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A DESCRIPTION AND ANALYSIS OF A RADIO
STATION OPERATION DURING A FOREST FIRE

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A large and devastating forest fire swept a central California county one late summer. The fire began in the hills to the east of a city of about 60,000 population on the afternoon of Tuesday, September 22 and, given an easterly wind blowing in from the sea, initially appeared to pose little danger to the city. However, a reversal of the wind direction during the night and morning of the twenty-second and twenty-third spread the fire down the hills toward the city's suburbs. For the next 36 hours the residents of the city were directly threatened by the fire. More than 10,000 persons were forced to evacuate their homes by the evening of September 24. Some seventy-eight homes were actually destroyed by the fire. Danger to the city and suburbs ended by the morning of the twenty-sixth; the fire, however, continued to burn for another five days, not being declared officially out until October 1.

One hundred and fifty persons were injured -- twelve seriously -- and one person killed in the ten-day blaze. Total property damage was estimated to be three and one half million dollars. The land destroyed by the fire was set by the Fire Control Office at 67,000 acres. Of this area approximately 70 percent (46,000 acres) was national forest land; the remaining 30 percent (21,000) acres, private land. The seventeen units of the National Forest Service in California, as well as units from Oregon, Washington, Montana, Utah, Arizona, and New Mexico were active in fighting the fire. An estimated 3500 persons were involved in disaster activities.

This paper concerns the disaster-related activities of the fourteen staff members of one of the eight radio stations located in the urban area (hereafter referred to by the pseudonym of station ZEEL). The activities of these persons and of a number of emergency-related volunteers during the five-day period, September 22 to 26, will be described. Some attention will be paid to the normal activities of the members of the radio station. From this descriptive information we will be able to specify how the station personnel's disaster activities differed from their normal responsibilities.

The first part of this paper will describe the structure of the organization, its division of labor and authority structure. In the latter part of this paper we shall consider the organization's structure in the light of its disaster operations.

The Structure of the Radio Station

The work of radio station personnel is wide-ranging and diverse. This work includes the selling of commercial time; the operation, maintenance, and repair of electronic equipment; the gathering and editing of news; the planning and production of programs; and, of course, the product of the station, broadcasting itself -- the work of the disc jockey and news announcer. Given the many work roles of station ZEEL and its relatively small staff, it is not surprising that fully half of its personnel are players of several distinct work roles. A single employee of the radio station, for example, functions as disc jockey, news announcer, and engineer; another performs as news gatherer, announcer,

and disc jockey; a third, as music program director and disc jockey. This virtuosity of the ZEEL personnel, necessary during normal periods because of limited staff and a variety of work roles, will be particularly relevant to our analysis of the organization's structure during the emergency.

A second characteristic of the structure of the organization is the "flatness" of its authority structure. At no point in the organization is the hierarchy of authority more than three levels deep. Correlated with this structural feature are the considerable autonomy of the members of the organization in performing their several roles and the informality of inter-personal relations among the station personnel. These characteristics, too, will bear on our analysis of the effects of the disaster on the structure of the organization.

We turn now to a more detailed description of these two structural features of the radio station -- its division of labor and authority structure -- through an analysis of its organizational table. This information is summarized in Figure 1.

