

1st draft
November, 1966

Working Paper 10

DISASTER AND ORGANIZATIONAL CHANGE IN ANCHORAGE

by

William A. Anderson

This is a draft copy prepared for use by members
of the Geography Panel of the National Academy of
Sciences Committee on the Alaska Earthquake.

DISASTER AND ORGANIZATIONAL CHANGE IN ANCHORAGE

Introduction

In this paper, we will report the findings of a study which considered the long-term changes undergone by a selected number of organizations in Anchorage, Alaska following the March 27, 1964 earthquake. The study involved acquiring data which would provide answers to the following questions: (1) What were the long-term organizational adjustments that occurred following the earthquake? In other words, a description of the long-term consequences of the disaster for certain selected organizations was sought. (2) What was the nature of such modifications? For example, had they been anticipated prior to the disaster? (3) How can we best account for the observed changes? and (4) How can the absence of change in some organizations be explained.

Long-term organizational change refers to modifications in organizational patterns which appear to have become relatively durable features. Such changes are different from those modifications in organizational patterns which occur immediately after a disaster in response to rescue and relief problems. The latter are often emergency changes of short duration which may disappear once the emergency is over. In contrast, the long-term organizational changes are geared toward providing organizational adjustments for some time to come. These long-term changes may be seen in the daily patterned interaction of an organization or, in some instances, they may be so designed as to change it only under certain circumstances. For example, an organization

may establish disaster plans which will serve as a basis for changing its pattern of interaction only in the event of a disaster.

In the first section of this paper, we will briefly discuss the findings of some of the other studies dealing with the relationship between disaster and social and organizational changes, and discuss the manner in which the data for this study were collected. In the second section we will present the findings of this study, and our conclusions and interpretation will be presented in the final section.

Some findings on disaster induced change

There have been only a small number of studies on disaster induced long-term change. However, those that have been done present findings which indicate that long-term social and organizational change often does occur in a community or society which experiences a major disaster. For example, in the first systematic investigation of disaster by a sociologist, Prince notes changes in community health organizations following a massive explosion in Halifax and also changes in community recreation, education, and relations between various voluntary organizations.¹ J. E. Ellemers reports that the Holland flood disaster was followed by many long-term changes and he says: "The establishment of new institutions such as social welfare, community centers and a beginning of community-organization constituted . . . elements of change introduced by the restoration."²

Bates et al., in their longitudinal study of the social and psychological consequences of Hurricane Audrey, identified several changes which occurred in Cameron Parish, Louisiana. For example, there were changes in public services, in key community offices, and in the creation

of new public positions and new organizations.³ One of the most noticeable changes which occurred after the hurricane was in the organization of Civil Defense.

At the time of Audrey the parish had no effective civil defense organization. A director had been appointed, but attempts to arouse local interest in building an organization had not been successful.⁴

A few months after the storm, when interest was high, a group of prominent citizens got together and organized Civil Defense. An elaborate organizational plan was created and money was appropriated for its operation.⁵ "In addition to working out an organizational structure and securing the personnel to implement it, a natural disaster plan was worked out."⁶

Weisman conducted a study of a flood which struck Norwalk, Connecticut. Among the changes he observed in the aftermath of the disaster was the organization of new agencies and commissions in the community in addition to a greater awareness on the part of officials of various kinds of community problems.⁷

Sometimes there are also technological adjustments which accompany disaster. For example, Ellemers notes that after the Holland flood a number of technological projects were undertaken by the government.⁸ Drabek, reporting on a study of the Indiana State Fairgrounds Coliseum explosion, indicates that the disaster was followed by a number of technological or physical changes dealing with organizational communication systems. For example, he notes that an inter-hospital radio telephone system was established in Indianapolis as a direct result of the disaster and steps were taken to improve police communication

capabilities.⁹

The findings from many of the studies suggest that a community or society which is struck by a disaster may become more susceptible to change. For example, Prince observes that

. . . when there comes the shattering of the matrix of custom by catastrophe, then mores are broken up and scattered right and left. Fluidity is accomplished at a stroke. There comes a sudden chance for permanent social change.¹⁰

The findings of Ellemers lends support to this view. In discussing one aspect of the response to the flood in Holland he points out that

Projects were initiated which were not directly connected with the restoration. Restoration was considered a matter of national concern. Attention was directed on the disaster area. Proposals, which before the disaster would not even have been considered, were promptly accepted. Requests by local officials and non-official bodies for cooperation and financial support received an appreciative hearing from the government.¹¹

One generalization which appears in many of the studies is that disasters function as catalysts; that is, they result in the acceleration of pre-disaster patterns of social change.¹² Prince, for example, reports that some anticipated decisions and changes regarding city planning and civic improvement in Halifax were accelerated because of the explosion.¹³ Ellemers says that following the Holland flood, "The most important tendency seems to be the acceleration of an already existing process of social change."¹⁴ For example, he notes that pre-disaster plans for the alleviation of important social problems which had dragged on for years, received considerable more attention after the flood. Had it not been for the disaster ". . . it might have been decades before these plans were given proper attention by the government

and by the public. Now they were worked out in detail."¹⁵ Bates et al., also report that pre-disaster change patterns or processes were accelerated following Hurricane Audrey. In one instance, the disaster was responsible for accelerating the trend toward increased formalization in social relations in Cameron Parish.¹⁶

These studies, then, indicate that long-term change does frequently result from a community-wide disaster. Also, there is evidence that disasters function as catalysts, and are responsible for accelerating pre-disaster patterns of change.

Data Collection¹⁷

A purposive sample of twenty-three organizations was drawn from the universe of organizations in Anchorage that were involved in the emergency community response to the earthquake. The organizations chosen for study range from those that were the most actively involved in emergency activities to those that were the least involved. They also vary in terms of certain structural dimensions. For example, included in the sample are (1) large, highly bureaucratized ones, (2) organizations with large numbers of volunteers and those that have no such personnel, (3) organizations whose normal function is to deal with emergency situations and those that never became so involved, and (4) local and state organizations. The following were the organizations included in the study.¹⁸

- Anchorage Port Department
- Anchorage Fire Department
- Anchorage Police Department
- Anchorage Public Works Department
- Anchorage Civil Defense Department
- Anchorage Municipal Light and Power Department
- Anchorage Telephone Department
- Anchorage School District

Organizations included in the study (continued):

Alaska Native Service Hospital
Charity Hospital
Faith Hospital
KDFN Radio and Television
KNFE Radio
KMAY Radio
Area Broadcasting Company
Mountain Broadcasting Company
Anchorage Daily Journal
Mountain Electric Association
Anchorage Polar Gas Company
Southcentral Alaska Red Cross
Alaska Salvation Army
Alaska National Guard
Alaska State Civil Defense

Data on these organizations were secured on six field trips to Anchorage, Alaska by Disaster Research Center (DRC) research teams. Data gathering trips were made in March, 1964 (on this first trip, a DRC team arrived in Anchorage on March 28, one day after the earthquake); May, 1964; June, 1964; August, 1964; March, 1965; and August, 1965. The data gathering period for this longitudinal study, then, was a year and a half.

The data that were acquired included: (1) unstructured and semi-structured tape recorded interviews with organizational members, (2) on the scene and partly recorded observations of organizations in operation during the emergency period, and (3) various kinds of organizational documents (e.g., operation reports, policy statements, written disaster plans, logs, budgets, and newspaper and radio reports).

Long-Term Organizational Changes

When disaster strikes a community, as it did in Anchorage and throughout southcentral Alaska, certain direct consequences or changes

become immediately apparent to even the most casual observer. People are killed and injured, and buildings and other kinds of physical structures are destroyed or damaged by the impact of the disaster agent. Beyond these purely direct or physical consequences and changes, however, are the sociological consequences of such events. Many of the social consequences which unfold following a disaster are more or less short-lived and are in response to problems and situations which are usually present during the immediate emergency period. For example, soon after the earthquake in Anchorage new and often unexpected organizational structures and relationships emerged. In addition, a number of organizations and groups engaged in novel tasks and activities such as search and rescue.

Just as there were organizations which experienced various earthquake induced social consequences during the immediate emergency stage, there were also some that were so affected on a long-term basis. The findings of this study, then, further demonstrate that a disaster may (1) precipitate or set in motion new patterns or processes of long-term organizational change, and (2) accelerate change that was already underway or was more or less latent in an organization. It will be recalled that our sample consisted of twenty-three Anchorage organizations. Seventeen of these organizations experienced some long-term change. In some of the organizations, the earthquake caused both the emergence of new patterns of change and hastened the implementation of pre-existing patterns. While in several other organizations, the disaster was responsible for bringing about only one of the two types of changes. We might ask the question, then, why did the earthquake have long-term

consequences for some organizations? That is, why did it in some instances generate new processes of organizational change and also, in others become responsible for hastening pre-existing processes of change?

The answer to this question lies in the fact that organizations are dilemma or problem solving social systems.¹⁹ As problem solving entities, the contingencies with which they must come to grips are both internal and environmental in nature. In the most general sense, organizational change represents the reaction by an organization to external or environmental conditions, or the response of an organization to its own internal characteristics and problems. The data of this study indicate that we can account for disaster induced long-term organizational change in a similar fashion as we account for other instances of organizational modification. The Alaska earthquake modified the environments and was responsible for altering the internal patterns and characteristics of some organizations. The result was long-term change as the organizations adapted to the new circumstances. Some of the organizations studied underwent change in response to both environmental and internal factors, while others changed only in response to one of the two types of conditions.

The disaster experience influenced the development of two internal and two external factors which provided the impetus for long-term organizational change. The internal factors were "organizational learning" and organizational strain. The external factors were increased environmental support and new environmental demands or requirements. Let us look more closely at how these notions are used in this report before we present our finding.

The idea of organizational learning is used in the sense that, as problem solving units, organizations incorporate into their structures and

processes knowledge and skills gained from experiences with various kinds of events and situations. As we will indicate, the earthquake experience afforded the opportunity for some organizations to discover alternative modes of operating as well as the opportunity for innovation.

The notion of strain refers to the endogenous or internal sources of change in social units.²⁰ In the case of organizations, it is the inconsistencies or discrepancies between structural elements or patterns.²¹ Inconsistencies between official and unofficial rules and regulations, and normative dissensus involving certain units of an organization are types of organizational strain. A certain amount of strain is tolerated in organizations, particularly when it can be controlled. In such cases, strain may not lead to change. However, when certain areas of strain cannot be kept within manageable limits - i.e., when their effects on an organization cannot be minimized - then such strain may become sources or organizational change as new adjustments are sought by the organization. For a few organizations in this study, the earthquake experience heightened certain prior existing strains and as we will indicate resulted in certain long-term organizational modifications as solutions were sought to these internal problems.

By increased environmental support we are referring to the fact that after the disaster extra organizational sources - e.g., other groups and organizations in the community - provided some organizations with additional

resources, and assisted or cooperated in other ways. As we will point out, in a number of such instances this led to long-term organizational change. And finally, by new environmental demands we mean those earthquakes caused environmental changes which resulted in additional tasks and responsibilities for some organizations. As the findings will indicate, some organizations found it necessary to develop new patterns in the process of meeting such additional tasks.

