): 9-14.

16. See Dynes, Organized Behavior in Disaster

17. See, for example, Charles E Fritz and J H Mathewson, Convergence Behavior in Disasters: A Problem in Social Control (Washington: National Academy of Sciences-National Research Council, 1957)

18. John W. Powell, Jeanette F. Rayner, and Jacob E Finesinger, "Responses to Disaster in American Cultural Groups," Symposium on Stress (Washington: Army Medical Service Graduate School, Walter Reed Army Medical Center, March 16-18, 1953), pp 174-193; Anthony F C Wallace, Tornado in Worcester: An Exploratory Study on Individual and Community Behavior in an Extreme Situation (Washington: National Academy of Sciences-National Research Council, 1956)

19. William A. Anderson, Disaster and Organizational Change: A Study of the Long-Range Consequences in Anchorage of the 1964 Alaska Earthquake, Disaster Research Center Monograph Series (Columbus: Disaster Research Center, The Ohio State University, 1969).

20. Dynes, Organized Behavior in Disaster, chap. III.

CHAPTER IV

THE EARTHQUAKE: AN OVERVIEW OF THE IMPACT AND DAMAGE

This chapter contains a general description of the effects of the impact, beginning with the overall disaster and narrowing the focus to Anchorage -- the major city in the area of severe damage.

General Geological Effects

The Alaskan earthquake, which struck at 5:36 p.m., March 27, 1964, had a richter magnitude of between 8.4 and 8.7 and left widespread damage. Its epicenter (the surface point directly above the subsurface point of earthquake origin) was at latitude 61.05° and longitude 147.50° near the east shore of Unakwik Inlet in northern Prince William Sound.[1] This area was rugged and sparsely settled. The closest communities of any size were Valdez and Cordova, 40 and 70 miles respectively to the east and southeast, and Anchorage, about 80 miles west.

The point below the earth's surface at which the quake originated was relatively shallow -- estimated at 12.5 miles -- a condition which contributed to the massive damage it produced. Significant damage to structures and property took place over a land area of about 50,000 square miles in southcentral Alaska. Pressure buckling and cracking of ice on inland rivers and lakes and along the ocean shores occurred over an area of about 100,000 square miles. The earthquake tremors were perceptible to more than half the people in Alaska. (See fig. 1.)

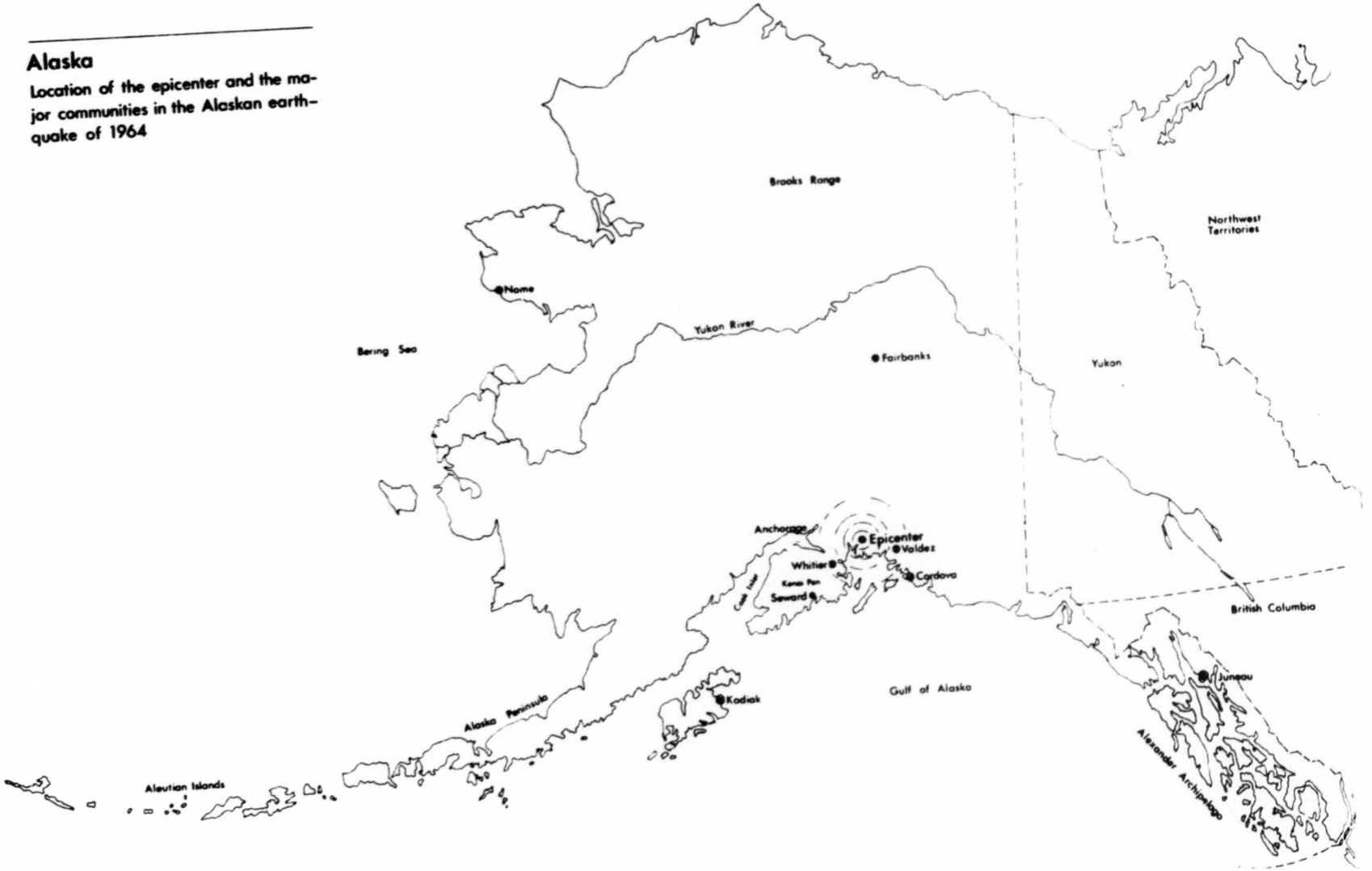
The main earthquake was followed by numerous aftershocks; 52 were recorded before 6:53 a.m., March 30. The greatest of these had a 6.7 magnitude; eleven others had more than a 6.0 magnitude. In all, ten major aftershocks were recorded during the first twenty-four hours after the initial quake. The aftershocks during the first two and one-half days following the main quake occurred in an area from about 15 miles north of Valdez to about 30 miles south of the Trinity Islands off southern Kodiak Island.

All of the epicenters of March 27-30 were along a quake belt well defined by most of the previously recorded earthquakes in Alaska. Indeed, this earthquake belt is part of a series of belts which encircles the Pacific Ocean and includes North and South American shore areas, Japan, and other islands. Over twenty of the major destructive earthquakes of the past two decades originated in the circum-Pacific quake belts.

Most major earthquakes produce visible permanent alterations in earth surface topography. This one was no exception. Uplift and subsidence affected an area of at least 39,000 square miles in southcentral Alaska. The central hinge zone for this surface activity lay along a northeast-southwest axis from an area off the southeast coast of Kodiak Island and extending in a northeasterly direction toward the Chugach Mountains.

Alaska

Location of the epicenter and the major communities in the Alaskan earthquake of 1964



The hinge zone also lay just east of Seward and Portage. West of the hinge area, coastal lands have subsided as much as five and four-tenths feet and east land levels are up as much as seven and one-half feet. Thus, Kodiak Island, the Kenai Peninsula -- including Seward and Portage -- and Anchorage all lay in the area of subsidence while coastal areas in eastern Prince William Sound, including Cordova, were raised.

In addition, thousands of snow and rock slides were set off throughout the Kenai Mountains, the Chugach Mountains and the Islands of Prince William Sound, blocking or threatening the major transportation routes between Seward, Whittier, and Anchorage. A third major consequence of the earthquake was the seismic sea waves (or tsunamis) which battered shore lines in the quake region of Alaska, western Canada, and the United States, and fanned out across the Pacific.

As will become clear in the following accounts of damage to structures, transportation, industries, utilities, etc., these and other geological consequences of the earthquake were in many instances the major destructive agents.

Damage to Alaska's Industries and Transportation Routes

The disaster area in southcentral Alaska, where approximately 60 percent of the state's population lived, contained the state's key transportation complex and produced over 55 percent of its revenues. Thus the earthquake struck Alaska's most vital area. The general description of damages given here cannot encompass the tremendous and long-range economic effects of this catastrophe.

Fishing. The fishing industry sustained major damage in some of the affected areas and only minor damage in others. About 255 vessels valued at $7 million were either lost or damaged beyond repair. While some of the major canneries and processing plants remained intact, most of the small canneries and one-owner operations at port cities were destroyed by seismic waves. Port and dock facilities at these places were also wrecked.

Most severely affected was the king crab industry which suffered heavy losses to fishing vessels, ports, and processing and cold storage plants. Since the king crab season had begun before the earthquake struck, these losses were more serious than would otherwise have been the case. However, the loss of 255 vessels must be projected against the total pre-quake fishing fleet of 3,400 ships in the southcentral area and 9,546 for all of Alaska. Thus, only the king crab industry was seriously impaired. The salmon and halibut industries escaped with only minor damage.

Oil and Gas. The petroleum and gas industry experienced only minor damage to refineries, wells, and pipelines. Aside from the 60,000-80,000 barrels of petroleum products lost through burning or spillage from ruptured tanks at several storage dumps, the industry was relatively unaffected.

Transportation. Vital transportation links from the Prince William Sound ports to Anchorage and inland areas were disrupted in a number of places. The single track railroad extending 471 miles from Seward to Fairbanks was severely damaged by landslides. About 150 miles of track, mostly between Seward and Anchorage, were affected.

Highways in the impact area were similarly impaired. In addition to slides, land subsidence lowered some coastal highways to the extent that they were flooded at high tide. There were large impassable cracks in the road surface in some places. A few bridges collapsed and many others were so seriously weakened by the shaking that traffic had to be limited to passenger cars and light trucks. Early reports indicated that the highway from Seward to Anchorage was blocked by four major slides, seventeen damaged bridges, large cracks, and one sizable washout.

Air transportation was not seriously affected. All of the major airports could be used although several control towers had collapsed. With ground transportation partially disrupted, air transportation assumed even greater prominence than before.

Anchorage: Timing of Impact and Damage

As we have indicated, the earthquake occurred at 5:36 p.m. on March 27, 1964. This was the last workday before the Easter weekend for many Anchorage residents. The time at which a disaster agent strikes is important since it makes a difference for the subsequent emergency activity. It determines, in part, the impact it will have -- e.g., the number of persons killed and injured -- and the type of rescue-and-relief response the community can generate. Communities are more vulnerable during some time periods than during others, especially if the disaster strikes with no advance warning. Any variation, then, in the time period in which a disaster occurs (e.g., hour of the day, day of the week, or time of the year) can have variable consequences for the affected community.

Dr. Martha Wilson, director of the Alaska Native Hospital in Anchorage, comments on the timing of the Alaskan quake:

> Had we planned this earthquake, we could not have chosen a better time. In the late afternoon of Good Friday many office buildings were closed and many persons were driving home in automobiles, a relatively safe place to be. Everyone was awake and most persons were clothed. Even more important they had their shoes on, usually an important point in Alaska survival. Fortunately, on this day and during the following week, temperatures ranged from 20° F. to 30° F. During approximately four months of the year the weather is severe enough to cause fatalities in a disaster situation if suitable clothing or shelter is not immediately available. Building fires for warmth in this disaster would probably have been as hazardous as the freezing cold. When the quake started, the electricity went off immediately. Had it struck at the same time of day three weeks

earlier it would have been dark, and no one without a flashlight would have been able to see to rescue children, avoid falling objects, escape from breaking and falling structures, or avoid the numerous crevasses which were opening and grinding closed in the earth.[2]

General Damage. Anchorage was not the only city stricken, but it was the largest. The earthquake itself produced widespread damage in the port cities of Homer, Valdez, and Seward. Whittier and Kodiak were damaged most by the subsequent tidal wave, while Cordova experienced wave damage to waterfront structures.

In Anchorage, seismic shock reduced some structures to rubble and produced extensive cracking of the land surface, but the main destruction was caused by landslides. (See fig. 2.) There was no damage from seismic waves or from fires.

Landslides. Four major slides, all near or at the bluff sections, occurred within the metropolitan area. An unstable substance known locally as Bootlegger Cove clay underlies most of this land. Seismic shock triggered its latent instability, resulting in damage to structures, utilities, and streets -- and loss of life.

At the Government Hill slide, vertical lowering of at least six feet caused the Government Hill school and other buildings which straddled the slide scar to break in half. Other structures resting entirely on the down-dropped portion remained intact. This slide area north of Ship Creek was more than a mile long and shaped roughly like a crescent. Lower slide areas pushed out over The Alaska Railroad lines.

More spectacular was the Fourth Avenue slide in which land dropped vertically from ten to eighteen feet and apparently moved laterally northward. The entire north side of the Fourth Avenue business district between B and E Streets (several hundred yards long) dropped, wrecking many of the structures and leaving the others uninhabitable. In this area, all utilities were completely disrupted. Buildings along the south side of Fourth Avenue remained relatively unharmed although in some instances they were less than twenty feet from the edge of the depression.

A third large slide occurred near L Street in the area along the western waterfront bluff. A strip about one hundred feet wide and one-half mile long dropped six feet. The depressed area was from ten to five hundred feet back from the edge of the bluff. Damage to buildings, utilities, and streets was similar to that in other slides.

The largest slide was in Turnagain where the bluff broke off in a series of slides one and one-half miles long and one-quarter mile wide. Trees, buildings, streets, and people were moved downward and out toward Cook Inlet. Seventy residences were reported destroyed beyond repair and valuable land in the city's finest residential district was permanently lost. Because of extensive cracking behind the new bluff edge, a strip of land from ten to five hundred feet wide became unstable. (See fig. 2.)

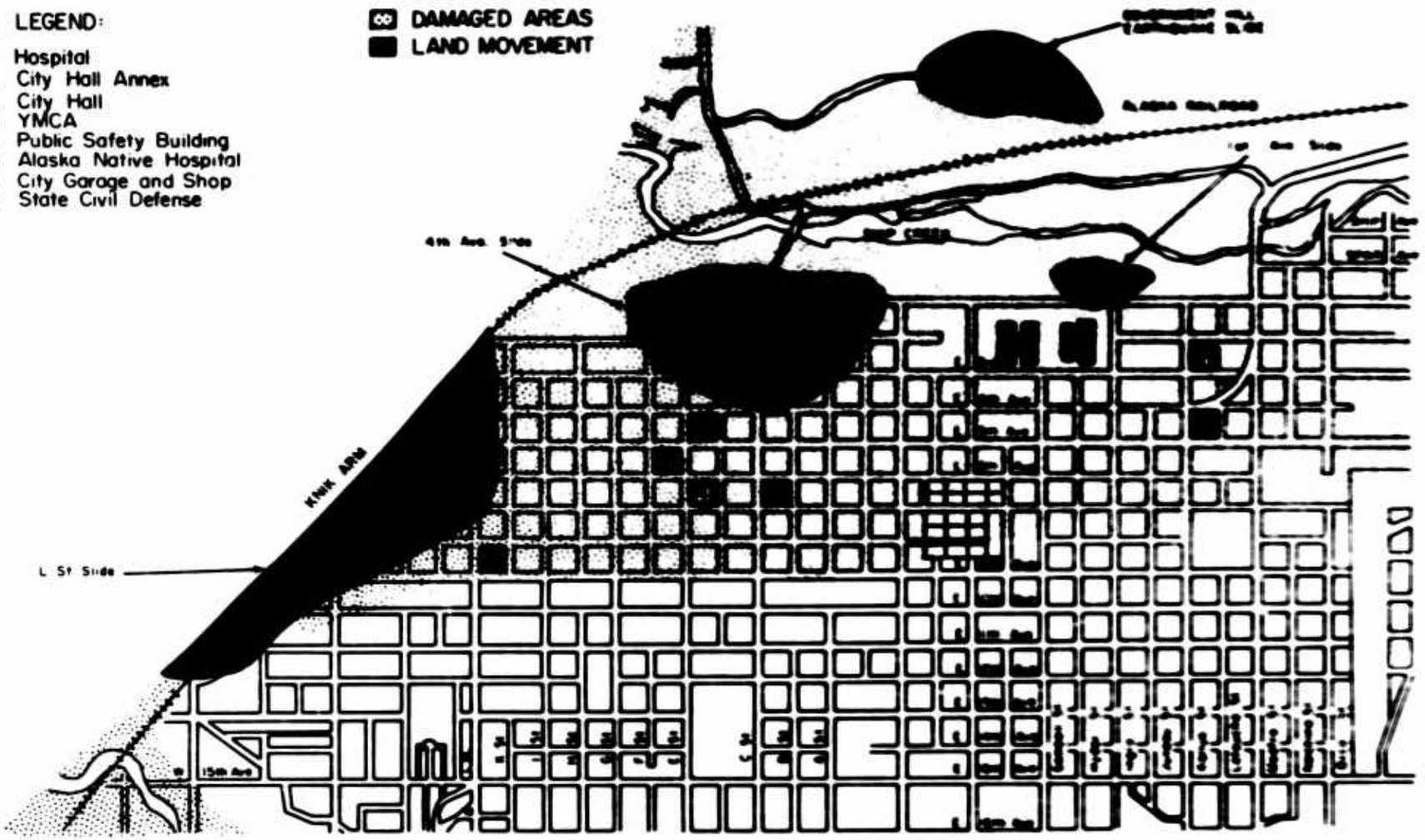


Fig. 2 - Anchorage, Alaska: Location of Damaged Areas and Selected Organizational Buildings, 1964

Damage to High Buildings and Utilities. Small one-story wooden buildings were generally not harmed except in slides. "Four buildings, one or two stories high, suffered damage estimated to be moderate or severe; nine buildings of one to 14 stories suffered moderate damage, and an estimated 22 buildings received relatively light damage."[3] Three multi-story structures either partially or totally collapsed: part of a new five-story department store, the sixty-foot high airport control tower, and a six-story apartment building. In addition, a fourteen-story hotel, two fourteen-story apartment buildings, and two office buildings eight and six stories high were structurally damaged. Some large one- and two-story buildings, warehouses, garages, and an airport hangar either partly or completely collapsed.

The Anchorage telephone system was disrupted but not totally inoperable. The buildings had minor damage, equipment at the offices was shaken and fuses were blown, and underground transmission lines were broken in many places.

Power supplies to the community failed. At the Bureau of Reclamation plant, rock and gravel from slides in its reservoirs entered the turbine and reduced the power output. Major structural damage occurred in Chugach Electric's distribution system and power plants; the utility's plant in Anchorage went out completely. The vibrations of the earthquake activated a sensitive meter-safety device which resulted in a shutdown of the municipal power's large turbine generator and produced a full transmission loss, although the plant and generators remained basically intact.

In the city's electrical distribution system, overhead power lines and about fifty poles fell, and about twenty-five transformers either fell or caused supporting poles to lean. Two entire blocks of the underground distribution system in the downtown area were destroyed.

The water system was completely drained by numerous breaks, especially in the slide areas. An estimated 50 percent of the underground distribution system suffered breakage or was a total loss. Basic water supplies -- seven wells and a gravity source through the treatment plant -- were seriously affected. Initially the wells were unusable due to power failure. Later it was discovered that two could not be pumped and a third, when pumped, produced sand. The gravity supply remained constant for six hours, then was greatly reduced by earth slides above the reservoir which temporarily blocked the stream.

Early estimates of damage to the sewer system indicated that over 50 percent of the out-fall lines were damaged and 25 percent of the collection system was beyond repair.

Damage to the Anchorage Natural Gas Corporation's pipelines was responsible for the disruption of service to 4,000 customers -- about 80 percent of those normally served. Gas shot into the air from a major break in a ten-inch main at Third Avenue and Post Road for thirty minutes until the valve was closed.

Damage to Other Buildings. The police and fire departments remained essentially intact and were able to function although utilities at their headquarters were off for some time after the quake. They maintained communications through use of shortwave radios. Field operations were difficult because many streets were impassable in places and vehicular access to some areas was either difficult or impossible. With the water system drained, the fire department was dependent upon the water in their apparatus tanks and in the department's 1,100-gallon tank truck for fire fighting. No major fires broke out during the immediate post-impact hours.

Civil Defense headquarters was deemed unusable because the equipment was thrown about and the basic utilities were off. The city offices at City Hall and the Annex also lacked heat, water, and electricity. Although both buildings were close to the fault line there was no structural damage and they were used when utility service was restored.

There was no significant structural damage to any of the four hospitals in Anchorage, although the hospital at Elmendorf AFB had some damage. Access and egress routes remained intact. No patients or personnel were injured. Utilities were off at all four hospitals. Only Samaritan, because its emergency generator did not function, was evacuated.

The Red Cross chapter headquarters was damaged, and the executive secretary was unable to immediately retrieve her disaster files and lists of volunteers. Red Cross staff personnel at the two nearby military bases were occupied with duties at the bases.

The Salvation Army, with its buildings and facilities undamaged and its personnel available, suffered little, if any, loss in capability. The only key staff member missing was the Alaskan divisional commander who was outside the community at the time of impact and unable to return immediately.

The two nearby military bases, Elmendorf and Fort Richardson, suffered considerable damage; however, with their vast resources, their capability was not seriously impaired. The proximity of the Alaska National Guard, which was training at Fort Richardson, enabled the Guard to lend assistance quickly when civil authorities requested it.

All of the commercial radio and television stations went off the air at the time of the quake because of power failure. With undamaged facilities and emergency generators, the first commercial station returned to the air twenty minutes after the quake.

The preceding provides some indication of the dimensions of the tasks that confronted the community of Anchorage. It should be emphasized at this point, that what has been described here as the results of the impact was not apparent for some hours or even days. Initially, no one had the answer to the question that all residents were asking themselves and others -- "What happened?" It is one thing to be able to determine what tasks need to be done and then devise means to accomplish them. It is quite a different matter when one of the major "tasks" is to find out what the tasks are -- what has to be

done. What follows in the subsequent chapters is a description of community activity in the emergency period. One should keep in mind that this activity was not initiated nor did it proceed upon a complete knowledge of what had to be done. This would have been rational but rationality has its limits, particularly in the context of incomplete knowledge. Those in Anchorage not only had to cope with the problems resulting from impact but they had to cope with the problem of finding out what actually had happened.

FOOTNOTES: Chapter IV

1. U.S., Department of the Interior, Geological Survey, Alaska's Good Friday Earthquake, March 27, 1964: A Preliminary Geologic Evaluation, by Arthur Grantz, George Plafker, and Reuben Kachadoorian, Geological Survey Circular No. 491 (Washington: Government Printing Office, 1964), p. 2.

2. Martha Richardson Wilson, M.D., "Effect of the Alaska Earthquake on Functions of PHS Hospital," Public Health Reports 79, no. 10 (1964): 853.

3. The National Board of Fire Underwriters and the Pacific Fire Rating Bureau, San Francisco, A Report, The Alaska Earthquake, March 27, 1964 (New York: The National Board of Fire Underwriters, 1964), p. 26.

CHAPTER V

FUNCTIONAL PRIORITIES IN THE COMMUNITY RESPONSE

PART I: PRESERVATION OF LIFE

In chapter three a sequence of functional priorities after the disaster event was suggested. It was suggested that, while in "normal times" the activities within communities are directed toward a diversity of ends, in the emergency period a new priority of community functions emerges. In the next three chapters, the priority system which was posited will be examined. In this chapter the activities within the community which related to the "preservation of life" will be detailed. The following chapters will do the same for "restoration of essential services," "the maintenance of public order," "the maintenance of public morale," "provision of food and shelter," and for "economic," and "leisure" activities. Each of these discussions will be introduced by an overall statement concerning the activity relating to these functions, followed by a chronology of events within the community relevant to the particular function. These chronologies were compiled from a variety of sources. Most of the material was derived from interviews with organizational officials in the Anchorage area by a DRC staff member. This form of information was supplemented by organizational logs, mass media announcements, and other documentary materials from specific organizations. The utilization of this type of presentation is to ascertain whether the activity which did occur in Anchorage during the emergency period actually follows the sequence of functional priorities which was hypothesized. The time notations on the chronologies are primarily intended to convey sequence and not precise occurrence. In instances of contradictory information -- and the emergency period is not the most opportune time for consistent record keeping -- we have resolved such contradictions based on our more inclusive knowledge of the events in the community.

In this chapter activity carried out with the intent and/or major consequences of protecting and sustaining life at the community level is included. This focus excludes specific individual actions, i.e., an individual rescuing his own family. However, if this same person became involved in the provision of rescue and medical aid in a more general sense, his activity would be included as having community relevance. The sequence of discussion moves from search-and-rescue activity, to the emergency medical response and to public health activities.

A. Search and Rescue

This activity began immediately after the shaking subsided at about 5:40 p.m. on Friday and continued throughout the night and into the next day. There was no overall coordination in this area until early Saturday morning when the city Civil Defense director appointed a volunteer to take charge of various volunteer search-and-rescue groups. Even after this appointment, there was search-and-rescue activity apart from the official CD groups.

Practically all the victims of the impact were found and removed before dark on the first night. Later activity involved duplication of the first efforts and checking out various reports of tapping sounds or calls for help coming from abandoned and damaged structures. By Saturday evening, twenty-four hours after the impact, organized search-and-rescue groups had thoroughly searched every building -- collapsed or standing -- in the heavily damaged area three or four times. The coordinator appointed by the Civil Defense director was convinced that no victims remained to be rescued anywhere in the Anchorage vicinity. From this time, search-and-rescue teams were put on a standby basis until the downtown business area was opened to the public. By Sunday afternoon, however, it seemed obvious to all city officials that no further rescue work remained to be done.

Chronology of Search-and-Rescue Activity

Friday, March 27, 1964

5:36 p.m. Impact. Individual "preventive" action is taken all over the community. Some large buildings are evacuated before the shaking subsides. Individuals check several apartment buildings and help occupants to evacuate.

5:40 p.m. Immediately after impact, Crowds gather in the downtown area, notably in front of the J. C. Penney Company store where concrete facing has dropped upon automobiles in front of the building and at the Fourth Avenue slide.
Individuals help survivors climb out of the sunken area in Turnagain. Several Alaska Rescue Group members assist.
The damaged Penney's store is visible from the main fire station at the Public Safety Building. As soon as the doors can be opened manually (several minutes), an ambulance and an engine company are dispatched to the front of Penney's where they initiate rescue efforts. Two dead and one injured are removed immediately. The injured person is taken to a hospital by fire department ambulance.

5:50 p.m. The fire chief sends firemen and rescue squads into various sectors of the city to check for potential fires.
The Spenard Volunteer Fire Department reports damage at Turnagain and asks for ambulances; one ambulance is sent.

6:00 - 6:15 p.m. The rescue effort at Penney's is hampered by the crowd of onlookers. Wreckers and other equipment have difficulty getting through.
The fire department ambulance returning from St. Joseph's Hospital picks up a severely injured person at Third and A Streets and takes him to Samaritan Hospital. Upon arrival, the driver finds the hospital being evacuated and takes the patient to St. Joseph's. All rescue squads are notified by radio to take injured persons to St. Joseph's.

6:15 - 6:30 p.m. Two Anchorage Fire Department rescue ambulances are at the Turnagain site. The Spenard Volunteer Fire Department has charge of rescue operations there. Some state highway patrol troopers also assist in searching homes and helping the uninjured to climb out. The Spenard fire chief sends a call for helicopters to evacuate injured persons. Two casualties are taken from their homes by a helicopter (Moore's helicopter service) and lifted up to the ambulances. Both are taken to a hospital.

Many injured persons have already been taken to the hospital by private automobile. They are refused ambulance service because they are only slightly injured.

Two funeral homes send a total of six vehicles with eight stretchers and eight men to the fire department's main station downtown for use as ambulances. One jeep with two stretchers is brought by a civilian volunteer. Thus, the fire department has ten ambulances available, three with the Spenard Volunteer Fire Department at Turnagain and seven at the main station downtown.

6:15 - 7:15 p.m. Firemen search a number of buildings in the damaged areas by walking through and calling. A few policemen and volunteers assist. All the downtown hotels are checked.

6:40 p.m. Light rescue-and-damage assessment teams begin to be dispatched from the Public Safety Building. A city engineer and several acquaintances have procured city maps; the engineer organizes teams of five to ten men which he sends into areas "gridded in red." These teams search for survivors and inspect the condition of the buildings. They turn off all utilities, report on broken water mains, hazards such as broken pieces of buildings hanging and about to drop, broken glass, etc. Teams are made up of volunteers who have come to the Public Safety Building to offer their services. This effort continues throughout the night. These teams are labeled here the "Disaster Control Group."

7:31 p.m. A fire department unit removes a man trapped at First and C Streets and takes him to a hospital.

8:00 p.m. All operating units of the fire department are at headquarters. The fire department search-and-rescue activity ceases for the night.

A specially trained Army mountain rescue team is placed on alert status at Ft. Richardson.

8:01 p.m. There is a report that a "tidal wave" is expected. The fire department dispatches two units with power microphones to the South Addition and Fourteenth Avenue areas to warn residents to evacuate.

Public works employees evacuate also.

8:31 p.m. — A fire department unit reports that the Bootlegger Cove area is evacuated.

9:00 - 10:00 p.m. — A radio broadcast asks for Alaska Rescue Group personnel to do rescue work. A local member of this group checks and discovers that the request is for the next morning.

9:15 p.m. — The Army mountain rescue team is dispatched to the highway patrol office at East Thirtieth Street. No one there had requested a rescue team. After about an hour the team is asked to report to the Public Safety Building.

10:00 p.m. — A child is discovered pinned in the wreckage in a building. A rescue team composed of experienced men with equipment for heavy work (ropes, jacks, etc.) is dispatched to the scene. It takes them until 6:00 a.m. to free the child.

11:00 - 11:30 p.m. — Several of the Alaska Rescue Group members meet in the Turnagain area. They decide to organize teams and go through the area. Six teams of three men per team are organized and begin searching buildings in the slide area with flashlights. This group did not know that the area had already been searched before dark.

11:00 - 12:00 p.m. — The Army rescue team arrives at the Safety Building. After they locate the mayor, he asks them to search the Turnagain area. The two officers decide to make a personal reconnaissance of the area before committing their troops.

Saturday, March 28, 1964

12:30 a.m. — The two officers arrive at Turnagain and radio back their impressions. They decide that it would be of little value to commit their troops to search the area until daylight. After returning to the Safety Building they recommend to the mayor that 150 troops be assigned to the area at daybreak to make a systematic search. They are then sent back to Ft. Richardson.

1:40 a.m. — Alaska Rescue Group members report that they have completed their search of the Turnagain area. All the houses are empty. They will be searched again at daylight. At the Safety Building they are asked to stand by until daylight when rescue teams will be sent to search all multiple-story buildings.

5:25 a.m. — Military rescue and survey teams are sent to the Third Avenue area (downtown) with instructions to search all the buildings.

5:30 - 6:00 a.m. — An Alaska Rescue Group member arrives at the Public Safety Building in response to the request of the night before. He finds other Alaska Rescue Group members there and gathers them

together to form rescue teams. Some time elapses while he attempts to discover where they are needed and who is responsible or in charge. A captain in the fire department informs him that they are needed but he does not know where or who is in charge. The police tell him to take charge of the rescue effort. Finally the Civil Defense director, the fire department captain, and the Alaska Rescue Group volunteer talk matters over and decide to organize the rescue effort from the Public Safety Building. The fire captain cleans out the assistant fire chief's office for the rescue group. Rescue teams are dispatched to areas of known damage and where requests for search or rescue were made. Initially there are about ten Alaska Rescue Group members, enough for two teams.
The fire department supplies the rescue groups with maps and advises them as to where they can get assistance, both equipment and manpower.
At least one rescue team is still operating under the direction of the city's Disaster Control Group.