Division of Labor

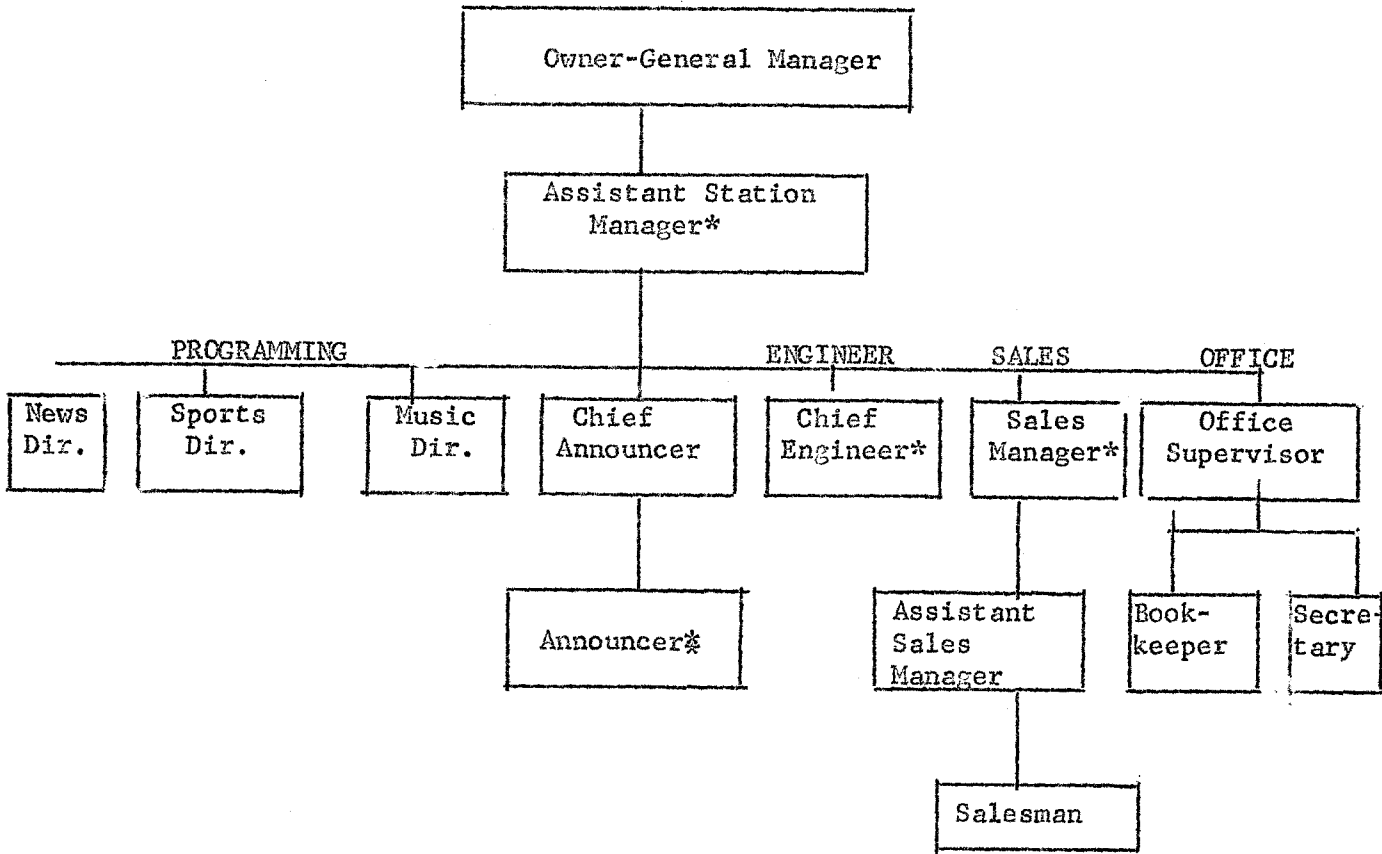
The owner of the radio station serves as president and general manager of the organization. He is the only member of ZEEL whose principal function is managerial, coordinating the operations of the other members of the organization. In his absence, this function is assumed by the station's sales manager. The latter's major role, however, remains the promotion and selling of commercial time for the station (an activity in which the owner sometimes engages also). The sales manager, too, has an assistant whose responsibilities include, in addition to sales work, writing and recording commercials, and planning and announcing a daily radio program. The sales force is augmented by a full-time salesman whose only functions are associated with sales.