After initially discussing the changes which occurred in the municipal organizations in our study, we will consider the private, welfare, and state organizations.

The Port Department

The Port Department is responsible for the maintenance and operation of the city owned Port facilities. At the time of the disaster, the Port Department had a small staff consisting of a port director, terminals manager, business manager, two pier foremen, two accounting clerks and a secretary. The Port director is responsible for the over-all administration of the department and the Port. And like other city department heads, he was responsible to the city manager, the chief administrative official of the city.

The Port is located at the head of Cook Inlet about a mile from downtown Anchorage. At the time the earthquake occurred, the major facilities at the Port consisted of a single berth dock and an industrial park area which the city leased for industrial purposes. The dock had been completed in 1961, and until the time of the disaster there had been no regularly scheduled carrier which used the facilities of the Port.

Shipping has long been one of the most important means of transportation in Alaska, due in large measure to the inadequacy of other modes of travel. The major ports in the state have been those located in the ice-free Prince William Sound, the ports of Seward and Whittier. Before the disaster, the typical pattern for getting commodities into the state had been for shipping companies, operating out of the state of Washington, to transport goods to the ports of Seward and Whittier, and from there the cargo would be transported into the interior (e.g., to Fairbanks) by the Alaska Railroad, which served as a land link with the water transportation system. This pattern of shipping goods to the Prince William Sound area and then taking them by rail to interior communities was usually followed even when such goods were destined for Anchorage. This route was preferred by shippers largely because the ports of Seward and Whittier were ice-free the year around.

Prior to the disaster, the Port of Anchorage was operating at a financial loss because of the lack of carrier service. Shortly before the earthquake, however, there was some indication that the situation would be somewhat improved because city officials were in contract negotiations with a major carrier for weekly service to the Port. While it was anticipated that this regular shipping service would provide the Port with needed revenue, it was also recognized that much more business had to be attracted before it would no longer be operating at a deficit.

The ports at Anchorage, Seward and Whittier were all affected by the disaster. However, damage was much more extensive at the latter two ports. Docking facilities were virtually destroyed at Seward, and at Whittier they received considerable damage. Also, petroleum storage

tanks were heavily damaged at Seward and Whittier. The Port of Anchorage, in contrast, although sustaining some damage, fared much better. Emergency repairs were begun quickly on the facility and three days after the disaster it was able to receive its first vessel.

A few days after the earthquake emergency as well as non-emergency shipping, which normally would have gone to one of the ports further south, began coming to Anchorage. This shipping included the oil tankers of companies which had petroleum storage farms at the damaged Ports of Seward and Whittier. As a result, the amount of tonnage received at the Port of Anchorage was unprecedented. To cope with the increased shipping of oil products to the Port, a temporary petroleum berth was completed in July, 1964. Largely because of the disaster, then, Anchorage became the shipping center of the state, handling more tonnage than any other terminal.

Because the Port of Anchorage was the only such facility operational for some time after the disaster, several oil companies either expanded their installations or built new ones in the industrial park area. Shell Oil and Standard increased their storage facilities, and Union Oil and Texaco constructed new installations in the Port area. These expanded facilities, many of which replaced those that had been destroyed at Seward and Whittier, increased the storage capacity at the Port by 290%.

All of the increase in shipping at the Port was not due to the disaster. In addition to the increase in bulk petroleum tonnage, there was also an increase in general cargo handling. This increase in general cargo was due, for the most part, to the fact that the carrier known as Sea-Land, which had been negotiating with the city prior to the earthquake,

decided to continue with its plans to establish regular shipping service to the Port of Anchorage. In fact, because of the serious transportation problems following the disaster, the company began its operation in May rather than in June as originally planned. Sea-Land also made shipments during the winter, making it the first time such a feat had been carried out. With the increased petroleum shipping, as well as the increase in general cargo, city and Port officials were optimistic that the expanded Port operation would continue beyond the reconstruction period.

The dramatic effect that the post-earthquake situation and on the fortunes of the Port is indicated when tonnage figures for the first three years after the dock facility was opened are compared, as we have done in the table below, with 1964, the year of the disaster.

TABLE I
PORT OF ANCHORAGE TONNAGE FIGURES

	<u>General Cargo</u>	<u>Petroleum</u>
1961	38,259	(no figures given)
1962	44,575	52,888
1963	97,507	98,903
1964	159,608	656,009

(From the Port of Anchorage public information brochure)

As shown in the table, there was a substantial increase in general cargo handled by the Port in 1964, over preceding years, and an even greater increase in petroleum tonnage handled. It is apparent that all of this increase in the amount of shipping handled at the Port cannot be solely attributed to the earthquake; however, it is also just as obvious that much of it has to be so attributed.

As a result of the increased use of the facilities of the Port of Anchorage, and relatedly, the fact that it was operating for the first time without a loss, Port programs which had been conceived prior to the disaster, and whose implementation was not expected for some time to come, were implemented sooner. The increased use of the single berth dock made the facility inadequate. As a result, city and Port officials pushed ahead with plans to enlarge the Port. The new financial status of the Port operation made officials confident that the citizens of Anchorage were prepared to support such plans. Accordingly, a two and a half million dollar general obligation bond issue was put before the city voters on March 9, 1965. Increased Port business and the need for more adequate facilities in order to attract new trade was the reason given the voters for the expansion plans. The bond issue passed and, as a result, a permanent petroleum dock was completed in November, 1965.

Before the new dock was completed, city and Port officials, after further consideration, felt that its addition would not be sufficient to handle the expansion in Port activity. So therefore, in October, 1965, a second bond issue was put before the voters and likewise passed. This provided twice as much expansion funds as the first bond issue and is being used to construct a second dock which is scheduled for completion sometime in 1967. Thus, programs for the physical expansion of the Port of Anchorage, which were probably years away, were catalyzed, at least in part, by the circumstances following the earthquake.

The expansion in Port operations was responsible for some modification in the structure of the small staff. One new position was established and there was some re-alignment of responsibilities. Shortly

after the disaster, the position of port engineer was established. The port engineer was made responsible for preventative maintenance and various engineering planning functions. Before the disaster, the terminals manager had been responsible for the maintenance of Port facilities.

The position of terminals manager was re-classified and re-named operations and sales manager after the earthquake. The operations and sales manager was made responsible for sales promotion. In addition, he assumed some of the duties which the terminals manager had, such as overseeing the handling of cargo. Finally, an additional utility man and a secretary were hired.

According to our respondents, these few structural changes had been anticipated before the earthquake. However, with the increased Port activity, they were implemented sooner for the sake of greater operational efficiency.

One of the latent consequences of the expanded Port operations was the increased formalization which developed. Officials reported that standard operating procedures evolved in areas where they had been lacking prior to the disaster. For example, written procedural files were started which covered several aspects of Port activity, and a much greater emphasis was placed on maintaining records.

In sum, the disaster essentially assisted in creating circumstances favorable to the expansion of the Port. It modified the environment in which the Port organization had to function. The facilities at Seward and Whittier were destroyed or heavily damaged and Port officials in Anchorage were able to accelerate plans for both structural and physical changes in the Port; such changes had been viewed as being years in the future.

Anchorage Fire Department

Fifty-two firemen were employed by the Anchorage Fire Department at the time of the earthquake. Fire Department officials reported that the organization was undermanned. High operational costs related to the special environmental and climatic problems which communities in Alaska must face were primarily responsible for the inability of the department to keep up with manpower requirements.

The Anchorage Fire Department was responsible for providing fire protection to the Port of Anchorage and the surrounding industrial park area. After the disaster, as previously noted, Port area business experienced unprecedented growth because of the decline of competing ports in the state. The dramatic expansion at the Port created a serious problem for the Fire Department. The problem became one of how to provide additional fire protection to the Port area since the fire hazard there had increased considerably along with the expanded business. The seriousness of such a problem should be apparent in the light of what we have just said about the manpower shortage which faced the Fire Department even before the earthquake.

In order to have provided the most adequate fire protection for the expanded Port operation, it would have been necessary for the Fire Department to have hired a number of additional firemen. However, the cost of such a step was considered prohibitive and, therefore, an alternative was found. One fire official was designated as a fire inspector and assigned to the Port area to conduct a systematic fire prevention program and thereby reduce the fire hazard. This position was established in January, 1965. Also, a civil fire brigade was formed by the Fire Department to assist with any fires which might occur in the

area. The brigade was composed of personnel from various businesses in the Port area. They are trained by the Fire Department and work under the supervision of the fire inspector.

In conclusion, the Fire Department found it necessary to adjust to new circumstances brought on by the changes undergone by the Port. An organization functions in an environment composed, in part, of other organizations, and as one organization changes it may create problems for other organization, making it necessary for them to also change. We have here an empirical case of this phenomenon occurring.

Anchorage Police Department

The Police Department at the time of the earthquake had 89 full time employees. The department did not have an auxiliary police force. This meant that in the event of a major disaster in which more manpower was required to carry out police functions, as was the situation following the earthquake, assistance from extra-organizational sources was required. The earthquake demonstrated rather conclusively that the demands made on the Anchorage Police Department during periods of major emergency might be so great as to require additional manpower. Thus, police and local Civil Defense officials decided that in the future instead of augmenting the size of the police force with untrained volunteers, as was done following the earthquake, a more effective measure would be to establish and train an auxiliary police force which could be called upon for assistance. Several months after the disaster, two Anchorage veterans organizations, the American Legion and the Veterans of Foreign Wars, were contacted and agreed to cooperate in this project by each organizing a group of men to be included in the auxiliary force.

A year and a half after the earthquake, one unit of the auxiliary

police force had been organized by the VFW. and was working with the Police Department and Civil Defense. The total force was expected to number around 60 men when it was completed. Some Civil Defense funds were to be used to purchase equipment for the group.

The auxiliary police force personnel were expected to be called upon during major emergencies to primarily handle such tasks as traffic and crowd control. This would leave regular police personnel relatively free to engage in more important activities and duties.

The Police Department also had some difficulty notifying off-duty officers following the earthquake and during a major fire which occurred in the Port area several months later. As a result, a back-up notification procedure was established. This procedure involves giving the local radio stations instructions to broadcast a notice for off-duty personnel to report to police headquarters in the event of a major emergency.

Our data indicates, then, that the Police Department did undergo some change following the disaster. The changes which were made evolved from some of the contingencies faced by the organization during the disaster and accordingly are attempts at preventing their recurrence.

The Public Works Department

With 169 employees at the time of the disaster, Public Works was the largest city department. It was almost inevitable that with its many, and varied resources -- men, equipment, and material -- it would play an important role in the disaster response of the community.

The department was responsible for a multiplicity of functions prior to the earthquake including: (1) the maintenance of streets, sewers, and city buildings; (2) the design and construction of streets, water and

sewer lines; (3) the maintenance and operation of the municipal airport and water utility; and (4) traffic engineering and building inspection.

The director of Public Works is head of the department and is also the city engineer. He is directly responsible to the city manager. Under the director of Public Works is an assistant director who also functions as the assistant city engineer.