7:00 - 9:00 a.m. Search and rescue is fully organized. Two teams are dispatched to the east end of Fourth Avenue slide area with instructions to search building by building, working west. Two additional teams are sent to the west end of the slide with instructions to work east until they meet the other teams. One team is dispatched to the Penney building. Teams are instructed to report back every hour or whenever they have completed searching a block. Runners are used to communicate between teams and headquarters.

8:47 a.m. Fire department personnel from both the Anchorage and Spenard departments set up a command post at Turnagain and begin a full-scale search of the entire area. City CD sends rescue teams to Turnagain with instructions to report to the command post at Iliamna Avenue and Susitna Drive. The Anchorage Fire Department requests helicopters at the Turnagain command post for standby assistance. A local citizens' radio band club offers assistance to the search-and-rescue coordinator. He assigns them to various areas to provide communications: St. Joseph's Hospital, Alaska Native Hospital, Penney's store, Turnagain area, and Shadyside Nursing Home (this one was assigned later than the others).
During the morning, other persons and groups offer to help with search-and-rescue work. Eventually about 142 men are utilized aside from the military and the crew still working with the city engineer. The various groups represented are Alaska Rescue Group, 30; ski patrol, 40; volunteer firemen from outlying areas, 40; citizens' radio band club, 8-10; and construction workers with trucks and equipment, 24.

10:10 a.m. One officer and twenty enlisted men are dispatched to the Turnagain command post at Susitna Drive and Iliamna Avenue for search-and-rescue work.

10:50 a.m. The Army supplies one officer and forty enlisted men to assist with the search at Penney's. This group returns from Penney's at 11:50 a.m.

3:35 p.m. All military search-and-rescue groups are released. They are asked to stand by for call if needed. This is done in consultation with the city manager.

Evening The CD coordinator is convinced that all the bodies and injured persons have been found but he keeps the rescue program going until Sunday afternoon.

B. Medical Care

There were five hospitals in the Anchorage area prior to the earthquake, two private and three public. Initially, the major attention of the community centered on the two private hospitals. Nearly all of the injured, however, were brought to one hospital, St. Joseph's, for treatment.

There were various reasons the three public hospitals in the area were not regarded as places to take the injured. The Elmendorf Hospital was outside the community and thus, while it could have represented an additional resource if needed, was not directly involved in the community-wide medical response. In addition, the Elmendorf staff personnel focused upon their internal problems and the injured brought to them from the military, while the two private hospitals were seen as relevant to general community needs. The Alaska Native Hospital (ANH), a large facility, was generally defined as serving the native population. Thus, it received only seventeen patients from the Anchorage community during the first twenty-four hours; eight of these were hospitalized. The ANH personnel activated their disaster plan, set up a triage arrangement, and notified the local Civil Defense of their readiness to receive patients. They also made contact with St. Joseph's Hospital and offered to assist if needed. However, their main activity, aside from caring for the patients already admitted, involved providing facilities for state public health officials and administering typhoid shots -- a public health measure instituted several days after impact. On Saturday, March 28, ANH was asked to prepare for an influx of casualties from outlying villages, but this never materialized. ANH provided an additional function by housing some refugees during the night of the earthquake.

The Alaska Psychiatric Institute sustained only minor damage. The staff and patients were not injured by the quake so the institute could have handled a number of casualties. However, no disaster casualties were taken there. The main emergency services provided at API were office space and clerical assistance for the state public health team and housing for senile and psychiatric patients who had to be evacuated from the Harborview Nursing Home in Valdez.

The two private hospitals which absorbed the bulk of the incoming casualties had about 205 beds available. Slightly over half of these were occupied at the time of the impact and a number of these occupancies could have been discharged if space had been needed.

One problem became apparent very early. Samaritan Hospital, the downtown medical facility -- without power and water and with an odor of gas in the building -- was evacuated. Sometime between 5:45 and 6:00 p.m. the director of nurses was informed that St. Joseph's Hospital was operational and could receive patients. She immediately decided to send home all patients who could be released and to evacuate the rest to St. Joseph's. Physicians with patients at Samaritan had already begun discharging those who could go home. Thus, Samaritan Hospital received and treated only two emergency cases on Friday night.

In all, twenty-two patients were transferred to St. Joseph's between 6:00 and 8:00 p.m. Since communications were erratic or nonexistent right after the quake, there was no way to call for ambulances. Volunteers with cars and station wagons provided transportation. One male Samaritan staff member stepped into the street, stopped cars, and asked drivers to take patients to St. Joseph's. A local Boy Scout troop, which was out delivering directories at the time of the earthquake, arrived at Samaritan in time to help evacuate some of the patients. Police cruisers provided escort for most of the station wagons transporting stretcher cases. Patients were evacuated in the following order: ambulatory patients first, obstetrical patients next, and medical-surgical cases last -- including the stretcher cases. By 7:30 p.m. all patients were out of Samaritan Hospital. The last ones arrived at St. Joseph's between 7:45 and 8:00 p.m., accompanied by Samaritan nurses. On Sunday afternoon Samaritan announced on radio that it was then open for emergency service and that full operation would be resumed by 7:00 a.m. Monday morning.

Thus St. Joseph's treated most of the disaster victims. Of its 155 beds, 75 were occupied when the disaster struck, leaving 80 beds available. None of the top level administrative and medical staff was at the hospital. Personnel present at the time of impact were nine registered nurses, some orderlies and aids, licensed practical nurses, a personnel consultant with considerable Civil Defense experience, and the normal contingent of service and maintenance staff.

No injuries occurred and there was no serious damage to the building. When city power went off the hospital auxiliary power plant started automatically, supplying power to the corridors, the emergency room, and operating suites. The water supply from the city was also cut off.

Within thirty-five minutes the director of nurses, the administrator, the disaster coordinator, and the chief of medical staff were all present. Their initial reaction was to check the facilities and medicines available. With no information indicating the number of casualties to expect, they conducted a rapid survey and began preparation for a large number. By 6:15 p.m., when the first casualty arrived, the chief of staff, the disaster coordinator (a surgeon), and the administrator knew that:

1. For an unknown period of time essential power would have to be provided by the 125 kv. auxiliary diesel plant. The chief engineer reported that it could operate continuously for seventy-two hours without difficulty.

2. City water mains were broken but the boiler was full. Thus heat would be available for a short time. An exposed spring at the back of the hospital was open and could be tapped to provide water for hospital mains.

3. Internal communications were reduced to the public address system and runners. External communications were totally inoperative.

4. A preliminary inspection of the entire plant by the engineers and the architect who had designed it indicated that it was safe. There was no major structural damage.

5. The radiology department was without power for the operation of large X-ray units.

6. The laboratory and pathology areas were without power for equipment and lights.

7. The kitchen area was without power and in serious disarray. There was adequate food supply for at least three days.

8. The two elevators were inoperative and exhaust fans within the hospital were not functioning.

9. The pharmacist and storekeeper reported that despite extensive breakage and spilling there were sufficient essential supplies on hand for emergency operations.

10. The surgical area was operational.

11. Sewer mains appeared intact.

12. Rapid response on the part of the medical staff already indicated that there would be sufficient personnel available for any contingency.[1]

The first effort after taking stock of the situation was to reassign personnel to provide maximum coverage and efficiency. Extra nurses were assigned to the emergency area, and as medical staff became available, they were first assigned to set up a triage in the emergency area. Later some were assigned to cover the floors.

The triage was partially set up at 6:15 p.m. when the first patient arrived. When the triage was well established, patients were seen in the emergency area by a team of surgeons and general practitioners and then sent to one of five designated areas: area one, closed fracture cases in the charge of two orthopedic surgeons; area two, open fracture cases also in the charge of two orthopedic surgeons; area three, five operating suites for emergency surgeries; area four, a row of mattresses along the corridor for the less urgent cases; and area five, the morgue.

The expected influx of casualties never materialized. From 6:15 p.m. to 12:00 p.m., twenty-one casualties were received. Three were dead on arrival,

seven were admitted, and the rest were sent home. From Saturday morning until Sunday night, eighty-nine emergencies were handled at St. Joseph's. Of these, eighteen were clearly earthquake victims.

Inpatient census at this hospital never exceeded 123 during the entire emergency. During the first 77 hours, 272 emergencies were recorded. Some were not recorded, so the tally should be somewhat higher. Many of these were not directly earthquake-related victims but sustained injury while working with debris. Some were children with respiratory ailments due to exposure.

After the first wave of casualties was over, hospital personnel were assigned to cover the emergency area and floors on a shift basis. A team of doctors was on duty in the emergency room and at least one physician had charge of each floor. By Monday morning, most of the physician's private offices were reopened and specialty coverage at the hospital was terminated. All inpatients were assigned to the doctor of their choice.

Three additional matters should be mentioned: communications as related to the hospital-community linkage, restoration of power and water, and the convergence of uninjured persons upon the hospital. Each of these represented problems which needed to be resolved to maintain adequate medical service during the emergency.

Communications. External communications were cut off by the effects of the earthquake. Initially the hospital staff placed calls for needed supplies or personnel over ambulance radios when they arrived with patients. Police were notified that a radio link with emergency headquarters was needed. Radio-equipped cars arrived by about 8:30 p.m. to provide this service. Meanwhile representatives of state CD appeared at St. Joseph's and asked what was needed. A radio link with state CD was requested. By 9:00 p.m. Friday evening the hospital was in radio contact with both city emergency headquarters and state CD headquarters. Radio coverage was continued around the clock through Sunday even though limited telephone service was restored by 10:00 p.m. Friday evening. Telephones were jammed most of the time.

Power and Water. A temporary water supply for the hospital mains was provided by tapping the open spring (some reports call it a small creek) behind the building. The fire department laid a suction hose from the spring to the hospital. By 11:00 p.m. city water was on again at the hospital but it was not used until 3:00 a.m. Because of potential contamination, physicians ordered it chlorinated before drinking. The fire truck with the suction hose was removed early on Saturday. Pure drinking water was supplied during the night (Friday) by a local soft drinks firm and an Army water trailer. Two fifty-gallon drums of pure water plus soft drinks were available by 9:00 p.m.

Convergence. While convergence as a general phenomenon of community response will be discussed elsewhere, it is germane to mention those aspects which affected the medical response here. There was a large influx of persons at St. Joseph's Hospital as darkness arrived so that the lobby was filled completely and the crowd spilled over into some of the adjacent areas. Some of these were the families of staff members who had lost their homes and some

were relatives and friends of the injured who had heard radio announcements stating that all patients were being taken to St. Joseph's. Many more were volunteers offering their services. Although the congestion was something of a problem, the administrator felt that these persons should be allowed to remain at the hospital where there was light and warmth. At 10:00 p.m., dormitories at Alaska Methodist University were made available for refugees. Some of the overflow crowd at St. Joseph's went there for the night, thus relieving the congestion at the hospital.

Some General Observations on the Medical Response. To summarize the medical situation, the major problems encountered were not with supplies, equipment, or facilities but with utilities, power, water, and sewage. There was never a shortage of competent staff at any of the treatment centers. Assigning and organizing medical specialists created a few minor problems which were easily overcome. A tremendous volunteer response, many more than could be utilized, took up much valuable time on Friday evening.

Lack of information was severe for many hours at treatment centers. They never knew how many casualties to expect. At St. Joseph's, preparation was made for four or five hundred. ANH prepared for a large number.

There was no panic or hysteria at any time, either among patients or staff.

There was good support from other community organizations throughout the emergency. Initially the hospitals functioned on their own for thirty minutes to an hour without support, but later during Friday night the fire department, police department, Civil Defense, the military, hospital supply houses, and radio broadcast stations all provided direct support.

Medically speaking, the earthquake struck at a fairly opportune time. The evening meal had been served at the hospitals so there was no concern about feeding for eight hours or so. Secondly, the temperature was at a moderate twenty degrees. It had been at a minus ten just two weeks before. Exposure and unheated houses would have produced many more emergencies had it been colder.

Chronology of Emergency Medical Response

Friday, March 27, 1964

5:36 p.m. Impact. None of the key administrative and medical staff is at the hospitals. At St. Joseph's, the personnel consultant working with the switchboard operator and the intercom system advises patients to remain calm. Nurses stay on the wards.

5:40 p.m. The comptroller at Samaritan writes "no smoking" on the exit and entrance areas. There is an odor of gas in the building. The administrator of St. Joseph's contacts the hospital via telephone and receives a condition report. She returns to the hospital immediately.

5:43 p.m. The chains and couplings in the elevators at St. Joseph's fail, rendering them inoperative. No one is in the elevators at the time.

5:50 p.m. The personnel consultant bans smoking at St. Joseph's in case oxygen lines are broken. No outside communication lines work. He begins a quick check of the building and equipment. There is no visible damage of any consequence. Personnel who had just gone off duty begin arriving again.

5:50 - 6:00 p.m. The comptroller at Samaritan goes across the street to a nursing home to check on its status and to discover whether Samaritan patients could be evacuated to St. Joseph's in case that becomes necessary.
The director of nurses at St. Joseph's arrives at the hospital. She immediately assigns two extra nurses to the emergency area.
The director of nurses at Samaritan arrives at the hospital. Since all utilities are off and there is an odor of gas in the building she begins to check on whether St. Joseph's could accept patients. "Someone" tells her St. Joseph's is operational. She decides to evacuate Samaritan.

6:10 p.m. The disaster coordinator at St. Joseph's arrives at the hospital. He begins to assign treatment areas for triage.

6:15 p.m. The first earthquake victim arrives at the St. Joseph's Hospital emergency room.
The switchboard in the lobby at St. Joseph's becomes the overall control point for the administrator.

6:20 p.m. The area executive of ASH picks up a staff physician and proceeds to the hospital.
Evacuation of Samaritan Hospital is under way.

6:30 p.m. The executive head and staff physician arrive at ASH. A number of other staff members are already there. A quick tour of the hospital indicates no major damage, but offices and storerooms are in serious disarray. After a meeting of personnel in the lobby, a triage is organized and the emergency room set up to receive casualties. Eventually the director of nurses and all the surgical staff report for work.

6:30 - 7:00 p.m. Casualties are arriving at all four main entrances to St. Joseph's Hospital. Mattresses are removed from vacant beds on the second floor and placed in the corridor adjacent to the emergency room.

7:00 p.m. ASH staff have their triage operable. It is refined and improved during the evening.

7:30 - 8:00 p.m. A radio announcement indicates that St. Joseph's is the only fully operational emergency medical center available. An appeal is made for nurses

8:30 p.m. ANH staff sends a runner to the state CD office on Fifth Avenue and asks for a walkie-talkie to provide communication with CD headquarters.
The ANH generator is repaired by an FAA electrician. It had failed intermittently and finally gave out completely.
A radio announcement indicates that St. Joseph's has plenty of nurses.

8:50 p.m. "Requests for a water tanker at St. Joseph's." (SCD log)
The staff physician from ANH reports to SCD that ANH can accept patients.

8:45 - 9:00 p.m. State CD sends a man with a portable field radio to ANH. This unit is kept in operation twenty-four hours a day for several days.

9:00 p.m. An Anchorage city truck arrives at St. Joseph's Hospital with elements of a 200-bed Civil Defense emergency hospital. A local doctor had surveyed the CD emergency medical items stored in a warehouse and asked that they be sent to St. Joseph's.
At about the same time a truck reports at St. Joseph's with additional mattresses and bed frames.
The Pepsi Cola Bottling Company of Anchorage delivers two fifty-gallon drums of drinking water and some soft drinks to St. Joseph's. One of the drums was set up on the fifth floor.
"St. Joseph's has an adequate supply of water, blood, and plasma." (SCD log)
A local radio station receives a report that St. Joseph's needs a chlorinator and someone to install it.

9:15 p.m. "St. Joseph's has all the equipment and nurses needed." (SCD log)

10:00 p.m. Sandwiches and coffee are served to the staff and refugees at St. Joseph's.
The president of Alaska Methodist University offers AMU facilities for the housing of refugees. This is announced over the hospital intercom along with an offer to provide transportation for those who need it.
The night staff at St. Joseph's reports an hour early.
Limited telephone service is restored to St. Joseph's.

10:30 - 11:00 p.m. The Anchorage Fire Department delivers 1,000 gallons of water to ANH. ANH receives a thirty-kw. generator from the Air Force. This provides enough extra power to enable them to start cooking.

11:00 p.m. Milk rationing is ordered at St. Joseph's to conserve available supplies.
ANH is in touch with St. Joseph's on a fairly regular basis throughout the evening via runners. ANH offers assistance by way of personnel or facilities if needed.

Saturday, March 28, 1964

1:00 a.m. The St. Joseph's auxiliary power plant fails; batteries from Army trucks are used to restart it. A call for more batteries sent out over police radio produces a quick response.

1:05 a.m. Samaritan is "in business" and "they need water and a radio truck." "ANH needs water by 9:00 p.m." (SCD log) (This bit of misinformation is interesting since Samaritan was not ready for patients until Sunday afternoon.)

1:38 a.m. "St. Joseph's Hospital needs eighty-one beds for morning needs." (Again a bit of misinformation. St. Joseph's was overstocked with beds at this time.) (SCD log)

3:10 a.m. St. Joseph's Hospital requires portable autoclaves and a 200-bed CD hospital. (The CD hospital had arrived there some hours before.) The portable autoclaves are requested by the St. Joseph's staff because the auxiliary plant does not provide enough power to operate their large autoclaves. (SCD log)

4:30 a.m. "One autoclave is en route to St. Joseph's." (SCD log)

5:00 a.m. The Army delivers a small portable generator to Samaritan Hospital.

6:00 - 9:00 a.m. The ANH maintenance supervisor comes to the Public Safety Building with a request that electricity be restored at the hospital. Chugach Electric, a local REA cooperative which normally supplies ANH, is inoperative and has no indication when they can supply power.

7:30 a.m. An Army truck delivers a 100-kw. generator to Samaritan Hospital. This culminates a night-long and frustrating search by the administrator for a generator with sufficient power to supply the entire hospital.

Morning Army trucks deliver water to Samaritan Hospital.
Volunteers assist Samaritan staff in cleanup operation and restoration within the building.
An elevator repairman arrives at St. Joseph's and repairs the elevators.

12:00 a.m. The large autoclaves at St. Joseph's become operational again with the firming up of city power.

3:20 p.m. "One thousand gallons of diesel fuel are en route to St. Joseph's Hospital." (SCD log)

C. Public Health

In addition to the immediate response in terms of search and rescue and emergency medical care, activity was directed toward neutralizing environmental health threats created by the earthquake. It was known that fresh water supplies were potentially contaminated. The city of Anchorage does not have a health department. Public health needs are met by contract with the Alaska Department of Health and Welfare.

At the time of the quake the local public health officer was ill and unable to assume responsibility for emergency activity. To compound the problem, the director of the Arctic Health Research Center, who was designated in the emergency health plan as his alternate, was also incapacitated. This left no one in charge of public health services in the Greater Anchorage Health District at the time of impact.

At first, most of the public health nurses and sanitarians remained at home. However, one of the local sanitarians came to the Public Safety Building at 8:00 p.m. At the time, he thought he was the only sanitarian available. He was asked to organize a program to supply safe drinking water to the city. He had no staff and little information about sources of equipment and pure water.

About 9:30 p.m. this sanitarian had the first of a series of public health messages released over the radio, warning area residents that all water must be regarded as contaminated and unsafe for human consumption until it was boiled or chlorinated. He issued simple instructions for the chlorination of water with household chlorinated bleach.

A separate announcement called for public health sanitarians to report to the Public Safety Building. Three of his regular staff reported eventually and, with liaison assistance provided by the military, water trailers were procured from nearby Fort Richardson. The first of these arrived at the Public Safety Building by 11:00 p.m. Friday evening. These were dispatched to various key points throughout the city, with shelters and hospitals being given priority.

Before midnight on Friday, the health officer of the southcentral region of Alaska stopped in at the Public Safety Building and conferred with the sanitarian. It was agreed that the sanitarian would continue there with the water program and that the health officer would report to state Civil Defense headquarters.

The sanitarian in charge of the water program had difficulty convincing military authorities of the need for so many water trailers. It was a confused and hectic night. However, he was able to report by 4:00 p.m. on Saturday that safe water was available at no less than twenty-nine schools and other central places throughout the city and outlying areas. These water trailers were staffed and maintained by military personnel until city water was restored and declared safe. A week after the earthquake the number had been reduced to nine trailers, mostly in the Turnagain and downtown areas. In addition to the water trailers the military also supplied four water treatment plants capable of purifying water on the spot. These were put in use on Monday, March 30, and phased out on Thursday, April 2.

With sufficient pure water available by Saturday afternoon, attention was directed to testing public wells and city water mains as the latter were restored. The earthquake had destroyed the health service laboratory normally used for this purpose. Military laboratories did some of the testing but the bulk of it was done by Arctic Alaska Testing Laboratories, a local firm. Since the extent of underground breakage of both sewers and water mains was unknown, each section of main had to be systematically tested before the water could be declared safe for drinking. By April 8, a week and a half after impact, only a few outlying subdivisions remained to be tested. Water transmitted through overland irrigation pipes was declared unsafe and had to be boiled or chlorinated.

Meanwhile, public health clinics for typhoid vaccinations were set up at a number of points in the city, using local, state, and federal public health nurses and doctors, as well as volunteers. This week-long program was initiated on Saturday morning on a small scale and expanded during the next several days. In all, 38,000 typhoid inoculations were administered in the Anchorage area.

Beginning the first week after the quake, one sanitarian was assigned solely to the food warehouses for about a month to inspect food supplies until they had all been cleaned out.

The main feature of the public health effort was the initial inchoate and the somewhat individualized response of its professional personnel. Most of the early effort (on Friday night and Saturday) was carried out by individuals or small groups somewhat disconnected from one another. Overall direction and coordination did not emerge until Sunday when the acting director of the Arctic Health Research Center was informed that he should have charge of the Anchorage Emergency Health Service. After reporting to the Public Safety Building and being briefed by the regional health director, he assumed command of the situation. Since he was unfamiliar with public health work, he permitted the sanitarians and public health nurses under him wide latitude in structuring and carrying through their own program. Routine health work was resumed by most of the Anchorage district health personnel by April 5

Public Health Chronology

Friday, March 27, 1964

7:30 p.m. An Anchorage Health District sanitarian arrives at the Public Safety Building thinking he may be the only sanitarian left. He is asked to organize a program to provide safe drinking water to the city.

7:45 p.m. Personnel of the Division of Public Health (Branch of Nursing) meet the Anchorage area health officer and another physician at the Public Safety Building. Plans are made to set up inoculation centers the next morning.

9:30 p.m. "Anchorage residents urged to either boil water or add one teaspoon of Clorox to each five gallons for safety." The sanitarian experiences some difficulty acquiring information concerning the extent of damage to water facilities and sources. He uses the radio to call for his staff to report to the Public Safety Building. (radio announcement)

11:00 p.m. The first Army water trailers arrive at the Public Safety Building. They are assigned to various points in the city. The regional health officer arrives at the Public Safety Building. The sanitarian briefs him on what is being done. He leaves for SCD headquarters.

Night The sanitarian continues to encounter difficulty, this time with the military. U.S. Army, Alaska, (USARAL) headquarters asks him to justify the need for additional equipment and assistance.

Saturday, March 28, 1964

4:50 - 5:00 a.m. A radio announcement indicates that there will be inoculations given that day. Public health nurses are asked to report to state Civil Defense headquarters on East Fifth Avenue to assist in this program.
A second announcement states that military tankers will be available to supply pure drinking water to critical areas, particularly institutions. These are to be located at all schools in the community and should be ready by 8:00 a.m.

9:00 a.m. Immunization clinics are set up at Airport Heights, Orah Dee Clark Junior High and Willow Crest schools. (radio announcement)

10:00 a.m. All doctors' offices are closed. (radio announcement)

2:00 p.m. — A new order of inoculation supplies and vaccine is placed with West Coast suppliers. Civil Defense arranges with Military Air Transport Service (MATS) to deliver it. The filled order is in Anchorage and delivered to inoculation centers by 10:00 a.m. Monday.

4:00 p.m. — Twenty-nine 500-gallon military water tankers are located in strategic spots around the city and outlying areas.

During the day — Jack Henry Post American Legion volunteers search for vaccines. Some are finally procured from a drugstore. An inoculation station is set up at the post.

10:00 - 11:00 p.m. — A Legion member leaving for Seattle is asked to obtain typhoid vaccine.

Sunday, March 29, 1964

Morning — The manager of the American Legion post picks up vaccines at the airport. These had been sent by Wyeth Laboratories. This was enough to last through the day at the post.

9:13 a.m. — "Immunization shots will be available at Alaska Native Hospital, Airport Heights, Willow Crest, and Orah Dee Clark schools from 10:00 a.m. to 6:00 p.m. today." (radio announcement)

3:00 p.m. — A "surge" of people arrive at St. Joseph's Hospital after an announcement on the radio indicates they are giving shots. St. Joseph's calls the station to tell them they are not giving shots.

Monday, March 30, 1964

10:00 a.m. — The order of inoculation supplies and vaccine is in Anchorage and available at inoculation centers.

12:15 p.m. — Typhoid immunizations are to begin at 2:00 p.m. and continue until 8:00 p.m. at the Edgewater Motel on Seward Highway, Calvary Baptist Church, and the Government Hill, Airport Heights, Orah Dee Clark Junior High, and Spenard Willow Crest schools. (radio announcement)

1:45 p.m. — Typhoid vaccine is available at ANH. (CD release)

This completes the major activities concerning the preservation of life. In a peculiar way, Anchorage was fortunate. During those early hours of the emergency period and throughout the darkness of Friday night, it was easy to assume that the death and injury rate had been much higher than it was. In the long run, nine died in Anchorage but looking at Penney's, Fourth Avenue, or the Turnagain area, one would have expected many more.

FOOTNOTES: Chapter V

1. Ed Fortier, "Emergency Operations at Providence Hospital -- March 27, 5:30 p.m.-March 29, 5:30 p.m.," Alaska Medicine 6, no. 2 (June 1964): 57-64.

CHAPTER VI

FUNCTIONAL PRIORITIES IN THE COMMUNITY RESPONSE

PART II: RESTORATION OF ESSENTIAL SERVICES

It was suggested that subsequent to priority given to the victims during the emergency period would be the activities related to the restoration of what can be called "essential" services. If impact disrupts utilities, transportation and communication arteries and facilities, restoration of these is given high priority. In particular, immediate attention will be given to restoring services to hospitals, command centers, and installations of organizations which are most actively crucial for the emergency activity. In one sense, of course, any activity considered valuable and important to community welfare is "essential" but the discussion which follows concentrates on what are usually known as the "utilities": water, electric power, telephone, and sewage disposal. Transportation and communication will receive minor attention.

It is perhaps appropriate at this point to note an event which had special significance for the overall emergency activity and particularly for the restoration of essential services. The diversity of activity required after a disaster event necessitates some exchange of information among those charged with responsibility in various segments of community life Normal lines and procedures of coordination which exist prior to the emergency often do not easily sustain the overload created by impact. It is characteristic in many widespread disasters for a meeting to occur which brings together representatives from many segments of community activity to "report" both on the damage as well as the activity and resources required to restore some semblance of organized activity. In Anchorage, such a meeting took place at three o'clock Saturday morning. Most of the participants there were concerned with "essential" services. References throughout the rest of the chapters to the "three o'clock meeting" refer to this event. Further description of this meeting is provided in chapter seven.

This discussion of the activity concerning the restoration of essential services will follow this order: (a) electricity, (b) water, (c) sanitation, (d) gas, (e) telephone, and (f) transportation and communication.

A. Electricity

Electricity is supplied to the area from three sources: The municipal plant with two large dual fuel turbines and six small ones provides a total of 36,000 kw. potential, the Chugach Electric Association with a total of 37,000 kw. potential, and the Eklutna plant of the Bureau of Reclamation with an additional 16,000 kw. Generation facilities at the nearby military bases would provide an additional source of power in an emergency.

The earthquake disrupted all power sources in the area. Initial response centered on checking the generation facilities and transmission lines -- the former to assess damage and restore generation and the latter to determine the capability of transmission lines to carry the load.

When they arrived at the city generation facility, Municipal Light and Power (ML&P) crews discovered that the natural gas supply had been cut off and they immediately began switching the large turbines to diesel fuel. Conversion to diesel and the preliminary survey necessary to safely restore power to some main transmission lines were completed by 7:00 p.m. A few minutes later one generator was started at the municipal plant.

Meanwhile, Chugach Electric Association (CEA) personnel, unable to communicate with the Cooper and the Bernice Lake power plants, checked the Knik plant and discovered sufficient structural damage to discourage any effort at restoring it that night. There was no power coming in from either Bernice or Cooper Lake plants, and the Eklutna substation in Anchorage reported no power input from the Bureau of Reclamation lines. Although the Cooper Lake facility was producing power by 7:00 p.m., damaged transmission lines and roads made it impossible to provide power for Anchorage area customers. CEA personnel continued checking their own substations and transmission lines in the Anchorage area, expecting to receive power either from one of their own outlying facilities or the city turbines. However, the only source of power during the first four and one-half hours was the single large city turbine, started about one and one-half hours after the earthquake, at 7:00 p.m. It could produce only a fraction of the power needed to supply the community.

At 10:00 p.m., when the Bureau of Reclamation plant at Eklutna began supplying power through its transmission lines, the CEA was able to restore power to about 75 percent of its customers. This lasted only for an hour because the Eklutna facility lost its water supply and went off the line again. About the same time, the city turbine also stopped, due to an unnoticed rupture in an oil line which had gradually drained away the diesel fuel supply. The city was again plunged into darkness except for small generators at a few key spots.

At this point, with all their own sources of power generation out of action and little possibility of quick repair, the CEA personnel began assisting the ML&P men working on the turbines. The problem was twofold: restore a steady fuel supply and start the turbines again. The latter was not simple, since the large turbines needed an independent power source of 500 kw. before they could be started.

The Eklutna facility was again producing some power by 3:00 a.m. Saturday, but none was relayed to Anchorage from this source until much later. It was at this same hour that a meeting, convened at the request of the mayor and city manager, produced the information that the military power generators were restored to near capacity and could supply some electricity to the Anchorage system.

In spite of this, the city remained without effective power until 8:00 a.m. Saturday, when one of the city turbines was again restored to service. During the day, ML&P and CEA crews worked constantly, attempting to hold the power sources steady and to expand the area being serviced. The city turbine failed intermittently during the morning and early afternoon but by 3:00 p.m. was holding well and producing steady power. The Eklutna plant was also

supplying some power to the area by this time. A third source, the military generators, became available, supplying 3,000 kw. to the system.

By 5:36 p.m. Saturday, March 28, twenty-four hours after the earthquake struck, the Anchorage area was receiving power on a fairly reliable basis. The most severely damaged areas were still without electricity, especially the Fourth Avenue slide area. CEA reported that they were servicing 95 percent of their customers in the area. While massive repair and rebuilding would be required to restore electric service facilities to their pre-quake level, there was sufficient power available on a fairly steady basis for immediate tasks and needs.

Chronology of Power Restoration

Friday, March 27, 1964

5:36 p.m. Impact. All power sources disrupted. Vibration meters on city turbines shut them off. Gas supply for the turbines is broken. CEA transmission lines coming in from the Bernice and Cooper Lake generation facilities are damaged. The Eklutna plant ceases generating power. The CEA plant in the city also stops producing power.

5:46 p.m. CEA personnel are already arriving at the Anchorage headquarters and being dispatched to check substations, transmissions lines in the area, and the Knik Arm generation facility. They have no communication with the Bernice and Cooper Lake plants. Their only means of communication in Anchorage is via radio units in their vehicles.

6:05 p.m. The mayor stops at the city power plant and is informed that the turbines seem operable and will be switched to diesel fuel as soon as possible.

6:15 p.m. The manager of ML&P arrives at the generating plant. He dispatches men to survey overhead transmission lines and to shut off damaged areas.

7:00 p.m. The ML&P crew have completed their survey of the main transmission lines. They continue checking damaged areas and feeder lines.

7:15 p.m. One of the municipal turbines is started on diesel fuel and provides power to part of the city system.