Program personnel are identified by four operational statuses: news, sports, and music directors, and announcers. Seven members of the organization (including, as announcer on a part-time basis, the station's engineer) are incumbents of these positions. Among the seven, there is considerable overlapping of activities. All programming personnel, regardless of designation get "on board" (i.e., "on the air"), and, in that sense, all might be considered "announcers." Of the seven, however, only three are announcers more or less exclusively. (Two of these are part-time personnel: one works only week ends; the other, vacations.) Announcers, too, perform other tasks, like the collection of news and recording commercials. With these shared responsibilities in mind, we shall briefly describe the "normal" activities of the news, sports, and music directors and of the announcers.

The news director collects and follows up news stories from all local sources (national and international news is taken from a wire service). He regularly collects news from the police and fire departments, sheriff's office

FIGURE 1

THE STRUCTURE OF THE RADIO STATION:
DIVISION OF LABOR AND LOCATION OF ZEEL PERSONNEL



* Designates personnel occupying multiple positions.

** Designates position occupied by part-time personnel.

and highway patrol, local hospitals and city hall. He attends the meetings of the city council and is present at important sessions of other local organizations. He is responsible for all news collection for the station and, therefore, exercises some authority over other members of the programming staff when they are involved in news work, either as mobile unit reporters or writers in the news room. The news director may also conduct sales interviews and often represents the radio station at social gatherings. Daily, between 6:00 am and 1:30 pm, the director is on board with the news.

The sports director works during the evening shift, collecting sports stories and other news. Like all members of the programming staff, he also serves as announcer. His specialization, however, is sports; he is responsible for collecting, writing, and announcing news of professional and amateur athletics for broadcast each evening. Only on weekends and during his vacation are these duties undertaken by other members of the programming staff.

Radio station ZEEL is a "music and news" station. (The assistant sales manager's daily half-hour "bookstore" program is one of few exceptions to this music-news programming.) Thus, the music director is effectively the station's non-news program director; he is, in fact, so designated at times. As program director, however, his responsibilities are limited to the selection and scheduling of the music to be played during the station's non-news hours. He follows the popular music charts and maintains an up-to-date collection of the best-selling records for the station. Within certain limits (described below), he determines which records will be played by the station's disc jockeys. He is also in charge of the organization's record collection, maintaining as well as selecting and ordering them. Tape recording of music is under his direction. During the afternoon hours, the music director is on board as a disc jockey.

The announcer who works the morning and early afternoon shift and is on board more hours during the day than other programming personnel is designated "chief announcer" by the members of the radio station. This position, however, does not appear to carry any official authority over other announcers. The incumbent is not charged with any special duties beyond those expected of others whenever they perform as announcers. "Chief announcer" describes the one full-time member of the organization whose principal function is on board. The other two announcers, as we have noted, are part-time employees. Thus, of the station's full-time personnel who announce, only the chief announcer does not also occupy another position identified by the organization -- e.g., news, sports, or music director; assistant sales manager; or chief engineer. The "chief" functions of these latter personnel are not announcing. All personnel who assume the role of announcer, however, perform the same tasks: the playing of records and tape-recorded commercials and public announcements. If commercials are not recorded, the announcer reads them himself. In addition, the announcer on board provides all the connecting comments which hold the program together.

The station's chief engineer is responsible for the technical aspects of radio broadcasting. He is, therefore, the station's troubleshooter, maintaining and repairing the organization's electronic equipment. The station possesses

receiving as well as transmitting equipment: one of its receivers monitors the internal communication of the police, fire, and sheriff's departments and the other monitors the station's own communication system, its thirteen mobile units. The latter are located in the private cars of many of the station's personnel including the general manager, all sales and programming staff. The station is served by five telephone lines: two standard lines, one unlisted line, and two lines connected directly to taped weather reports and time signals. An auxiliary power system was constructed shortly before the forest fire disaster. Located some distance from the station, it increased the strength of the station's signal, thus extending somewhat the area covered by ZEEL. In addition to maintaining this equipment, the chief engineer also serves as announcer.