The department was divided into six divisions prior to the disaster: traffic engineering, building inspection, engineering, municipal airport, maintenance, and water utility. The assistant Public Works director was head 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 operations of the airport division, a water utility manager was the head of the water utility division, and a superintendent of Public Works was responsible for the maintenance division. The head of each division was responsible to the director of Public Works.

Following the earthquake, the Public Works Department underwent considerable change. Some of the modifications can be, in part, attributed to the disaster experience, i.e., to developments which occurred during the emergency or later rehabilitation periods.

Several changes might not have occurred in the organization when they did had it not been for certain pre-disaster characteristics and circumstances. It also seems fairly evident that had the disaster not occurred, some of these modifications would have eventually come about anyway. In many respects, the earthquake functioned as a catalyst; that is, certain processes of change that were pre-disaster features of Public Works were accelerated by conditions which prevailed following the disaster.

The Public Works Department at the time of the earthquake was experiencing a period of reorganization and was in a state of considerable flux or fluidity. A number of changes had become operational only several months before the disaster and many more were anticipated by officials. These changes had been made in order to bring about a more efficient use of resources.

In addition to the patterns of change which had become manifest prior to the disaster, there were some areas of strain and tension which were partially responsible for some changes which later emerged.

The major disaster related long-term changes that occurred in the Public Works Department involved the water utility division, traffic engineering, building inspection, engineering, and building construction and maintenance.

Water division -- On October 8, 1963, less than a year before the earthquake, the water utility was organized into a separate division within the Public Works Department. Prior to that time, the responsibilities of the utility were divided among several municipal agencies. The reorganization was made because it was believed that a centralized operation would be more efficient.

A utility manager was appointed to supervise the newly centralized operation. Like other division heads, he was made responsible to the director of Public Works. Prior to the earthquake, plans had called for the water utility to become a separate department over a period of several years as the operation expanded, with the manager directly under the authority of the city manager. There were twenty-five employees in this division prior to the disaster.

The earthquake resulted in accelerating the development of the water

division closer to the time when it would operate as a completely separate unit from the Public Works Department. The responsibilities of the division were considerably enhanced following the disaster, and a few permanent positions were created. These changes were made because they were seen as necessary to cope with the increased demands of rehabilitation. Damage by the earthquake to the city's water system required an expanded operation in order to (1) restore and rehabilitate the portion of the water system which had been damaged or destroyed, and (2) to meet new requirements for continued service which were related to the disaster, e.g., the return of service to those persons who were forced to move into areas which previously received no water service. Since many of the changes that were made had been programmed by officials for some later period anyway, the decision was made to continue with them beyond the recovery period. In other words, they became long-term changes.

One key official observed, "We have added staff, professional people, increased its scope of duty and responsibility to permit a greater flexibility in the expansion of the redevelopment program." In this regard, the engineering division of Public Works, prior to the earthquake, met all of the engineering requirements of the water utility. In November, 1964, the utility assumed some of this responsibility with the establishment of the beginnings of an engineering section. At this time, an engineer and a draftsman were added to the staff. The engineer was also expected to serve as an administrative assistant to the utility manager. This administrative back-up to the utility manager provided by the addition of the assistant, as well as the creation of the position of draftsman, was expected to contribute to the utility's capability of handling the expanded operation made necessary by the disaster. According to officials, these

changes had been planned for some later period and the earthquake hastened their implementation.

In addition to expanding its services to include those new residential areas which developed as people moved out of damaged ones, some other expansion plans made prior to the disaster were also advanced a year or more. Mention has already been made of the relationship between certain changes which occurred in the Fire Department and the expanded Port operation. The modified Port of Anchorage situation had a similar effect on the water division. It required the acceleration of planning to extend water mains and lines to the developing Port industrial area.

Traffic engineering -- Traffic engineering was a small division. At the time of the disaster only nine persons were employed in it. In October, 1964, several months following the earthquake, traffic engineering was taken out of the Public Works Department and made into a separate city department. The traffic engineer was retained as head of the new unit and he became directly responsible to the city manager.

Traffic engineering had an increased work load following the disaster; with major street damage and damage to the downtown area, a considerable redevelopment program was required. For example, new traffic patterns had to be established as well as a new public parking program, in conjunction with the rehabilitation of downtown Anchorage. City officials said that this expanded program was primarily responsible for the change in position of traffic engineering in the municipal structure. Yet, it seems that other factors were also very important in this regard.

Prior to the disaster, traffic engineering had been allowed to function fairly autonomously by the Public Works director and assistant director. The rationale was that here was a highly specialized function that required

professional training and which should be primarily administered by those who possessed such skills, i. e., the traffic engineer and his associates. However, more was involved; the two key Public Works officials found it necessary to spend the bulk of their time dealing with city engineering concerns and often did not have time for over-all departmental matters, including the close supervision of traffic engineering.

Because of traffic engineering's considerable autonomy, officials in the division were encouraged to seek official separation from Public Works. Thus, there was pressure for a change in the position of traffic engineering in the municipal structure even prior to the earthquake. This pressure or strain became manifest as an unofficial policy. In terms of this policy, members of the division systematically disregarded the organization's official lines of authority by by-passing the Public Works heads and going directly to the city manager on important matters. This unofficial pattern was pursued by traffic engineering in an effort to demonstrate that the division could operate at the departmental level in the municipal structure.

It appears that the disaster provided the opportunity for making official what was being done on an unofficial level. The argument could be presented to those who might have objected to the change, e.g., the heads of Public Works, that it was being done to maximize the handling of traffic engineering problems brought on by rehabilitation. This pressure for change, then, as well as the increased work load in the unit seems to account for the change in the status of traffic engineering following the earthquake.

Building inspection -- Another disaster related structural change in the Department of Public Works was the separation of the building inspection

division. This unit became a separate department in October of 1964. Thus like traffic engineering, the new department was elevated to the same level in the municipal structure as Public Works.

Prior to the earthquake, building inspection was not considered an important function by many city officials. This was, in part, reflected in the fact that the division had been understaffed in terms of the work that had to be done. There were ten employees in the division at the time of the disaster. The extensive damage to the buildings in the city caused by the earthquake and the subsequent rebuilding which was then made necessary was responsible for heightened interest in the building inspection division and its function. One high city official noted, for example, "We will make sure in the future that we have fully adequate inspection of all buildings."

Two additional building inspectors were hired in June of 1964. Requests for such additions to the staff had been turned down by City Council prior to the disaster. This increase in size of building inspection, and its new departmental status were based on an increased work load following the disaster and an anticipated generally expanded operation.

There was also greater attention paid to building and construction standards following the earthquake. Relatedly, in order to encourage the construction of buildings which could resist earthquakes, a code committee was organized following the disaster composed of the head of the building inspection department and a number of local architects and engineers. This committee wrote a number of amendments to the building codes in the community which reflected the earthquake experience. These amendments were adopted in April, 1965

Engineering division -- Prior to the earthquake, consideration had been given by Public Works officials to the establishment of a position to coordinate the underground construction activities between public and private agencies in the Anchorage area. It was held that such a person could serve as a clearing house in the scheduling of construction work carried out by such organizations, and in the location of utility lines. This type of coordination was believed to have been needed for a long time, but nothing had been done about it.

Also, there had been a need for centralized location of new utility construction information. The Public Works Department had utility drawings of the facilities in the community, but they had not been kept up to date because of budgetary considerations. The drawings that were available proved invaluable for reconstruction work that had to be done on city utility lines following the earthquake.

Reportedly, the considerable amount of reconstruction and improvement of underground utility lines by Public Works and other organizations following the earthquake made it even more important that someone coordinate and make a record of the new construction. Works and city officials felt that if these functions were carried out a considerable savings in project costs would be made over the long run. As a result, a new position called projects control engineer was added to the engineering division of Public Works in late 1964; also, a draftsman was added to work on utility maps on which new construction data were recorded.

These changes in the engineering division can be seen as an adaptation on the part of the organization to problems which persisted from the pre-disaster period. It seems that the changes were made when they were because the problems that they were expected to correct had assumed greater proportions with the earthquake related reconstruction activity.

Building Construction and Maintenance

There were seven employees in the building construction and maintenance section prior to the earthquake. The official responsibilities of the section were (1) to provide a planned preventative maintenance and repair program for the 86 city buildings ; (2) to provide supervision and coordination for architectural firms engaged through contract by the city; and (3) to do design work for municipal buildings.

At this point, mention may again be made of the fact that according to the organizational chart of the Public Works Department, the director and assistant director had authority over section and division heads. Therefore, building construction personnel were officially supposed to refer to either one of these two persons on matters of major policy.

Also as previously noted, administrative decisions which affected the entire Public Works organization were supposed to be made by the director, and to a lesser extent by the assistant director. In addition to being concerned with the over-all administration of the department, the director, as city engineer, was also expected to be involved in engineering matters. Relatedly, the assistant director, in addition to being an administrative assistant to the director, was also the operational head of the engineering division. It was in the activities of this division that both the director and assistant director concentrated most of their efforts.

Although the director and assistant director officially had two roles, then, they were more active in one than the other. They were not actively involved in the affairs of the several divisions with the exception of engineering. And in the engineering division, they were less involved with the building and construction section. Consequently, prior

to the disaster, the heads of the several divisions of Public Works, and also the head of the building construction section, enjoyed considerable autonomy. We have already discussed the implication this situation had for traffic engineering. Likewise, it had some consequences for building construction and maintenance.

The structural characteristic of the Public Works Department referred to here was partially responsible for the fact that decisions were often made in the building construction and maintenance section which should have been cleared by the director or his assistant. The inaccessibility of the two administrators, however, due to their being involved in other duties and problems, meant that they did not encourage or make it necessary for building construction personnel to frequently seek approval of their decisions. As would be expected under these circumstances, this sometimes led to decisions being made and actions being taken that they would not have approved. The pattern evolved for one of the head officials of building construction to first engage the section in some activity or project and then seek the support of those higher in authority. For the sake of anonymity, we shall, throughout the course of this discussion, only refer to this official by using the fictitious name of "Mr. Brown."

Also, as in any organization, Mr. Brown, as an employee of Public Works, was expected to follow certain organizational rules and procedures in making decisions and in engaging in activities which did not necessarily need authorization from those in positions of higher authority. However, he had the tendency to use unofficial means and procedures rather than those which had been officially outlined. His philosophy was that it was more important to get things done than to go through official channels and to use official procedures.

Because of this tendency, and encouraged by the frequent inaccessibility of his immediate supervisors, Mr. Brown frequently went beyond his authority and responsibility as an official of building construction, and this sometimes got him into trouble. For example, at times he made certain decisions which required the expenditure of considerable amounts of money before such money was available to him. One of his supervisors commented:

. . . he'll get things done and without going in proper routes, so to speak. Sometimes he doesn't find this out till too late, then we have to manipulate to financially get the job done.

Others in the Public Works Department described Mr. Brown as a "doer" or "a person who gets the job done" but not likely to follow the official norms. Prior to the disaster, then, he frequently went beyond his designated authority and involved his section in projects and activities which should have been initiated or approved by higher-ups.