10:00 p.m. The Bureau of Reclamation plant at Eklutna becomes operational and power is restored to much of the Anchorage area. CEA is able to service approximately 75 percent of its customers. Information has been received from the Kenai Peninsula indicating that CEA facilities there are not badly damaged.

11:00 p.m. The Eklutna plant runs out of water and discontinues producing power. At about the same time, the city turbine also shuts down because it has exhausted its fuel supply due to a break in the fuel line which drained away reserves. The city is again in darkness.
Sometime prior to this, the city manager has asked both electric and gas companies to discontinue service to the downtown area because of fire hazards.

Saturday, March 28, 1964

1:55 a.m. State Civil Defense orders 20,000 gallons of No. 2 diesel fuel from USARAL for the city generator.

2:00 a.m. A tanker truck with 7,000 gallons of fuel is dispatched to the city power plant. This truck was originally from Seward.

2:35 a.m. SCD receives word that an escort is needed at Fort Richardson for the fuel truck. They notify the Anchorage Police Department.

2:40 a.m. Anchorage police provide escort for the fuel truck to the city power plant.

3:00 a.m. The Eklutna plant is again operating with reduced power output. Power is relayed to Palmer (a town north of Anchorage) first. At a meeting in the Public Safety Building, arrangements are made to utilize power from military generators as soon as it becomes available.

5:00 a.m. Continued attempts are made to restart the city turbine. CEA personnel assist ML&P personnel.

8:00 a.m. The city turbine is going again, providing power to part of the system. Its performance is interrupted periodically throughout the morning and early afternoon.

Forenoon Two crews from Anchorage Natural Gas Corporation are working full time to restore gas service to ML&P turbines.

11:30 a.m. Elmendorf AFB and Fort Richardson Post are asked to transfer power to the city. (SCD log)

1:00 p.m. The Eklutna plant is again supplying power to Anchorage.

3:00 p.m. The city turbine now is operating fairly steadily.
Military generators provide 3,000 kw. power to the city to offset the normal evening peak.
CEA has most of the damaged areas in their part of the system shut off and is able to supply 95 percent of their customers.
Repairs are under way at the Knik Arm plant in the city.

5:36 p.m. — Twenty-four hours after the impact most of the Anchorage area has power on a reliable basis. The major section excluded is the Fourth Avenue slide area.

Sunday, March 29, 1964

4:00 a.m. — Gas service is restored to the city generation plant by Anchorage Natural Gas crews. Manager of the municipal utility estimates that power is restored to 90 percent of the customers who can receive service.

During the day — CEA personnel make an aerial survey of transmission lines coming in from the Kenai Peninsula to Turnagain Arm. The Knik Arm plant has one boiler going and could supply some power to the system if necessary.

Evening — ML&P has achieved service to 100 percent of all customers who are able to receive power.

8:00 p.m. — ML&P announces that it will restore power to buildings in the downtown area as they are inspected and approved by city building inspectors.

b. Water

The Anchorage area received its water supply mainly from the Ship Creek reservoir east of the city, supplemented by seven deep wells. Numerous private wells remained in use in many parts of the city. Land fractures and slides caused by the earthquake resulted in many breaks in the water distribution system. Three of the seven city wells were destroyed and landslides along the banks of Ship Creek above the dam temporarily stopped its flow into the reservoir. The water treatment plant seven miles out of town was damaged but operative. With power off, none of the pumps were working and breaks in the underground water mains drained the system.

The only man on duty at the time of impact was at the treatment plant. He threw the main power switches, turned off the chlorine cylinders, and ran outside until the quaking had subsided. Immediately afterward he began operating valves manually to keep the water flow up to normal. The water disappeared as fast as he could open the valves. About two hours after the earthquake, all intake valves from the reservoir had been opened. Water continued to disappear.

While efforts were being made to keep the treatment plant going manually, other water division personnel began turning off the valves of water mains at the east end of town where the main line entered the city. By 8:00 p.m. there was water available at the east end. Within another hour and a half service was restored to the first major subdivision, Mt. View. Efforts were then made to route water to St. Joseph's Hospital through undamaged mains. This was accomplished by 11:30 p.m. From this point throughout the night crews

continued turning off water in damaged areas and attempting to restore service. With the ground frozen, it was slow work. Many times, even digging down a foot to get to the "key boxes" (valve boxes) required steam thaw rigs.

With both the military and municipal water systems using (or losing) large quantities of water as they attempted to restore service, Ship Creek reservoir was rapidly lowered to the point where surface ice began jamming the intakes. Thus, when at 4:00 a.m. two sizeable sections of the city were ready for water, there was no surplus available. Reservoir supplies were very low and there was no power at the wells to pump them. For a time, then, the process of isolating sections that could receive service by valving off damaged areas proceeded without immediately restoring service. As soon as firm electrical power was restored on Saturday afternoon, well pumps were activated. Two wells were returned to service and pumped at full capacity for several days. Meanwhile, the reservoir situation corrected itself when water breached the Ship Creek slide on Saturday afternoon and again flowed into the reservoir.

Eventually the distribution system was separated into three major independent sections to prevent water loss in one section from draining the entire system. Crews continued working within each section, expanding the area being serviced. By the time of the 3:00 a.m. meeting, it was announced that water had been restored to Mt. View, Grand View, City View, and the hospital. Water was restored in the Spenard area the morning after the quake and, within twenty-four hours, to 75-80 percent of the residential areas. By Sunday evening, water was available throughout the city except where major slides had completely severed mains. Service was restored to some portions of the downtown business district Sunday evening.

On Monday, aluminum irrigation pipe with connectors for garden hose was ordered from Seattle suppliers. The first shipments arrived at 11:00 p.m. on Tuesday. This was used for surface distribution in the slide areas. On Monday evening, at the mayor's request, water division crews concentrated on the downtown business district so that businesses, especially the banks, could reopen Tuesday morning. But full service to all city consumers was not restored until April 8, thirteen days after the earthquake.

While any assessment may appear a bit arbitrary, it would seem that the critical phase of the emergency occurred on Saturday, the day after impact, when it was discovered that the Ship Creek reservoir was nearly depleted and that there was no water flowing into it from upstream. Nor was there power available to pump the wells which remained intact. This situation was relieved on Saturday afternoon when water flowed over the Ship Creek slide and into the reservoir again and power was restored to pumping stations at two wells. From this time until Tuesday morning, water service restoration was a matter of continued searching, valving off, and repairing. Sizeable areas remained without service on Tuesday but the critical phase was past -- it was only a matter of time. It is interesting to note that the water division did not begin using large numbers of volunteers until after this date. (The system was underground and experienced personnel knew where to find valves and mains. Even with maps, men were still needed who knew the system; otherwise hours could be lost hunting around in the snow or thawing at the wrong place.)

Water Restoration Chronology

Friday, March 27, 1964

5:36 p.m. Impact. Water mains are broken in many areas of the city. When power fails, all pumping operations cease. The system is "essentially drained."
A landslide blocks the stream flow above the Ship Creek reservoir.

5:46 p.m. The water division manager arrives at the office after being picked up at home by his assistant. He begins calling his men together via radio.

6:00 p.m. About six men are working on the water situation. Two had been on duty at the time of impact at the filtration plant. One foreman is dispatched to the plant to check it. The others are put to work valving off the water in the Mt. View area and inspecting the main gravity line between the treatment plant and the city. The line entered the city at the east end (Mt. View).

6:15 p.m. One of the water foremen arrives downtown and heads for the gravity line as soon as he realizes that water service has been disrupted. He valves off the main line at the east end of town and begins making sideline valve-offs between the city limits and the treatment plant.

6:30 p.m. About ten of the water division men are on the job.

9:00 p.m. The emergency generator at the filtration plant is operative and going. This provides enough power to control the equipment and water treatment process. The water division has fifteen to eighteen employees. However, some are unable to assist because of serious problems at home. There is radio contact with the treatment plant (from the shop).
Water division crews have isolated some areas of the city and are prepared to restore water to them one by one.

9:30 p.m. Water is restored to the Mt. View area. Crews begin forcing water through serviceable mains to St. Joseph's Hospital area.

11:30 p.m. An adequate water supply, "working pressure," is restored to St. Joseph's Hospital. (It should be noted here that [illegible] personnel were not aware of this until 3:00 a.m., when they began using it.)
Throughout the night, efforts are made to restore water service to one area after another. As water is released in an area, breaks are discovered. Thawing machines are used to thaw out key valves and the surrounding soil at breaks. This is slow work so not many breaks are repaired during the night.

Saturday, March 28, 1964

3:00 a.m. The director of the public works department gives a report on the water situation at the meeting called by the mayor and city manager. He indicates that the filtration plant escaped serious damage. He warns that contamination of the water is almost inevitable since there are many breaks in both sewer and water lines and urges that it be boiled or chlorinated before using. Arrangements are made with Elmendorf AFB personnel to connect a water line to the Government Hill area.

4:00 a.m. The water division has about fifteen men in the field searching out, testing, and closing off broken water mains. Although two sizeable areas could receive water, there is no power to operate well pumps and the Ship Creek reservoir supply appears jeopardized.

4:50 a.m. A radio broadcast disseminates information on the water situation as presented at the 3:00 a.m. meeting. People are warned not to use water as it is restored until they boil or chlorinate it.

Morning Water service is restored to the Spenard area by Saturday morning. During the day, water is restored to the downtown areas as far south as Fifth Avenue and as far east as K Street. By Saturday evening water service is restored to about 75-80 percent of the residential areas.

Sunday, March 29, 1964

During the day Water crews continue repairing breaks and restoring water to areas still unserviced. By evening, water is available in nearly all the areas except where slides have completely severed lines. Areas without water include: Turnagain, the bluff along the western part of the city, the majority of the downtown business district, Government Hill, and the port.

4:45 p.m. A news release indicates water will be available in some sectors of the business section that night. Persons responsible for the buildings are asked to turn off valves to prevent further damage from water leaks within the buildings.

9:20 p.m. A request is made to an Office of Emergency Planning representative for 10,000 feet of 3/4-inch garden hose and 750 female-to-female adaptors for it. This is to be sent piecemeal over the next four to five days.
During the day the water division begins efforts to bring water service to the area south of Ninth and west of K Street (the L Street slide area).
The water division submits a request through CD to have the

treatment plant roof strengthened to prevent timbers from falling into settling basins in the event that another severe quake occurs.

Monday, March 30, 1964

6:50 a.m. Fairbanks water workers who flew down Sunday are asked to report to the city CD office at the Public Safety Building ready to work as soon as possible.

11:00 a.m. A telephone call is placed to Seattle for aluminum irrigation pipe to be used for above-ground lines in badly damaged areas.

2:35 p.m. "Here is a rundown on the city water situation as of 1:00 p.m. Monday. . . . The chief of the water division reports that water is serving these areas: Mt. View, Grandview Gardens, City View, Spenard, most of Fairview, most of South Addition, Forest Park, and part of the business district where the water mains are in good condition.
"Water division crews are continuing . . . all-out efforts to restore service elsewhere as fast as possible.
"Turnagain area is not expected to have water service before the end of this week or early next week. People there will have to continue utilizing the water tankers supplied by the military, or get their containers filled in the areas that have service.
"Government Hill residents may have water tonight or Tuesday. Tanker service has been furnished at the Hollywood shopping center on the Hill, and through temporary hose extending from Elmendorf AFB.
"Some of the water mains are frozen, some service lines are frozen. The Department of Public Works has two thawing machines touring areas where the water system has been turned on, to relieve frozen service connections. Where freezing is in the mains themselves, thawing may take as long as two weeks.
"/The chief of the water division/ urges everyone to use the city system sparingly. Where the water is not yet on, it is best to leave faucets closed, and open them every 2-3 hours to see when service is ready." (CD news release)

6:00 p.m. Water is turned on in the downtown area as requested by the mayor so that banks could open the next morning. Owners are again asked to be in the buildings in case leaks develop.

Tuesday, April 8, 1964

10:45 a.m. "Water distribution is expected to be in effect to all of the city's customers by noon today. This includes the Turnagain area and the area west of L Street over the bluff, including

Bootlegger Cove and Ebbtide apartments. The city has sufficient water to meet any foreseeable emergency." (CD news release)

C. Sanitation

Of concern here are the activities directed toward refuse disposal of all kinds at the community level: garbage, human wastes, debris clearance, etc. While these are not directly under the jurisdiction of public health officials, disposal must, nonetheless, meet state and local public health standards.

Anchorage had a system of underground sewer piping which discharged wastes into Knik Arm. Most of the sewage was untreated. A privately owned utility company operated a treatment facility for some community wastes. Some of the larger trailer courts in the area and some private subdivisions were served by treatment facilities of a semipublic nature.[1] For Anchorage proper, three men, under the auspices of the public works department, had primary responsibility for maintenance of the sewers. The city also had regular garbage pickup and debris clearance provided by the same department. Five "loadpacker" trucks were used for normal refuse collection. Flatbed trucks were available for hauling larger trash such as trees, etc. The refuse and sanitation division of the Anchorage Department of Public Works (PW) had nineteen men employed at the time of impact.

Most of the damage to the sewerage system occurred in the slide areas where other underground utilities were also most heavily damaged. Refuse trucks housed in rented warming sheds were also damaged when the walls collapsed and the roof fell on them.

There was little activity or concern directed toward waste removal during the first twelve hours after impact. Most of the sanitation personnel in the PW department reported to work Friday evening and were assigned to assist the police and fire departments. With radio-equipped city vehicles, they constituted a ready resource of personnel and communications. They participated in rescue work, transportation of injured to the hospital, and delivery and placement of barricades at danger points.

Upon delivering an injured person to a hospital early in the emergency period, the driver of the vehicle, a sanitation foreman, was informed that more supplies were needed. He knew where the CD emergency hospital materials were stored in the City Hall Annex so he arranged for trucks and some men to load these supplies for the hospital. At their request, a physician was sent to the Annex to select supplies which would be useful. After some delay one arrived and supervised the selection and loading of needed materials. These were delivered to the hospital. The remainder of the evening and night were spent "assisting everyone in general."

There was no official effort directed toward problems of sanitation and refuse.[2] One of the city surveyors did inspect a number of sewers by kicking open manholes and checking with a flashlight to see whether sewage was flowing. He reported later that only about one in ten showed any signs of activity. (This would be expected since water pressure in most of the community was nil and normal sewage flushing had come to a standstill.)

After 1:00 a.m. Saturday the pace of activity gradually lessened and eventually most of the men were sent home to get some rest. Activities resumed at 5:00 a.m. when the foreman of the refuse and sanitation division returned to work and discovered that the rented warming shed used to store the garbage trucks had collapsed. As soon as his men reported for work he assigned them the task of freeing the trucks. Two items of heavy equipment were borrowed for this operation: a crane from the equipment pool on the park strip and a large loader from a local contractor.[3] The roof was cut into sections and lifted off the vehicles. It was 3:00 p.m. before the last truck was freed and taken to the maintenance shop for emergency repairs. Shop crews worked until 11:00 p.m. restoring them to serviceable condition. The normal Saturday refuse collection was not attempted.

Another major activity during Saturday afternoon and evening was providing emergency disposal containers for human wastes. All available chemical toilets were located and distributed to institutions and centers where toilets could not be used. Fifty-gallon drums were cut in two, fitted with plywood covers, and distributed in heavily damaged areas. By Sunday morning, a drum or other container for human wastes had been placed within two blocks of most homes in the slide areas.

Systematic checking of the sewers did not begin until Sunday morning, more than thirty-six hours after impact. Five hundred maps showing the location of all underground utilities were made available to city crews, and ten men were assigned to check sewers. Department of health sanitarians worked with them looking for open breaks which would expose sewage.

At about 3:00 p.m. Sunday, the director of public works assigned sewer operations to one of the most experienced PW employees. Information available at that time indicated that extensive restoration would be necessary. With fourteen men at his disposal the newly appointed sewer foreman began systematically searching out breaks in the main lines, checking lift pumps and outfalls. With water restored to many sections of the city, sewage was again flowing and many breaks and stoppages became apparent. After the lift pumps were put back into operation the crews concentrated on keeping the sewage flowing out and away from the city. Sewage was pumped from manhole to manhole to get around stopped areas. But with all the pumpers available (some cesspool pumpers were borrowed), the men were not able to keep ahead of sewage flow during peak hours.

On Sunday, after his appointment, the sewer foreman asked for assistance. One of the city's engineers was assigned to take charge of emergency construction of temporary sewer lines. By early Monday morning, March 30, the engineer had arranged for local contractors to begin digging and laying temporary lines under his supervision. Restoration of main lines in areas of complete stoppage was given priority, along with pumping to get around obstacles in the system. Heavy pumping operations had to be maintained for over a week. The twenty-four-hour effort to construct temporary lines and interconnect sanitary and storm sewers where needed and possible lasted two weeks. It was estimated that about a mile of sewer piping was installed during this period.

A news bulletin released by city CD at 8:30 p.m. on Sunday indicated that sewage disposal was "improving rapidly" and advised residents and businesses to use toilet facilities as usual. Persons on Government Hill were advised to place human waste in plastic and paper bags, etc. Turnagain area residents were instructed to use the barrels and drums made available by refuse crews. The public works department would pick up these wastes beginning Monday. The last item in the release indicated the CD personnel were trying to procure portable stools and plastic bags for distribution to dwellings where sewage disposal remained a problem. In line with this announcement is the following entry in the state CD log on Sunday evening at 9:20 p.m.

> City CD director phoned. Request Region 8 OEP /Office of Emergency Planning/. NEED IMMEDIATELY. CANCEL IF UNABLE TO FURNISH BY MONDAY: 1,000 folding camp-type toilet stools with 100,000 plastic refill bags.

Two days later another item appeared in the log:

> Many conversations with city CD . . . believes request has been made through SCD to OEP for 1,000 chemical toilets about 2 days ago. OEP and ALCOM J-4 say they have received no such request. Finally learned that SCD had ordered them from states and they are on the way.

On Monday morning refuse personnel, using the battered but operable trucks, covered the normal garbage collection routes for both Saturday and Monday. Other city employees worked at cleaning up and hauling away debris along streets and sidewalks. Refuse and sanitation personnel also assisted in water testing and spread chlorinated lime on exposed sewage. A few additional chemical toilets were located and distributed.

During the rest of the week sanitation crews maintained their normal collection routes and provided assistance elsewhere as needed to gain and to maintain control of the waste and refuse problem. One difficulty after another had to be overcome. For example, chlorinated lime was spread daily on open sewage. By Tuesday local supplies were nearly exhausted. A rush order was placed with Seattle suppliers, who got the first shipment to Anchorage by 6:00 a.m. Wednesday morning.

Also on Tuesday afternoon a stoppage in sewer lines near the L Street slide caused sewage to back up into the lower levels of a hospital. When he learned about the situation, the city manager ordered all water in the downtown area to be shut off temporarily. Persons in the area were asked not to flush toilets. The next day the newspaper printed a column indicating that sanitary sewers were usable in most of the city as of that morning. The only areas not served were Turnagain and the downtown section of the city between Cordova and E Streets from Second Avenue to the north side of Fourth Avenue.

Another problem occurred when the shipment of chemical toilets was misplaced for a time. They were located and made available to the public on Wednesday, April 1. By Thursday, the refuse foreman could report that he had

a complete emergency sanitation system set up and that his crews were handling about nine hundred gallons of human waste daily by truck. This effort continued on a gradually decreasing scale for two and one-half weeks as sewers were restored or rerouted.

Food and Drug Administration inspectors were careful to condemn any foods which had any possibility of being contaminated. Thus food supplies in local warehouses were checked. Condemned material was hauled to the city dump and covered immediately to prevent scavenging. However, at one point the supervisor at the dump reported that he had received no foods that day. Upon checking it was discovered that truck drivers were hauling condemned warehouse foods to an open area outside the city, dumping them there and rummaging through them for salvable items. One entire day's haul -- seventeen truck loads -- did not get to the dump. This was quickly corrected. A fourth possible source of contaminated foods was the groceries and markets, especially freezers. These also had to be inspected and cleaned out.

Normal refuse collection for that time of year amounts to about 12,000 cubic yards per month. The first month after impact this increased to 20,000 yards and then dropped back to 15,000-17,000 yards for the second and third month. These figures give some indication of the amount of refuse created by the emergency itself although the vast bulk of refuse was handled after the community was back to some semblance of normalcy. The refuse division personnel themselves worked only about one and one-half hours extra per day for the first week; thereafter they were on an eight-hour day.

Sanitation Chronology

Friday, March 27, 1964

5:36 p.m. Impact and immediately after. Refuse and sanitation crews report to work and are "loaned" to other city departments. They engage in rescue assistance and deliver packaged CD hospital supplies to a hospital. No sanitation work is done.

10:00 p.m. A flashlight-equipped city employee (surveyor) inspects a number of sewers by kicking open manholes and checking on whether sewage is flowing. Only about one in ten shows any activity.

Saturday, March 28, 1964

4:30 a.m. A radio announcement indicates that facilities will be made available for the disposal of human wastes in areas where there is no sewer service. Details remain to be worked out.

7:00 a.m. The sanitation-and-refuse foreman returns to work and discovers that the roof of the storage shed had collapsed on the garbage trucks. As soon as his men report for work, he assigns them

to the task of freeing the trucks. The roof is cut into sections, lifted off with a crane, and loaded onto trucks to be hauled away.

3:00 p.m. The last garbage truck is freed and taken to the city shop to be repaired. There is growing concern about sewers but no systematic checking or repair.
After freeing the garbage trucks, refuse and sanitation crews are assigned to the task of providing temporary containers for human wastes. Fifty-gallon barrels are cut in two, fitted with plywood tops and distributed to heavily damaged areas. All available chemical toilets are also distributed.

11:00 p.m. All five of the garbage trucks are a bit battered but operable. The above-mentioned surveyor (10:00 p.m., Friday) takes a map and begins plotting the earthquake fault line on it. While doing this, he systematically checks sewer manholes, noting whether sewage is flowing and whether there is any damage to the manhole. He works on his own most of the time. Occasionally another person helps him. Sometime after midnight he discovers some manholes in the Chester Creek area which have been opened. On the assumption that someone else was checking sewers he goes home to rest.

Sunday, March 29, 1964

8:00 a.m. Five hundred maps showing all the underground utilities are procured and made available to city crews.

Morning Ten city employees begin checking sewers in more detail to discover what effects the earth movement had upon them. This is the first effort involving more than one or two individuals. Department of health sanitarians work with city crews searching for open sewers.

3:00 p.m. At a meeting with the director of public works, responsibility for overall sewer operations restoration, repair, and maintenance is assigned to a PW employee who "knows the system." Available information indicates that a massive job lies ahead.

4:00 p.m. Initially fifteen men are committed to the task of restoring the city sewer system. They begin systematically searching out breaks in main lines and checking lift pumps. Cesspool pumpers are borrowed to pump sewage from one manhole to another and to clear congested areas. The first objective is to get sewage flowing and away from the city. Temporary repairs are made and some sanitary sewers are connected to storm sewers where the latter remain intact and the sanitary sewer is damaged.
An engineer employed by the city is asked to take charge of

emergency restoration of main sewerage lines as damages are ascertained. He begins making arrangements with contractors to do the work.

8:30 p.m. A city CD news release indicates that residences and businesses may use toilet facilities "in a normal fashion." Barrels are provided for human waste in the Turnagain area. The Government Hill area will soon be supplied with them. Public works crews will empty them.

9:15 p.m. A news release from the city manager asks surplus stores, hardwares, variety stores, etc., to take all available portable toilets to the PW yard at Third and Post Road Monday morning. The city will distribute them to families who have need of them.

9:20 p.m. City Civil Defense requests 1,000 folding camp-type toilet stools with 100,000 plastic refill bags through the OEP representative.

Monday, March 30, 1964

4:00 a.m. Emergency restoration of sewer lines begins, with local contractors doing the work under the supervision of a city engineer. The sewer foreman and his crews continue pumping and inspection operations.
Major breaks or stoppages which require heavy equipment are turned over to the contractors.
Refuse and sanitation crews report for work on their regular schedule and run regular routes for both Saturday and Monday. Extra men are committed to the task of cleaning up and hauling away debris.
During the afternoon a radio announcement asks people in the area around Ninth and Third Avenues and west of Gambell to restrict their use of sewage facilities because the PW department is having difficulty getting rid of the excess.
Refuse and sanitation men assist in testing water. A few additional chemical toilets are found and set up. Sewer repair is hampered because there are not enough heavy "rippers" to dig into the frozen ground.

Tuesday, March 31, 1964

3:35 p.m. With water restored to the heavily damaged downtown area and to the area adjacent to the L Street slide, sewage problems mount. Sewage backs up at the hospital (across the street from the L Street slide), contaminating the first level. The administrator finally gets in touch with the city manager who orders that water be shut off in the downtown area. At 3:35 p.m., city CD releases the following announcement: "Water in the

downtown area is being cut off immediately . . . toilets are not to be used. The sewers are backing up and a serious health problem could develop. . . . Do not drink water without boiling. Do not use sewers." This announcement is repeated several times.

D. Gas

Natural gas supplies for Anchorage come from four wells about 65 miles southwest of the city. Two twelve-inch steel pipes bring it to the City Gate station at the southeastern edge of the community. Steel pipes are also used for underground distribution within the city. There was no appreciable damage to either the wells or the twelve-inch transmission lines outside the city. However, within the metropolitan area there were numerous breaks in the distribution system. By comparison with underground water and sewer piping, gas distribution lines suffered fewer ruptures even in major slide areas.

Gas company personnel reported to work soon after the temblor had subsided. Supervisors en route from their homes were advised via radio to spread out in the general service area to survey damage and then report to the office. When a city employee reported a large break at Third Avenue and Post Road, gas company officials knew that they had a major problem because the distribution main for more than 80 percent of the system was in that area. Within an hour it was known that service could be continued to the hospital area by shutting off a block valve on the ruptured distribution main. Thus, about 10-20 percent of the community continued to receive service after impact.

As darkness approached, two men were dispatched with maps to plot faults and damaged areas. It was discovered that most of the land movement which would be damaging to underground lines occurred in the northern and western parts of the city. With the supply entering the system from the southeast it would be possible to restore service systematically from point of entry, moving toward fractured areas. With the general outlines of the problem thus fairly well defined it seemed apparent to gas company officials that they would need additional skilled help. One of the staff members was sent to "either Ft. Richardson or Elmendorf" with instructions to find whatever communications were available and to request help from gas companies in the Pacific Northwest area. This call was placed sometime before midnight Friday night. By 3:00 a.m., a company official could report that crews were coming from Seattle to assist.

By 10:00 p.m., gas company crews had begun laying an above-ground loop of three-inch pipe to bring gas from the hospital area to the section of the city isolated by valving off the ruptured main line at Third and Post Road. Steam thaw rigs were set up to thaw the ground down to mains at tie-in points, while piping was laid between them. By 6:00 a.m. the next morning, this temporary loop was completed and crews could begin restoring service to the larger system.

A second major emergency effort initiated within twelve hours after impact was the laying of two above-ground pipes to the municipal power plant

to restore gas service to the turbines there. Two crews began this work early Saturday morning and completed the job by 4:00 a.m. Sunday, about thirty-four hours after the earthquake occurred.

At the 3:00 a.m. meeting, the gas company reported that there was gas service in Mt. View, City View, and Nunaka Valley areas. Work was under way to repair the main break at Post Road and Third Avenue but it was going slowly because of a shortage of steam thawers equipped with points.[4] State highway department officials present at the meeting offered thawers but had no points; the Chugach Electric Association contributed points for the thawers.

On Saturday, during the day, gas company crews, assisted by volunteers, began systematically testing lines and restoring service to the isolated area, moving first west from the point of entry through the Spenard area and then northward. Aside from attempts to repair the main break at Third and Post Road and installing temporary lines to the municipal power plant, very few repairs were attempted during the next several days. Testing and restoring lines, bypassing breaks, and relighting technical equipment and appliances occupied the attention of crews around the clock for most of the first week. Breaks discovered at places not indicated by surface faults made it mandatory to test the entire system piecemeal. Each segment of main and each customer house line had to be pressure tested before restoration was made. Service was restored to about 90 percent of the consumers by the end of the first week after impact.[5]

Workmen imported from the Seattle area greatly facilitated this effort. They began arriving late Saturday night. By Monday morning thirty men, representing the full range of skills needed and with hand tools and other equipment, were available to relieve weary local personnel who had been working with very little rest since Friday. During the next four or five days crews in both office and field were composed of about 80 percent "outsiders" and 20 percent regular employees.

Because of the frozen condition of the ground, ordinary leak detection procedures were ineffective. Gas company officials requested a portable infrared leak detection device. One was located at Lubbock, Texas, and flown into Anchorage on a Military Air Transport Service (MATS) plane. This unit was immediately assigned to the areas where testing and restoration were in progress. It was operated twenty-four hours a day for two weeks to make a survey of the entire system.

By April 14, the vice-president of the company reported that operations were back to normal with the exception of personnel and equipment in the customer installation section who were still assigned to relighting and restoration work.

Chronology of Gas Restoration

Friday, March 27, 1964

Before 6:30 p.m. — Supervisors en route to the office are asked to spread out in the general service area and make preliminary visual assessments of damage which might affect gas service.
A public works employee arrives at the gas company office and reports a major break at Third Avenue and Post Road.

7:00 p.m. — A block valve is closed above the break at Post Road shutting off over 80 percent of the service area. The hospital area continues receiving service.

About dark — Two men are dispatched with maps to plot fault lines in the city.

After dark — A request for skilled help is relayed to Seattle gas companies. "Fifteen servicemen, fifteen distributor men with complete tool kits, leak detectors, valve locators, and pipe locators. Recommend warm winter clothing and flashlights and extra batteries." (SCD log, no time given)

10:00 p.m. — Crews begin laying a temporary surface pipe from the hospital area to connect with the main part of the distribution system which was isolated at 7:00 p.m.

Saturday, March 28, 1964

3:00 a.m. — Gas company officials attend a meeting of local officials and report that service is restored to the Mt. View, City View, and Nunaka Valley areas. A crash program to repair the break at Third and Post Road is hampered because of a shortage of steam thawers with injection points. The state highway department and Chugach Electric Association contribute thawing equipment and points.
Two crews are assigned to lay two surface lines to the city power plant.

6:00 a.m. — The temporary loop connecting the hospital area to the main system is completed. Crews begin testing and restoring service in Spenard.

Late night — Skilled crews begin arriving from Seattle to assist and relieve regular gas company employees and volunteers.

Sunday, March 29, 1964

4:00 a.m. — Temporary lines to the city power plant are completed. The turbines are switched back to natural gas operation.

Morning — All available men work at testing lines restoring service. Workmen continue arriving from Seattle throughout the day.

Monday, March 30, 1964

Morning — Skilled men flown in from Seattle gas companies now total thirty and represent the entire gamut of skills needed. They replace most of the regular employees for several days.

10:00 p.m. — "From Anchorage Natural Gas Corporation -- FA2-2200. Request mobile gas leak detector from Heath Survey Consultants, Inc., of Washington. Machine is in Lubbock, Texas. Mounted in Land Rover (jeep). . . . Gas company will notify Lubbock to deliver unit to Lubbock AFB." (SCD log)

Tuesday, March 31, 1964

5:30 p.m. — A request is submitted to state CD for air lift of a 5,000-lb. Land Rover jeep with leak detection equipment. One is located at Lubbock, Texas. Equipment and operator needed immediately in Anchorage. "Heath Survey Consultants, Inc. will be advised to deliver this equipment to the military base in Lubbock, Texas, when air lift is approved." An attached note indicates: "This mission has been entirely set up." (SCD log)

7:05 p.m. — City CD news release indicates that the gas company has completed the initial phase of its restoration program and is now re-introducing gas into the entire Anchorage area system. Caution is urged with regard to any gas lines and the public is asked to report any gas odors to the company, police, or fire departments.

Wednesday, April 1, 1964

During the day — The gas company releases a two-page report to the Anchorage community explaining restoration and testing procedures and indicating that restoration could not be made in any area before careful testing and leak detection efforts were made. Customers are asked to wait until servicemen release automatic shut-off valves at their meters and relight appliances. The odorant level of the gas is doubled to assure quick detection of any leaks.