The remaining three employees of the station occupy positions which may be designated clerical or office statuses. The office supervisor acts as receptionist at the radio station. In addition, she is the "traffic" responsible for the station's "log." The log is a detailed timetable of the broadcast day (6:30 am until 1:00 am), listing newscasts, commercials, public announcements, and music. As traffic, she determines (within the guidelines established by federal regulations) when commercials and public announcements will be broadcast during a given period of time. Other tasks performed by the office supervisor include writing commercials and assigning them to the various station personnel who record them. She also writes station correspondence and shares such clerical duties as typing with the station secretary and bookkeeper.

In addition to typing, the secretary serves in other capacities: for example, assisting the music director in the maintenance of the station's record collection and in the preparation of the log for music programming. She also works in the control room, edits taped material for broadcast, records commercials, and prepares the taped weather report. The responsibilities of the bookkeeper include general typing (e.g., the daily log) and telephone answering as well as the posting of the organization's financial transactions. Both the secretary and the bookkeeper perform clerical work under the authority of the office supervisor. The bookkeeper, however, maintains the organization's financial records independently of the office supervisor's authority.

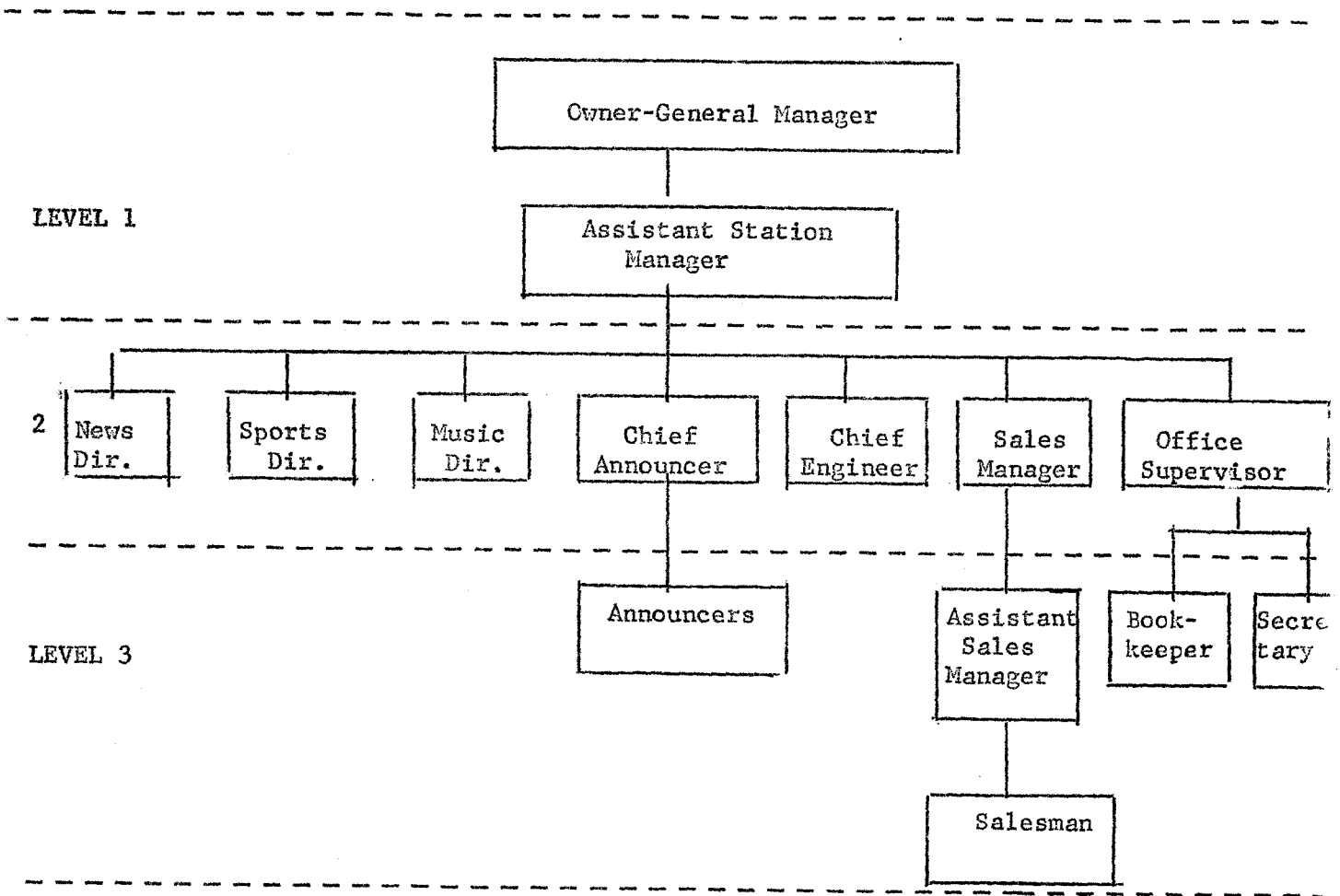
Thus the distribution of tasks among the twelve full-time members of the organization is characterized by considerable sharing of duties. Most of the personnel, whatever their "official" designation, are routinely expected to perform a wide variety of tasks, assuming more or less regularly several distinctive roles within the structure of the radio station. This structural characteristic is related to the organization's "flat" authority system. We turn now in our discussion of the normal structure of ZEEL to the patterns of authority relations among its members.