Mr. Brown and other building construction workers, plus a number of volunteers who joined them, played a key role during the disaster. They became involved in rescue and damage control activities. The response of Mr. Brown, and those regular employees and volunteers who followed his lead during the emergency period, was largely a continuation of unofficial patterns that had evolved before the disaster. Our data indicate that this was at least true in terms of this group's orientation towards established rules and regulations. For example, one member who participated in the emergency rescue and relief activities comments as follows:

We commandeered all the equipment we needed, all the material we needed, and we just did the job. That was a projection of what we normally do. We do these sort of underhanded things normally, but we don't do them so flagrantly as we did then.

Mr. Brown and his organization of regular employees and volunteers were quick to make decisions and to respond to the problems and needs of the emergency period following the earthquake. Also, the pattern of this response was an extension of normal behavior. It was the consensus among city officials that his emergency group did an outstanding job during the disaster.

Prior to the disaster, then, officials tended to generally perceive the ignoring of rules and regulations, quick judgements, etc., by building and construction as dysfunctional for the Public Works Department and the larger municipal organization. In terms of our conceptualization, this was a source of strain. However, similar activities by building construction personnel during the disaster tended to be defined at the time as functional. Put in a more general sense, a *modus operandi* which was seen as creating instability under relatively stable environmental conditions was defined as functional under emergency conditions when adaptive rather than routine behavior seemed to be called for.

Some time after the disaster, Mr. Brown and his section were again perceived as creating problems because of the unit's manner of operating. Almost exactly one year after the disaster, for example, a high Public Works official made the following comment regarding this section:

You get in the problem there of people that are real good in a crisis and perform outstandingly because they have initiative, but they don't work too well. They can't work continually that way because if they do, they will run over everybody.

This same official contrasted the above type of person with another:

Now you take a man like _____, he's worthless in a crisis, absolutely worthless. But on the long haul that's the kind of guy that the Council wants and that's the kind of guy you have to have.

The unorthodox fashion in which building construction and maintenance operated was primarily due to the official of this section to whom we have been referring as Mr. Brown. This was recognized by Public Works and other city officials. Also, it appears that he had a tendency to act even more in an unofficial fashion following the disaster due to (1) the increased pre-occupation of his superiors with rehabilitation problems, and (2) the general fluidity which characterized the situation in which he and others had to operate following the disaster. Public Works officials adapted to this source of strain by removing Mr. Brown from his position. This occurred in June, 1965. However, before this was done, he initiated some interesting changes in his section which had implications for other city departments.

On October 1, 1964, the building construction and maintenance section became a separate division and was re-named the city structures division. It is not clear if this change was somehow related to the disaster. Some of our respondents, for example, reported that they believed the change was made necessary because of an increased work load following the earthquake, while others reported that they did not feel such a relationship existed.

The disaster experience remained of interest to the city structures division long after the emergency period had passed. Many informal critiques were held at which time the actions that had been taken were discussed along with the problems that had been encountered. This was done with a view toward ascertaining what alternative adaptations might have proved more satisfactory. Such continued interest in the disaster experience seemed to have stemmed from two sources: (1) during the rehabilitation period, the men in the division in the course of their

work were constantly faced with physical reminders of the earthquake, and (2) Mr. Brown, who was retained as a top official when the section was made into a division, was militant regarding the matter of emergency preparedness.

In the course of these informal critiques, several problem areas were identified. It was agreed in general terms that the problems experienced by their group and others during the emergency resulted from two things. First, there was an absence of a disaster plan which would have specified the roles of key people so that a division of labor and coordination could have occurred more rapidly. And secondly, there was a lack of needed emergency equipment such as certain kinds of tools and radios. Mr. Brown decided to initiate a disaster and emergency preparedness program in his division which would take these problems into account.

To engage in such a project in a bureaucratic setting, it is usually necessary for officials of a unit to acquire the approval of those higher in authority, unless such a program is an assigned responsibility. Usually such approval will not be forthcoming if the project is considered the function of another unit of the organization or if the means to carry it out violates organizational norms. As noted above, Mr. Brown frequently used unofficial means of operating and this pattern persisted in his program for disaster preparedness for his division. Also, city officials tended to define disaster preparedness as a function of the Civil Defense Department. Accordingly, this program met with resistance.

Mr. Brown and others in the division wanted to play a similar role in future emergencies or disasters as the division had played in the emergency period following the earthquake. They were encouraged to proceed with plans for such a role by the fact that for a long time

following the earthquake little had been done to prepare the community to face the threat of possible future disaster; and so city structures personnel took the initiative and began functioning in this area as they had done during the emergency period. Some of their ideas were later adopted by other city department.

One of the first things that was done to prepare the division for emergency or disaster duty was the acquisition of a considerable amount of equipment. One year after the disaster, for example, the division had acquired several additional radio equipped vehicles. Also, the men in the division were issued protective clothing such as hard hats, rain gear, heavy boots, etc. Such clothing was issued to enable the men in the division to work on an emergency basis in all kinds of weather and in all types of situations. Relatedly, Mr. Brown requested the personnel to carry basic emergency tools in their vehicles -- e.g., cutting torches, wrecking bars, etc. -- in anticipation of emergency operations.

A considerable amount of the equipment was acquired to increase the emergency capability of city structures was acquired somewhat unofficially. For example, certain funds from the city budget were allocated to the division for small tools which usually meant wrenches, hammers, and the like. Instead of purchasing these things, cutting equipment, wrecking bars and similar pieces of equipment were bought. Also, some equipment was purchased and justified on the basis that it was needed for routine work with an eye toward using it primarily in emergencies.

Much confusion occurred during the emergency period because persons who had disaster roles could not be easily identified. In anticipation of this problem in any future emergency, each employee of the city structures division was given an identification card and their hard hats

were prominently marked with the city of Anchorage emblem and a relect-orized emergency symbol. City police and firemen were acquainted with these cards and hats so that divisional personnel could pass police lines and enter emergency areas without difficulty. Also, vehicular identification plates were made for the employees of the division.

An emergency plan was also written for the division. In writing this plan, an effort was made to anticipate and make allowances for the kinds of situations and problems which had occurred following the earthquake. The plan covered several important problem areas including: (1) emergency responsibilities of the division, (2) emergency communication; (3) the use of volunteers, (4) emergency lines of authority, and (5) reporting procedures. The plan reflected the tendency of Mr. Brown to emphasize the adaptations to situations in terms of expediency rather than in terms of established procedures.

Some key officials were opposed to Mr. Brown's initiative regarding disaster planning and preparedness on the grounds that he went "overboard" and that the city structures division was engaged in a program or function in which it lacked authorization. Statements such as the following that appeared in the disaster plan were objected to by some officials:

If you are turned back at a police post, try to get through another one. Use talk, trickery, or muscle if you have to, but get through.

Also, some officials felt that while the city structures division could be called upon in the event of an emergency like any other city division, it, nevertheless, should not concern itself to such a degree with these matters. Emergencies, they reasoned, involved the responsibilities of the Police, Fire, and Civil Defense Departments, and the latter had the responsibility for making plans and preparations. Thus, there existed

considerable concern regarding the activities of the city structures division.

On January 23, 1965, less than a year after the earthquake, the city structures division was once again involved in an emergency operation. At this time, a major fire occurred in the Port area involving petroleum tanks located there. Personnel of the city structures division were mobilized and appeared at the scene of the fire to assist city firemen. Some city officials felt that they tended to get in the way somewhat because they had no special training. As a result of this experience, and as a result of the belief by some that the city structures division had in general gone far beyond its sphere of responsibility, some pressure was brought to bear on the Civil Defense Department by city officials to become more involved in establishing an inter-departmental emergency and disaster program.

Civil Defense officials were instructed to work with the various city departments whose personnel could be called upon during periods of disaster or emergency. It is interesting that Mr. Brown was told to discontinue his "go it alone" activities and several of the ideas used in his division were incorporated into a proposed inter-departmental Civil Defense program. For example, in the following quotation from an interview with a high city official the similarity will be noticed between this proposed Civil Defense program he proposes and the one which we have already discussed and which had been earlier implemented in the city structures division.

As we go along with this program these people will be provided with hard hats and with turn-out clothing such as volunteer firemen have and certain vehicles. When they are responding, for example, to assist the fire and police at a large conflagration, they will

be able to go through police lines and get into the scene of the emergency to be useful, and also we will probably develop a new identification card system so that those persons who are specially talented to be helpful in such emergencies will have cards that identify them as emergency rescue persons.

In terms of the data, we conclude that Mr. Brown was defined as a disturbing influence not only with regard to the Public Works Department, but in terms of the general municipal organization as well. Officials in the Public Works Department and the City Manager's office were concerned about his tendency to proceed in an unofficial and unorthodox fashion as well as the assumption of functions which were recognized as being assigned to another department. Officials tried to avert this threat to stability by pre-empting Mr. Brown's ideas on disaster planning and assigning the responsibility for their development on an inter-departmental basis to the Civil Defense Department. Thus, it was hoped that the initiative would be wrenched from Mr. Brown and there would no longer be any need for his division to have a separate disaster program. Mr. Brown, then, served as an impetus for change within the context of the disaster. When the data gathering for this study was completed a year and a half after the disaster, one aspect of the inter-departmental disaster preparedness program was in the process of being completed. This involved providing city employees who possessed emergency relevant skills with city identification cards.

The pre-emption of the disaster program was not the final adaptation made by Public Works and city officials to the unsettling influence of the city structures official. As previously noted, he was asked to resign as a result of his continued policy of ignoring organizational norms.

Mr. Brown, then, seemed to have been out of place in the bureaucratic

setting of the Public Works Department. He played, however, an interesting role in terms of long-term changes. In some respects, he fits the description of the organizational type that Presthus refers to as the ambivalent.

Despite his inability to meet bureaucratic demands, the ambivalent type plays a critical role, namely, that of providing the insight, motivation, and the dialectic that inspire change. . . . the ambivalent is always sensitive to the need for change . . . few ideals or institutions escape his critical scrutiny. In his view custom is no guarantee of either rationality or legitimacy.²²

We have pointed out that disaster related long-term change did, in fact, occur in the Public Works Department. Some of the changes which occurred were structural; that is, they represent an actual modification of normative patterns of the organization, as when traffic engineering and building inspection became separate departments. Other modifications involved disaster planning, personnel, and physical facilities and systems.

Our data also indicate that the earthquake functioned as a catalyst for some changes. In addition, some of the changes evolved out of pre-disaster and disaster problems and sources of strain.

Anchorage Civil Defense

A few weeks before the disaster, the Anchorage Civil Defense Department operated with a paid staff of two persons, a director and a secretary. In addition to the two regular employees, the heads of the various city departments, such as Fire, Police, Public Works, etc., were expected to cooperate in developing Civil Defense plans and other programs.

There was a definite lack of support for local Civil Defense programs in Anchorage prior to the earthquake. For example, on one occasion the director had requested the addition of an assistant director to his staff,

but the City Council failed to approve the position. Also, 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 budgeted operating funds for that year.

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 but there were some city councilmen who felt a new director should not be appointed and that out of financial considerations the department should be discontinued. So at the time the disaster struck, Anchorage was without a Civil Defense director, and there was serious doubt that the department would be continued. Soon after the earthquake, however, the man who had earlier resigned as Civil Defense director volunteered to serve in that capacity during the emergency period.