12:00 a.m. — The gas company releases an announcement to the public indicating that odors in the Rogers Park, College Village, Lake Otis, Tudor Road, Wentworth Subdivision, and hospital areas are the result of leaks at the City Gate station. The public in these areas is asked to report only odors discovered within buildings.

E. Telephone

The Anchorage telephone system is municipally owned and operated. With four exchanges, it served slightly over 17,000 subscribers at the time of the disaster. A backlog of requests for new installations existed at the time.

As with the other utilities the impact disrupted telephone service. Some few calls were made immediately afterward but for the most part it was impossible to get through to the number desired. The aerial line system remained essentially intact except in the slide areas. The underground cables (about 25 miles, mostly in the downtown area) were severely damaged. Equipment at the exchanges was shaken about, cabinets tipped over, and wires shorted out, but the damage was superficial. The buildings themselves survived with very little damage at all.

In accordance with their emergency plan, most of the telephone employees reported to the main exchange as soon as possible. They began arriving within ten minutes and by 6:05 p.m. the emergency generator was running at the main exchange. The first task was to realign and readjust the equipment in the exchanges themselves. All external lines were cut off temporarily until the equipment within the buildings could be righted and the main power shorts eliminated. This was followed by testing external cables, "100 at a time." Where testing indicated trouble the lines were left out of service. By 8:00 p.m. there was limited service within each exchange but it was not possible to call between exchanges. Radio-equipped trucks were sent to each of the outlying exchanges to provide a communications link with the main office. The number of employees present at each exchange and their specialties -- linemen, switchmen, etc. -- were relayed back to the main office. A runner was also sent to city CD to apprise them that the telephone building was intact but damage remained to be assessed.

It was midnight before calls could be placed between exchanges. However, it was still impossible to call outside the system as well as to or through other exchanges. Early Saturday morning, crews were assembled at the main office and assigned to survey and repair lines between exchanges and trunks still out of service. The telephone utility manager attended the 3:00 a.m. meeting and reported that about 3,000 numbers had been put out of commission by wrenching in the underground system. About 1,600 lines had been restored to service and the equipment was about 65-70 percent operational. There was no way of estimating how long it would take to unscramble the remaining lines and get them back into service. Restoration was currently proceeding at about one hundred lines an hour but much of the damage remained to be assessed. "Priority will be given to institutions, doctors, emergency crews, key workmen, etc."[6] The manager asked that the public be requested to stay off the lines except for extreme emergencies to prevent overloading.

Long distance cables to Alaska Communication System[7] (ACS) were severed by the Fourth Avenue slide. Before daybreak on Saturday morning survey crews had determined that a temporary connection could be made in the vicinity of the Westward Hotel adjacent to the slide area. From there a cable was strung across Ship Creek and the railroad tracks, up Government Hill to the ACS

facility. This work was completed at 1:05 p.m. Monday -- about sixty-seven hours after impact -- thus connecting the community with the "outside world" again. Military crews assisted in this effort.

On Saturday afternoon crews were dispatched to the severely damaged buildings to salvage the instruments in them. Over a three-day period, 3,000 were retrieved. By late Sunday afternoon the telephone utility could report that 90 percent of the system was operational, although extensively "jury-rigged."

Overloading became a critical problem as more lines were restored. On Monday another appeal was broadcast asking private users to refrain from telephoning except in extreme emergencies. Lines were so overloaded that some of the circuits were going out. This appeal was made again Tuesday afternoon followed by a temporary disconnecting of residential lines on the main exchange. This situation corrected itself during the next several days. However, overloading remained a threat for some weeks after the emergency. As late as April 16, residents were still being asked to curtail nonessential calls.

Chronology of Telephone Restoration

Friday, March 27, 1964

5:36 p.m. Impact. The test board operator at the main exchange begins pulling fuses to shut off equipment. He rescues an operator trapped under a fallen cabinet.

5:46 p.m. The manager and other employees begin arriving at the main exchange. First efforts including righting desks, cabinets, etc., and checking equipment.

6:05 p.m. The emergency generators at the main office are operational. External lines are shut off until the main boards are working.

6:20 p.m. A 110-volt power cable is connected into the board so that radio communication can be resumed from the base station at the office.
Some twenty-five employees are present. Some of the test equipment is operational.

7:30 p.m. Power is restored in the exchange "way out south."

8:00 p.m. Service within exchanges is possible on a limited basis.
Practically all workers have reported.
Radio trucks are sent to each of the subexchanges to provide communications. A runner is also sent to city CD to apprise them that the main telephone building is intact.

Saturday, March 28, 1964

2:00 a.m. Some trunk lines between exchanges are connected so that it is now possible to call between some of the exchanges.

3:00 a.m. The manager attends the meeting at the Public Safety Building. He reports on the condition of the system and restoration procedures.

4:50 a.m. A report of the 3:00 a.m. meeting is aired on a radio station. Persons are asked not to use telephones except in extreme emergencies to prevent overloading.

Sunday, March 29, 1964

During the day Work continues on the restoration and patching of lines to provide service to a wider area in the community. By afternoon 90 percent of the system is operational.

7:40 p.m. SCD requests that the telephone company restore a Teletype circuit, and that an additional line be connected to the CD trailer.

Monday, March 30, 1964

11:00 a.m. A special request is broadcast from Civil Defense asking "private parties" to stop using telephones unless there is an extreme emergency. Lines are overloaded and business phones are going out. Unless there is an immediate let-up, the telephone utility manager has threatened to shut off all private phones.

1:05 p.m. Lines to the ACS are finally connected, enabling persons on the Anchorage system to call long distance. The Broadway exchange is linked with ACS. The Federal Building is also connected. A check indicates that seven incoming and five outgoing circuits with the Broadway exchange are working.

3:40 p.m. "Circuits from Anchorage Broadway -- seven incoming and eighteen outgoing. Tandem (DI, FE and FA exchanges) -- seven incoming and one outgoing." (ACS log)

12:00 p.m. "Anchorage circuits status: To and from DI, FE and FA (city tandem) nine inbound and eight outbound circuits. To and from Broadway are 18 outbound and 13 incoming circuits. All are working." (ACS log)

Tuesday, March 31, 1964

3:25 p.m. "At the present time a portion of the Anchorage telephone system is out of order due to overloading. Once again it is imperative that you limit your calls to only emergency calls. At the moment the telephone system is at the critical peak. A portion of the system has already broken down from the load. Limit your calls to emergency calls only. Make only calls which are an absolute necessity." (radio announcement)

4:00 p.m. "Though the city telephone system is functioning well, it is by no means able to carry the volume of calls that are being placed upon it. Twice in the last two days the volume of calls has been so heavy that the exchanges, particularly Broadway, have had overload fuses blow. In order to protect the essential services, the public health, safety, and welfare, and the telephone system, the utility manager has ordered that all residence lines in the Broadway exchange, not considered essential, be disconnected starting at 4:00 p.m., March 31, 1964." (radio announcement)

F. Transportation and Communication

Transportation and communication facilities are the main distributive channels used by communities to conduct day-to-day activities. These provide physical access to sources of supply involving materials, information, and persons within the community, as well as providing connecting links with other systems. Disasters, such as the earthquake which struck Anchorage, damage or block some of these channels and interrupt movement considered vital to the system. This section will discuss the restoration of these channels and facilities insofar as information is available. Roads and streets, air and seaport facilities, the mass media including broadcast stations and newspapers, local amateur radio operators, etc., will be included.[8]

In many ways, one of the more remarkable features of this disaster was the slight damage done to important transportation and communications facilities. Most seriously damaged was The Alaska Railroad which lost many miles of track and sustained considerable damage to the yards and adjacent warehouses in Anchorage. No rail service was available during the entire emergency period or for some weeks afterward. However, all the other major transportation and communications lines were restored to some degree during the first forty-eight hours after impact -- most of them within the first twelve hours.

There was widespread concern about the condition of these facilities immediately after impact and the first activity was directed toward reconnaissance and emergency restoration. Initially, the main effort was within the community's territorial spread, although local contingents of state and federal agencies encompassed a broader scope. Activities of these and other externally based agencies will be included as they appear relevant to the local scene. Transportation will be presented first and then communication.

Streets and Roads. Anchorage had a little over 175 miles of streets and alleys in 1964. About 54 percent of the streets were paved; most of the alleys were unpaved. In addition, there were over 100 miles of sidewalks.[9] Severe damage occurred at each of the four major slides. In Turnagain and at the Fourth Avenue slide, land displacement completely destroyed streets and sidewalks. Numerous holes and crevices appeared in roadways along the L Street bluff line. Nevertheless, considering the entire community, most of the streets and alleys remained passable. Vehicular and foot movement were not greatly restricted. In fact, the traffic jam which occurred on Friday evening after impact was a far more formidable obstacle to movement than any of the slides or faults.

One of the first activities of several organizations, indeed, of many community members acting individually, was a survey of the streets. The fire chief dispatched men and equipment to various sectors of the city with instructions to check which streets were passable and whether there would be sufficient access to permit fire fighting. Police and state highway patrol cars also made checks within the city. These were less systematic and thorough than fire department efforts. State Civil Defense personnel also did some reconnaissance of streets but were more occupied initially with the availability of communications and supplies for hospitals.

Soon after dark on Friday one of the public works department employees was dispatched from the shop with a caterpillar tractor equipped with lights. He was instructed to do what he could to open streets by removing debris and filling fissures. How much he was able to accomplish in the dark with the traffic congestion is unknown. On Friday night, the only other activity associated with streets was the erection of temporary barricades to keep traffic out of dangerous areas.

During the night, plans were laid to fill holes in the streets with gravel. At the 3:00 a.m. meeting the director of public works announced that his department would begin filling holes at 8:00 a.m. Saturday. His report indicated that the worst damage existed along L Street all along the bluff and in the Turnagain area.

Concern was not limited to the Anchorage area alone during the first hours after impact. State highway patrol and state highway department personnel began checking the condition of roads linking Anchorage to other communities, especially along the coast and inland to Fairbanks. By the time of the 3:00 a.m. meeting, the highway department representative could report that the Glenn Highway north was open to Mile 118 and that there was no reason to believe any damage existed beyond this point. Aside from small fissures and crevices, only seasonally slick road surfaces would impede movement. To the south, seven bridges were down on the Seward and Sterling Highways. A number of landslides and major breaks in the road surface were also reported. The slides and road surface breaks were not regarded as severe problems but the bridges were another matter. Bailey bridges were requested from the military.

Beginning Saturday morning the city's public works department instituted a major emergency "gravel haul" to fill in crevices and holes in the streets.

Additional men and equipment were hired for this operation, which lasted all day Saturday and most of Sunday. In all, about 12,000 yards of gravel were hauled.

Thus, by Sunday evening the only streets within the community which remained impassable were those completely destroyed in the down-dropped sections at the Turnagain and Fourth Avenue slides.

Port of Anchorage. This area, normally not in use at this time of year, sustained minor damage to its facilities. Four of the large cranes used to unload cargoes jumped their tracks damaging undercarriages and counterweight arms. Two hundred feet of the port-access road was damaged. There was also some shifting of the main pier and building walls were cracked. At the 3:00 a.m. meeting, the port director reported that the port was in fairly good condition and could be used. An icebreaker would be needed to clear the inlet under certain conditions. With the mayor's permission the port director requested an icebreaker from the Coast Guard to check the channel and determine whether any ice craft would be needed. A radio announcement Saturday morning indicated that the port should be back in operation within a week.

However, with the imminent arrival of a ship (the Tonsina) which could not dock at any of the ports farther south, the port was readied for emergency operation by Monday evening, March 30. The local Corps of Engineers filled in the access road on Saturday and Sunday. A supply survey conducted Monday by state Civil Defense included the report that the Anchorage port could handle all incoming sea carriers for the duration. The Tonsina was docked on Tuesday morning and unloaded during the next several days. A mobile crane supplied by a local firm was used until the damaged unloading equipment could be repaired.

Replacement and repair parts for the heavy port cranes were flown in from Seattle during the next week so the port was soon in full operation.

Airports. The airports in Anchorage -- Merrill Field, used by light planes, and International Airport, used by long-range craft -- both sustained only minor damage.[10] Most severe was the collapse of the control tower at the International Airport. There was also a large quantity of aviation fuel spilled in the vicinity. The runways at both places remained intact and usable, sustaining only minor cracks.

With technicians and maintenance personnel on duty at the time of impact and only minor damage, it was not long before both fields were in operation again. Merrill Field was reported operational at 6:30 p.m., a little less than an hour after impact. Civil Air Patrol planes began using the field at this time. At International two radio technicians began using a DC-3 plane as a control center soon after the shaking had subsided. Federal Aviation Agency (FAA) personnel who were at work within the hour restoring air traffic control capabilities gave early priority to readying the Lake Hood tower for control functions at nearby International field. Beginning at 10:10 a.m. Saturday, weather observations were made at the Lake Hood tower by airport personnel assigned there. On Friday night, however, with the early advent

of darkness and without sufficient emergency power to light the runways, air traffic at International field came to a halt. The airport was closed to the public because of the fire hazard created by spilled fuel.

At the 3:00 a.m. meeting, FAA officials reported that flights at both fields would be limited to emergencies. International would remain closed to the public for the present. No inspections of small aircraft tied down in the vicinity of International or Lake Hood would be permitted until the spilled fuel situation was corrected. Merrill Field was reported to be open and operating with Merrill tower in contact with Honolulu and Seattle. Flights, especially CAP planes, continued at Merrill Field throughout the night.

During the day Saturday, a number of large planes landed at Elmendorf field bringing in officials, newsmen, technicians, etc., from Juneau, the state capital, and as far away as Washington, D.C. By noon the FAA announced that air traffic facilities for the southcentral region were over 90 percent operational. City power was restored to International field at 2:00 p.m. on Sunday. By 1:10 p.m. Monday, March 30, the FAA reported itself as being 96 percent operational in the entire region. However, commercial flights into and out of International Airport continued to be limited and erratic with priority to emergency needs until Wednesday, April 1, when regular schedules were resumed.

Communications. The first communications channels available after impact were provided by city-owned vehicles. Police and fire department radio nets were off the air for only a few minutes. The radio-equipped vehicles of the public works department, water department, and telephone department were unaffected by the earthquake. All of these vehicles were used to transact emergency business, convey information, and to request assistance. However, since each of these organizations had its own commitment and responsibility these channels were used mostly for departmental matters. They were not in any general sense available to community decision makers and each was on a different frequency.

With the telephones not functioning at first and city power off, personnel activated mobile communications units in their cars. The RACES[11] officer for state CD arrived at their headquarters in Anchorage within fifteen minutes after the temblor ceased. During the next several hours other mobile units were sent to key spots in the city to provide communications; hospitals, both airports, radio stations, and the Public Safety Building were among the first provided service. Mobile ham units were in operation around the clock for twenty-four to forty-eight hours at these locations until normal communications channels could be restored.

The state police contingent located just outside the city also dispatched patrol cars to key points in the community. Several cars went to the Turnagain slide area when it was learned that the bluff had sheared off. State patrol cars did not remain at these spots as long as the hams did since other duties made it imperative to utilize men and equipment to the maximum. They were at these locations most of the first night.

Radio Stations. The local radio stations were all knocked out in one way or another by the earthquake or by secondary effects such as power outage. Beginning at about 5:57 p.m.,[12] the first station came back on the air and began broadcasting with emergency power and remained on the air continuously throughout the emergency. Another station came on the air at about 6:40 p.m. Loss of about 40 feet of the 300-foot tower reduced their output to 3,500 watts, about 1,500 below normal. A third station came on at 7:25 p.m. The fourth commercial station began broadcasting at about 10:00 p.m. and signed off shortly before midnight, coming on the air again at 2:00 a.m. Saturday and broadcasting continuously from that time.

During Friday night and Saturday, radio stations were the prime news sources for the community. Both stations used mobile automobile units to broadcast on-site information. One had shortwave contact with state Civil Defense headquarters and broadcast their bulletins. Another station moved its mobile "camper" studio to the Public Safety Building early in the evening and from there broadcast information coming from fire, police, city Civil Defense, and other city departments and officials. In the absence of the normal telephone channels, both these stations were used to transmit all kinds of messages, from requests for persons with specialized skills or emergency supplies to personal messages for friends or loved ones. This station "camper" was an especially vital link for all city agencies during the entire emergency period.[13]

Several city officials commented that the most evident hindrance to a rapid and efficient attack upon pressing problems was the lack of communications during the first hours after impact. The availability of these two broadcast stations, the RACES operators located at key points, and radio-equipped city vehicles and taxicabs greatly eased this problem but did not resolve it. Runners on foot and volunteers with vehicles were used to transmit messages within buildings and in the field.

Both local TV and FM stations were off the air the first night. One FM station began broadcasting Saturday morning and a TV station returned to the air Sunday night. The other two stations, one FM and one TV, were off the air for the entire emergency period. No commercials were aired during the entire period from Friday evening, March 27, to Monday afternoon, March 30.

Communications outside the community were re-established in various ways. Perhaps the earliest after impact occurred via mobile radio units. State police, state fish and game, and RACES units all were in contact with other points in the state within the first hour after impact. Military Affiliate Radio System (MARS) operators who established contact with the state capital and the continental U.S. shortly after the quake acted as relays for local hams. Local radio broadcasts were rebroadcast over a series of Alaskan stations so that the rest of the state was kept informed.

A third type of link was provided by the Alaska Communication System (ACS), a part of the overall Alaska Communications Region which provides long-line telephone and telegraph service in the state. The Anchorage ACS service also provided Teletype facilities to the community. The effect of the temblor

left the downtown ACS telegraph center inoperative, but the Anchorage Telephone Toll Building, though damaged, was usable. Shortly after 7:00 p.m. this facility resumed service. Since some of the cables connecting the city telephone system to the ACS building were severed, long-distance telephone and telegraph users had to come to the toll building. Two Teletype machines and three phones were placed in the foyer of the toll center Friday night to provide service for Anchorage customers. The next day, Saturday, March 28, another temporary telegraph center was set up in one of the downtown schools. These two temporary locations were the main points of long-distance telephone and telegraph communication during the next several days.[14]

City Civil Defense was linked to long-distance service and the military bases nearby at 3:00 a.m. Saturday when Army communications vans were placed near the Public Safety Building and the ACS toll building. The van at the toll building was connected to the ACS main frame and from there by base cable to ALCOM headquarters. One additional long-distance link should be mentioned. A Teletype in the downtown studios of a radio-TV station was activated at 2:00 a.m. Saturday and used for the next several days to transmit news to other parts of Alaska and the Seattle AP bureau.

Newspapers. The two Anchorage newspapers were unable to go to press on Saturday, partly due to power outages and minor damages to their facilities. In the interim the Fairbanks newspaper printed special editions (at least five) which were circulated in Anchorage free of charge. On Sunday one Anchorage daily printed a special eight-page edition which was quickly sold out. Beginning Monday both newspapers resumed their regular daily issues, having missed only one day due to the earthquake.[15]

Chronology of Transportation Restoration

Friday, March 27, 1964

5:36 p.m.	Impact. Many streets and roads are blocked by slides and debris or impassable because of fissures. The control tower at International Airport collapses. Port equipment is damaged.
5:45 - 6:00 p.m.	Fire department vehicles are dispatched to check the streets. FAA technicians and airport personnel check flight control capability. Two technicians use an airplane as a temporary control tower at International Airport. A state official contacts the Merrill Field maintenance supervisor and asks for an immediate report on the condition of "our airport."
6:05 p.m.	Merrill Field reports to SCD that the runway is not damaged.
6:30 p.m.	Merrill Field is in operation. The first CAP plane leaves for Seward.

6:40 p.m.	State highway department receives reports on road conditions. An employee is sent out to check road conditions.
8:30 p.m.	FAA's Air Traffic Division is busy checking air traffic control capability in the southcentral region. Priority is given to preparing the Lake Hood tower for use as a control for International traffic. A bulldozer operator is dispatched from the city maintenance shop with a caterpillar equipped with lights. Instructions are to do what he can to clear streets.
9:15 - 11:15 p.m.	SCD receives reports on road conditions. "/There is/ a large crevasse in the Seward Highway at Rabbit Creek."
11:52 p.m.	International Airport is closed for the night.

Saturday, March 28, 1964

12:37 a.m.	The road is clear to Palmer (north).
2:01 a.m.	SCD receives reports that there is one bridge out between Anchorage and Girdwood; three are out between Girdwood and Silvertip.
3:00 - 4:50 a.m.	State Highway officials report roads open north to Mile 118. Bridges are out to the south and there are slides and fissures. FAA officials estimate that 85 percent of air traffic facilities are restored to operation. Anchorage port officials report the port is in fairly good condition and can be used.
7:45 a.m.	ACD receives a report that the road is open to Glennallen.
8:00 a.m.	International field is open to limited traffic. Anchorage public works department begins a massive "gravel haul" to fill in fissures and sunken places in city streets.
8:20 a.m.	The state highway department checks on how much Bailey bridging will be needed.
10:10 a.m.	FAA personnel complete arrangements for weather observation at the Lake Hood tower. This is to continue until the weather bureau can take over.
Noon	Jets arrive from Juneau and Seattle bringing state and federal officials; they land at Elmendorf. The FAA announces that air traffic facilities are over 90 percent operational.
Afternoon	The Corps of Engineers begins repairing the port access road.

2:00 p.m. FAA personnel expect a portable control tower for International. A man is sent out to coordinate a location for it.

8:15 p.m. FAA receives word that a portable tower is en route from McCord AFB. Arrival is estimated at 7:38 a.m., March 29.

9:00 p.m. Estimated arrival time of the portable tower is revised to 8:30 a.m. on March 29.

9:30 p.m. International Airport clears a large jet for landing after dark.

Sunday, March 29, 1964

6:45 a.m. Additional information concerning the portable tower is received by FAA personnel.

7:30 a.m. FAA personnel are informed that the portable tower is for Elmendorf AFB. It will arrive at approximately 9:00 a.m.

8:00 a.m. The gravel haul continues. Work also moves forward at the port.

9:30 a.m. The portable tower arrives at Elmendorf. It is set up and operating by 1:00 p.m.

11:00 a.m. The Storis, a Coast Guard icebreaker, is assigned to icebreaking in Cook Inlet. Arrival time is unknown. (SCD log)

1:30 p.m. Plans are made to coordinate with the military and to use the icebreaker Storis to bring in the Tonsina. (SCD log)

2:00 p.m. Municipal Light and Power is granted authorization to connect power to International Airport.

Evening A meeting of transportation officials, shippers, city and state officials is convened at SCD headquarters to discuss transportation problems, especially from Seattle to Anchorage.

Monday, March 30, 1964

4:20 a.m. Anchorage International runway lights are returned to service.

4:23 a.m. The Anchorage Weather Bureau advises they are set up to take weather observations at International. It will call FAA with reports. The FAA observers at Lake Hood tower are recalled.

7:30 - 8:00 a.m. Anchorage International runway lights are only partially operational. FAA and state crews go to work on them.

1:30 a.m. Flight restrictions are placed on the area within a five-mile radius of Merrill Tower. Aircraft must operate above 2,000 feet except for takeoff and landing.

1:10 p.m. An FAA status report indicates they are 96 percent operational with regular headquarters at Merrill Field. "All air traffic is now being handled normally."

1:16 p.m. A radio broadcast gives legal loads for Knik bridge, as well as speed and other instructions for crossing.

4:15 p.m. City police refer a complaint about low-flying aircraft to FAA. The bulletin advising restricted flying conditions is rebroadcast.

Tuesday, March 31, 1964

Morning The Tonsina docks at Port Anchorage. Unloading begins

Wednesday, April 1, 1964

Morning Commercial airlines based at International terminal resume regular flight schedules.

Chronology of Communications Restoration

Friday, March 27, 1964

5:36 - 5:40 p.m. Impact. Normal communications channels are disrupted temporarily.

5:40 - 5:55 p.m. Police and fire department communications are restored by using portable battery-powered communicators between the dispatching center at the Public Safety Building and vehicles located just outside the building. The base station is out of operation due to the power failure.
Other city departments establish communications by means of radio-equipped vehicles.
The RACES officer for SCD arrives at the headquarters on East Fifth Avenue and sets up communications from his automobile.
State police, state highway, and state fish and game departments are able to communicate via their vehicles.

5:57 p.m. A local radio station returns to the air on emergency power.

6:10 p.m. A ham-radio operator arrives at the Public Safety Building. He begins contacting other hams at this time.

6:10 - 6:30 p.m.	State patrol cars arrive at the Public Safety Building, at SCD headquarters, and at a hospital. It is possible to contact some other areas via their radio network.
6:40 p.m.	A radio station returns to the air and begins broadcasting emergency bulletins.
6:40 - 7:40 p.m.	Portable communicators are distributed to key locations by SCD personnel. The hospitals, airports, radio stations, and the Public Safety Building are provided sets.
7:00 - 7:15 p.m.	The ACS long-line telephone and telegraph facility is in operation.
7:25 p.m.	Another radio station returns to the air and rebroadcasts the signal of another station in a simulcast arrangement.
7:30 - 8:30 p.m.	A mobile broadcast unit in a car at the Safety Building is used to relay information to the public via radio.
8:30 p.m.	A radio station "camper" is placed at the Safety Building. A long cord with a microphone is connected to the camper, permitting transmission from within the building. This becomes an important link during the rest of the night.
10:00 p.m.	Another radio station returns to the air and broadcasts for two hours.
Before midnight	Two Teletype machines and three telephones are placed in the foyer of the ACS toll center to accommodate local users. Broadcasts of local radio stations are relayed to other stations in the state by MARS operators at Elmendorf AFB. Local hams and RACES operators are in contact with Juneau, the state capital, and the continental U.S.

Saturday, March 28, 1964

2:00 a.m.	A Teletype machine at the downtown studios of a radio-TV station is pressed into service by newsmen.
3:00 a.m.	City Civil Defense is provided with long-distance communication by a military-radio telephone hookup.
Morning	The Fairbanks newspaper publishes extra editions for Anchorage. Anchorage newspapers do not publish. State police cars and mobile amateur communicators are withdrawn from the Public Safety Building.

Sunday, March 29, 1964

One Anchorage daily paper publishes a special earthquake edition.
A TV station returns to the air Sunday night and stays on a twenty-four-hour basis for two days at the request of Civil Defense to provide Seward with information.

Monday, March 30, 1964

Both Anchorage newspapers publish regular editions.

Tuesday, March 31, 1964

The radio station "camper" is removed from the Safety Building parking lot.

Wednesday, April 1, 1964

City Civil Defense moves into the basement of the Safety Building. A broadcast booth enables them to make direct broadcasts from these offices.

The restoration of these "essential" community facilities engaged many diverse community organizations in Anchorage. There were other community functions, however, which had lower priority and were less likely to become the responsibility of specific organizations. Among these functions were the maintenance of public order and the maintenance of public morale. In addition, there were the efforts to provide shelter and food to the survivors. In the next chapter, we shall look at these functions, as well as what happened to the economic and leisure life in Anchorage during the emergency period.

FOOTNOTES: Chapter VI

1. State of Alaska, Department of Health and Welfare, "Preliminary Report of Earthquake Damage to Environmental Health Facilities and Services in Alaska" (Juneau: Branch of Environmental Health, Division of Public Health, April, 1964), p. 9. (Mimeographed.)

2. This does not include the work of public health sanitarians and physicians who were attempting to provide pure water for the community. See chap. v.

3. This pool was established Friday night to provide a central point for collecting and dispatching heavy equipment donated by area businesses, contractors, and individuals.

4. Points are inserted into the ground to speed up thawing for excavation.

5. Some reports indicate that this was accomplished within forty-eight hours; others say ten days.

6. See Appendix B.

7. The Alaska Communication System is a military communication system also used by the general public.

8. Restoration of telephone service was presented in the previous section because of the amount of attention it received.

9. City of Anchorage, Alaska, "Miscellaneous Statistical Facts, December 31, 1963," Table 27, p. 70. (Photocopy of typewritten data in Disaster Research Center files.)

10. There was also Elmendorf airfield nearby, but this was used primarily for military planes. It was not a "community" airport although Military Air Transport Service (MATS) based there transported a vast tonnage of emergency supplies and equipment for civilian communities during the emergency period. In addition, during the emergency period, large commercial jets in particular were diverted from International to land at Elmendorf.

11. Radio Amateur Civil Emergency Service is a volunteer group which functions as an alternate communications link. There were about three hundred such hams in the city who were associated with the RACES. It was estimated that the number who assisted during the emergency reached a maximum of fifty.

12. Various reports placed the time between 5:48-6:15 p.m. The best judgment here indicates the time as 5:57 p.m.

13. The "camper" was kept at the Public Safety Building until Tuesday, March 31.

14. Long-distance telephone use was very heavy between March 27-31. ACS reported over 20,000 calls, 100 percent above normal. The two temporary telegraph centers received more than 7,000 telegrams and delivered 12,000 during the same period, 500 percent above normal for a three-day period. In addition to this, over 300,000 words of press copy were transmitted from a special press room set up for newsmen. U.S. Department of the Air Force, History of the Alaskan Communications Region, 1 January-30 June 1964, by Mrs. Elsie M. Salley, Office of Information, Air Force Communications Service (1965), pp. 86-89.

15. The Anchorage newspapers did not have a Sunday edition.

CHAPTER VII

FUNCTIONAL PRIORITIES IN THE COMMUNITY RESPONSE

PART III: OTHER ACTIVITIES

In the previous chapters, we have been concerned with the activities in Anchorage related to the preservation of life and to the restoration of essential services. In this chapter, we will continue the analysis of the Anchorage community response to include other functions, perhaps less important in the hierarchy but still important in the context of the community's overall response to the events of March 27. First, we shall be concerned with maintaining public order, in particular: the establishment of security lines around the impact areas, the problem of evacuation of persons from the damaged area, and the control of convergence will be discussed. A separate section will be devoted to the acquisition and dissemination of information. This activity, which was not earlier suggested as an important community function, became so in Anchorage and the efforts to gain knowledge of what had happened are indicated here. The discussion shifts then to the community efforts to maintain community morale and to provide food and shelter for survivors. Final attention is given to two areas of activity -- economic and leisure -- in which it was hypothesized that a cessation or withdrawal of activity would occur during the emergency period.

A. Maintenance of Public Order

The activities of the various agencies whose function it was to maintain public order will be discussed here. Actions which were officially sanctioned and which necessitated compliance by community members will be the primary focus.

When the quaking subsided, of the community officials who were to play prominent roles in efforts to regain control, only one was at his post. This was the captain, second in command of the police department. The mayor, en route from International Airport, was about three blocks from his home when the earthquake struck. After it was over he drove home, found minimal damage, picked up his wife, and drove to the Public Safety Building. He arrived there about fifteen minutes after impact.

The city manager was at his home when the tremor began. After righting things there and ascertaining that his family would be all right, he got into the city car and turned on the radio. He heard the public works director talking with his division heads and asked him for an appraisal of the situation. The manager next drove around the downtown area as much as was possible, making a visual inspection of the area and then went to the Public Safety Building where he set up command headquarters in the radio car outside. Over an hour had elapsed before he arrived.

The city attorney lived only about one-half mile from the Public Safety Building. He left his home shortly after impact and drove to the Public

Safety Building to confer with the police, arriving there within ten minutes after impact. Almost at the same time another city employee from the division of engineering arrived.

Meanwhile, several key military men took action which brought them to the same building. At Fort Richardson, the USARAL commander directed his provost marshal, a colonel, to report to the city police to establish liaison and offer assistance. The colonel arrived with a radio-equipped jeep at about 6:30 p.m. and immediately conferred with the chief of police. The state adjutant general, commander of the National Guard, was at Fort Richardson during impact. He also drove to Anchorage -- a distance of 5-6 miles -- went to the Public Safety Building where he talked with city officials and offered the assistance of the National Guard.