Authority Structure

The authority structure of ZEEL has three levels. (See Figure 2.) At the top of the organization (the first level) is its one full-time administrative position. This position is occupied by the owner of the station who also serves

FIGURE 2

The Structure of the Radio Station:
Hierarchy of Authority
And Location of ZEEL Personnel



as its chief administrator. Only in his absence is the role of the assistant station manager activated. The incumbent of this part-time position is the manager of the sales department.

On the third level of the organization are the five full-time and part-time operational, sales, and office positions -- announcers, salespersons, bookkeeper, and secretary. Between this lowest level and the top of ZEEL are seven intermediate (second level) positions. These are the three program directors (i.e., news, sports, and music directors), the chief announcer, chief engineer, sales manager, and office supervisor. Of these seven middle-level personnel, only three are actually in positions of authority over other personnel -- the sales manager, the office supervisor, and the chief announcer. In the case of the chief announcer, the two announcers who are "under" him are both part-time fill-in's. The positions of the remaining four "middle-level" personnel mark the bottom of the organization's hierarchy: there are no employees "under" them. In this sense, these four are more like the third-level staff than they are like their middle-level colleagues.

Two related features of the organization help to account for the relatively flat structure of authority at ZEEL. These features are, first, the thin distribution of staff among the organization's positions and, second, the staff's distribution through the organization's long operating day. ZEEL's division of labor (see Figure 1) reveals that there are fourteen separate positions making up the organization. There are also exactly fourteen members of the ZEEL staff (two of whom are part-time announcers who work only on weekends and during full-time staff vacations). We have already suggested how this thin spread of human resources affects the allocation of the organization's tasks: how, for example, most staff members perform a wide variety of tasks and how distinctly different organizational positions are occupied by the same staff member (the chief engineer and announcer positions are occupied by the same man, as are the sales manager and the assistant station manager positions).

Secondly, the station operates for nineteen and a half hours every day -- from 5:30 in the morning (an hour before broadcasting begins) until 1:00 the following morning. In order to distribute ZEEL's twelve full-time employees into fourteen positions for almost twenty hours a day, some employees must not only fill two positions but others must work more or less independently of their fellow employees. During the early morning hours 5:30 until 9:00 am, for example, the news director and the chief announcer perform all station operations on their own. Again, at the end of the day (6:00 pm until 1:00 am), only the organization's sports director is at work: he is disc jockey, announcer, news writer, and newscaster. Thus, these program personnel regularly work independently of supervisors "over" them. They are also free of responsibilities to supervise the activities of others "under" them. Thus, neither the news director nor the sports director exercises authority; only the chief announcer is located "over" others (the two part-time announcers who are, in any case, outside the daily structure of ZEEL).