A number of disaster related changes occurred in the Anchorage Civil Defense organization following the earthquake. Probably the most important change was the increased support the organization began receiving. In a very real sense, the earthquake contributed to the survival of the department. It provided those persons who favored the continued allocation of resources to the support of a local Civil Defense program a more convincing argument that such a program and an organization for its implementation was needed. It seemed to be the consensus of officials in the community that local Civil Defense had done an admirable job during the crisis and that the director out of regard for the stricken community unselfishly returned to the post he had earlier vacated. Following the disaster, then, the climate was such that certain gains could be

made in terms of local Civil Defense programs and operations which might have been all but impossible under more stable circumstances.

As previously noted, when the director resigned there were a number of city officials who questioned the need to seek a replacement, or even the desirability to support a Civil Defense organization. The occurrence of the disaster, however, for the time being anyway, neutralized this threat to the survival of a local Civil Defense organization in Anchorage. During the emergency period, the former director was reappointed to that post without opposition. In this regard, one Civil Defense official notes:

. . . following the earthquake they made the decision immediately that they were going to keep it (Civil Defense office) open . . . So that was a direct result of the earthquake. I rather expect if we hadn't had the earthquake that they wouldn't even have an office or if they did, it would probably be the additional duty of someone in the Police Department or Fire Department.

City Council's failure to approve the position of assistant director was further evidence of the lack of support for Civil Defense prior to the earthquake. Such a position was needed in order to have someone serve as a back-up to the director during periods of emergency. Also, an assistant director was needed to handle the acquisition and distribution of emergency Civil Defense supplies and equipment in the Anchorage area. Because no one had devoted much time to this function, considerable equipment and supplies had been lost, and also it was not known how much of it was still usable. This situation created a problem for the relief effort in Anchorage following the earthquake. Since the earthquake experience provided rather concrete evidence of the need for an assistant director, the position was afterwards approved by the City Council. One official in the City Manager's office observed:

We had some lack of support for Civil Defense in Anchorage prior to the earthquake, but it has been changed at least in part . . . we did have one addition as a result of the earthquake and this was the deputy CD director . . . who was placed in charge of inventory and control as well as coordination (and) public relations along with the director to expiate this one problem. We didn't have proper inventory and control of supplies as to location.

Another change in local Civil Defense was the creation by the City Council on January 5, 1965, of a Civil Defense and Disaster Board on the recommendation of the city manager. Some of the leading citizens of Anchorage were appointed to serve on this body. For example, the man who was mayor of the city when the earthquake occurred was appointed chairman. A total of seven members serve on the board.

The Anchorage Civil Defense and Disaster Board was given a similar function as other municipal boards and commissions. It was to advise the mayor and City council on the city's Civil Defense problems and needs. The Civil Defense director was appointed as executive secretary to the board. Thus, the creation of this new group seems to reflect, at least, a temporary change in the stature of local Civil Defense.

After the earthquake, the Anchorage Civil Defense director published a greater Anchorage Civil Defense basic plan. This plan outlined in very general terms the authority and responsibilities of the director. Also, outlined in a similarly general fashion was the nature of the greater Anchorage area emergency Civil Defense structure and the tasks and function of its operating units. For example, the plan called for health and medical functions to be carried out by the Greater Anchorage Health District.

The Civil Defense director also drafted a reporting procedure whereby

certain key city employees, such as department heads, were assigned specific places to report in the event of another community disaster. Relatedly, as already mentioned, when our final data gathering trip was made to Anchorage a year and a half after the earthquake, Civil Defense officials were involved in a project of providing city employees who possessed emergency relevant skills with identification cards.

One of the most serious contingencies during the disaster was the difficulty encountered by organizations and groups attempting to coordinate their activities. The impact of the earthquake disrupted the telephone service in the Anchorage area. For a considerable period thereafter, intra- and inter-organizational communication had to be carried out primarily by runner or radio. The use of runners proved to be a relatively slow process, and also many groups and organizations did not initially have radios at their disposal. In addition, there were organizations which had radios but found that they still could not communicate with others because they happened to be on different frequencies. As a result of this experience, a Civil Defense emergency communication network was established in Anchorage. The equipment for this network was purchased by local Civil Defense on a matching-fund basis.

The emergency network was installed in April, 1965. The control station for the system was located in the Anchorage Civil Defense headquarters. The equipment included eleven battery operated mobile transceivers. Key city personnel and departments were assigned the use of one of these transceivers including: the city manager, the mayor, the local Civil Defense director, the assistant director, the Civil Defense information officer, the Civil Defense communications officer, the Police

Department, the Fire Department, and the Municipal Light and Power Department. Also, two of the transceivers were placed in reserve. One transceiver was placed on standby as a replacement for any set which ceased to function properly, and a second was set aside to be used by emergency rescue groups. A test of this system is conducted every week.

The earthquake, therefore, demonstrated the need for some reliable back-up system of communication which could be utilized to maintain inter-organizational communication when customary means failed. In response to this need, a Civil Defense emergency communication network was established which provides direct radio communication between a number of key officials and organizations in Anchorage.

There was one final change in local Civil Defense also involving emergency communications. During the emergency period following the earthquake, the local Civil Defense effort was considerably assisted by a number of citizen band radio operators who volunteered their services and equipment. This was done on an emergent basis since no agreement existed between Civil Defense and the radio operators prior to the disaster. In developing a community shelter program after the earthquake, the Anchorage Civil Defense director, recalling the value of their contribution, made a formal agreement with a newly formed citizen's band radio club. Under the terms of this agreement, a radio operator was assigned to each shelter. Thus, this important communication capability would be used in the event of either a nuclear or natural disaster.

Anchorage Municipal Light and Power Department

The Municipal Light and Power Department (M.L. and P.) had fifty employees just prior to the earthquake. Most of the consumers of the department's electrical power reside within the city limits of Anchorage.

Within recent years, the number of customers served averaged over 8,000.

M.L. and P. officials reported that a technical modification in the department's power system had been, in part, accelerated due to the disaster experience. This change involved installing equipment which divided the city's transmission system into four areas, each of which could be isolated from the others in the event of difficulty. This will mean that a power outage in one of the areas will not cause the entire system to fail and thus it can be restored more rapidly. Comparing this new capability to what existed at the time of the disaster one official observed, "If we'd had that separation we could have cleared up trouble after the earthquake in pieces and put it back one by one rather than having to go through the entire area to see that all your trouble was cleared before you could restore service to the city."

Alaska Electric Association

The Alaska Electric Association (A.E.A.) is a member-owned cooperative financed by the Rural Electrification Administration. The A.E.A. served 15,000 consumers at the time of the disaster. Of this number, about 6,000 resided within the city limits of Anchorage.

Two changes occurred in the A.E.A. following the Good Friday earthquake. First of all, officials reported that before the emergency a relatively new pattern had evolved whereby the board of directors, which determines policy, had allowed the general manager and his staff considerable autonomy in managing the organization. After the disaster, however, the board returned to a previous policy in which it was more directly involved in its operation. For example, the staff was more frequently required to acquire the approval of the board in making major expenditures.

Officials attributed this change in the relationship between the board of directors and the management staff to circumstances following the earthquake. The disaster precipitated a critical period for the Alaska Electric Association, as it did for a number of organizations, and key decisions had to be made concerning the rehabilitation of facilities and plans for future development. It seems that within this context the board became more concerned about the operation of A.E.A. and, therefore, the trend toward increasing autonomy for the management staff was changed. Thus, after the disaster there was a different relationship between the two levels of the organization.

The earthquake was, moreover, responsible for the Alaska Electric Association accelerating plans for adding new generating facilities in the Anchorage area. The organization's transmission line from generation facilities on the Kenai Peninsula into Anchorage was considerably damaged. In assessing this damage, officials determined that it would be a number of years before the line could be repaired and power could once again be transmitted from the Kenai facilities to Anchorage. To offset this loss of power, pre-disaster plans to install new generation facilities in Anchorage were considerably advanced. Two large turbines were located in the city. Officials reported that these new pieces of equipment would have eventually been installed anyway; however, the installation was carried out sooner than had been planned because of the circumstances produced by the disaster.

Anchorage Polar Gas Company

The Anchorage Polar Gas Company provided gas service for 5,000 customers in the Anchorage area. Prior to the earthquake the company

employed 64 persons.

Only one change attributable to the disaster experience occurred in the organization. The vice president and general manager was promoted to president six weeks following the earthquake. Apparently, his promotion was due, in part, to his demonstrating unusual ability to deal with a variety of contingencies during the emergency situation. It was disclosed that if the disaster had not occurred he would not have been advanced to this new position.

Anchorage Daily Journal

At the time of the disaster, the Anchorage Daily Journal with a daily circulation of approximately 27,000 was the largest of the two newspapers in Anchorage. About 62 persons were employed by the newspaper organization.

With membership in the Associated Press, the Daily Journal had the responsibility for supplying the news gathering organization with news of the Anchorage area. Following the earthquake when there was considerable difficulty using normal means of communication, the Daily Journal was able to maintain contact with Associated Press officials outside of the state by means of radio equipment provided by a number of local ham radio operators. This was all done on an informal basis. However, after the disaster, the Associated Press and Daily Journal made a formal agreement with several local ham operators whereby the latter would again be called upon to lend assistance in the event of future emergencies. Thus, an emergent pattern which grew out of the exigencies of the earthquake became a formal stand-by mechanism.

Mountain Broadcasting Company
and Area Broadcasting Company

The Mountain Broadcasting Company owned and operated a television station and an FM radio station in Anchorage. The company also owned a television station in Fairbanks, Alaska.

The Area Broadcasting Company operated AM radio stations in both Anchorage and Fairbanks. We shall refer to them respectively as stations KBRA and KBAR.

The Mountain Broadcasting Company had been interested for a number of years in expanding its broadcasting operations to include AM radio. Relatedly, there had been a number of negotiations in the five year period before the earthquake with the owner of radio stations KBRA, Anchorage and KBAR, Fairbanks who was interested in selling the two stations. However, an agreement was never reached between the two parties. The earthquake was responsible for bringing about the circumstances which eventually led to Mountain Broadcasting purchasing the two radio stations.

The earthquake caused considerable damage to the building where the Mountain Broadcasting Company's studios were located in Anchorage. The broadcasting organization applied to the Small Business Administration for a disaster loan that was granted to construct a new building in which to locate new studios and to replace some equipment. Stations KBRA and KBAR were still available for purchase at the time; so encouraged by the loan, and the prospect of setting up a new operation in Anchorage, Mountain Broadcasting officials decided to make the acquisition.

A second factor was also involved in the decision to buy the stations at this particular time. In seeking a site on which to locate the new

facility that was made possible by the loan, one had to be chosen on which the Federal Aviation Authority would endorse the construction of a broadcasting tower because of the possible air navigational hazard. Mountain Broadcasting officials learned that by purchasing KBRA, the problem of finding an approved location would be solved because the site on which KBRA was located had already been approved by the FAA. With this in mind, the two stations were purchased and became a part of the Mountain Broadcasting organization.