The first effort at control was informal and unofficial, but nonetheless effective. In the Fourth Avenue slide area the pavement adjacent to the fault was deeply undercut and appeared on the verge of dropping. People were walking around on the undercut pavement. A bystander, at the urging of a reporter, warned the pedestrians and got them off the pavement. He and several others then stationed themselves around the area and kept passers-by off the endangered area. In another incident similar to this, an informal group developed at the Penney store to keep people away from the front facing on Fourth Street. Large slabs and pieces of concrete were sloughing off the building onto the street at that point.

The first formal control measures were organized at the Public Safety Building by the police captain on duty, the city attorney, and a city engineer who had arrived soon after impact. After talking things over, an agreement was made to utilize civilian volunteers to supplement the police force. With a total of only fifty men in the department, assistance would probably be needed. The attorney gave advice about the legality of the measures being considered. Sheets were taken from the jail supply and torn into strips for armbands. Volunteers were given an armband with "police" written on it and were deputized by the chief. Those who wished to be armed were given weapons. These volunteers were sent out in groups of from three to six persons; each group was accompanied by a patrolman. Initial orders were to enter the severely damaged area downtown and clear it of people. Some squads were stationed at intersections to direct traffic while others were posted at damaged buildings to guard valuables exposed by broken windows or collapsed walls, etc.

Since it had been determined at the beginning to maintain normal patrols as much as possible, the patrolmen posted volunteer auxiliary groups, made a brief survey of the area, and returned to the Public Safety Building to report to the officer in charge. Thus, with the extent of damage unknown and therefore an indeterminate security and traffic control problem, early efforts centered on reconnaissance as well as guard and traffic-control duties. As information came in via the police radio, returning patrolmen, persons reporting at headquarters, and telephone calls (a few calls came through the damaged system), awareness of control and security needs expanded rapidly. The city attorney accompanied several patrols into different sections of the city to apprise himself of conditions.

Even before the first groups of volunteers could be dispatched, the mayor stopped in at police headquarters and inquired whether any assistance would be needed to maintain police services. The sergeant at the desk agreed that the normal police force would be inadequate for the tasks at hand. It was well known in the Anchorage area that the National Guard had just completed its annual two-week encampment at Camp Denali, which was at nearby Fort Richardson. The mayor decided to ask for assistance from the National Guard, and since there was no communication with either Elmendorf (also headquarters of ALCOM) or Fort Richardson, he drove out to Elmendorf AFB to make his request. The military log indicates that he made his request at ALCOM headquarters at 6:00 p.m., just twenty-four minutes after impact. He was informed by the military liaison officer and a National Guard officer present that the governor's permission is ordinarily required before the Guard can be activated.

The mayor was then taken to the communications building on base where he conferred with the ALCOM commander. Within minutes, contact had been established with Fort Richardson and the mayor was assured that help was on the way. He then returned to the Public Safety Building.

Meanwhile, action which would result in military assistance had also been initiated in at least two other ways. As mentioned above, the USARAL commander at Fort Richardson had directed his provost marshal to drive to Anchorage and offer assistance to the police. The chief of police agreed that assistance was needed and asked for about one hundred men. This request was relayed to Fort Richardson and ALCOM via the jeep radio and the first regular Army troops were dispatched. These arrived at the Public Safety Building shortly after 9:00 p.m. Officers and NCO's were briefed by the chief of police and the provost marshal before dispatching their men to secure damaged areas.

National Guard units arrived at the Public Safety Building about the same time as the USARAL troops. It is not quite clear which set of actions resulted in their commitment. The adjutant general, who had personally driven to the Public Safety Building, was told by officials there that there was a real need for additional security personnel. He sent a car to Fort Richardson with orders to activate the Guard and to bring 150 Guardsmen and their communications gear to the city. As indicated above, the mayor had also contacted ALCOM headquarters to request Guard aid. The military log shows that the Guard at Camp Denali was alerted as early as 6:30 p.m. Whether they were dispatched before the adjutant general's car returned with his orders is unknown. In any case, they arrived at about the same time as the USARAL troops and were committed to security posts. Just under three and one-half hours after impact, a cordon had been established around downtown damaged areas. Some parts of the perimeter were patrolled by USARAL troops, others by National Guard. Civilian volunteers and Anchorage police officers then went through the area clearing it of traffic and pedestrians.

Getting people out of the damaged areas was one of the initial concerns of all officials during the early hours. The first official broadcast made over the radio, suggested by both the fire and the police chiefs, was a request that the public stay out of devastated areas. Three concerns were involved: continuing tremors plus already dangerously weakened structures could result

in buildings collapsing, or walls toppling and injuring many; these areas, especially downtown, were becoming so congested it was difficult to move emergency vehicles in and out of them; many buildings had broken windows, walls breached or locks broken so that valuable materials normally protected were exposed.

As darkness approached and with power off, it was also considered necessary to guard many undamaged buildings that were deprived of their usual protective circle of light. Early broadcasts had already urged residents to stay out of damaged areas, but city officials now asked that the announcements be repeated. How much influence these public announcements may have had upon the convergence which already was occurring is unknown. But traffic in the downtown area remained a problem until about 11:00 p.m., with a continual stream of vehicles approaching and, after traffic controls were posted, being diverted away. Some volunteers had the impression many motorists were circling back again and again to try to get a glimpse of the damage and rescue activities. At one point, a member of the governor's office who resided in Anchorage went on the radio himself and stated that police would issue citations if streets were not cleared of motorists.

Another control measure of more limited scope was put into effect early by the city attorney and the police chief. After observing three policemen trying to handle a violent drunk, the city attorney suggested that all bars and liquor establishments within city limits be closed. It was felt that during the emergency the police would have no time to spare for the handling of problems associated with drinking. Later the state police and state attorney's office agreed to establish the same policy for bars outside city limits.

Another measure considered but rejected Friday night was instituting martial law. At one point during the evening an announcement over one of the radio stations indicated that the state attorney's representative intended to ask the governor to declare martial law. Both the mayor and city attorney strongly opposed this move, arguing that as a "first-class home-ruled city," Anchorage had the power to institute any measures necessary to maintain civil control and to provide for the orderly abatement of any public nuisances which affected the community's welfare, health, and safety. Rumors persisted for several days afterward, but martial law was never declared.

Military officers were scrupulously careful to place their resources at the disposal of city officials, especially the police. The formal chain of command went from a request by a responsible city official to the liaison offices, to ALCOM headquarters, and then to the specific unit to be assigned. While the niceties were not always observed, the formal chain of command for military assistance was never breached.

An interesting procedure was developed to expedite matters. When a request was given to the liaison officer he would contact ALCOM and then, knowing which unit had the necessary capability, he would also contact that unit and inform them that a request had just been made to ALCOM. These units then alerted personnel and assembled equipment and supplies at their headquarters. Often when the formal order from ALCOM headquarters came through

they were "ready to roll" thus considerably shortening reaction time. The police chief was regarded as having charge of all security and control measures with the military, National Guard, and state police assisting him.

During the early hours of Saturday, public works employees had placed street barricades at various points around the perimeter of the Fourth Avenue slide area downtown at the request of the police department. Beginning Saturday morning these were gradually replaced with more permanent snow fences, especially at drop-off areas in streets. Barricades and fences were also erected around the Turnagain slide area.

An interesting procedure was developed Saturday morning by the city attorney in consultation with the state magistrate. They agreed to suspend formal court procedures for an indefinite period, i.e., no trials or formal arraignments. It was agreed that the magistrate would arraign prisoners in their cells. Normal court procedures were not reinstated until several weeks later.

On Saturday traffic continued to be a problem, but a controllable one. With the posting of guards and the erection of semipermanent barricades, control became a matter of routing traffic around damaged areas and keeping it moving. The jam of the previous night was not repeated on Saturday nor on any of the following days although traffic was heavy. One factor which contributed toward keeping the problem manageable was the closing of most businesses and places of employment which would normally have been open Saturday morning. In addition, radio announcements continued to urge the people to stay at home unless specific needs or requests required them to leave. Thus the normal shopping and going-to-and-from-work volume of traffic was very greatly reduced. Of course, emergency efforts of all kinds required vehicular access and egress and more than replaced normal traffic flow. But this was kept to manageable proportions.

Beginning on Saturday, however, vexing problems developed as a consequence of the security effort in the downtown area. With a cordon and barricades all around the area, it became difficult for rescue, damage assessment, and other emergency crews to move into and out of the area. Property owners and business managers clamored for access to their own establishments. Regular Army guards and National Guard troops were adamant -- unless there was an official clearance or pass of some sort, no one was permitted to enter. Those were the orders. Businessmen and owners came to the Safety Building with urgent requests for permission to enter their own places. Some were quite upset at guards who turned them away.

The disaster control group,[1] which had organized block-by-block search and damage assessment the night before and was continuing its effort on Saturday, issued passes to individuals who could establish proper identification. Most were known at sight by one or another of the men in charge. Civil Defense personnel who were in the process of getting organized Saturday morning also issued passes to virtually everyone that requested one.

To further complicate matters, state Civil Defense, the city building inspector, the police, and other officials were also issuing passes. Thus, some with passes were not permitted to enter because some of the guards had not been instructed which passes to accept as legitimating entry. After several planes arrived at lunchtime bringing state and federal officials and newsmen, the problem became more acute. Newsmen accustomed to special press privileges became upset when guards would not let them through. They demanded access to get photographs and to observe emergency activity.

At 4:00 p.m. on Saturday, a curfew was imposed on the downtown business area. All businessmen and newsmen were asked to leave at that time. Many of the passes issued during the day were not returned so that there were hundreds of passes "available" Saturday evening. To control this situation, both city and state officials changed their passes. But problems continued on Sunday when work was resumed in the area.

On Sunday morning, city officials attempted to set up a system issuing identification cards to persons authorized to enter the area. This proved troublesome also since some of the National Guard troops could not read well and would not permit persons to enter unless specifically commanded to do so by an officer.[2] When the identity cards did not relieve the situation, passes were issued again on a one-day basis. All other passes, ID cards, etc., were declared invalid. SCD officials agreed not to issue any more passes. Persons they wanted cleared for entry were sent to the Public Safety Building with an authorizing letter.

Finally, on Sunday afternoon, March 29, the police and military liaison officers, the mayor, the city manager, and city CD director got together and decided to eliminate passes entirely, except for members of the press who were issued permanent passes. Anchorage patrolmen were stationed at three checkpoints along Sixth Avenue and given discretionary authorization to permit passage to persons whom they considered as having legitimate reasons to enter the area. Persons seeking entrance were asked to identify themselves as to organization and person at Sixth and C, Sixth and H, and Sixth and F Streets. Businessmen and property owners were required to pass through the checkpoint at Sixth and H while all others -- government workers, utility men, repair and damage control crews, press representatives, Red Cross, etc. -- were required to pass through checkpoints at Sixth and C and Sixth and F.[3]

At the time of the press conference at 4:00 p.m. that day, there were still problems associated with entry into the downtown area. Newsmen were disgruntled at limitations imposed and complained vociferously to the mayor and manager. The curfew was reinstated at 7:00 p.m. Sunday and maintained throughout the night.

On Monday access was again limited to persons "with an absolute need to be there." Entry was permitted through the three checkpoints at the discretion of the policemen on duty. Problems of perimeter control and access to or egress from the downtown area were minimal. At the urging of city officials regular utility crews, emergency debris removal groups, and businessmen accelerated their efforts to ready as much of the area as possible for normal

business operations by Tuesday morning. Thus, there was a constant stream of traffic into and out of the cordoned area, especially during the latter part of the afternoon. Again a curfew was put into effect at 7:00 p.m. and maintained throughout the night.

While the pass system gave considerable difficulty, throughout the community initial control measures were being relaxed. Authorization was given late Sunday afternoon to open the bars and some bars were open Sunday evening. The perimeters of the damaged areas which were being guarded were greatly reduced, except in Turnagain. On Monday, the National Guard security troops were phased out and the Army took over the entire security mission, supplying manpower and transportation. The guards now were posted to keep people away from dangerous areas during demolition and debris clearance. In the Turnagain area, however, a number of guards were on duty throughout the month of April.

Throughout the emergency period, radio broadcasting was the basic means by which officials communicated with the public on any matter of concern. In fact, both official and unofficial sources presented a constant barrage of instructions, warnings, and information over the stations. For example, when information disseminated over the military communication nets indicated that seismic sea waves had struck Kodiak and other coastal towns and that the waves could potentially strike Anchorage, the broadcast facilities were used to warn the public. The first publicly broadcast seismic wave warning occurred Friday at 8:00 p.m. Another control measure utilizing the broadcast media was to bring well-known public officials to the stations to speak directly to the listening public. On Friday evening before 8:30, one radio station asked the mayor and the governor's executive assistant in Anchorage to come to the station. They spoke briefly outlining what they knew at that time and what was being done. Also, the state adjutant general in another context broadcast the news that the governor had assured him that the Guard would remain on active duty until the emergency was over.

B. Acquisition and Dissemination of Accurate Information

The problem of information was not listed earlier as one of the functional priorities of a community under stress. In the Anchorage situation it was exceptionally important. It was important primarily because of the relation it had to all of the other functions. The activity concerning the other functional priorities was, in large part, dependent upon accurate information. Those concerned with the preservation of life "needed" to know early the extent of the casualties. Those concerned with maintaining public order and restoring essential services needed to know the nature and extent of the damage. No specific organization saw information as its task. Medical organizations were primarily concerned with the immediate medical problems and maintaining their facilities. Organizations concerned with utilities collected information relevant to damage to their own facilities but often did not share this information with others nor were they aware of the status of other aspects of the community. Those community personnel and organizations concerned with public order needed information for their activities. Because of the importance of information in the emergency social system in Anchorage, it will be discussed separately here.

It should be kept in mind that many of the events which have been previously described occurred in a situation where the scope and severity of the impact was not well known. This is especially true of the events which occurred Friday evening and early Saturday morning. There were attempts to find out what had happened. Some of these attempts were direct while others "accidentally" gained information in the context of attempting to accomplish certain tasks. Simultaneous with early efforts to post guards and control the movement of people in the damaged area were efforts to reconnoiter the situation. As with the other activity, initial efforts were confined either to individuals or organizations. There was no arrangement to pool or share information on a community-wide basis, nor on an interorganizational basis. Thus, the fire department sent trucks and crews out to various parts of the city to check on the condition of streets, make a brief survey of damage and potential fire hazards, and to remove victims wherever they found them. This information was reported to headquarters at the Public Safety Building over their radios. Returning crews also reported directly. In addition, the chief made several tours in his car to inspect damaged areas.

The police department followed much the same procedure, sending patrol cars to various areas of the city where they checked on conditions generally and reported to headquarters from their radios. (It may be appropriate here to indicate that both the fire and the police departments had worked out procedures for handling communications when power outages occurred. Each agency would move a radio-equipped vehicle to the sidewalk or parking area just outside the building and use it as a base station for communicating with their field units. Walkie-talkies were used to communicate between the dispatchers and the mobile base station outside. Since power outages had been rather frequent, this was fairly routine. Immediately after the shaking subsided, both organizations set up this arrangement. It was discontinued when the emergency generator at the Public Safety Building began providing sufficient power to operate the main transmitter inside.)

The director of public works, in a city vehicle outside the Public Safety Building, asked his foremen to reconnoiter conditions in their areas. When the city manager called him on the radio, he reported what he had learned up to that point. The manager then made a personal inspection of as much of the downtown area as he could before he came to the Safety Building.

The mayor, en route to the Safety Building, did not notice too much severe damage but after leaving there on the way to Elmendorf he saw the Fourth Avenue slide and was firmly convinced that a major problem confronted the city. Still en route, he noticed a break in the gas main at Third and Post Road and turned aside to the municipal power plant nearby to learn what had happened there. The foreman at the plant informed him that gas service was off and that they were switching to diesel fuel. The basic equipment, especially the two large turbines, was all right.

When the mayor returned to the Public Safety Building between 6:30-7:00 p.m., the prime concern was information and communications. Some communicators were picked up from state CD. State CD personnel had, in fact, already placed some of these radio transmitter-receivers at locations such as hospitals, etc.

The building was crowded with people -- volunteers offering their services or equipment, persons seeking information, soldiers, city employees, etc. The police counter had become the focal point of activity and information. Nearby, the fire dispatcher also had information but he was not so accessible. Outside in the parking lot the public works director was gathering information from city crews in the field.

Three of the local stations were on the air. One was broadcasting announcements and information from state Civil Defense headquarters; another was broadcasting news from the Safety Building. The third station rebroadcast the releases of another.

Between 8:00 and 8:30 p.m. one radio station succeeded in placing their mobile "camper" broadcast station just outside the Safety Building. With a long microphone cord, the announcer was able to stand right next to the dispatchers and immediately broadcast any message they gave to her. General news and information were still presented but, as the possibilities of broadcasting requests for men and materials became evident, officials at the Safety Building began to rely more and more on this station for communications, pronouncements, and requests. The public was repeatedly urged to stay off the streets, remain at home, and keep their radios on. Many personal messages were broadcast as calls came in asking for information on the whereabouts of family members or friends. All radio media went on full-time public-service programming; two stations utilized mobile automobile units to get on-the-spot reports.

Another source of information which became available during the first three hours was the reports of damage assessment teams organized at the Safety Building and dispatched to make block-by-block reconnaissance. These teams were composed of six to ten men representing certain skills (a mechanic, an electrician, a plumber, a medical-aid man, etc.). They were asked to assess damage, shut off all utilities, search for survivors on a building-by-building basis within the area assigned to them, and bring a report of their findings back to the Safety Building. The first of these teams was dispatched before 7:00 p.m. and the first reports came in by 8:10 p.m. This operation continued throughout the night and all day Saturday.

By 8:30-9:00 p.m. there was information available at various places, but it was uncoordinated and much of it was unverified. Decision makers had great difficulty assimilating reports amid the pressures for action and the general hubbub in the Safety Building. At 9:00 p.m. the mayor attempted a personal survey of all damaged areas about which he had information. In the darkness, with no lights except his automobile headlights and with snow falling, he found it very difficult to get a picture of what needed to be done.

When he returned to the Safety Building he asked that teams be sent out to do reconnaissance throughout the entire Anchorage area. These teams were not to assist the injured or help in rescue work in any way but to survey the extent of the damage, make visual estimates of what services and utilities were disrupted, and ascertain whether there were any explosions or fires. These teams were to report back to the Safety Building.

Meanwhile, the mayor continued to accumulate information from the public works director, the city manager, and other city officials who were in turn receiving reports from their crews in the field. At no single source, however, could one get a very clear sense of the overall dimensions of the problem. At 11:00 p.m. the mayor again made a personal tour of damaged areas, broadening the scope of his survey to include areas he had not known about at 9:00 p.m.

After the mayor returned from his second tour, it was determined that a general staff meeting should be called to pull together information from all possible sources and to formulate an overall plan of action. Using the radio broadcast facilities of a radio station, a number of local, state, and federal officials were asked to come to a meeting at 3:00 a.m. at the Safety Building. This announcement was broadcast a number of times. City department heads met with the city manager between 2:00 and 2:30 a.m. to sketch out preliminary reports for the meeting. When the meeting convened at 3:00 a.m. in the basement gymnasium of the Public Safety Building, there were over a hundred persons present. The room was filled. The mayor took charge, calling the meeting to order, and briefly outlining the purpose of the meeting. He indicated that city Civil Defense would coordinate emergency activities and programs developed to cope with the situation. The acting CD director then asked for the various reports.

As the reports were given a general sharing of information followed each one. Suggestions were given for resolving difficult problems and assignments were made for work which needed to be done. Requests and needs were presented to the entire group for solution. The meeting lasted for an hour and fifty minutes and, when it terminated, city officials felt that they had received a fairly good picture of the overall dimensions of the problem. Later, when referring to the meeting, one of them called it "a strategy conference . . . for the purpose of formulating an approach to the common problem, of maintaining the public order in the best sense we could " Many other meetings followed this one but, as a general meeting of all relevant agencies, it was unique. While such meetings are often important in overall disaster activity, they are seldom recorded. It is fortunate that two different persons kept notes on the meeting, thus providing an indication of the state of affairs in the community at that moment. The edited notes of this meeting derived from these two sources are shown in Appendix B.

The period from 3:00 a.m. Saturday through Monday night involved a continued effort on a community-wide basis to acquire accurate information about the situation. City officials sought it; the public presented a constant barrage of questions and requests; state and federal officials, newsmen, business and professional people from out of town -- all sought information. Perhaps nowhere else is the sense of dependence upon accurate and complete information at the community level so directly evident to an observer as during the emergency period following a disaster. Gaining control of the situation seems contingent to a major degree upon obtaining, disseminating, and utilizing information. While this is not an attempt to describe all information-seeking and distribution activity, several types of information which seem most relevant will be discussed -- (1) missing persons, (2) appraisal of damage, (3) inventory of supplies, and (4) public information.

1. Missing Persons. The activity of public broadcast media has already been mentioned in the preceding section. By the time of the 3:00 a.m. meeting, the precedent was well established with regard to utilizing public radio announcements to convey personal messages, especially those asking for a response from or information about missing family members or friends. During the 3:00 a.m. meeting, when The Salvation Army reported that they were trying to reunite families and would establish a personal message service that morning, broadcast media representatives suggested that the public was already depending upon the radio for personal messages. It was agreed to establish a missing persons registry at The Salvation Army headquarters at Eighth and Barrow Streets beginning at 8:00 a.m. Saturday with radio announcers continuing to relay information and personal requests directly to the public. In a broadcast immediately after the meeting, those in charge of public shelters were asked to take a census of persons in each shelter and home owners who had provided shelter to others were also asked to report names, ages, and addresses.

During the day Saturday there was continuing interest and pressure from newsmen and the general public for information about the number of casualties. The massive damage and dislocation of residences in the Turnagain area alone seemed sufficient to create many more than the few that had been reported. City officials themselves expected search teams to find many more casualties as the damaged sites were thoroughly searched on Saturday morning. Inquiries were referred to The Salvation Army headquarters where new names were constantly being added to the list and others checked off as having been located. Only one casualty was found during the day, and by Saturday evening the search-and-rescue coordinator was personally convinced that none remained to be found.

On Sunday morning, city CD broadcast an announcement at 10:05 a.m. indicating that the Red Cross had thirty workers taking messages for people and helping reunite families. The same announcement also indicated that The Salvation Army at Eighth and Barrow was providing a second means of getting messages to families and of bringing family members together. As a third point the announcement indicated that the city Civil Defense headquarters "will keep a list of known missing persons only." Anyone living in the Turnagain area who knew that a person was missing was asked to call city CD. A list of three missing persons was given with the request that anyone knowing that they were not missing to telephone the CD office. At noon, a revised list of five local persons and six military men was broadcast. The list remained small during the early part of the afternoon.

After the Saturday press conference, which was held from 4:00-5:00 p.m., the mayor requested that a full-scale missing persons bureau be set up at the Public Safety Building to provide a definitive answer to persistent questions concerning unfound casualties and/or missing persons from the Turnagain area. Beginning with tax assessor's lists, utility lists, and public school lists, a master register of over three hundred names was put together. Other agencies were asked to submit their lists of missing persons to CD headquarters.

At 10:20 p.m. Sunday, a public announcement from the assistant to the manager was aired over the radio indicating that the city CD was developing a roster of residents from the Turnagain area who were known to be missing. All

residents of damaged areas were asked to call in so that their names could be checked off the master list. Persons knowing of Turnagain residents who were missing or out of town at the time of impact were also asked to report. As calls came in identifying persons from the slide area, they were checked off the master list. Persons reported missing who were not from Turnagain were placed on a separate list. This "incidental" list had up to one hundred names at one time.

When the Turnagain roster was reduced to more manageable length, the missing persons bureau began broadcasting lists of persons reported missing and asking anyone who had seen these persons since the earthquake to call in. The earliest extant list contained forty-one names, some representing entire families. This one was broadcast at 2:00 a.m. Monday morning. The next list available was broadcast at 8:30 a.m. Others followed at 9:45 a.m., 11:00 a.m., 1:15 p.m., 2:30 p.m., and 3:15 p.m.

Public response to these announcements was tremendous. One of the volunteers staffing the bureau reported, "We would have a new list out barely twenty minutes before we had reports on half the people in it." Thus, on Monday, the list of those known missing was rapidly depleted during the day. By 4:00 p.m. the last group of names was broadcast over the radio and by 6:00 p.m. only six Turnagain names remained to be cleared. At midnight only three remained and by 10:30 a.m. Tuesday the last person on the roster was located. At this time the incidental list was down to about a dozen. It was rapidly reduced to about five after a broadcast. The missing persons bureau at the city CD office was then closed out. Files and information were turned over to The Salvation Army. Officials were finally convinced that there were no more persons missing than the reports early Saturday morning had indicated.

2. Appraisal of Damage. Inventory and damage appraisal was initiated in a general way on Friday evening about an hour and a half after impact. Damage assessment teams reported to the Public Safety Building, at the disaster desk. All city and private utilities crews were also doing much the same along with emergency restoration efforts. However, specific and detailed appraisal did not begin until Saturday morning. Appraisal of the private sector was heralded when a public announcement over the radio called for all real estate people, appraisers, "everybody that is fairly qualified to appraise property loss or damage," to report to the public library downtown. A more detailed appraisal of public utilities, streets, and buildings also got under way on Saturday morning as daylight came. Each utility assigned men to draw up fairly accurate and detailed estimates of damages, to estimate emergency restoration timing and costs, and to establish fairly accurate estimates as to the cost of permanent repair or replacement.

3. Inventory of Supplies. An inventory of fuel and food supplies was established on Saturday. Some estimates had been made on Friday night and voluntary rationing was suggested but there were no firm figures available. In fact, one of the purposes of the 3:00 a.m. meeting, as outlined by the mayor in a radio release at 12:15 a.m. Saturday, was to discuss the supply situation with regard to food, fuel, and medical items. State Civil Defense appointed coordinators in the first two areas, food and fuel. The state public health

office was already checking on available medical supplies. Fuel rationing and emergency price fixing were discussed on Saturday, but aside from the informal and voluntary rationing urged by public announcements, no formal control measures were put into effect. During the day Sunday it was established that there was an ample supply of food and fuel available in the Anchorage arca. A public announcement concerning food supplies was made at 7:30 p.m. on Sunday evening. It was reported that there was a thirty-day supply of food on hand in the Anchorage area, available through normal shopping procedures. Temporary shortages on some items were to be expected where distribution from local warehouse locations was delayed but food was not critical. Double emphasis was given to the statement, "Do not buy large supplies of anything -- take it easy and everyone will eat comfortably."

The fuel situation was clarified at a meeting of local fuel suppliers called by SCD at 1:30 p.m. on Sunday. A Monday morning announcement indicated that all types of fuel were available locally through regular purchasing channels. "There is no need for stockpiling or hoarding." The community was urged to follow their regular shopping practices.

Appraisal of damages to public and private buildings, equipment, and facilities was included in estimates of damage, emergency restoration, and long-term rehabilitation which were presented at the press conference on Sunday afternoon (4:00-5:00 p.m.). These figures were later used in reports to state and federal agencies and became the base of reference for early rehabilitation efforts.

4. Public Information. Public information was a knottier problem. Three of the local radio stations were broadcasting whatever news they could get. The fourth was simulcasting one of the others. Reports and rumors of all kinds soon developed and were repeated over broadcast media. Information was attributed to official sources which had not been authorized by them. With three broadcast sources and multitudinous "officials" all of whom seemed to have an important task or announcement, this confusion was not surprising. There was, inevitably, much overlap and repetition in information given to the community. As mentioned before, one station was broadcasting directly from inside the Public Safety Building early Friday evening while another had a link with the state Civil Defense office.

Awareness of the need for better control of emergency public information developed on Sunday during the day when several conflicting accounts were released over different stations. By Sunday evening, city CD officials had developed an official form with a line for signatures to be used with public announcements. This provided some control but did not really get at the problem.

On Monday morning the former Civil Defense public information appointee for the greater Anchorage area appeared at the city CD headquarters. After a while, he conferred with the director about policies and procedures for public releases. The director explained what was being done and asked him to take charge of public information to organize reports and control rumors. It was agreed that every release would be signed and the source indicated. Thus, both origin and authorization could be accounted for.

The information director spent the day acquainting himself with operations -- who had charge, who could authorize releases, etc. A system for reproducing releases was set up, as was a news desk in the lobby of the Public Safety Building where reporters could pick up the latest release. Dates, time, and authorizing signature were on each one. Rumors and overlapping and conflicting accounts continued throughout the day and for some time afterward. Further developments in this area after the emergency period will be discussed in the next section.

Toward the end of the emergency period, the major problem which remained concerned information and the control of "unofficial" news sources. Rumors and inaccurate and contradictory information continued to emanate from broadcast studios. The control measures instituted by the public information director of city CD were just beginning to take effect on Tuesday. On Tuesday, March 31, a statement to all broadcast media asked each station to apprise its listeners of the official or unofficial nature of announcements being made: "If it's not on the official release paper, make it completely clear that is not official." The purpose of the release was to eliminate indiscriminate broadcasting of whatever was handed to reporters and announcers. Whatever affected the "general public" should at least be shared with the Civil Defense officials so that they could consider its potential effect. Broadcasters were asked to guard against releasing any material which might cause undue anxiety. They were also requested to read official releases verbatim without any ad-libbing or change. There was to be no repetition of an announcement unless it was read in its entirety. After this, the situation improved but problems still continued.

When city CD moved back into its regular offices at 9:00 a.m. on Wednesday, the information director had a small broadcast booth with a direct link to all local stations available to him. Thus, he could broadcast urgent matters over all local outlets simultaneously and be sure of what was said as well as how it was said. Direct broadcast was not used very often, however, since few matters remaining were considered to be of sufficient urgency to justify it. All official releases were mimeographed and made available to the stations. There was also a heavy demand for copies from other organizations involved in the emergency effort.

Rumors persisted during this four-day period (Tuesday-Friday) and beyond. The information section of CD was kept busy trying to reassure residents and locate sources of rumors. Particularly trying were broadcasts which stated that inhabited apartment buildings had been condemned or were in danger of collapse and needed to be evacuated. These caused quite a stir, especially among persons living in these apartments. Irate owners called CD saying that their renters were moving out or that they had evacuated the building and demanded to know what had been happening. In one of these instances the building stood close to the Ship Creek bluff line and apprehensive residents quickly left when a broadcast, repeated several times, indicated that it was being evacuated. In this case the information director called the station involved and was told no such announcement had been made. Later, after Civil Defense had officially announced that there was no foundation to the story, it was again repeated. A telephone call and some firm language stopped it.

Another situation which occurred on Friday, April 3, involved an apartment in the L Street slide area. While geological evaluations were being made, it had been considered to be in no immediate danger. A rumor spread that it had slipped two feet and was to be evacuated. At noon, the information office made its first release denying the allegation. By midafternoon there were quite a few calls again, and the stations were asked that no more mention be made of the incident. However, at 6:30 p.m. a local news program repeated the rumor in an announcement sandwiched among other news items. Since this was a popular news program in the community the CD office drafted another disclaimer which was released at 7:30 p.m.

Various rumors persisted for some time after the emergency period -- that another and more severe earthquake had been predicted, that the entire downtown area of the city would have to be moved, that there really had been many more casualties but officials withheld information. This last rumor had its inception during the emergency period when the number of casualties seemed too small for the magnitude of the destruction.

After the missing persons bureau at Civil Defense headquarters had closed on Tuesday, The Salvation Army was designated the official agency in charge of casualty lists. Careful checking of all missing persons reports usually produced evidence that supposed victims were alive and all right. Yet, as late as April 23, the CD office released a lengthy statement supporting the accuracy of previous reports. One of the paragraphs illustrates the problem rather well:

> Although mannequins or dummies or parts thereof have been removed from the Penney building, no human bodies have been found since the night of March 27. Even then, the only casualties in or near the Penney building were outside the building on the adjacent sidewalk. The city of Anchorage is neither concealing bodies nor suppressing information concerning missing persons.