Among the station's "nine-to-five" administrative, sales, and office staff are the hierarchical authority relations. Here daily social interaction among

staff who work "together" -- i.e., at the same time -- requires that their relationships be vertically as well as horizontally ordered. For the program staff, by contrast, only a horizontal division of labor has been worked out. As a result of the absence of a clearly defined authority structure among them, program personnel appear to be subject to some chronic difficulties of decision-making authority.

One difficulty may illustrate the problems of a "flat" authority structure. Between the music director (a "nine-to-five" man) and the other members of the program staff a breach has developed concerning the musical content of ZEEL broadcasting. On the one side, the music director, following wishes of the owner-manager, has attempted to develop ZEEL into a "Top 40" rock music and news station, with the programming emphasis on music rather than news. The other members of the program staff -- who have greater seniority at the station than the music director -- have resisted this change by playing the "easy listening" music they prefer and emphasizing the newscasting function of ZEEL. In the absence of authority relations among program staff, a problem such as this one is extremely difficult to resolve because both task specialization and temporal separation of the members of the staff make it possible for them to avoid direct confrontations over their differences.

The owner-manager, too, appears reluctant to force a show of authority among his program staff. He says that each of the station personnel is expected to make job-related decisions independently and that his own function as owner is to oversee the entire operation rather than check on individual performances. (Other members of ZEEL express the same idea: one of the middle-level supervisors, for example, stated her perceptions of authority relations by observing that she "never heard anybody tell anyone what to do -- even [the manager].") When, however, individual staff members deviate from station policy, the owner does tell the individual "what to do." Doing this himself, rather than delegating this authority to other members of the staff may exacerbate intra-staff difficulties like the one discussed above.

Members of the ZEEL staff also go directly to the owner-manager when seeking authority; they do not go to one of the middle-level personnel. The logic behind this pattern, according to one member of ZEEL, is simple: the owner pays the staff to do "what the boss expects." How better to determine "what the boss expects" than to ask him directly? This short-cutting of the authority structure, together with the thin distribution of staff among the organization's positions and through its working day, contributes to the "shallowness" or "flatness" of ZEEL's authority structure.

Disaster Activities and the Structure of the Radio Station

In the second part of this paper we shall describe the activities of ZEEL during the emergency period and, then, reexamine the organization's division of

labor and hierarchy of authority in the light of these emergency activities. The question to which we are seeking answers, thus, is "What effects -- if any -- did the disaster have on the structure of the organization?"

Disaster Functions of ZEEL

The emergency period at ZEEL lasted for a little more than three and a half days -- from 2:15 pm, Tuesday, September 22 until the morning of the following Saturday, September 26. (Although the danger to the city ended by this latter date, the fire burned until the following Thursday, October 1.) During the ninety hours of the emergency period ZEEL became an emergency appendage for a number of disaster-relevant organizations in the community, including the Civil Defense, police department, fire department, sheriff's department, and Salvation Army. The station not only served manifestly as a communications link between these agencies and the public -- as when it broadcast information concerning available and needed disaster services from the Civil Defense and Salvation Army -- but it also collected information about the fire for emergency organizations and sent it to them through its mobile-unit "live" coverage of the disaster. Most often this latter function was latent: station personnel said that members of both the police and fire departments were routinely ordered to monitor ZEEL broadcasts for disaster information. Thus, when physical barriers (e.g., mountains) disrupted intra-organizational communications, units of the police and fire departments could still receive fire information from ZEEL.

On at least one occasion, however, a ZEEL mobile unit was explicitly ordered by the sheriff's department to report via ZEEL on disaster conditions in a particular area. This incident may have prompted one member of the mobile-unit staff to observe that he had felt more like a representative of a law enforcement agency than of a radio station during the emergency period. Another staff member capsulized his impressions of the emergency activities of ZEEL by suggesting that ZEEL was "just another element in the fire disaster -- instead of a radio station."