There was, then, a definite relationship between the disaster and the change which occurred in the two broadcasting organizations, i.e., the change in ownership of the two stations. The earthquake was followed by a set of circumstances or conditions favorable to the purchase of the radio stations by the Mountain Broadcasting Company; these conditions were responsible for this change happening at a particular point in time. One official put it this way:

We knew we were getting into the radio business. I knew that twelve years ago when we started the station, but just exactly when was all a matter of timing . . . so this earthquake catalyzed that.

Mountain Broadcasting officials reported that had the earthquake not occurred they would not have purchased an AM radio station until some later period.

Alaska Native Hospital

The Alaska Native Hospital is the largest United States Public Health Service hospital in Alaska with a bed capacity of 301. It provides free medical treatment to those persons defined as descendants of Alaskan natives -- i. e., Aleuts, Eskimos and Indians.

After the earthquake, a committee was appointed from among the hospital staff to critique the performance of the organization during the crisis, and to make recommendations on needed changes. As a result, some changes were made which reflected the earthquake experience.

A new disaster plan was published following the disaster. The format of the new plan differed from that of the pre-disaster one in several respects. For example, the new plan was altered so that members of the staff could more quickly and with less effort locate the sections which pertained to their own particular tasks or duties. Also, a distinctive cover was designed for the new plan so that it could be easily recognized. One of the problems which reportedly occurred during the disaster was the difficulty of finding copies of the disaster plan which had been earlier made available to some of the staff members. To prevent this problem from recurring in the future, copies of the plan were placed in brightly colored covers and located in conspicuous places.

The disaster plan was also changed to permit the use of some patients as volunteers during emergencies under the direction of hospital personnel. This change also reflected the earthquake experience in that patients proved to be a valuable source of manpower at that time. "They performed as messengers, stretcher bearers, janitors, elevator operators, dietary helpers, and general straightener-uppers."²³

The hospital staff learned during the disaster that the use of the emergency room and the outpatient department for treatment of large numbers of victims would have been exceedingly difficult. The physical layout of the outpatient department would have been particularly inadequate if the number of disaster victims that were treated had been larger. The committee appointed to review the hospital's disaster problems

recommended that a number of architectural features in the department be modified. The recommended physical changes were made to the extent that available funds would permit.

Some long-term changes, then, were made at the Alaska Native Hospital. There remained, however, a number of changes which were suggested, but which were not implemented due to the absence of needed financial resources. For example, all of the problems related to the layout of the outpatient department were not solved because it would have required the expenditure of a considerable sum of money. Also, the disaster pointed out the need for a larger auxiliary generator. For a number of critical hours following the earthquake, some important areas of the hospital had no light because the emergency generator that was on hand was too small to meet the hospital's needs. However, a new generator was not purchased due to a lack of funds.

Charity Hospital

Charity Hospital is a general hospital. With 155 beds, it is the largest civilian hospital of its kind in Alaska.

Very few long-term changes were made at Charity Hospital following the earthquake. The hospital did not have a completed disaster plan prior to the earthquake. And a year and a half after it, a plan had not yet been completed, although there had been some work done on one.

Similar to the Alaska Native Hospital, the lack of adequate auxiliary power proved to be a problem at Charity during the emergency. The generator that was on hand was not adequate to provide power for light in several areas of the hospital such as the x-ray area, the kitchen, and the patients' rooms. And as was the case at the Alaska Native Hospital,

the staff at Charity Hospital recognized the need for a larger emergency generator. Likewise, funds were not available to purchase one.

Water was available to Charity throughout the emergency period, even when it was not available to other hospitals in Anchorage, because pumps were borrowed to transfer water from an adjacent spring site into the hospital's mains. Thus during the critical period, drinking water was available as well as water for the hospital's sewage disposal system. As a result of the success of using the adjacent spring in this fashion, a pump was purchased so that the spring could be utilized as an emergency source of water whenever it was necessary.

Southcentral Alaska Red Cross

Prior to the earthquake, there were just two paid persons on the Southcentral Alaska Chapter of the American Red Cross which has its headquarters in Anchorage, an executive secretary and a secretary. The remainder of the chapter consisted of volunteers. The chapter is within the jurisdiction of the Red Cross Pacific Area which has its headquarters in San Francisco.

The chapter's disaster committee was headed by a local volunteer. The committee was assigned the responsibility for surveying the community to determine the kind of disaster planning that was needed. Following a disaster, the disaster committee was expected to organize shelter operations, food and clothing distribution, emergency medical care and handle welfare inquiries. The disaster committee, then, was expected to be the key to the emergency response of the local chapter in the event of a disaster. The importance attached to the position of disaster chairman can be judged by noting some of the actions he is instructed to take in the

Red Cross Disaster Manual.

1. Direct your survey subcommittee chairman to secure on-the-spot information about the extent of the disaster, casualties, damage and emergency needs.
2. Alert all other subcommittee chairmen to stand by or report to headquarters.
3. Provide first aid, emergency medical and nursing, and canteen services according to the need for them indicated in the survey report. Relief of disaster sufferers is your first and continuing responsibility.
4. When the situation warrants, open disaster headquarters and identify it with Red Cross flags and signs. Ask your family service chairman to set up information, welfare inquiry, and registration services.
5. Notify your area office by the quickest available means of the occurrence of disaster, stating:
 - Nature of the disaster and time of day it occurred
 - Area affected
 - Preliminary estimate of persons dead, injured, ill, and hospitalized
 - Preliminary estimate of homes destroyed and damaged and of persons made homeless
 - Action taken by the chapter in organizing emergency relief
 - Help needed immediately from the outside 24

Under the leadership of the disaster chairman, therefore, the local chapter was expected to use its resources to primarily meet immediate emergency relief needs, and representatives of the larger Red Cross organization, as they arrived in the community, were expected to focus primarily on long-term family rehabilitation.

The Southcentral Chapter did not respond as quickly as it was expected to do following the earthquake. The disaster chairman did not bring together the members of the disaster committee and it did not fulfill its expected functions. Moreover, the executive secretary of the chapter did not organize a disaster operation during the crucial period following the earthquake.

The disaster chairman did not function in this role following the

earthquake because of a stronger commitment to another role. At the time of the disaster, he had a position with one of the local hospitals and it was in this hospital that he worked throughout the emergency period. During an interview he noted: " . . . I'm a former member of the Red Cross board . . . but I wasn't active in the Red Cross during the emergency -- I had a job to do here." Thus, the disaster chairman's multiple organizational membership resulted in his not performing his important Red Cross duties. And relatedly, the local chapter did not organize the type of disaster operation that was expected. The disaster chairman's multiple organizational membership, therefore, was a latent source of strain for the local Red Cross chapter which became manifest after the earthquake.

The lack of an organized effort by the local chapter was the cause for considerable concern to the Pacific Area Red Cross staff who came to Anchorage. For example, one official observed:

I would say that if this disaster proved one thing it has proved . . . to us that any chapter should have a disaster committee well organized with somebody ready to take care of food and clothing, shelter and make arrangements for supplemental emergency medical care. Without this basic organization in a chapter very valuable time is lost because the first few hours are critical in terms of getting into operation, letting the public know who you are, where you are, what you can do. Unfortunately, time was allowed to elapse before this was accomplished.

Red Cross Pacific Area personnel remained in the Anchorage area for several months after the disaster providing rehabilitation assistance. Also during this period, they worked with the local Red Cross chapter in an attempt to strengthen some of its weaknesses, especially its disaster preparedness organization.

The disaster committee was reorganized; a new chairman was appointed

and a co-chairman was also named in order to provide the committee with some back-up leadership. The new committee also included three people to handle mass care and one person was assigned to handle each of the responsibilities for: emergency communications, transportation, volunteer services, supply, and public relations.

The reorganization of the disaster committee can be interpreted as an attempt by the organization to enhance its effectiveness in responding to emergencies and as a means of adjusting to the strain resulting from the multiple organizational membership of the disaster chairman. The strain was controlled by replacing the role incumbent in this position and, further, by selecting a disaster co-chairman and thus providing added insurance against a similar problem occurring in future emergencies.

Alaska Salvation Army

Prior to the earthquake, there were fourteen Salvation Army Corp centers in Alaska. The headquarters for the organization in the state is located in Anchorage.

Only a few changes occurred in this organization as a result of the disaster. First of all, plans had been made just prior to the earthquake to begin organizing a new corps center in Kodiak. The disaster was responsible for causing a delay in the implementation of these plans for approximately two years.

The earthquake experience also sensitized Salvation Army officials to the need for increased disaster preparedness. They attribute the purchase of a new canteen, which can be used to prepare food during emergencies, to this increased awareness. The canteen is considered an important new resource because it has a self-contained power unit on

which it can be operated for about a week during periods when the normal sources of power are unavailable.

The Alaska National Guard

The Alaska National Guard was heavily involved in emergency activities following the disaster. And as a result of the experience one change was initiated in the organization. A year and a half later, National Guard personnel reported that they were taking the experience into account by revising their emergency troop plans. When this was reported, it was anticipated that it would be several months before the revisions were completed.

State of Alaska Civil Defense

Alaska State Civil Defense is a division of the Alaska Department of Public Safety; headquarters for the division is located in Anchorage. Prior to the earthquake, the permanent staff consisted of eight persons, all of whom worked at the divisional headquarters except for a deputy director who was stationed in Juneau.

The Alaska Civil Defense director is appointed by the governor and is directly responsible to the commissioner of the department. The remainder of the staff is under civil service.

An assistant director-administrative officer was second in command in the organization; prior to the disaster he was responsible for administrative matters, and assumed command in the absence of the director. Under the assistant director were the operations, resources, and training officers. The remainder of the headquarters' staff consisted of a secretary and a clerk-typist.

According to officials, the organization was understaffed at the time

of the earthquake. As a strong supporter of Civil Defense, the governor had urged the State Legislature to provide for a larger Civil Defense staff.

The several state departments had been assigned emergency Civil Defense functions, and certain officials from each were designated as Civil Defense coordinators. By order of the governor, these officials can be required to function under the direction of the State Civil Defense director during periods of major emergency as some of them did following the earthquake.

When the disaster struck, State Civil Defense did not have a completed disaster plan. There had been a plan published in 1958; however, some years later, it was assessed to be outmoded and the staff decided to rewrite it. A revised rough draft of this earlier plan was made in 1962, due in part to the anxiety generated by the Cuban crisis. Plans had called for the State Civil Defense staff to write the basic state disaster plan, and for each state department to write more specific plans called annexes which would complement the general guidelines established by the state plan. There had been meetings between the State Civil Defense staff and officials of the various state departments regarding disaster planning and preparedness. The goal had originally been set for such meetings to occur each month, but this did not come about because many departments were not very interested in such matters. Some of the departments were reported to have been working on their phase of the plan, but very few had completed them. So when the disaster occurred, there was little in the way of pre-established emergency norms for the state organizations to follow.

A few weeks before the disaster, the State Civil Defense organization was in danger of losing its financial support from the State Legislature.

Because of this members of the staff became involved in a campaign to publicize the function of the organization and to make the public aware of why it was needed in the state. Appearances were made by staff members on radio and television, and articles were released to the newspapers. Civil Defense at both the state and local levels in Alaska, then, was experiencing difficulties prior to the 1964 earthquake.