C. Maintenance of Public Morale

After most disaster events and particularly during the emergency period, a considerable amount of attention is given to what can be called maintaining public morale. Much of this activity is predicated on the belief by community officials that disaster impact will have negative effects on the morale of community members. It is often thought that because of the presence of death and injury the survivors need extra reassurance. Many agencies and officials assume that all the survivors will withdraw as soon as possible from the impact area. Such officials, concerned about the long-term consequences, fear a mass migration of the population which would leave the community stripped of its human resources at a time when much of the material resources have been destroyed. Such consequences seldom occur.[4] The concern that they will occur, however, leads to overt activity which has the function of sustaining and supporting community morale.

Such activity tends to be widely diffused through the community. Much of it occurs, of course, at the individual and interpersonal levels, not at

official and organizational ones. In addition, many of the activities previously described concerning the acquisition and dissemination of accurate knowledge can and do contribute to morale. Knowledge related to the extent of impact allows individuals to make more accurate judgments as to the safety of others. Attempts to correct misinformation, particularly concerning casualties, also has a morale function. The following traces some of the other organizational activity related to community morale.

City officials and broadcast media personnel in Anchorage seemed concerned from the beginning that many persons would either panic or become discouraged in the face of the massive damage to familiar landmarks. Early broadcasts repeatedly urged calmness. The request, made before midnight, that the mayor and the governor's representative come to one of the stations and speak to the public was regarded as a morale measure. In fact, almost every one of the city officials involved in the activity Friday night spoke on the radio at one time or another or had announcements made in his name. Military officers were also put on the air.

At midnight, the mayor drafted a public information release which was a straightforward account of what had happened and what was being done. Another important broadcast occurred right after the 3:00 a.m. meeting, when a detailed account of the meeting was given. This type of public service broadcasting continued throughout the emergency period. It was estimated that 4,000 messages were broadcast over one station alone during the three critical days. Just how much influence public radio media had in maintaining a sense of community and confidence in the speedy recovery of the area is not known.

Accounts by local residents indicated a sense of isolation immediately after impact. Silence -- no telephone, no power, no water, no radio, nothing -- prevailed; everything seemed to have stopped.[5] This was followed by concern for family members who happened to be absent or for friends who could not be contacted immediately. Hearing the familiar voices of local radio announcers and later, well-known public officials, was reported as having a considerable positive effect. Seeing the first fire truck or police car or any other familiar public vehicle had the same result. Below are some announcements made Friday night which illustrate the concern with morale:

> We can feel fortunate that Anchorage was not completely leveled. Anchorage has sustained a great deal of damage and it has been a shattering blow to a very proud people. However, many of us have enjoyed, actually taken a great deal of pride, in seeing the way the people of Anchorage, Alaska can rise to the occasion.
>
> I have talked with ham operators and they assure me that the outside world is aware of the fact of what has happened in Anchorage. . . .

The adjutant general and commander of the Guard said:

> The Guard was scheduled to start for home at midnight. However, that has all been cancelled. . . . We have most of our communication gear here in town and 150 troops and the rest are standing by. . . .

> Transportation has been made available to the civilian community. . . . Anything we can do to help out, rest assured that we will make it available.

The announcer continues:

> We are still having a number of people coming in and offering their services here in the Public Safety Building. I believe everything is pretty well under control and survey teams are beginning to come in and report extensive damage. . . . International Airport was hit rather hard . . . there was some damage at the military bases. The general has been in here now conferring with the Civil Defense, Civil Air Patrol, city police, city fire department . . . also /the assistant/ of the governor's office. All of the state of Alaska, all of the military installations, all military and civilian personnel have turned to and are giving a terrific effort right now on search and rescue. /This was followed by a seismic sea wave warning./

The tremendous pressure on the part of officials for information about the extent of the damage was more than matched by the interest and concern of the public. There was convergence in many places. The damaged downtown area has already been mentioned. In addition, other centers of activity became focal points of convergence. Hospitals, the Public Safety Building, and to a lesser extent the state Civil Defense headquarters all had problems on Friday night with masses of people who asked endless questions. During Saturday, Sunday, and Monday this problem continued at the Public Safety Building and at SCD headquarters.

Thus one of the constant efforts was to keep the public informed about the situation. Daily press conferences were established, beginning Sunday afternoon at 4:00 p.m., to supplement the ongoing coverage by reporters. The efforts of the CD public information director beginning Monday were intended to present all the information available to prevent unnecessary duplication and contradiction, to squelch rumors about unreported deaths or buildings on the verge of collapse, and to make official announcements "low key" so as to prevent undue alarm or concern. Information of a positive or encouraging nature was played up; difficulties were presented in a less dramatic way. Later, one official commented:

> You can read a carefully prepared announcement and it may be prepared with a low key; key the thing real low because you don't want to get anybody excited. The problem you're dealing with may not be one that would cause anxiety unless you took it wrong, so we worded it so we got the point across without any possible double meaning, . . . /otherwise/ a lot of people are prone in a situation like this to jump to the worst possible conclusion and so these /were/ the things we /were/ trying to guard against -- not to give anybody listening in any possible opportunity for a double meaning. We said exactly what we meant. . . .

On Wednesday, the second day after the downtown area was opened to the public, a Civil Defense release indicated that there was no reason to keep business neon lighting dark: "Approval has been given to light the Anchorage skyline once again."

This, of course, followed the strenuous effort to reopen the downtown area, which began Sunday and reached its peak late Monday afternoon. It was felt that if business was not restored to some semblance of normalcy, many local residents would begin evacuating. City officials were especially concerned about making it possible for banks to open by Tuesday morning. Monday would normally have been a bank holiday and it was felt that opening as usual on Tuesday morning would provide a great morale boost for the community.

To be able to encourage the businessmen and the community at large to use electricity in any amounts and to "light the skyline" again was a final assurance that things had indeed returned to normal and that the physical and technological base for the community was either restored (electricity, gas, water, food, fuel, housing, streets, etc.) or restorable.

One other matter, only touched upon earlier, should be mentioned here. There was a tremendous surge of messages -- via Teletype, ham radio, etc. -- which came into the community as soon as long-distance service was restored. These were brought to state Civil Defense, to city Civil Defense, and finally to both Salvation Army and Red Cross headquarters for disposition. Since many local residents had been displaced by the earthquake and still others not displaced were working around the clock on emergency tasks, it was very difficult to deliver all the messages. Teenagers and Boy Scout troops, as well as other adult volunteers, were used as runners to trace down recipients of messages. With telephone service improving over the weekend, many could be phoned and asked to come to headquarters to receive their messages. Over 20,000 telegrams were reported to have arrived during the first four days. The backlog created by this situation lasted throughout the first week after impact. Again the sense of urgency, the need on the part of responsible officials to deliver these messages, would seem to indicate an effort to restore morale.[6]

A chronology of major events related to efforts to maintain public order, to acquire accurate information, and to maintain public morale follows:

Chronology of Public Control, Information, and Morale

Friday, March 27, 1964

5:40 p.m.	Immediately after impact, fire and policemen set up emergency communications at the Public Safety Building.
5:46 p.m.	The city attorney arrives at the Safety Building.
5:51 p.m.	The mayor arrives at the Safety Building, consults with the police, and then leaves for Elmendorf AFB.

6:00 p.m. The former city CD director stops in at the Public Safety Building and consults with the police. He leaves for Elmendorf to pick up CD supplies there.
The mayor arrives at Elmendorf and makes a request for National Guard troops to provide security.
Off-duty policemen arrive to supplement the force. Volunteers are deputized and dispatched to traffic control and security duty.

6:10 p.m. The state adjutant general arrives at the Safety Building from Fort Richardson. After consultation, he sends a car to the post to bring National Guardsmen to the city for security duty.
A request is made on radio for the mayor and the governor's assistant in Anchorage to report to the station.
Both fire and police department personnel are asked to reconnoiter areas of the city and report to headquarters.

6:30 p.m. The mayor and the governor's assistant arrive at a radio station. Each one speaks briefly and then leaves again.
Damage assessment teams are organized at the Public Safety Building by a city engineer.
The city manager arrives at the Public Safety Building and confers with the director of public works.
The USARAL provost marshal arrives at the Public Safety Building.

7:00 p.m. The first damage assessment teams are dispatched from the Public Safety Building.
Broadcasts are made urging people to keep off the streets so that emergency vehicles can move freely. Traffic is a real problem.

7:15 p.m. ALCOM orders that 150 USARAL troops be committed to assist the city.

7:30 p.m. The city manager sets up emergency command headquarters in the Public Safety Building, first in police headquarters but later in the fire chief's office.

8:00 p.m. A "tidal wave" warning is broadcast over radio. Fire and police department units are dispatched to low areas to evacuate residents.

8:10 p.m. Reports from the first damage assessment teams arrive at the Public Safety Building.
The radio mobile "camper" is moved to the Public Safety Building providing a long cord and microphone inside the building. The station begins to be used for recruiting personnel and equipment as well as for public announcements.

8:30 p.m. Firemen report the Bootlegger Cove area evacuated. The mayor requests teams with automobiles to make surveys of the extent of damage and operations going on.

9:00 p.m. The mayor makes a reconnaissance in the city.

9:05 p.m. 150 USARAL troops arrive at the Public Safety Building. National Guard units arrive at about the same time. They are briefed and dispatched to establish a perimeter around the downtown area. After the cordon is established, police and deputized volunteers clear the area.

11:00 p.m. The mayor makes a second reconnaissance. Afterward city officials plan a meeting for 3:00 a.m. The meeting is announced on the radio.

Saturday, March 28, 1964

12:00 a.m. A second tidal wave alert is broadcast. Predicted impact is at 1:00 a.m. Lowlands are again evacuated.

12:45 a.m. A rumor is circulating that the governor has declared martial law in Anchorage. (military log)

1:00 a.m. The tidal wave does not materialize.

1:15 a.m. Martial law has definitely not been declared in Anchorage. (military log)

2:00 - 2:30 a.m City department heads meet with the city manager

3:00 a.m. A mass meeting convenes in the basement of the Public Safety Building. Various local, military, state, and federal representatives are present. The meeting lasts one hour and fifty minutes.

4:50 a.m. An extended account of the meeting is broadcast over radio.

6:00 a.m. City Civil Defense is organized and moves into the fire prevention office in the Public Safety Building.

6:00 - 7:00 a.m. There is a meeting of city department heads with the mayor, manager, and some council members

7:00 a.m. The mayor and manager make a tour of damaged areas, including Turnagain

Morning Passes are issued to businessmen and others requesting entry into the downtown area.
The city attorney and state magistrate agree to suspend formal court proceedings indefinitely

9:00 a.m. A desk is placed in the corridor outside the CD office to keep the crowd away from the staff

Noon	The governor and his staff arrive at the airport. City officials meet them.
1:30 p.m.	Another city staff meeting is held.
4:00 p.m.	A curfew is imposed on the downtown business area. A meeting of local, state, and federal representatives is held at Elmendorf. The mayor attends.
4:00 - 5:00 p.m.	OEP representatives and the Alaska state senators arrive.
8:00 p.m.	A press conference is called at the Public Safety Building. Since the governor is delayed, it does not convene until 8:30. Damage estimates are given by the mayor. Another city staff meeting is held.

Sunday, March 29, 1964

8:15 a.m.	"All movement in the disaster area is being tightly controlled. . . . All rescue or disaster teams that are working in these areas, Turnagain or downtown . . . will need passes to get through." (radio announcement)
10:00 a.m.	A news release over the radio states that The Salvation Army and Red Cross are helping to reunite families. City CD is maintaining a roster of persons known to be missing.
Morning	The mayor appoints the Anchorage Reconstruction Commission to deal with the private sector. Problems with passes continue. Finally the manager, police, CD, and military get together and decide to abolish passes.
1:30 p.m.	An announcement is made over the radio indicating that entry into the downtown area would be limited to three checkpoints manned by city police. No passes are required. Local fuel suppliers meet to assess the fuel situation.
2:00 p.m.	Property owners and businessmen enter the cordoned area through police checkpoints.
4:00 p.m.	A press conference convenes in the courtroom at the Public Safety Building.
5:00 p.m.	The missing persons effort at city CD is accelerated to clarify the situation regarding Turnagain residents. School lists and tax assessor's rolls are used to develop a master list.
7:00 p.m.	Curfew time arrives in the downtown area.

7:30 p.m. A public announcement is made concerning food supplies. Adequate stores are available locally.

10:20 p.m. A public announcement is made over the radio asking all residents from the damaged Turnagain area to call city CD so that their names may be checked off the master list.

Monday, March 30, 1964

2:00 a.m. A public announcement from city CD lists missing persons and asks public assistance in locating them. Others follow at 8:30, 9:45, and 11:00 a.m., and at 12:15, 2:30, and 3:15 p.m.

8:30 a.m. A city staff meeting is held with the mayor and manager.

Morning Police checkpoints continue as on the previous day.
The former city CD public information officer appears at the Public Safety Building and assumes responsibility for coordinating and organizing public information in the community.

10:00 a.m. A city employee is appointed to the task of clarifying "who was in charge of what." Another barrier (a table with a secretary) is set up to keep casuals away from the police counter. Large charts listing functions, persons responsible, locations, and telephone numbers are developed. These are posted in the corridor of the Public Safety Building by late afternoon.

4:00 p.m. A press conference is held.
City government plans to move back into City Hall and the Annex on Tuesday morning.

Evening City council meets in emergency session and passes ten resolutions directed to federal agencies to facilitate disaster relief and rehabilitation.
Many National Guardsmen are relieved of duty.

Tuesday, March 31, 1964

8:00 a.m. City employees report to their regular places of work. Administration is back in City Hall.
The downtown area is partially open for business. By late afternoon the perimeter is further reduced to permit access to all but the most severely damaged areas.
Public information at city CD requests all radio announcers to exercise care to distinguish between official and unofficial announcements. Official announcements are reproduced in quantity for all news media and other agencies.

Wednesday, April 1, 1964

9:00 a.m. City CD moves back into its regular office in the basement of the Safety Building.
Public information of city CD again has access to the broadcast booth at the CD headquarters. Urgent matters are broadcast immediately from this office.
Minimal security problems remain with guards at a few downtown spots and the Turnagain slide area.

After April 1

The main problem remaining is providing accurate information to the public. Rumors persist and efforts are made to squelch them.

D. Provision of Food and Shelter

The impact in Anchorage and its suburbs affected many residential units. Certain houses and apartments were completely destroyed and others were made uninhabitable. In some places the loss of electricity meant the loss of food in the refrigerator and the freezer as well as the loss of cooking facilities. Many gas stoves and furnaces could not be used, either. While neighbors and friends provided much of the assistance, there was still considerable community effort to provide such services for those who had been displaced by the effects of the earthquake. Those services and materials which were provided free of charge, not purchased, are the point of interest here.

1. Food. Food was provided on Friday night within two and one-half hours after impact. At 8:15 p.m. the first truckload of food was dispatched from The Salvation Army men's service center at Eighth and C Streets to the Federal Building downtown where clean-up crews were preparing a shelter. Most of their effort was directed toward the Federal Building the first night. As refugees came in they were offered coffee and food. Finally at 1:30 a.m., after many trips back and forth between the center and the shelter, Salvation Army personnel decided to move their coffee operation from the men's center to the Federal Building. This was accomplished by 2:00 a.m. Food was also served to personnel and refugees at The Salvation Army headquarters at Eighth and Barrow during the night.

Other food services provided for the community on Friday night came from the American Legion Post on Fireweed Lane which served nearby radio station personnel, employees at the airport, and also sent a lunch wagon downtown to serve rescue and other emergency workers. The YMCA also became involved in food service early in the evening, and served coffee and sandwiches to evacuees, rescue workers, and anyone else who came by.

At the 3:00 a.m. meeting in the Public Safety Building emergency food needs were discussed. It was felt that mobile kitchens would be needed to feed many people who had no facilities to cook hot meals. With many homes

and apartments unheated, the need for hot food seemed more acute. The military agreed to provide mobile field kitchens for this purpose. The broadcast account of this meeting, aired over radio beginning at 4:50 a.m., indicated that these kitchens would be placed at three sites: in the park behind the Public Safety Building, on the park strip between K and L Streets, and at Wendler Junior High School on Lake Otis Road and Northern Lights Boulevard. The announcement indicated that these three kitchens would be ready to serve at 9:00 a.m. Saturday. The military log of March 28 shows that three kitchens and food for 1,000 persons were released to the Public Safety Building at 6:46 a.m. Mass feeding by these mobile field kitchens continued through April 1, the following Wednesday. Three meals were served daily to anyone who came through the lines.

The American Legion Post continued its food program on Saturday and throughout the emergency period. Employees at International Airport and the nearby radio station personnel ate their meals there during the weekend. However, most of their food service involved their own staff and persons being lodged at the post. They reported having served a total of 6,000 meals during the emergency period, March 27-April 3. The YMCA accelerated its food service effort on Saturday and for the three days following. They reported preparing 2,000-3,000 sandwiches daily and over 1,000 gallons of coffee throughout the emergency period. On April 2 they reported that they were still feeding about six hundred people daily. The Red Cross covered the cost of much of this food.[7]

Food service in the Government Hill area was provided by the restaurant in a bowling establishment. Elmendorf AFB personnel brought pure water. Food was purchased from local wholesale establishments. Since this was the only food facility in that section of the community able to serve food, it was "asked by city officials" to remain open. Propane gas was used for cooking. This restaurant did not serve meals free of charge as was the case with all other emergency feeding described here.

The Salvation Army was perhaps the largest supplier of emergency food aside from the military field kitchens. On Saturday SA personnel rapidly expanded their sandwich and coffee operation to include full meals. At the peak they reported making about 1,000 sandwiches and 110 gallons of coffee an hour at their men's service center on Eighth and C. Local canteen establishments offered the use of several mobile canteens to supplement the units already in use. Eventually ten vehicles were kept busy transporting food to various places in the city. In a report to the governor, The Salvation Army reported serving an average of 1,200 sit-down meals daily in The Salvation Army center. At eight other points in and around Anchorage they reported serving 4,800 meals daily. Food was also provided at the hospitals. St. Joseph's reported serving approximately 1,000 meals while Alaska Native reported serving 1,575 during the week following impact.

With the restoration of utilities over the weekend and the opening of stores on Monday and Tuesday, most persons in the community went back to their normal eating arrangements. Free food was still available in the Public Safety building, the YMCA, and at Army field kitchen locations, but demand

diminished rapidly. Very little food was being prepared and served on an emergency basis by the weekend of April 3-5 following the earthquake. Food was being served to evacuees remaining at the "Y" and to Kodiak natives housed at the Airport Heights School. Mass public feeding had been terminated on April 2 because there seemed no further need for it.

2. Shelter. Housing in the Anchorage area was in oversupply at the time of the disaster. A survey just two weeks prior to March 27 indicated that approximately 14 percent of available units were unoccupied.[8] These were mostly one-bedroom and efficiency apartments in fairly low rent classes. Very few larger units normally used by families were vacant. Several apartment buildings were near completion.

Surveys made after impact showed that 971 out of 12,747 units had sustained 60 percent or more damage.[9] These were considered totally destroyed. Half these units represented large apartment houses. Over two hundred were private dwellings, mostly in the Turnagain area. Using the arbitrary occupancy figure of three per unit would indicate that at least 3,000 persons needed shelter. With electricity, water, and gas off and buildings partially damaged, many more were apprehensive about remaining in their homes or apartments. Many did go to the homes of friends or family members. Informal groups congregated wherever someone had heat and light. In fact, although it is impossible to determine how many stayed at the available public shelters, it would seem that the majority of those who left their residences congregated eventually in small groups at the homes of friends and neighbors. The account of one person involved in such a neighborhood group is illustrative. This family had followed Civil Defense instructions for shelter stocking and thus had fresh water, a transistor radio, a portable vaporless kerosene heater, flashlights and batteries, etc.

> Right after the quake, we were still at home there [picking] up around the house, two young ladies who were on the thirteenth floor of the 1200 L Street building, a fourteen-story apartment building, came running up our front path. There was still plenty of snow on the ground and it was about 15 degrees outside. They were barefoot and white. . . . They were pretty well worn to a frazzle after running three blocks in the snow. . . . So we took them in and all of a sudden people began to appear from I don't know . . . Three, four, or five maybe at a time [arrived]. . . . So we first established the heaters and set everything up for lights and food and so on. [People were clustered around the transistor radio.] People began to dwindle away a little bit after fifteen, twenty minutes. Everybody slept in the living room. We sat up most of the night and had several quakes after that through the night. . . We had to be careful because we did have the lightings, all fire of some sort or another, and we made sure that one individual was assigned to take care of each appliance. If we began to get a little shake all these things went out.

The first public shelter to be established and publicized as a shelter was an American Legion Post on Fireweed Lane close to the Turnagain area.

Within a very short time after the quaking had subsided, the commander arrived at the building which served as something of a community center for members and their families. Finding the building intact, he issued a call over radio for all members to meet there. The decision to set up a shelter came soon after this and members dispersed to locate a generator, get water, and make other necessary arrangements. One member was sent to the radio station nearby to ask the station to carry the announcement that the building was open as a shelter. Fortunately this shelter was fairly well organized. Each incoming person was registered. Records show that 1,482 persons entered the post on Friday night and 375 remained until morning.

Another effort emanated from the Public Safety Building downtown. The disaster control group operating from the police counter sent crews into the Federal Building (Post Office) on Fourth Avenue, the City Hall Annex on Fifth Avenue, and the community center on G Street just around the corner from the Annex to clean up debris and make them habitable for shelters. Cots and bedding were procured from the military through their liaison at the Public Safety Building. The Salvation Army supplied supervisory personnel at the Federal Building. Information concerning the number of persons that first night in the Annex and community center is not available. The Salvation Army reported about 175 people present at the Federal Building the first night. The next morning most of them left and did not return. Many of these were evacuees from downtown hotels.

Announcements concerning the availability of shelter at the American Legion and downtown were made before 9:00 p.m. Other buildings which were reported available were the American Legion building at Dawson and Northern Lights, the city jail, the Spenard utilities building, the Odd Fellows Lodge on Northern Lights Boulevard, the National Guard Armory on Lake Hood Road, Carpenters Hall at Fourth and Denali, the YMCA downtown, and the Edgewater Hotel. In addition to these, reported between 8:00-11:00 p.m., a number of churches were opened for shelters. Announcements indicated that the following were available: the Episcopal church at Eighth and F, the Baptist church on Seventh Avenue, the Seventh-Day Adventist church at Seventh and A, and the Greek Orthodox church on Arctic Boulevard.

Unannounced shelters, besides those involving small neighborhood groups in homes, developed at the hospitals and at the Public Safety Building. Many of the physicians and staff members' families spent the night at the hospitals. Many others also came in and slept in hallways, the reception area, and wherever there was space. Some hospital evacuees were moved to the Alaska Methodist University building nearby after 10:00 p.m. when the AMU president offered their facilities. At the Public Safety Building downtown, people slept upstairs in the firemen's quarters -- some on the floor, some on cots. Others sat in corners or against the wall in the lobby and dozed.

No figures are available on the total number housed on Friday night at places other than their normal residence. Listed here are the figures for shelters where a count or registration was made: Jack Henry Post No. 1, 375; Federal Building, 175; National Guard Armory, 90; YMCA, 200+; The Salvation Army Headquarters, 100

Emergency housing at public shelters was all but discontinued by Saturday night. Most displaced community members had by then found lodging. However, a few shelters continued operating over the weekend -- the YMCA, the Jack Henry American Legion Post on Fireweed Lane, and the National Guard Armory. At the "Y," which was adjacent to the closed off downtown area, housing was provided for more than two hundred persons for five successive nights. As of April 2, night accommodations were still being provided for 150. The American Legion Post provided lodging for a much reduced number on Saturday night, largely because many local residents telephoned, offering rooms and apartments. Calls began coming in Saturday morning. So many calls were received that a member's wife later reported, "We had twelve pages of housing." Most of the evacuees at the post were placed in at least temporary quarters by Monday. No information is available on the phasing out of the National Guard Armory as a public shelter. It was used by Guardsmen throughout the next week but whether or not any evacuees remained beyond Saturday night is unknown.

A Salvation Army official reported that appeals for temporary housing for earthquake victims were broadcast on Saturday and that more than five hundred homes were offered for displaced persons. As he saw it, "housing was no problem after the first night." After the emergency period, the Alaska State Housing Authority took over the housing problem.

Two other related services -- providing clothing for victims and salvage help for those in the Turnagain area -- should perhaps be mentioned in this context. Both the American Legion Post No. 1 and The Salvation Army dispensed clothing during the emergency period. The Legion initiated its clothing drive on Monday. Many clothing contributions had been brought to the post prior to that time as community members brought blankets, sleeping bags, etc., that were requested. Response to the clothing drive was overwhelming to the small staff at the post. Approximately 8,000 pounds were received locally with another 65 boxes being shipped via a Military Air Transport Service plane from the state of Washington. Anchorage Legion Post No. 28 offered its building as a storage and distribution center. The Veterans of Foreign Wars auxiliary assisted the Legion clothing committee and junior auxiliary in sorting and dispensing clothes. Records show that sixty-seven families were supplied with clothing but Legionaires reported that many others not recorded received clothing. Both the Red Cross and The Salvation Army sent people to the post with referral slips. Others received clothes as they came for meals or for shots being administered at the post.

A second source of clothing for the community was The Salvation Army headquarters at Eighth and Barrow. The Salvationists started clothing distribution on Sunday, March 29. At their request, a planeload of clothing and disposable diapers was shipped from Seattle. Over seventy-five families were provided with clothing and bedding. In ail, eight hundred garments were distributed to families during the first four days after impact.

A rather unique and interesting salvage operation was inaugurated on Tuesday by members of the Spenard Rotary Club. At 10:30 that morning a radio announcement indicated that the Rotary was forming teams to salvage and

evacuate belongings of homeowners in the Turnagain slide area. Volunteers were asked to report to the National Bank of Alaska office at Spenard Road and Northern Lights Boulevard with packboards, ropes, wire cutters, axes, etc. Homeowners desiring assistance were asked to contact the Rotary at the bank. This operation lasted through the next day, Wednesday, and resulted in the removal of valuable personal property worth thousands of dollars, which would otherwise either have been lost or removed at the owners' expense. Alaska Rescue Group members went with each team to ensure safety and supervise activities. The bulk of team members were agile teenage boys and young men who volunteered to assist. Vehicles to transport salvaged goods were provided by local business and construction firms. The operation was officially closed out as of 5:00 p.m., Wednesday, April 1. Not all homeowners whose property was in the slide area availed themselves of this service.

It should not be inferred from these accounts describing housing, feeding, and other welfare activities that all activity was terminated at the end of the emergency period -- about April 1. Rather, such activity continued for a long time throughout the rehabilitation period. However, after the emergency phase, these services were more systematic and formalized and they were handled through the regular agencies set up for that purpose.

Chronology of the Provision of Food and Shelter

Friday, March 27, 1964

After impact, about 6:00 p.m.	The American Legion commander of Jack Henry Post No. 1 inspects the building and issues a call for members to report there as soon as possible.
8:00 p.m.	The radio announcer at the Safety Building is asked to report that the Legion building is open as a shelter. Damage assessment crews are in the process of cleaning up several buildings downtown for shelters.
Between 8:00 and 9:00 p.m.	A radio announcement indicates that the city jail, the Spenard Utilities building, the Odd Fellows Lodge, the National Guard Armory, and the North Star School in Spenard are open as shelters.
9:00 p.m.	A Salvation Army officer announces that a shelter is open in the Federal Building downtown.
Between 9:00 and midnight	A number of churches open their doors as shelters. Coffee and sandwiches are served by The Salvation Army at the Federal Building; the YMCA and the American Legion Post No. 1 also serve food.
10:00 p.m.	The National Guard is setting up a kitchen for 100-200 people. (SCD log) The Alaska Methodist University president offers AMU buildings as shelters for the night.

Saturday, March 28, 1964

12:25 a.m.	An announcement by the police department: Advise people wishing to return home in Anchorage not to do so. Go to Carpenters Hall or other housing for the night. (SCD log)
12:31 a.m.	Additional housing is needed. (SCD log)
1:30 a.m.	The Salvation Army moves its coffee making operation to the Federal Building.
3:00 - 4:50 a.m.	During a meeting at the Safety Building it is agreed that the Army will provide three mobile field kitchens for mass feeding.
3:30 a.m.	Seven hundred loaves of bread are being air shipped from Fairbanks and will arrive at 7:30 a.m. (SCD log)
4:50 a.m.	A radio announcement indicates that public mass feeding would be set up at three locations in the city by 9:00 a.m.
During the day	Meals are served at the Legion post, the Federal Building, The Salvation Army headquarters, the YMCA, the National Guard Armory, and the three mobile Army field kitchens. Many who stayed at shelters disperse before anyone can get their names or addresses. Many telephone calls to the Legion post and The Salvation Army are made by private householders who offer to share their homes with persons displaced by the quake. Food is also distributed to emergency workers via mobile canteens by The Salvation Army. A restaurant is opened on Government Hill at the request of the city officials.
Night	Shelters at the National Guard Armory, the YMCA, the American Legion, and the Edgewater Motel house evacuees.

Sunday, March 29, 1964

Mass feeding at Army field kitchens continues. The Salvation Army, YMCA, Legion, and Guard continue food preparation and dispensing throughout the weekend.
Clothing is dispensed at The Salvation Army headquarters.
The same shelters that remained open Saturday night are open.

Monday, March 30, 1964

Mass feeding continues. Shelters are almost empty except for the YMCA. Most families are placed in temporary housing.
The Legion post mounts a clothing drive and is swamped with contributions.

Tuesday, March 31, 1964

The Spenard Rotary Club organizes a salvage operation to retrieve personal property from the Turnagain slide area. Food programs are continued but the number of persons coming to the field kitchens is reduced.

Wednesday, April 1, 1964

5:00 p.m. The salvage operation at Turnagain is "closed out." Mass feeding continues and is terminated at the end of the day.

E. Low Priority Functions -- Economic and Leisure Activities

Earlier we suggested that priorities can be seen not only in terms of increased activity for particular functions of community life but also in terms of the "withdrawal of effort and concern." It was suggested that low priority would be given to economic activity and the activities centering around leisure and recreation. In effect, these areas of community life might be sacrificed so that manpower and resources could be transferred to those functions with higher priority. The following discussion concerns itself with these two functions which we suggested might have low priority. One situation factor should be mentioned initially -- the fact that the emergency spanned the weekend when there is normally less economic activity but probably more leisure activity than at any other time during the normal week.

1. Economic Activity. When the earthquake struck, most of the businesses in the downtown area were either in the process of closing or close to it. A few shoppers lingered in Penney's department store but for the most part the business day was over. After the earthquake, the remainder of the evening and night involved little act v.ty except checking on the condition of the buildings and/or merchandise. Security and control measures inaugurated by the police, as well as the darkness which came soon after, precluded anything more than that. Most businessmen either stayed at home or became involved in the emergency effort.

On Saturday morning a few food stores and service stations in outlying areas were reported to have been open but aside from these there was no business activity whatsoever. Downtown businessmen made surveys of their facilities when they were able to secure passes. Some sporadic cleanup and preparation for reopening occurred, but with the restoration of utilities still problematic, not much was done. Emergency crews went through the area searching for casualties and securing broken store fronts with sheets of plywood. Removal of dangerous debris, especially that which was overhanging sidewalks and streets, was also in progress.

The first major activity involving the business sector occurred on Sunday afternoon. An informal meeting of local bankers convened at the Public Safety Building to discuss mutual problems. Present were the mayor and the city manager, most of the local bankers, and representatives from several Seattle

banks. There was considerable discussion about the possibilities of a run on cash in the banks when they reopened. Most of the bankers felt they had sufficient resources available to handle "a pretty sizeable run." A second topic discussed was the timing of reopening. Some banks had sustained damages at their main buildings. Since it would create problems for some banks to open for business before others, it was agreed informally that they would all remain closed until all could open at the same time. Banks with branches could open their outlets in outlying areas, but two did not have branches and would have to open in the downtown area. It was generally agreed that all banks faced similar problems and that they would work together as a unit for the duration of the emergency. It was felt that banks could reopen on Tuesday providing utilities could be restored to the downtown area.