In addition to serving as a communications link within disaster agencies and between these agencies and the public, ZEEL also assisted members of the public in communicating with disaster agencies and with each other. Many members of the public, for example, telephoned ZEEL requesting information about disaster agencies' services. ZEEL personnel made referrals to appropriate sources of information or provided the information themselves when it was available; often when the desired information was not readily available, they took the actions necessary to collect it from emergency organizations. Other members of the public called the station offering to assist victims of the fire. ZEEL personnel referred these people to individuals or agencies requesting help.

Sometimes mobile-unit personnel of ZEEL performed disaster services, alerting neighborhood residents to evacuation possibilities, offering advice on how to protect buildings by wetting them down before evacuation, reporting on fire conditions in evacuated neighborhoods for the benefit of their residents, and, in one instance, removing two children from an endangered area. One reporter who was in a neighborhood close to the fire hosed down some houses himself because

he knew that the residents were out of town. Another assisted a fireman in searching for lost fire equipment.

The content of ZEEL programming during the emergency period altered, of course, with these changes in the functions of the organization. Very broadly speaking, ZEEL transformed itself from a "Top 40" music station to a "talk" station, from programming which was 75 percent music to programming which was 75 percent talk. During the emergency period news up-dates were aired every 20 or 30 minutes, bulletins were broadcast immediately, and "on-the-spot" disaster reports were broadcast whenever a mobile-unit newsman requested air time. Interviews and "human-interest" stories, public-service announcements and personal messages filled out much of the remainder of the non-music programming.

Personal messages were an emergency period innovation; they had no counterpart in "normal" broadcasting. Such messages were aired whenever it was felt that response to them could help to save lives or property. Individual requests for last-minute assistance in evacuation, for example, were broadcast as were announcements of missing persons and similar messages addressed to victims of the fire.

Another emergency period change in the content of ZEEL broadcasting was the decline in the amount of advertising. The "normal" advertisements were suspended altogether; in their place ZEEL broadcast a smaller set of emergency-relevant advertisements (e.g., insurance). Finally, the musical programming, also dramatically reduced relative to "normal" amounts, was altered in content. Only the "easy listening" variety of recorded music was played during the emergency period. ZEEL did not air any "Top 40" hits during the Tuesday-Saturday period because such music was judged (by all of the programming staff) to be inappropriate to the community emergency.

This unanimity among programming staff during the emergency was not limited to matters of musical taste. Respondents agree that there was no disagreement among the staff on the decision to cover the fire in the first place nor was there any apparent disagreement over programming priorities during the station's emergency operations. News took precedence over music; emergency messages and announcements took precedence over news up-dates; and messages judged to be of special importance were broadcast twice.