On July 1, 1964, the Alaska State Civil Defense organization was renamed the Alaska Disaster Office. It was hoped that the new name would more accurately convey to the public the actual and broader function or responsibility of the organization -- that it had responsibilities during natural as well as nuclear disaster. There were a number of noteworthy long-term changes which occurred in the Alaska Disaster Office. Some of the changes were related to the disaster only in terms of their rate of occurrence, that is, the patterns of change existed in the organization prior to the disaster and were only accelerated by it. On the other hand, the earthquake experience also had the affect of initiating new patterns of change in the Alaska Disaster Office.

The disaster was a learning experience for members of the Alaska Disaster Office. Consequently, in assessing the organization's performance, the members identified a number of problem areas which had developed. Some of the changes which were made were based on the desire to control such problems in any future emergencies. In other words, some of the changes were geared toward making the future disaster responses of the organization more effective.

Also, it seems that the disaster (as already noted with regard to some other organizations) provided the Alaska Disaster Office with a

stronger case for why certain of its programs should be supported. One result of the disaster, then, at least for a short period, was that it allowed the organization greater control over an important aspect of its environment -- that aspect which determines the resources it will be allocated. Let us now consider more specifically the disaster related long-term changes which occurred in the Alaska Disaster Office, or Alaska State Civil Defense as it was known before the earthquake.

Before the earthquake, the authority structure of the Alaska Disaster Office was such that the director was at the head followed by the assistant director -- administrative officer. The three remaining non-clerical members -- the operation, training, and resources officers -- were under the assistant director and on a common level in the organization. Since the organization had not been involved in any major disasters prior to the earthquake, the effectiveness of this structural arrangement under such conditions was not known.

As Alaska Disaster Office officials began setting up their operation during the emergency period, they perceived their problems to be of two sorts. First of all, it became apparent that one of the main problems was the need to coordinate emergency rescue and relief activities. Secondly, they felt the other demand to be the handling of administrative work related to acquiring federal disaster assistance for the affected communities in the state. Accordingly, the work assigned to staff members was divided in a like fashion. The director and assistant director began handling the administrative phase of the organization's emergency response, and the operations officer was given a free hand to deal with the operational aspect. The resources and training officers were assigned to work

under the operations officer.

This manner of organizing the regular Alaska Disaster Office staff which finally emerged during the emergency period differed from its organization prior to the disaster. Also, officials felt that the structure which evolved during the crisis was more functional. In referring to an earlier period when the new arrangement had not yet emerged one official noted:

Well, early experience in the quake indicated that this (the pre-disaster structure) was just not too functional because we had an operations officer, but he was all by himself. He had no one actually working for him. . . . resources was helping him, but he was not under him. So we then took another look at our organization and we split it up to two particular sections within the . . . division.

Since the new structure that developed during the emergency period was defined as more satisfactory than the pre-disaster pattern, the decision was made to make it a "permanent" feature of the organization.

After the earthquake, then, the Alaska Disaster Office's non-clerical staff underwent some reorganization in order to most effectively cope with the numerous contingencies that developed. What was initially perceived as an emergent kind of organization in which the regular staff members would stand in new relationships with one another became a relatively long-term arrangement. Let us look more closely at this new arrangement which developed.

First of all, the responsibilities below the director, in contrast to the pre-disaster situation, were divided between the assistant director and the operations officer, who were now on the same level. As previously mentioned, two sections were established in the organization. The assistant director was made responsible for an administrative section and the

operations officer was made responsible for an operations section.

The resources officer position, which was later redesignated as an assistant operations officer position, and the position of training officer were made part of the operations section. Both came under the authority of the operations officer. In the pre-disaster organization the training and resources officers were on the same level as the operations officer.

The administrative section, headed by the assistant director, included a supply officer and an assistant operations officer. The assistant operations officer in this section became routinely involved in administrative tasks and, therefore, his designation was misleading. This position was so labeled in order that a new civil service classification would not have to be established. Both of these positions were new ones which the Alaska Disaster Office was able to add as a result of the disaster. For example, concerning the position of supply officer one official observed:

And we picked up . . . another new position, a supply officer which is in administration. This is something we never had . . . Well (during) the quake it was very clear we needed a supply officer, somebody who devoted full time to this. Would know where these supplies were, to handle the paper work involved . . .

The organization was also able to add two more clerical persons to the staff, a secretary and a clerk typist. By the summer of 1964, the staff had increased by four persons. In attributing this over-all increase in personnel to the disaster, one official said:

(We) went over this organization and we came up with this recommendation. (The director) in turn then recommended it to Commissioner _____ who approved it. It's the best thing we've ever gotten through in our life, through with no sweat, and this was directly due to the quake because we had no intentions whatsoever of increasing our staff.

There was one case of inadequate role performance by a member of the regular Alaska Disaster Office staff during the emergency period following the disaster. For purposes of anonymity, we will use the fictitious title of "plans officer" when referring to this person. Reportedly, there was some question about the plans officer's work and contribution prior to the disaster; however, dissatisfaction with his performance reached the critical point following the earthquake. For example, one person noted:

During the quake we'd look for him and there'd be periods of an hour, two hours, when we just didn't know where he'd be. He'd come back and have no logical explanation of where he'd been. He was logically the one who should have taken over the fuel coordination. I assigned it to him, but he was incapable of handling it. He didn't have the ability to see what had to be done and then go ahead and do it.

Because he was not performing his role as expected, the plans officer was informed during the emergency that he was being discharged effective as of the end of April. Later, this was temporarily reversed. However, during the first of July, 1964, he resigned by "mutual consent." His resignation might have occurred eventually even if there had not been a disaster because, as previously mentioned, there had earlier been some dissatisfaction with his performance. Yet, the resignation came when it did because the demands of the disaster had made his below par work even more critical and apparent. Under more stable conditions, organizations can use various devices in order to control, to some extent, the dysfunctional consequences of inadequate role performance - for example, by not assigning important work to those persons who are defined as performing under par. During periods of crisis, however, control devices sometimes break down and latent problems become manifest. It is our contention that the inadequate role performance of the plans officer, as defined by Alaska

Disaster Office officials, was a source of strain for the organization. The removal of the role incumbent was the means used in adapting to this strain.

It was reported that with the reorganization of the Alaska Disaster Office staff there was also an attendant greater delegation of responsibility and increased formalization. For example, some members of the staff expressed the belief that prior to the disaster the director supervised too closely the work they were doing on various projects and programs. They felt that this created a morale problem. However, it was reported that following the disaster and the reorganization there was much more delegation of responsibility and less close supervision. One member noted, for example:

I don't bother him (the director) with all the detail work on what we're doing, giving details unless there is a specific problem, and there's one of two ways that we can go. Then I contact him as to what way to go. He knows nothing about the routine, the procedure or anything. Prior to the earthquake he would have.

Evidently, this change was, in part, due to the modification in the interpersonal patterns of the organization with the addition of the new personnel. There seemed to be a considerable amount of confidence placed in some of the new role incumbents.

There was also a more specific assignment of tasks after the disaster and subsequent reorganization.

Prior to the quake it seems like everybody did a little bit of everything. We still do but we have now made specific assignments to individuals - this is the responsibility of a given individual. He may get assistance from someone else but we look to this individual for the accomplishment of this program and prior to the earthquake it wasn't that formal.

And along these same lines it was observed:

. . . we are now trying to concentrate on making sure that a call coming in pertaining to operations is handled by operations where prior to the earthquake an incoming call would be taken just about by anyone and they'd go to work on this problem . . . We're getting quite firm in insisting that these calls go directly to the operations officer and then if he wants to assign this particular problem that is posed or whatever it happens to be, he can, but it's called to his attention.

Thus, one result of the earthquake experience for the Alaska Disaster Office was that some new normative patterns emerged related to the delegation of responsibility and the assignment of tasks. Clearly, the organization was different from what it had been prior to the disaster.

As previously mentioned, the Alaska Disaster Office did not have an operational disaster plan when the earthquake struck. Work on a basic state plan had not proceeded as rapidly as had been planned. The disaster served to stimulate work on the plan, and it was published in February, 1965. It was a plan which was geared toward nuclear disaster; however, Alaska Disaster Office officials thought it would also provide some guidelines for natural disaster operations.

Prior to the earthquake, work had also been started by the Alaska Disaster Office on a state seismic sea-wave warning plan. The plan was published in September, 1965, and, like the basic state plan, its completion was accelerated by the disaster. One official put it this way: ". . . it (the earthquake) certainly stimulated getting it out. It pointed up the importance of the plan and I think it's coming about a year earlier than it normally would have."

A few changes also occurred in the physical facilities available to the Alaska Disaster Office. In the summer of 1964, the State Legislature

approved \$25,000 to be used for the purchase of radio communication equipment in order to establish an emergency communication system throughout the state. By the fall of 1965, equipment had been purchased for this new capability, including a 1500 watt base station with auxiliary power to be installed at Juneau, Anchorage, and Fairbanks; three 150 watt transceivers which can be taken to disaster areas for emergency communications; and a number of five watt mobile units and walkie-talkies. Relating the acquisition of this equipment to the earthquake experience one Alaska Disaster Office official said:

This is a direct outcome of the earthquake. We had attempted to acquire such a system for three years and had always been rejected. We went in with the emergency portion of our budget and it was approved without any question.

Another change in physical resources was the acquisition of a new office facility. This change grew out of the serious problem that developed during the disaster when the emergency operation of the organization with its expanded staff was seriously hampered by the lack of sufficient physical space. The 20' x 80' Alaska Disaster Office headquarters was much too small for a large emergency operation and four mobile homes had to be used.

After the disaster, a 24' x 60' redwood building was donated to the state of Alaska for use by the Alaska Disaster Office. Local contractors and labor unions provided some materials and labor, and the building was erected adjacent to the headquarters building to provide additional office space. Thus, the new facility provided a needed resource.

Our data, then, indicate that the Alaska Disaster Office underwent a number of long-term changes which were related to the earthquake experience. Some of the changes were structural changes; that is, they involved

modifications of normative patterns in the organization. Others involved the replacement of role incumbents or the addition of personnel. Also, some changes occurred in the physical resources available to the organization.

We might mention, again, that the disaster created a climate in which the Alaska Disaster Office received an unusual degree of support from other organizations and agencies. In this one respect, it had a measure of control over its environment that was absent during more stable periods. An organization or group has a certain amount of control over other groups and organizations when it can make certain requests of them and have such requests taken into account, or acted upon favorably. For several months after the disaster, the Alaska Disaster Office was able to request and did, in fact, receive an unusual amount of cooperation and support for its programs. For example, one official during this period made the following observation:

It's just like turning 180°. . . the close cooperation we now have with other state agencies and other federal agencies, the increased stature that we have gained as a result of it and as a result of this we're able to work a lot better with other agencies and they with us . . . It'll probably take two or three years of nothing where Civil Defense will slip into the background like it was before. So there's been irrevocable changes. In fact, friends of mine have accused me of engineering the earthquake.

However, such a climate of cooperation showed very definite signs of dissipating a year and a half after the earthquake, and Alaska Disaster Office officials began to once again complain about the indifference shown by some groups and organizations to its programs. This certainly has implications for those who must develop disaster preparedness programs and plans. It means that sensitivity to such matters may be short lived

following a disaster, and, consequently, support for disaster programs and projects ought to be sought as soon after such an experience has occurred as possible.