On Sunday, also, the mayor appointed a twenty-man commission to represent private business and residential interests. This group, called the Anchorage Reconstruction Commission, met with the OEP head and Alaska's Congressional delegation -- two senators and one representative -- on Sunday to discuss ways of providing assistance to the "private sector." This commission, headed by a city councilman, had a broad range of interests and agencies represented in its membership. Besides the councilman, there were five bankers, one member of the Chamber of Commerce, one each from the Alaska State Senate and House of Representatives, two from the city planning department, representatives from organized labor and from the Associated General Contractors (AGC). The Alaska Railroad, Alaska State Housing Authority, Federal Housing Authority (FHA), and House and Home Finance Authority (HHFA) were also represented. Among their early recommendations was an immediate moratorium of all Veterans Administration and Federal Housing Administration insured mortgages.

On Monday, March 30, both local newspapers resumed printing. One daily paper listed at least seventeen businesses as open on Monday. Bakeries were back in operation and dairies outside the city had plenty of milk available. City crews worked until late Monday evening restoring utilities in the downtown business district so that they could reopen Tuesday morning. Local businessmen were asked to have someone at their place of business as utilities were restored to prevent unnecessary flooding, fire hazards, etc., as the services were turned on.

By Tuesday morning, the cordon around the damaged downtown area was reduced to permit as many businesses as possible to reopen. All banks were open at either suburban branches or downtown offices. One bank with a fairly heavily damaged main building downtown opened for business in several house trailers parked at the sidewalk. Tuesday newspapers had many ads indicating that businesses were open. The following are typical statements in many ads:

> Plenty of food on hand. Our heartfelt thanks to all who so willingly pitched in and helped us in our cleanup job, so that we could reopen the store.
>
> We are open for business as usual.
>
> We are open and doing the best we can! Come in and let us assist you. Open 9:30 to 9:00.

One enterprising proprietor with a sense of humor nailed a sign on the front of his former location in the Fourth Avenue slide area: "Closed Due to Early Breakup. Business Moved to Seventh and C."

The run on cash at the banks never materialized although a million dollar reserve had been brought in to meet this contingency. In addition, both the military and west coast bankers had offered assistance as needed. By the end of the day, receipts showed that there had actually been more deposits than withdrawals overall. Bankers were relieved at this and placed the extra cash into reserves again.

Business was slow on Tuesday. However, on Wednesday, nearly all of the area businesses capable of opening were open. The food markets entered a full page ad in the newspaper indicating that they would continue cooperating with CD and local authorities and would keep prices normal. Customers were urged to limit their purchases to normal needs and to avoid scare buying and hoarding.

Later reports indicated that normal business activities were below average for the next several weeks and then began to increase. By the fall, it was apparent that the community was experiencing a "boom." Most businesses closed out the year with a decided increase over 1963. While there was some grounds to argue that the disaster itself created the boom, since reconstruction aid did bolster the economy, Anchorage businessmen pointed out that the area had been experiencing an almost continual boom for the last ten years. Regardless of the increased business activity later, it is clear that business activity was almost at a complete standstill during the emergency period. The stores which did remain open were those which could provide some justification to being related to immediate emergency activity, i.e., food stores, service stations, etc.

2. Leisure Activity. The leisure category encompasses a wide variety of activities. The focus here will be on those activities which involve significant numbers of community members and which are open for most who wish to participate. In particular, theatre attendance, participation in bowling and in organized sports leagues, scheduling and attendance at club and association meetings, public library use, and patronage at bars will be considered. While these do not exhaust the leisure possibilities, perhaps they are sufficient to indicate the nature of leisure participation during the emergency period and immediately following it.

a. Theatre Attendance. Anchorage had two theatre buildings and a drive-in outside the city at the time of the earthquake. The buildings were both on Fourth Avenue, just about five blocks apart. The Fourth Avenue slide totally destroyed the Denali Theatre but left the Fourth Avenue Theatre undamaged. Only one of the theatres was showing a film at the time the earthquake struck.[10] This film, a Walt Disney matinee for children, was in progress at the Fourth Avenue Theatre just three blocks from the slide area. With approximately seven hundred children in attendance, the manager took quick action. Posting ushers in the aisles to prevent anyone from leaving, he went to the stage in front and spoke to the children, asking them to remain in

their seats. The theatre had auxiliary power which came on moments after city power failed so there was no lighting problem. The children remained in their seats and no one was hurt.

Immediately after the quake anxious parents began arriving to pick up their children. The theatre was closed for the night and not reopened until Thursday, April 2, two days after the emergency period was over. There was a full house that night and when patrons entered many jokingly inquired, "Is this building earthquake-proof?" To which the manager replied, "Well, nothing happened last time'"

After it reopened, the Fourth Avenue Theatre featured matinees beginning at 1:00 p.m. in addition to its regular evening shows. Employees from the Denali worked the afternoon matinees while the regular Fourth Avenue employees continued in the evening. Attendance remained high during the next weeks and months, so that the manager could report at the end of the year that 1964 receipts were greater than 1963 despite the loss of one building.

b. Bowling. None of the five bowling establishments in the area suffered severe damages. All were closed during the early part of the emergency period. The first one opened for business Sunday afternoon. Very few customers dropped in. On Monday morning, the proprietor received a call from state Civil Defense asking whether he was open for business. When he said he had been open the afternoon before, they asked why he had not advertised it. The proprietor indicated he had not felt it was appropriate since others were not yet able to open. The SCD representative then asked whether it would be all right to have it announced that the bowling alley was open for business since recreation was one of SCD's big problems. They wanted something to provide an outlet for activity "to take people's minds off their problems."

Another bowling establishment opened on Wednesday, April 1. The manager of this establishment, located on Government Hill, had also been approached by the police and asked to reopen as soon as possible. The police indicated that they felt having recreation available would reduce tension.

A third bowling alley did not open until a week after the earthquake, having sustained some damage to the building.

In contrast to theatre attendance, bowling activity was greatly reduced as compared with pre-quake activity. Some of the regular leagues cancelled completely. One manager reported that his business dropped 75-90 percent during the weeks following the earthquake. A year later bowling establishments reported activity was still not up to pre-quake levels.

c. Organized Sports. Anchorage had a community center with a basketball court, rooms for ping-pong, boxing, and club meetings. There were also ice skating and swimming in season. The Parks and Recreation Board of the city had primary responsibility for the community center and other city recreational facilities. The earthquake did not damage the center but as soon as it could be reoccupied it was taken over by the Corps of Engineers, Engineering Consultants, Federal Aviation Agency and others. Every room except the gymnasium

was occupied. All official recreation activity normally sponsored by the Parks and Recreation Board was suspended until after school was out in June. The gymnasium was not made available for basketball until the end of the second week following the disaster. League play was not resumed. Normal use of the center facilities for March and April involved basketball league games, youth activity, ping-pong, and meetings of clubs and associations. All of these were cancelled.

Another source of organized recreation in the community was the YMCA, located near the downtown area. During the emergency their facilities were used as a shelter and also housed the Red Cross operation. All their programs were terminated: bridge, dancing, swimming, fellowship suppers. Movies were shown in the shelter area to provide some recreation for evacuees but these were not available to the community generally. The bridge group, the first to be reinstated, resumed several weeks after the earthquake. It was not until late May and early June that the normal programs were re-established.

It should be mentioned that the timing of the disaster had some effect on the recreational response presented here. Winter sports and recreation usually ended with spring breakup which was just a few weeks away. Thus, many of the organized recreational activities would have ended soon anyway and it did not make sense to re-establish them for just a week or so. That this was not the only factor involved, however, can be seen in that the normal spring sports and recreation did not begin until late May or early June in most cases.

d. Clubs and Associations. Before the disaster, Anchorage had numerous informal clubs and associations which met regularly. All meetings scheduled for the weekend of March 27-29 were cancelled. In fact, most meetings were cancelled for some weeks following. The community center facilities were occupied but other meeting places were available. Records show that meetings scheduled at these places during the first two weeks after impact were primarily formal organizations and agencies of the city or state. The city council met in the basement of the library on Tuesday March 31, at 8:00 p.m., its regular time and place. Others used the library. Meetings of clubs and social groups did not begin until April 10, when one was scheduled. It was three weeks before some semblance of normal use by these groups occurred.

e. Library Circulation. The circulation figures at the Z. J. Loussac Public Library showed an active participation by community members. Library use dropped for about a month after the disaster. The figures below show a drop of at least 4,000 for the first month after impact, as compared to the same month in 1963 and 1965.

Library Circulation Totals for April, 1962-1965,
Loussac Library

April 1962	18,323
April 1963	20,341
April 1964	16,388
April 1965	22,943

f. Bars. Many of the important centers of leisure-time activities in Anchorage were the bars. As pointed out earlier, bars were closed down during the emergency -- at least until Sunday evening. Seventeen of the over one hundred bars in the area were either totally destroyed or needed to be relocated because of slide damages. When they reopened, most bars experienced a slight increase in business during the daytime but about 50 percent decrease at night. One owner reported that it was more than a month before people ventured out at night again. "Things were pretty dead every place for a month or so all over town."

Thus, with the exception of theatre attendance, all of the leisure-time activities examined showed decreased participation after the emergency.

One other area of community activity which tended to have lower priority was formal education. Since the impact was late Friday afternoon, all schools were closed for the weekend. While some staff members were still in the building, no injuries occurred in the schools. The building and grounds supervisor arranged a systematic check of all facilities and by 9:30 p.m. was able to report that two schools were severely damaged. While a number of others sustained some damage, they appeared sound. Most of the schools had materials, papers, and chemicals scattered about and would require extensive cleanup.

On Sunday, after a staff meeting, the district superintendent announced in a news release broadcast that no schools in the district would be open on Monday. Corps of Engineers teams checked the buildings on Monday. For the remainder of the week, survey and cleanup continued. Arrangements were made for bus service and double shifts to accommodate students from two severely damaged schools. Ten schools were reopened on Monday, April 6, and eleven more on Wednesday. One school did not reopen till April 14 since evacuees from Old Harbor were being housed there. Thus, twenty-three of twenty-five buildings were reoccupied with minor repairs within a little over two weeks. Out of an enrollment of about 17,000 in the district, 97 percent were back in school after missing only seven days. On the other hand, it was clear that formal schooling was considered "expendable" during the emergency. While the economic life of the community began to settle down Tuesday and Wednesday, it was not until the next week that the schools resumed, and even then the concern was as much for "getting the children from under foot" as it was for educational values. During the emergency, many of the children had acted as messengers and found other small but important tasks. When the emergency was over, their involvement was ended and there was "nothing to do" except go back to school. During the emergency, there was no recreational activity unless the excitement and enjoyment of participating in emergency activity can be so considered.

This completes our analysis of the priorities given to community functions during the emergency period in Anchorage. We have examined the activities of various organizations and organizational personnel since these formed the core in the emergency social system which emerged in Anchorage. Of course, many individuals also contributed significantly to the emergency social system through individual, not organizational, acts. Collectively, these individual acts formed a great part of the total emergency social system. It now remains

to make a final assessment of the community priorities which were hypothesized earlier to see if the activities which actually emerged in Anchorage fit the sequence which was suggested. This is the topic of the last chapter.

FOOTNOTES: Chapter VII

1. This group, organized around a city engineer, the manager of a collection agency, and a business agent for a local construction workers union, emerged early Friday night and continued its emergency operations through Tuesday. They performed all sorts of tasks from organizing the damage assessment crews to arranging for shelters, procuring supplies and equipment, demolition and removal of dangerous debris, registering and organizing volunteers, etc. They were known variously as the damage assessment group, damage control group, disaster control group, as well as identified by the name of their major organizer.

2. These "native" Eskimo Scouts were excellent guards and highly respected for their professionalism as soldiers. Many of them knew only a little English.

3. See Appendix C for the complete announcement released at 1:30 p.m.

4. See, for example, E. L. Quarantelli, "Images of Withdrawal Behavior in Disasters: Some Basic Misconceptions," Social Problems 8, no. 1 (Summer 1960): 68-79.

5. The definitional process is discussed further by Russell R. Dynes, Organized Behavior in Disaster: Analysis and Conceptualization, Disaster Research Center Monograph Series (Columbus: Disaster Research Center, The Ohio State University, 1969).

6. One sidelight -- perhaps apocryphal -- was the statement frequently heard that mail was delivered as usual on Saturday, the day following impact. We have not been able to verify this.

7. The absence here of detailed description of Red Cross activity can be explained on the basis that the local chapter was one of the few Anchorage organizations which was severely affected by the quake. Its office was in one of the damaged areas and many records and materials were destroyed. As a consequence and also according to the usual Red Cross plan, much of the activity within the community was carried on by regional personnel, primarily from the Western Region. This activity is excluded here since we concentrated on the emergency period in Anchorage. Major Red Cross activity occurred outside Anchorage during the emergency period and in the rehabilitation period.

8. Howard Kunreuther and Elissandra S. Fiore, The Alaskan Earthquake: A Case Study in the Economics of Disaster, Case Study F 228 (Washington: Institute for Defense Analysis, Economic and Political Studies Division, 1966), Table 1.

9. Ibid., Table 2, p. 27.

10. The Denali was showing "Irma La Douce," an adult film, and thus had no matinee. It was due to open at 6:00 p.m. No one but the ticket girl was in the building at impact.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

The preceding chapters have detailed the various activities which occurred during the emergency period in Anchorage. In chapter three it was hypothesized that the emergency social system would reveal rather clear priorities in community functions during this period. It was suggested that highest priority would be given to preservation of life, and then, in order, to the restoration of and maintenance of essential services, to the maintenance of public order, to the maintenance of public morale, and finally to the provision of food and shelter for community members. It was also suggested that those activities relating to the production and distribution of goods, the more formal aspects of socialization, and the more traditional avenues of social participation within the community would be minimal. Let us review some of the salient points in each of these areas for indications of priority.

Preservation of Life

Activity associated with this began immediately and continued throughout the emergency period. However, the most widespread and sustained effort occurred during the hours between impact and darkness. After it became dark, activity was limited more to the hospitals and organizational headquarters areas. One major exception was the search of the Turnagain area after 11:00 p.m. by Alaska Rescue Group members. Medical care was organized at the hospitals with staff members doing most of the work. Few volunteers were used except in supportive activities such as runners, cleanup helpers, etc.

Search and rescue was more diffuse and uncoordinated with a mixture of individuals, volunteer groups, and formal organizations involved. The most organized effort on Friday night was in Turnagain where helicopters were used to lift some people out of the slide area. Concern with search and rescue was not manifest in the activities of most city departments during the first three or four hours after impact. Both fire and police departments made only unsystematic searches here and there. Damage assessment teams were instructed to make systematic searches, but locating and extricating disaster victims was only one of their assignments. It is interesting to note that a systematic search of the damaged areas was not organized until Saturday morning. Public health efforts were begun Friday night when a sanitarian was asked to set up a program to provide safe drinking water for Saturday when inoculations against typhoid would be given.

It is interesting, too, that no medical personnel, other than a public health official, took an active part in the 3:00 a.m. meeting. The absence of medical personnel has several possible explanations. First, it is possible that they were completely preoccupied with medical tasks and hence could not attend. Second, it may have been assumed that the medical facilities and personnel were fully capable of handling the casualties known at the time and that the major tasks remaining were restoring other community services. The

hospital which had taken the bulk of the local casualties had announced that they did not need additional staff quite early in the evening. In any case, the relative "inattention" to medical care was in contrast with the fact that three different municipal officials did report on search-and-rescue activities by their respective agencies. This indication of the lack of systematic and coordinated efforts of search and rescue seems to suggest that search and rescue was not considered as an integral part of the overall problem of the preservation of life. It was still problematic even the next day.

Restoration and Maintenance of Essential Services

Here a more organized attack was evidenced. Power, water, telephone, and gas utility crews were in action within the first hour. A sustained twenty-four-hour-a-day effort was mounted in each of these areas. Again the major work load was carried by the regular crews. This was especially true of city utilities which used almost no outside help. The gas company, which called in thirty skilled workmen from Seattle and employed a number of local volunteers, was the only exception.

Restoration of utilities to hospitals and to control headquarters was given first priority. Next was restoration of service to other utilities. For example, after ascertaining that the hospitals had gas, crewmen were assigned to laying temporary lines which would restore service to the city power plant.

It should be noted that many of the participants at the 3:00 a.m. meeting were representatives of the various community services, in particular, the utilities. (See Appendix B.) Much of the content of the meeting dealt with status reports on the extent of damage and the resources necessary to restore the facilities. Also, at that time, the notion of the priority of repair to damages at crucial points in the emergency social system, i.e., key institutions, medical facilities, etc., was introduced.

Certain kinds of community facilities had less priority than did the utilities. Sanitation services were not given immediate attention. In fact, it was not until Saturday morning that men and equipment were allocated to freeing trapped sanitation trucks. Emergency sanitation was provided Saturday afternoon when oil drums for the disposal of human wastes were prepared and distributed. Schools were checked within a few hours after impact, but there was no sustained effort to have them restored to service immediately. It was over a week before any schools were in session.

Transportation arteries and channels of communication received more immediate attention. However, there was no systematic or community-wide effort until Saturday morning when the Department of Public Works began to haul gravel to fill in sunken spots and crevices in the streets. Radio stations returned to the air soon after impact but each operated on its own. Two radio stations became the main channels of public communication during the emergency period. State Civil Defense, RACES, state police cars and hams not affiliated with RACES -- all were involved in providing additional channels of communication

while normal telephone and Teletype facilities were being restored. These emergency communications links were allocated primarily to hospitals and emergency control headquarters.

Other Functions

Control efforts got under way immediately and were given sustained attention throughout the emergency period. City officials took steps to supplement the normal control and security personnel before they attended to other matters. Security and traffic problems were neutralized before midnight. Information gathering -- inventory, appraisal of damage, and monitoring of emergency activities -- came second. The 3:00 a.m. meeting in the Public Safety Building marked a definite turning point from a largely uncoordinated and apparently confused response at this community level to the beginning of a more integrated endeavor. From this time, order and control developed so that by Tuesday morning most community functions could again be allocated to the sectors and/or organizations that normally handled them. It should be pointed out that almost all utility services were restored by Tuesday morning.

Public morale activity was more mixed and sporadic. It began on Friday evening as soon as the radio stations returned to the air and continued off and on for some weeks after the close of the emergency period. Retroactive self-congratulation was in evidence a year later when the two newspapers published earthquake anniversary editions. No real priority was given to this activity; it seemed to have been interwoven among other emergency efforts.[1]

The situation concerning the provision of food and shelter was somewhat mixed. Although this area did not receive the immediate and intense attention given to some of the others, there were early attempts to provide temporary shelter and food. Shelters were available by 8:00 p.m. on Friday. By Saturday evening, twenty-four hours after impact, only minimal numbers remained in the public shelters. Mass feeding began on Saturday morning and continued until Wednesday, April 1. Some clothing was distributed.

Economic activities were almost totally suspended for the duration of the emergency period. Only a few stores and restaurants were open on Saturday. Most goods and services provided over the weekend were free. By Monday morning some businesses were open and during the next two days most of the normal economic activities in the community were resumed.

Leisure and recreation were definitely given low priority for some time after impact. Under normal circumstances there would have been widespread participation in bowling, club meetings, and convivial drinking at bars, etc., but when these pursuits were again available to the community, attendance was well below normal. The major exception was theatre attendance. When the Fourth Avenue Theatre opened its doors on April 2, it had a full house. Afternoon matinees during the next weeks were well attended -- perhaps because schools were closed. Organized sports normally provided through the city's Parks and Recreation Board and the YMCA were not resumed until over a month after impact.

These activities are presented graphically in figure 3 which summarizes the community priorities, both in terms of time and intensity of involvement. Figure 4 also presents the range of involvement of various community organizations with some indication of the major organizations which became involved in each of the various functional areas. These two figures are intended to summarize the diversity of material which has been presented in the previous chapters.

In making a final assessment of the activities which occurred in the emergency period in Anchorage, it can be concluded that, in general, the priority of functions which were revealed by the activity followed the order hypothesized earlier. There were certain "aberrations," however, which require further examination and explanation. The two major aberrations which appear are (1) the greater attention given (than hypothesized) to problems of social control and (2) the sporadic attention given to search-and-rescue activities as a part of the "preservation" of life. The reasons for the "misplaced" emphasis on these areas perhaps can be explained in the following way.

The priority of functions suggested previously assumes that the scope of the tasks which faced the organizations in Anchorage was known. Knowing these tasks and assuming that men and materials were not available to engage in all of them at once, certain tasks are given attention first while others are left until later. This process is predicted on the notion that some assessment of the situation is made, then appropriate action can be taken. This "model" breaks down somewhat in Anchorage for the following reasons:

1. The tasks to be accomplished were not known immediately but were gradually learned over the several days of the emergency period. The accumulation of knowledge of impact damage was the responsibility of no particular organization within the community so it developed haphazardly. Without such knowledge, the selection of tasks and the assignment of priorities were difficult.

2. Regardless of the status of knowledge concerning tasks, certain ones which should have high priority in a disaster event were the responsibility of no specific community organization. In such instances, the community had to become aware of these tasks and then ways of handling them had to be adapted.

3. In the absence of knowledge about "more" necessary tasks, community organizations continued to perform traditional functions which are less relevant to the overall disaster response.

As we look at the Anchorage situation, the range of alternatives seems not to have been clearly defined. This tends to be true in disasters in general and the Anchorage experience was no exception. It was evident that the earthquake had done massive damage -- at least, it was to those who could see the slide areas or who were listening to the radio stations The extent of the damage to the technological base of the community was not as discernible. With normal communications channels destroyed, it was difficult for anyone to garner enough information to make an accurate assessment of what

Figure 3: Time and Intensity of Organizational Involvement in Community Priorities During the Emergency Period, Anchorage, 1964

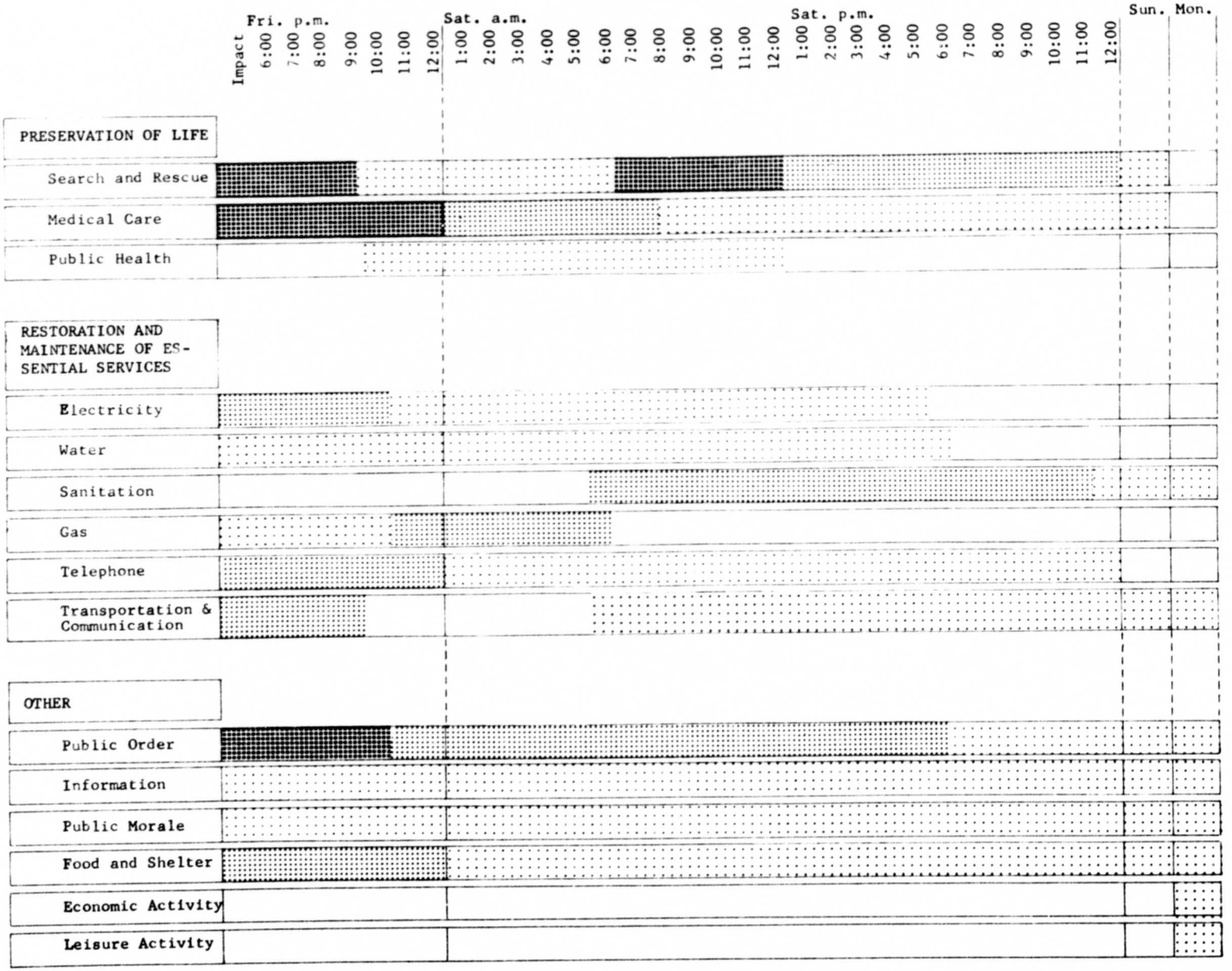


Figure 4: Scope of Organizational Involvement in Community Priorities During the Emergency Period, Anchorage, 1964.

The varying degree of organizational involvement are indicated in the following way: ALL UPPER CASE represent those organizations most intensely involved. Underlined and Lower Case represent, respectively, the next two lower degrees of involvement. No attempt was made to rank order the organizations within these three basic categories.

I. PRESERVATION OF LIFE

A. Search and Rescue

DISASTER CONTROL GROUP
Anchorage Fire Department
Anchorage Police Department
Mountain Rescue
Individuals
City Civil Defense
Army Mountain Rescue
Spenard Fire Department
United States Army Alaska
Ski Patrol
Construction Workers
Citizens Band

B. Medical Care

PROVIDENCE HOSPITAL
Presbyterian Hospital
Elmendorf AFB Hospital
Alaska Native Hospital
Alaska Methodist University
Anchorage Police Department
Anchorage Fire Department
Alaska State Civil Defense
City Civil Defense
Radio Stations
Hospital Supply Houses
Utilities Companies
United States Army Alaska
Boy Scouts
Volunteers

C. Public Health

Public Health Personnel
United States Army Alaska
Alaska Testing Company
City Civil Defense
Alaska State Civil Defense
Military Air Transport
American Legion

II. RESTORATION AND MAINTENANCE OF ESSENTIAL SERVICES

A. Electricity

MUNICIPAL LIGHT AND POWER COMPANY
Chugach Electric Association
Bureau of Reclamation

B. Water

PUBLIC WORKS DEPARTMENT
Fairbanks Water Workers

C. Sanitation

PUBLIC WORKS DEPARTMENT
Local Contractors

D. Gas

GAS COMPANY
Workers from Seattle

E. Telephone

TELEPHONE COMPANY
Alaska Communication System
Ground Electronics Engineering Installation

F. Transportation & Communication

Federal Aviation Agency
Anchorage Fire Department
Anchorage Police Department
State Highway Department
Alaska State Civil Defense
City Civil Defense
Corps of Engineers
Public Works Department
Anchorage Port Director
Radio Amateur and Emergency Service
Radio Stations
Military Affiliate Radio System
Alaska Communications System
United States Army Alaska
Coast Guard

III. OTHER

A. Public Order

Anchorage Police Department
Volunteer Police
United States Army Alaska
National Guard
Mayor
Alaskan Command
Governor's Office
State Adjutant General
KENI Radio
State Police
City Attorney
Public Works Department
Disaster Control Group
Alaska State Civil Defense
City Building Inspector
State Magistrate

B. Information

Radio Stations
Anchorage Police Department
Anchorage Fire Department
Director of Public Works
City Manager
Mayor
Alaska State Civil Defense
City Civil Defense
The Salvation Army
Damage Assessment Group
Alaskan Command

C. Public Morale

CITY OFFICIALS
RADIO STATIONS

D. Food and Shelter

THE SALVATION ARMY
AMERICAN LEGION
Red Cross
Elmendorf AFB personnel
Providence Hospital
Alaska Native Hospital
Mountain Rescue Club
Spenard Rotary
Alaska State Housing Authority

remained and what could be restored. Both the nature and the extent of the casualties were also not clear. Very apparent damage to structures seemed to suggest large numbers of injured and dead. Yet, no one knew how many or where they were.

The activities of Friday night, March 27 must be understood in the context of these and other uncertainties. Most of the organizations which normally dealt with emergencies retained their personnel and equipment and were able to engage in those problems immediately within their purview. These organizations chose tasks and, in effect, priorities were decided on the basis of the normal functions and responsibilities of the organizations themselves rather than on the basis of community-wide needs. For instance, the fire department used its resources to look for fires (the alarm system was not operating) and to check upon accessibility into areas of potential fires. Firemen did engage in some rescue work but, by 8:00 p.m., all units were at their normal stations. The department's traditional responsibilities were to maintain a stance of fire readiness. Having accomplished this, the department made no effort to engage in "novel" operations. Police, hospitals, utilities, etc., followed the same pattern. Each attended to the traditional duties with whatever resources remained available and made little effort to assume other tasks and responsibilities. For the most part, each had all and more than could be handled within its own sphere. Even the evacuation of the hospital can be understood in this context. Normal hospital functions were jeopardized by the absence of utilities and the presence of gas odors. The solution was to evacuate to another hospital where medical activity could be continued. Thus, for those organizations traditionally involved in emergencies, no "higher" community priorities except those of normal organizational tasks were evident during the early hours after impact. There were no instances of diverting an organization, or a major segment of one, from its own tasks to some other "more important" one.

There were, however, certain unusual or at least nontraditional tasks from the viewpoint of the existing community organizations which needed to be accomplished. In particular, search and rescue was needed and, in a more general sense, an inventory of damage was necessary in order to determine priorities. These "new" tasks were gradually assumed by groups which emerged at the scene of greatest damage and at the Public Safety Building. No established organization or group had the pre-assigned responsibility of making a general check of buildings, streets, and services on a block-to-block basis. A small group emerged early at the Public Safety Building and began doing this work with volunteers. Individuals and small groups began to search damaged structures for victims. Firemen and policemen were also doing some checking but this was on a "spot" basis and did not involve a systematic search of the impacted areas. The search of the Turnagain slide area was done by the Alaska Rescue Group. In effect, the search-and-rescue operations were not viewed as being the responsibility of any particular organization. While a number of the established organizations did become involved, it was more by accident than by plan and it was not until Saturday morning that a systematic check was made. In effect, it was about twenty-four hours before an accurate assessment could be made as to the extent and nature of the casualties. Given the intensity of the quake and the widespread scope of the destruction, it is

fortunate in retrospect that the death and injury rate was so low, but an accurate determination of this was not possible until much later.[2]

The pre-condition to the development of priorities is accurate knowledge, but the collection of information was not a customary function of any existing community organization. At the community level, information was needed concerning the nature and extent of damage to streets, buildings, equipment, as well as to persons. Almost every organization within the community was initially involved in an inventory of damage to its own facilities and services, but this information tended to remain within the organization that gathered it. No centralized information center emerged or was arranged for during the first few hours. Before long, however, the Public Safety Building became the place to find out what was going on. Hundreds of persons crowded into its corridors, especially at the police counter where several officers, the damage assessment group, military liaison, and the radio microphone were available. This building had been relatively undamaged and was near most of the downtown damage area and was, of course, the organizational headquarters for many municipal agencies.

The building became the location of much of the information being gathered through the community, but such information was still widely diffused throughout the community. The nightlong search for information culminated in a mass meeting at 3:00 a.m., Saturday. Here information which had been collected by organizational representatives and individuals was pooled and, for the first time, a fairly complete picture of the conditions and needs created by the earthquake became available to the responsible community officials. At that time, many of the small groups and individuals who had been involved in search and rescue were able to provide some of the more systematic information to the meeting as to the extent of the damage. Thus, search-and-rescue operations became, in fact, information operations. From this meeting, certain channels of communication were opened up and the rudimentary forms of cooperation and coordination became established among the various organizations which had become involved.

In the absence of knowledge in the early hours of the emergency period, however, most community organizations tended to pursue their traditional tasks and to be unaware of the even more pressing needs of the larger community. Hospitals were concerned with the medical problems which were brought to them. Organizations which were concerned with utilities made their own damage assessment and initiated work on those aspects which they defined as essential to their particular concern. On the other hand, search and rescue became the province of anyone who wanted to do it. Too, search and rescue, unlike other essential functions, ceased for all practical purposes with the advent of darkness and was not resumed until daylight the next morning. What might have happened if darkness had not intervened is a matter of conjecture but it should be noted that utility crews did work throughout the night and the next day without pause. Doubtless the swift and continuous action here was due to the fact that regular crews were by and large intact and were accustomed to responding quickly to emergencies.

In the absence of information which would allow the resources of the community to be utilized for those tasks with higher priority, many community officials and organizations became diverted to measures relating to social control. Many individuals within the community became involved early in supplementing the police force, in providing security for exposed property, and in controlling collective behavior. A number of organizational officials and members became involved in this activity -- city officials, military personnel, and a variety of others. Salvation Army officers, for example, spent the first half hour or so helping the police direct traffic. Many others assumed responsibility for directing traffic or guarding buildings. Within the police department itself, the initial objective was to gain control of the downtown damage area by posting traffic monitors and security guards at intersections and buildings. As soon as the radio stations were back on the air, announcers were asked to instruct drivers and pedestrians to keep away from the damaged areas -- a control effort. As has already been indicated, while many persons were involved in this activity, few did any systematic search-and-rescue activity. In the absence of knowledge, then, organizations such as the police continued their traditional security and traffic control functions and were joined by many others. The preoccupation with these tasks would indicate that they gave it high priority.

This "over" concern with control measures can perhaps be explained by several different factors. Such control measures are the traditional tasks of organizations such as the police. The police almost always become involved in "emergencies" but seldom emergencies of a nature which require search-and-rescue activity on a wide scale. In the early stages of the emergency, we have alluded to the tendency for all organizations to continue traditional tasks. Such preoccupation with control was also supported through the pressure that everyone in a disaster feels to "do something." Since much of the damaged area was in the downtown area near the Public Safety Building, "something" which everyone could do with little equipment and few resources was to direct traffic or guard a building. In that way, such individuals could make their personal contribution to the initial disaster response without organizational membership and with limited organizational involvement. This concern for social control was also fed by the customary preoccupation on the part of community officials that the behavior which follows impact would be somehow antisocial and, thus, panic and looting would become common. In order to avoid these anticipated consequences, which are by and large mythical with regard to events which follow a natural disaster, a great deal of community effort and concern was evidenced. These efforts, however, were less important to the total community than was systematic search and rescue or even information gathering which would have allowed the development of more realistic priorities within the community. This does not imply that control measures are not important. Convergence on the impact area by persons is common in disasters and the end result is often confusion and traffic jams which impede emergency activity. The point here is that security measures were taken to control the impact area which resulted in its isolation rather than facilitating activity which was directly related to the preservation of life. In the Anchorage situation, as well as in other similar situations, concern for social control and security measures was somewhat misplaced. While there are real problems in the control of men, vehicles, and materials which converge on the

impact area, the intent of the control measures should be in terms of facilitating this help and not organized in terms of fear of irrational behavior in the aftermath, which is uncommon in any natural disaster situation.

There are several implications which may be suggested here. First, there are certain activities which become crucial in disaster operations which exist only in rudimentary form in the community prior to the event. These "new" activities are search and rescue and information gathering (damage assessment might be another descriptive term). Those community organizations which are present in most American communities in general seldom see these activities as being within the scope of their anticipated disaster responsibilities. Consequently, when a disaster occurs, these tasks tend to be ignored while existing community organizations become preoccupied with their "own" responsibilities. Most frequently, informal groups within the community do emerge to cope with these new problems. Perhaps prior disaster planning can assign the new tasks as being the responsibility of specific organizations. Given the tendency for an existing organization to continue its specific responsibilities into the emergency period, this would increase the possibility that such tasks would be attended to earlier in the emergency period.

Also crucial in disaster planning would be to devise ways of acquiring, collecting, and cumulating information about the extent of damage which results from disaster impact. In most American communities, most organizations do keep other relevant organizations informed of their status and problems. This is most frequently done selectively and is often couched in "public relations" terms. There is seldom any "collecting agency" which can summarize what community needs exist at a particular time and what resources the community has to meet these needs. In disasters, as was evidenced in Anchorage, such knowledge does accumulate rather haphazardly. Such knowledge is essential in making a realistic assessment of what needs to be done and what can be safely ignored. It deserves to be accumulated more systematically.

These brief comments should not be interpreted as criticism of what went on in Anchorage. The remarks have the benefit of hindsight since the intent of any study of a disaster situation should be to provide an understanding of the more general process of adaptation to such events. Such has been the intent of the preceding analysis.

Perhaps a note should be added on another factor in the disaster response in Anchorage which was mentioned much earlier. Anchoragites during the emergency period and afterwards made much of their ability to respond to the crisis as being an integral part of the "frontier spirit" which characterized Alaskans in general. Many Alaskans believed it was an important factor in the rapid recovery of Anchorage. Radio announcers talked about it, newspaper editorials mentioned it, and at every small gathering, especially during the emergency period, one heard reference to it. It became an integral part of "public morale." Expressions such as the following were typical: "This is frontier country and we are used to hardship. Even those of us living in town spend our weekends roughing it. We know how to take care of ourselves." And, from one tough old Alaskan who had been around a long time, "They were magnificent. I used to complain that we were getting soft, that the younger generation just

didn't have it, but no more. I'm proud of the way Anchoragites pitched in and did what needed to be done!" Members of out-of-state and federal agencies who came to Anchorage during the early days after the earthquake also talked about the frontier spirit, the self-reliance of Alaskans.

However, taking the long view, a comparison of the behavior of Anchorage community citizens with that of citizens of other American cities stricken by natural disaster would suggest that the effect of the so-called "frontier spirit" of Alaskans in the disaster response is largely a myth. This is not to say that it is not a vital part of their universe of discourse, nor that they do not believe in it. Rather it is a myth in the sense that it had no apparent effect upon behavior beyond the normal impetus given by disasters. The behavior of Anchorage citizens was in no way atypical of post-disaster behavior elsewhere. There are several items which might be adduced in support of this contention.

It is normal during disasters for large numbers of persons to work for long hours without much food or rest. A spirit of altruism generally prevails, breaking through previous class and status barriers to provide help to anyone who needs it. People open their homes to evacuees, give clothing, food, and equipment freely to those who are temporarily dispossessed. Wolfenstein suggests that a sense of guilt on the part of the survivors for having been spared may lie behind much of the apparently altruistic behavior.[3] Whatever explanation one may prefer, it is difficult to see anything unusual in the Anchorage situation.

Secondly, it is typical during disasters, especially those involving sudden impact, to observe a lot of self-reliant, innovative behavior as men and equipment are diverted to unusual tasks in new and different ways. Typically, local heroes may emerge at crucial points. These are lauded in the press afterward. Alaskans in Anchorage were true to type in this respect, also.

Thirdly, after the first emergency problems are under control and aid from outside the community becomes available, it is normal to see an accelerating shift from accepting help to expecting it and almost demanding it. Firms which offered supplies, personnel, or equipment "free for the duration" begin to expect to be reimbursed. Individuals remember long hours of overtime work and ask payment. So it goes. Altruism and a communal orientation begin to be dispersed in a plethora of private interests. Again, Anchorage was not unusual. Within less than an hour, aid was requested from the military. The community depended very heavily on the military for manpower, vehicles, supplies, food, etc. Nor was the military the only "uncle." State and federal moneys were avidly cultivated, sometimes jokingly referred to as "foreign aid for Alaska." Delegations were sent to Washington to lobby for an omnibus bill to deal with local economic woes. It was hoped that FHA mortgages could be forgiven. Federal programs such as urban renewal, OEP, and aid from other governmental agencies were considered partly on the basis of the amount of outright grant which was involved. The press kept anxious watch over the process, pointing out the merits of each approach in terms of what it would do for Anchorage and Alaska.

If the frontier spirit means self-reliance and an aggressive independence, it was no more visible in Anchorage than in other disaster-stricken communities. This again should not be regarded as criticism, just a notation that Alaskans are normal human beings, motivated by wants and aspirations similar to most Americans. Their behavior during the height of the emergency period was similar to what can be found in other American communities. Contrary to what is often implied in mass media accounts, neither individuals nor communities descend into "chaos" as a result of a disaster, even one as wide in scope and as serious in intensity as occurred in Alaska. In certain ways, the response does have some parallels to the "frontier spirit," not just in Anchorage but in all such communities. Community members are suddenly faced with some of the basic problems of life from which the "veneer" of civilization often shields them today. They are faced with problems of death and injury, without the easy availability of trained medical help. They are faced with the dramatic realization of the importance of lights, water, and the variety of community services to which they have become accustomed in the course of modern life. They come face to face with problems of food, clothing, and shelter without the surety of the supermarket, the department store, or the real estate agent. In this sense, disasters provide a frontier situation where adaptation, flexibility, and creativity are required. Contrary to the pessimists, the fruits of technology and of "civilization," in general, do not atrophy man's skills for adaptation.

Since we have concentrated on the emergency period in Anchorage, we have excluded the longer term problems of rehabilitation.[4] It is interesting to note, however, that the beginnings of this rehabilitation, and consequently the end of the emergency period, can be detected in several places in the previous discussion. We noted that most economic activity came to a halt during the emergency period but, gradually, stores reopened providing a quiet advertisement of "business as usual." A bowling alley opened Sunday afternoon and positive encouragement for it to remain open came from the state Civil Defense. On Tuesday, the banks were all open. On Wednesday, the most symbolic event of all occurred when approval was given to light up the Anchorage skyline. Anchorage was back in "business" again. Turning on the lights signaled a new phase for Anchorage. There was still much to be done and Anchorage was to pass other milestones. In the March 13, 1967 issue of the National Observer a column appeared entitled "Reflections of a Milestone Party," and we will use it for the final observation.

> It was a good Alaskan party from start to finish, all nine hours of it. But not until 48 hours after it had ended did I understand its special significance.
>
> The five couples involved had known each other for years, and this was apparently just another winter party. It began with cocktails at 6:00 p.m., and ended with a coffee session that broke up at 3 o'clock the next morning. We talked about all the usual things, or thought we did -- politics, war, art, sport, food, music.
>
> The next day my wife agreed with me that there was something different about this last party, but she was unable to define it.

I was alone when the answer arrived, and my first impulse was to call my sociologist friends at the Disaster Research Center of Ohio State University and announce that a real milestone had been reached. For nearly two years after the massive Good Friday earthquake rearranged this part of Alaska in 1964 the Ohio State scientists had been probing every aspect of the disaster and its effects. Dr. William Anderson, the expert who interviewed me, must have traveled to Anchorage six times in studying the city's efforts to heal its wounds.

Now I had real news for him. For the first time since the earthquake, 10 men and women who had survived it had spent nine hours together without once mentioning the event.

For the first two years after March 27, 1964, it was normal for this same group -- and a thousand others like it -- to relive the ordeal through detailed retelling. It had marked us and affected our lives, changed our city and state and dominated our conversation more than 30 months later. The need to recount our various disaster experiences seemed almost compulsive. Perhaps it was a subconscious device for reminding ourselves that despite our losses (at least three of the group narrowly escaped death) we were lucky to be alive.

Each of us had a different story to tell, and I never tired of hearing my friends recall exactly where they were and what they did on that day. It was the most terrifying ordeal most of us had experienced, and I just assumed we would never escape it in our conversations.

The fact that 10 of us could spend 9 hours together without once referring to our quake was so unbelievable that I checked with other members of the party. They agreed and shared my amazement.

Dr. Anderson hasn't come back for some time, but I think he would agree that our last big party marked a healthy milestone for Alaskans. After almost three years the big quake is no longer a hot topic of conversation in Anchorage.

I can't explain why the disaster is fading from our talk. It might be that we have told and retold our particular stories so often, each person's experiences being known to all others, that we have completely exhausted the subject.

Perhaps the passage of healing time is putting it in proper perspective for us. And maybe, most important of all, we realize that the present and future also have a claim on our thoughts.

FOOTNOTES: Chapter VIII

1. It is unfortunate, in retrospect, that systematic data were not collected on some of the more informal types of behavior which bear on problems of public morale. It would have been useful, for example, to observe religious behavior. Our impression is that few of the public religious services were "suspended" the Sunday during the emergency period but we have little knowledge as to the more private religious manifestations which undoubtedly occurred.

2. An alternate explanation for the sporadic effort which often searched the same area several times was that such continued effort was motivated by the disbelief that the "known" casualty rate was so low compared with the widespread and visible damage. It is interesting to note that one of the changes which occurred in local Civil Defense following the quake was the assigning of search and rescue to specific groups in the event of future disasters.

3. Martha Wolfenstein, Disaster: A Psychological Essay (Glencoe, Ill.: The Free Press, 1957).

4. For some of the long-run consequences, see William A. Anderson, Disaster and Organizational Change: A Study of the Long-Range Consequences in Anchorage of the 1964 Alaska Earthquake, Disaster Research Center Monograph Series (Columbus: Disaster Research Center, The Ohio State University, 1969).

APPENDIX A

THE MAYOR'S PUBLIC INFORMATION RELEASE AT 12:15 A.M., MARCH 28

About 5:30 p.m. last night, Friday, a serious earthquake, followed by a number of lesser shocks at intervals, caused severe damage to the City of Anchorage by cutting all communications, destroying buildings and knocking out all utilities. It also made International Airport non-operational.

Elmendorf Air Force Base emergency runway and tower facilities were usable in short order.

Highways both north and south from Anchorage were made impassable.

The extent of casualties in the City is not yet estimated; preliminary reports, as of about 10:00 p.m. Friday, set the casualty list at 60 injured and four dead. Many homes were knocked down, slipped on hillsides and damaged inside and out.

City, State Civil Defense, and units of the Alaskan Command and Alaska National Guard are maintaining order, and the military are very helpful in supplementing the local and state law enforcement agencies.

Fortunately, the weather is not too difficult; temperature about 30 degrees above; occasional snow flurries in the afternoon on Friday; clear, as this is written at Friday midnight. Freezing does not seem to be a serious threat at this time, although practically all heating systems are out of order for various reasons -- mainly lack of electric power and loss of natural gas supply.

A conference is scheduled at the Public Safety Building in Anchorage at 1:00 a.m., Saturday, in which city, state and federal officials will review the situation as regards public utilities, initial damage reports. Preliminary damage survey crews are expected to have initial reports in for consideration. The supply situation as regards food, fuel and medical items will be discussed.

The State Civil Defense office has radio contact via ham radio operators with the Office of Emergency Planning, Region 8, in Everett, Washington.

APPENDIX B

MINUTES OF THE 3:00 A.M. MEETING, MARCH 28

Present at the meeting in the Public Safety Building at 3:00 a.m., March 28, 1964, were city department heads, Civil Defense officials, military personnel, public health officials, other state and federal officials, Red Cross personnel and Salvation Army personnel.

The meeting was called to order by the mayor who explained that the purpose of the meeting was to obtain reports from the teams and people in the field, to estimate the amount of damage and the number of casualties resulting from the earthquake. He explained further that an attempt would be made to formulate a plan to establish priorities. Current priorities were listed as the location of missing persons and the handling of the health and sanitation problems of the area. An effort would be made to start with a planned program later in the morning. The mayor indicated that the acting Civil Defense director would coordinate the recruiting and dispatching of personnel for the projects. Also, further searches would have to be made to determine if any injured persons had not yet been found or fatalities discovered. Plans would have to be made to protect the health of the community. The mayor then called on the Civil Defense director to speak briefly and to ask for specific reports as they had been gathered. Following are summaries of the reports made by various individuals.

THE ANCHORAGE PUBLIC WORKS DIRECTOR:

Water mains in many parts of the city were broken and drained. The filtration plant sustained no serious damage. Crews have been trying to get water to the hospital -- a matter of prime importance. There is some available there now. When water is returned to the mains it should be regarded as polluted and treated (sterilized) before using. Currently, there is water in parts of Mt. View, City View and Grandview Gardens. Turnagain should have water sometime today.

With regard to streets, the public works director reported that the worst damage is on L Street, all along the bluff, and in the Turnagain area. He said that his department will begin filling holes in the streets by 8:00 a.m. They will need six dump trucks with drivers, also flat-bed trucks with plywood sides which can be loaded by hand. Hand shovelers will be needed, also.

Refuse Problem:

All load packers belonging to the department of public works were lost when the warehouse collapsed on top of them. They will be dug out later in the morning. Further instructions will be given later concerning where personnel and equipment are to report for work.

Sanitary Sewers:

Sewers will be checked out at daylight for damage. Honey wagons are needed for manholes. There were many breaks in sewer lines so that the sewage will rise through the ground in some areas.

Equipment Needed:

All the steam boilers with points available in the area are needed, also, a caterpillar.

BUILDING CONSTRUCTION AND MAINTENANCE SECTION,
DIVISION OF ENGINEERING, STRUCTURAL ENGINEER:

The structural engineer has been directing teams inspecting damage to buildings in the area. Main areas of damage to buildings are in the downtown business district and the Turnagain residential sections along the bluff. Some buildings, including schools, will not be fit for occupancy for some time. More thorough inspections will begin at daylight. Crews will be organized to do away with dangerous situations involving debris, etc. Clearance and removal will begin at 8:00 a.m. Search, rescue and cleanup crews will be under way at that time.

Equipment Needed:

Several tankers for water, especially for institutions, are needed. Arrangements are under way to have water located at certain places this morning.

OFFICER OF THE DEPARTMENT OF PUBLIC HEALTH SERVICE:

The health service is preparing to have nurses in the morning to be used as needed for inoculations or going to outside areas. Public health programs are being coordinated with Civil Defense headquarters at the Public Safety Building. The public health sanitarian advised that chlorinators will be needed. The Elmendorf AFB may have some available, especially for public buildings and institutions. Six will be needed. Ample chlorine supplies are available. Hydrants will be set up for chlorination purposes.

GENERAL DISCUSSION:

It was suggested that water stations need to be established at accessible locations for drinking water only. Radio stations will broadcast the locations where water will be available. (An announcement made immediately after the meeting indicated that military tankers will be available to supply water to critical areas, particularly to institutions. A representative of the Greater Anchorage Health District says that "these water distribution centers will be located at all the schools in the area. They should be set up and ready to supply water by 8:00 a.m.")

Five artesian wells have already been offered for general use.

Funds will be available for health-connected facilities in institutions through the Department of Public Health Service on a long-range basis.

General manpower will be needed on sewage problems. Damage is probably light in residential areas. Cesspool pumpers should be used only in emergencies.

The Army can offer about 35 water tankers and will place them at any location requested.

Facilities for the disposal of human wastes, portable privies, will be needed. These could possibly be furnished by the Army.

MUNICIPAL LIGHT AND POWER MANAGER:

Both of the city's gas turbines survived the quake. The Eklutna station has gone out and damage there is not known. There is no water there for power. At the municipal station the gas lines are out. Oil storage tanks containing reserve fuel in case of gas outage are ruptured and most of the oil is gone. Emergency fuel is being supplied to one generator, providing limited power. Ten percent of the equipment will be back in service as soon as power is available. Crews will make further surveys at daybreak to check on damage. The main problem is in the downtown area where the underground system must be completely checked out before any power can be restored, and there is danger of fire in some of the buildings.

MAYOR OF FAIRBANKS:

Fairbanks city employees have been alerted to stand by in case personnel and supplies for Anchorage utilities are needed. Fairbanks will operate with skeleton crews while necessary line crews and utility workers are sent to Anchorage to assist in restoring utilities as quickly as possible. Equipment and parts are also available and can be flown in as needed. The mayor also said that he has already requested that the area be declared a disaster area.

MANAGER OF THE CHUGACH ELECTRIC ASSOCIATION:

The Knik Arm power plant lost a boiler, and the boiler section is badly damaged. It will be out of operation for at least several days. The Bernice Lake plant has only minor trouble and the Cooper Lake power plant is all right. The main problem is the transmission lines between the Kenai Peninsula (Cooper Lake) and Anchorage. Attempts will be made to locate the trouble after daylight but with reports of slides along the Seward highway it is impossible to determine immediately how extensive the damage might be. The major lines in Spenard and Mt. View are in trouble.

Equipment Needed:

Linemen and communications are needed.

ANCHORAGE NATURAL GAS CORPORATION:

The pressure in the main transmission lines held all the way. The major break is on Post Road at Third Avenue. This break is what caused the lack of gas supply to the city's gas generators. Welders and steam thawers are already on a crash program to repair this break. They are blocking off systems into the downtown area. Currently, there is gas in Mt. View, City View and Nunaka Valley. Two gas companies in the state of Washington (Seattle) are sending crews to assist. Householders using gas should do nothing at this time. Automatic shut-off valves on the meters eliminate any danger of fire or explosions where gas is off. It may be five to six days before heat is available to some homes.

Equipment Needed:

The crew coming from Seattle is most needed. Demolition crews with licensed personnel are also needed. Possibly the military or general contractors could supply such personnel. Repair work at the main break on Third Avenue and Post Road is hampered by a shortage of steam thawers with points. At this time the state highway department representative reported that they had thawers but no points. Chugach Electric personnel indicated that they could supply points. Both agencies agreed to make their equipment available to the gas company to speed up the project. All heavy duty equipment should be taken to Third Avenue and Post Road and dispersed from there.

Additional Remarks Concerning Water:

The damage on Government Hill is not known. The city would like to know when power is restored to Elmendorf AFB so it can cut into that line and restore water to Government Hill.

MANAGER OF THE CITY TELEPHONE UTILITY:

The new $500,000 telephone building survived the quake. There is not a crack in it. However, about 3,000 numbers were put out of commission by wrenching in the underground system. There is no prediction on how long it will take to repair the lines and get them back into operation. About 1,600 of some 6,000 other lines are back in operation now. The system's equipment is about 65 to 70 percent operational. Auxiliary power is being used in the exchange buildings. Additional diesel fuel is needed for that.

The public is urged not to use the lines except in extreme emergencies. Overloading the system can incapacitate it. Crews will be working around the clock, and priority will be given to institutions, doctors, emergency crews, key workmen, etc. The company has sufficient employees. ACS has good contact with the south 48. Lines are being restored at about 100 per hour.

Equipment Needed:

Needed are gasoline for vehicles, diesel at the Broadway and Fairfax exchanges, and clearance for blue trucks so that they can get around town.

CHIEF OF THE ANCHORAGE POLICE DEPARTMENT:

All buildings and damaged business places are being guarded. Fort Richardson has stationed 140 men downtown to guard businesses and banks which were unable to lock up due to extensive damage. In addition, the National Guard has sent 150 men into the city to assist the police department in patrolling the business district and the Turnagain area. Traffic is also being controlled with the help of military personnel. Searches are being continued for injured and deceased persons. No one is allowed to go into the downtown area except emergency workers or owners of business establishments.

Report of Injuries and Fatalities:

At the present time, only 18 minor injuries, 3 major injuries, and 3 deaths have been reported at the hospitals.

CHIEF OF ANCHORAGE FIRE DEPARTMENT:

No major fires have been reported in Anchorage since last night's earthquake. Small fires broke out in the chemistry laboratories of two high schools and a junior high school. However, fire guards stationed at the schools brought the blazes under control before much damage had been done. Extra ambulances have been obtained and firemen from the AFD are going through damaged buildings throughout the city to search for the injured and the dead. Guards are stationed in many buildings. The bluff area at Turnagain has been searched for the injured and the dead. The Spenard Volunteer Fire Department has assumed the responsibility for any possible fires in the Turnagain area.

THE CITY MANAGER:

A finance section will be established as soon as possible to take care of expenditures.

THE STATE HIGHWAY DEPARTMENT:

A spokesman for the state highway department reported that to the north the Glenn Highway is open to Mile 118, and there is no reason to believe that there was any damage beyond that point. There are small fissures and crevices, but they are not major. However, the roadway is slick and should be driven carefully. To the south, the Seward-Anchorage Highway has four bridges down; there are also three down on the Sterling Highway. Landslides and major breaks in roads can be handled, but all motorists are urged to stay off the Seward-Anchorage Highway.

Equipment Needed:

Bailey bridges are needed to replace those bridges lost. Assistance from the military has been requested on this.

RED CROSS:

A supply of food is available where needed. Eight representatives will be sent into Anchorage from the south 48 this morning. A shelter has been established at Elmendorf AFB and is operating around the clock. Headquarters will be set up for dispersing food. Anyone in need should contact the local chapter.

STATE CIVIL DEFENSE:

Valdez has sent word that there are 140 to 150 persons at Thompson Pass. They have evacuated the town, and 500 people are expected at Thompson Pass by daylight. They need bedding, clothes, food and fuel. Five hundred feet of the runway at Valdez are gone; fuel (oil) tanks are burning. Word came at 12:30 this morning that the town was burning, the petroleum, oil and lubricant facility (POL) had exploded, oil was covering the city of Valdez, and evacuation had begun. Also, it was reported that no water was available and the railroad was destroyed. The fuel tanks at Seward are also burning. Three unconfirmed reports indicate that the docks and runways at Kodiak are out, that the town is burning, and that they need fire fighting equipment.

(Also broadcast with this statement was the following report.) Three gas stations are dispersing gasoline, one on East Fifth Avenue and three operating in Spenard. Fuel (gasoline) will probably be rationed. It is requested that service stations voluntarily begin rationing of gasoline, that they sell only to emergency personnel -- Civil Defense, FAA, police and fire department personnel, and others involved in the official disaster relief effort. Citizens are asked voluntarily to ration themselves.

FEDERAL AVIATION AGENCY:

No flights other than emergencies will be allowed at either Merrill Field or the International Airport. The International Airport is closed to the public. Any small aircraft tied down in the vicinity of International or Lake Hood cannot be inspected. There is still the danger of fire in the vicinity due to the spilling of jet fuel on the ground, and the public will not be allowed into the area until it is cleared up. The airlines, not International Airport, are to be telephoned regarding transportation.

Both runways at International are in good shape. There are the usual frost heaves which occur at this time of year, but no big cracks caused by the earthquake. The lights are off on the runway. Only VFR traffic will be allowed by 8:00 a.m. A DC-3 has been pressed into operation as a control center since the flight tower collapsed in the quake. Beginning at daybreak, the Lake Hood tower will be used to control flight traffic for International.

Merrill Field is open and operating. The Merrill tower is still operational and is in contact with Honolulu and Seattle at this time.

PORT OF ANCHORAGE:

The port is in pretty good shape and could be used. An ice breaker will be needed under certain conditions. A ship with fuel may be dispatched to this area.

THE SALVATION ARMY:

Food is available to anyone who needs it. The Salvation Army agrees to handle the job of reuniting separated families and listing missing persons. Displaced persons should register at one local place to facilitate getting families together. This will be done in The Salvation Army State Headquarters at Eighth Avenue and Barrow Street, starting at eight o'clock this morning. All those in charge of public shelters are urged to take a census of the people in each shelter and report this information to The Salvation Army at 8:00 a.m. Also persons who have provided shelter to others for the night should report to The Salvation Army the names of those in their homes. The Salvation Army will continue to service working personnel on the streets so that they will not have to leave their posts.

LOCAL FHA OFFICIAL:

The local FHA official pointed out the need for mobile kitchens to feed the many people who have no facilities to cook hot meals. (The deputy commander of Fort Richardson offered military field kitchens for this purpose.) After being named to take charge of locating the kitchens in strategic places in the city, the official said that the kitchens will be ready to serve at about 9:00 a.m. There will be one located in the park behind the Public Safety Building and another at the A. J. Wendler Junior High School on Lake Otis Road and Northern Lights Boulevard.

General Information:

Portable stations should be established for people with specialized problems, possibly to be set up at those schools not damaged.

The American Legion post on Fireweed Lane will have a group of male volunteers available later in the morning for use whenever they are needed.

The regional public health officer will have sanitarians available for disbursement wherever they are needed.

Generators are stockpiled at Palmer.

THE COMMANDER-IN-CHIEF, ALCOM:

In a conference with the chairman of the Joint Chiefs of Staff at 2:00 a.m. this morning, the commander-in-chief was told that any assistance needed would be available. The chairman of the Joint Chiefs of Staff told him that it would be necessary for the governor to make a request to the President if the area is to be declared a disaster area. The commander-in-chief then

contacted the governor in Juneau and informed him of the procedure. The governor assured him that he would make the request immediately.

The Air Force had attempted to fly into Juneau to pick up the governor and other state officials to bring them to Anchorage, but they were turned back by bad weather. Another attempt will be made as soon as the weather lifts. Medical personnel are also standing by in Juneau to be transported to Anchorage by the Air Force.

Three big jets are standing by at Travis AFB near San Francisco to airlift supplies to Alaska. A 36-bed field hospital is en route to Elmendorf. Reconnaissance planes will go out at daylight to survey the damage to the state.

Though the flight control tower at Elmendorf was knocked out of operation by the quake, a plane has been set up as a control center, and any emergency planes can be brought in.

The Alaskan Command went to work immediately following the quake yesterday. Troops were sent into town to assist the police force in patrolling and rescue work. The commander-in-chief assured community leaders that the military will put water wherever it is needed by the use of tank trucks. They will also furnish portable field kitchens to feed Anchorage area residents.

In summing up, the commander-in-chief said that operating a military command is a great deal like running a self-sufficient city. "We have a lot of talent and equipment. It is all available to the community as needed."

General Information:

Before adjournment at 4:50 a.m. it was decided to ask all grocers in the area to open early this morning to dispense milk, bread, and other necessities and to inform the public that there was no danger of a food shortage. Grocers were asked to open their stores earlier than usual so that people could purchase the necessary food items, but the public was urged to buy no more food than actually was needed.

APPENDIX C

A PUBLIC INFORMATION RELEASE FROM THE
CITY MANAGER AT 1:30 P.M., MARCH 29

The following announcement is a supplement to earlier instructions this morning concerning entry into the central business district.

As stated earlier, men operating businesses and property owners will be allowed to enter beginning at two o'clock today. They will be required to pass through a police checkpoint at Sixth Avenue and H Street. They must have identification relative to themselves and their businesses. Additional checkpoints have been set up for government workers, utility men, repair and damage control crews, press representatives, the Red Cross and the like. Checkpoints for these people are at Sixth Avenue and C Street, and Sixth Avenue and F Street. Police will question all persons entering at these points to determine the need for them to go in.

Some buildings cannot be safely entered. These have been posted as condemned. Other buildings are partially sound. The dangerous ones will be barricaded.

Caution: Remember that businessmen and property owners check in at Sixth Avenue and H Street. All other essential workers and press check in at Sixth Avenue and C Street or Sixth Avenue and F Street.

ENTRANCE IS BEING ALLOWED ON PROPER ESTABLISHMENT OF THE NEED TO BE THERE, AND THERE IS NO REQUIREMENT OF PASSES FOR THIS PURPOSE.

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13 ABSTRACT

The monograph focuses on Anchorage, Alaska during the emergency period following the March 27, 1964 earthquake. The study takes the total Anchorage community as the unit of analysis. The organizational resources which existed at the time of the quake are first described. A set of priorities of community functions during an emergency were hypothesized. These were tested by an analysis of actual activities during the emergency. These activities were determined by fieldwork, involving interviewing and direct observation during and after the emergency period. The fieldwork was supplemented by documentary materials.

The monograph provides a detailed account of emergency activity in many segments of community life. Chronologies of critical events were compiled for all major areas of community action, particularly activities relating to the preservation of life and the restoration of essential services. The priorities actually given to various community functions closely followed the hypothesized sequences. Greater attention than was initially hypothesized was given to problems of social control and somewhat less attention was given to certain aspects of search and rescue. An explanation for these "misplaced" emphases is provided in the context of the complexities which emerge from extensive emergency activity.

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