Conclusions

We have suggested that it is fruitful to conceive of organizations as problem solving social systems. Accordingly, the Good Friday earthquake was viewed as presenting certain problems to some organizations, and also as providing the context in which other problems could be solved. Four factors -- two internal and two environmental -- were specifically identified as sources of long-term organizational change after the disaster. In some cases, these conditions generated new patterns in organizations and in others they merely hastened pre-existing patterns of change. Starting with the internal ones, let us briefly reconsider the impact of these four factors on the seventeen organizations in our study that underwent some change.

Internal factor (1) organizational learning

The emergency period was followed by considerable reflecting and second guessing, particularly on the part of those organizations that played prominent disaster roles. A number of organizations wrote "after action" reports in which their disaster activities were described and evaluated with an eye toward making better preparations for future disasters. Some organizations held formal meetings in which their emergency activities and problems were reviewed, while most had more or less informal critiques. Such reflecting had an influence on the implementation of a number of new organizational patterns.

Some procedures and arrangements which proved satisfactory during

the disaster became prescribed patterns. For example, the Alaska Disaster Office was re-organized into two new sections and the assistant director and the operations officer were placed on the same authority level because this arrangement had proved functional during the emergency period following the earthquake. Also, in some organizations, emergency adjustments which turned out to be helpful were incorporated into organizational disaster plans; for example, some of the revisions in the Alaska Native Hospital's disaster plans were based on such considerations. Further, some of the physical resources that were wanting following the earthquake were later purchased to be maintained as stand-by emergency mechanisms.

A similar "organizational learning" process was involved in the acceleration of pre-existing patterns of change in some organizations. In other words, the implementation of some pre-disaster forms of change was catalyzed by the earthquake experience because it somehow demonstrated their importance for organizational viability. For example, the disaster brought about an acceleration in plans to implement a technical change in the Municipal Light and Power Department's transmission system permitting faster restoration in the event of outages. Thus, latent patterns of organizational change became more relevant in terms of the disaster experience.

Internal factor (2): organizational strain

The reaction of some organizations to a second type of internal pattern, i. e., organizational strain, also accounts for the emergence of some patterns of long-term change. Disaster related long-term changes arose out of internal sources of strain in the Public Works Department, the Alaska Disaster Office, and the Southcentral Alaska Red Cross Chapter.

Prior to the earthquake, these strains were controlled, or at least more or less tolerated. However, the controls which had been relatively effective prior to the disaster broke down following it; this resulted in an intolerable amount of pressure being exerted for the removal of the strains.

Considering the Public Works Department as one example, our data indicate that the inclination of one of the city structures officials, i.e., "Mr. Brown," to utilize unofficial means to accomplish things was defined as a threat to the organizations' stability. This strain was present prior to the disaster; however, it became greatly magnified after it, and was particularly threatening during the rehabilitation period. Following the earthquake, Mr. Brown used unofficial procedures and channels even more with the increased pre-occupation of his immediate superiors with rehabilitation problems. He also endeavored to establish a disaster preparedness program in his division -- a function that city and Public Works officials defined as the responsibility of another city department. The initial adaptation to this divisive influence was the pre-emption of this disaster program by city officials. Finally though, Mr. Brown was forced to resign. Thus, the two changes which grew out of this source of strain were the incorporation into local Civil Defense plans disaster preparedness ideas which were initially implemented in the city structures division, and the replacement of role incumbents in the one position in the division.

External factor (1): new demands

In addition to responding to internal problems, organizations must also adjust to their environments. As external conditions undergo

alteration, they must, in turn, make certain adjustments and adaptations. To do otherwise may over the long-run threaten the very existence of an organization. For a number of Anchorage organizations, the earthquake introduced new environmental problems or demands which had to be met, and in the process of meeting them, new organizational patterns developed.

The expanded Port of Anchorage operation created a new set of environmental problems for the Anchorage Fire Department. As a result, the Fire Department found it necessary to make some long-term changes. A fire inspector was appointed to try to control the increased fire hazard at the Port, and a new body, a Port fire brigade, was established to lend assistance.

Just as modified external conditions brought on by the disaster were responsible for the appearance in some organizations of new patterns of change, similarly caused altered environmental settings led to the acceleration of a number of pre-disaster organizational patterns of change. Long-term changes that had been programmed for the future were advanced a number of years either because they were perceived as relevant in terms of organizational viability or because it was felt that certain gains would be made in light of the altered environment.

Certain pre-disaster patterns of change were accelerated in the water division of the Public Works Department because of their relevance to new external conditions. For example, officials reported that the division's move toward autonomy from Public Works was accelerated because of new environmental demands, such as the need to expand operations in the booming Port area. Two new positions were created and the division was given more responsibility. Such changes had been planned prior to the earthquake, but the change in external circumstances made them necessary sooner than had been anticipated.

External factor (2): increased support

A number of new patterns of change emerged in some organizations because they were given increased outside support following the earthquake. For example, within the context of the disaster, Civil Defense programs seemed for a while anyway, more important than they had been before. As a result, official bodies, that determine the amount of resources which will be allocated organizations engaged in these programs, became more generous to them.

This seems to be the case in the Anchorage City Council's approval not only of the re-appointment of the director of the Civil Defense Department after the disaster but also its approval of the appointment of an assistant director.

And finally, some of the changes which occurred in the Alaska Disaster Office can also be explained by the unusual amount of support the organization received following the disaster. It was able to acquire additional personnel and the Alaska State Legislature appropriated money for a new communication system.

Conditions for maximum long-term organizational change

In view of the above discussion, we might suggest what would be the conditions under which maximum disaster related long-term change would occur in a given organization. Such conditions would seem to be as follows:

- (1) a number of latent changes were present in the organization, or in the process of being realized when a disaster occurred and which became more relevant because of it;
- (2) new strains were generated or old ones were made more critical by the disaster;
- (3) the organization experienced a significant alteration in its relationship to its environment such that new demands were placed on it;
- (4) alternative organizational procedures

and norms were suggested by the disaster experience; and (5) increased external support was given the organization following the disaster. The presence of these conditions would exert considerable pressure for organizational change.

As some supporting evidence for this argument, it can be pointed out that these conditions existed for the Public Works Department and the Alaska Disaster Office -- the two organizations in which in a qualitative sense probably the most change occurred. As previously noted, new patterns of change were initiated and latent patterns were accelerated in these two organizations by both internal and external conditions. Thus, these conditions placed pressure on the organizations to make some long-term adjustments.

Why didn't more long-term change occur?

When the magnitude of the earthquake is taken into account, it is somewhat surprising to note the actual extent of the long-term changes which were initiated by it. While some of the organizations included in this study did experience significant change, many underwent minor long-term adjustment, and some experienced no observable change. At this point, two factors seem to, in part, account for this.

First of all, it seems that a number of organizations experienced little or no long-term change because, except for the initial emergency period, the disaster did not appreciably alter their relationship to their environment. For example, this was true of the Anchorage Daily Journal, the Anchorage Telephone Department and station KDFN. By and large, once the initial emergency was over, these organizations did not find it necessary to adapt on a long-term basis to a new set of external conditions

as was true of some other organizations, such as the Anchorage Public Works Department.

Secondly, in some instances certain long-term changes were not initiated because they were of low priority vis - à - vis other considerations. For example, organizations have to allocate the skills and time of their members among a number of concerns. By having their members focus on certain activities at a particular time, less time can be spent on other organizational matters. Thus, a priority of organizational tasks evolves, and those assigned low priority receive less attention. Similarly, organizations allocate financial resources on a priority basis. Usually high priority items override low priority ones when a determination is made as to the distribution of scarce financial resources. Accordingly, in some organizations needed changes in the area of disaster preparedness were not made because they were treated as secondary to other organizational problems or matters. For example, some organizations had not written disaster plans because they were unwilling to divert their members from more routine tasks and activities to work on such plans. Also, many organizations were not willing to allocate funds for emergency equipment and facilities when it would mean that other things would have to be set aside.

Footnotes

1. Samuel H. Prince, Catastrophe and Social Change (New York: Longmans, Green, and Company, 1920), pp. 118-140.
2. J. E. Ellemers, Studies in Holland Flood Disaster 1953, Vol. 4, (Washington: National Academy of Sciences - National Research Council, 1955), p. 59.
3. F. L. Bates, C. W. Fogelman, V. J. Parenton, R. H. Pittman and G. S. Tracy, The Social and Psychological Consequences of a Natural Disaster: A Longitudinal Study of Hurricane Audrey (Washington, D.C.: National Academy of Sciences - National Research Council, 1963), pp. 121-125.
4. Ibid., p. 137
5. Ibid., pp. 137-138
6. Ibid., p. 139
7. Seymour S. Weisman, Case Study of a Flood Stricken City (New York: Colby Printers, 1958).
8. Ellemers, op. cit., p. 56.
9. Thomas E. Drabek, Disaster in Aisle 13: A Case Study of the Coliseum Explosion at the Indiana State Fairgrounds, October 31, 1963 (Columbus: The Disaster Research Center, The Ohio State University).
10. Prince, op. cit., p. 20.
11. Ellemers, op. cit., p. 55.
12. Gideon Sjöberg, "Disasters and Social Change," Man and Society in Disaster, ed. George Baker and Dwight Chapman (New York: Basic Books, Inc., 1962), p. 356.
13. Prince, op. cit., p. 130.
14. Ellemers, op. cit., p. 60.
15. Ibid., p. 56.
16. Bates, et. al., op. cit., pp. 130-131.
17. For a more complete discussion of the methodology used in this study see: William A. Anderson, Disaster and Organizational Change: A Study of Some of the Long-Term Consequences of the March 27, 1964, Alaska Earthquake (Columbus: The Disaster Research Center, The Ohio State University).

18. For purposes of anonymity non-public organizations have been given pseudonyms.
19. Our approach follows rather closely that suggested by Wilbert Moore and Blau and Scott. See, for example, Wilbert Moore, Social Change (Englewood Cliffs, New Jersey: Prentice Hall, 1963); "Society As A Tension-Management System, " Behavioral Science and Civil Defense, ed. George W. Baker and Leonard S. Cottrell, Jr. (Washington, D.C.: National Academy of Sciences - National Research Council, 1962); and P. Blau and W. Scott, Formal Organizations (San Francisco: Chandler, 1962).
20. Talcott Parsons, "An Outline of the Social System," Theories of Society: Foundations of Modern Sociological Theory, ed. Talcott Parsons, Edward Shils, Kasper D. Naegle, and Jesse R. Pitts, Vol. I (New York: The Free Press of Glencoe, 1962), p. 71.
21. Robert Presthus, The Organizational Society: An Analysis and a Theory (New York: Vintage Books, 1965), p. 258.
22. Drabek, et. al., op. cit.
23. Martha Richardson Wilson, "Effect of the Alaska Earthquake on Functions of PHS Hospital," Public Health Reports, 79 (October, 1964), p. 859.
24. Disaster Manual (Washington D.C.: The American National Red Cross, 1955), p. II.