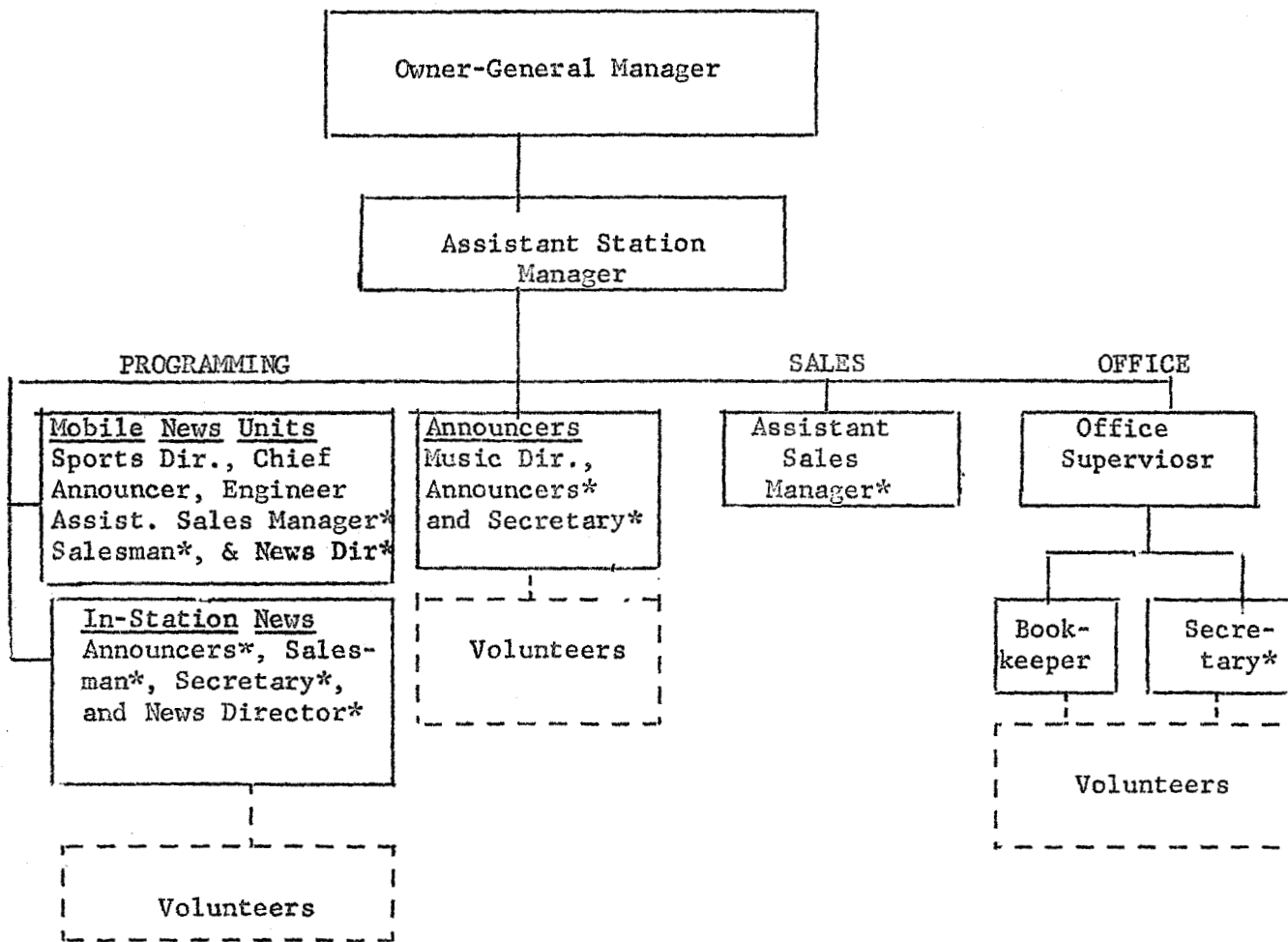
In the next section of this paper, we shall describe how these emergency functions of the radio station were carried out by its personnel.

Disaster Division of Labor

Figure 3 summarized the principal changes which developed in the radio station's division of labor during the emergency period. Although only one new position was created during this period -- the so-called "runner" -- several significant changes within the existing structure occurred which will be described here.

FIGURE 3

DISASTER STRUCTURE OF THE RADIO STATION:
DIVISION OF LABOR AND LOCATION OF ZEEL PERSONNEL



* Designates persons occupying multiple positions.

--- Designates volunteer positions.

The amount of time required for certain tasks at ZEEL increased dramatically during the emergency period. The effect of this increase in demands on the staff was to transform what had been essentially "part-time" tasks into "full-time" tasks. This effect was most pronounced in the labor associated with the gathering, editing, and broadcasting of news. During the emergency period three members of the staff -- the sports director, the chief announcer, and the engineer -- worked full time from mobile news units, gathering information at the scene of the fire and reporting it "live" on ZEEL. Normally, operation of the mobile news units is a part-time task only, carried out by various members of the programming staff. The emergency transformed it into a literal 24-hour-a-day task performed by as many as seven staff members simultaneously. (In addition to the three persons already mentioned, the assistant sales manager, the salesman, and the news director sometimes worked from mobile units.)

An effect of this expansion of mobile news gathering was an increase in the demand on the dispatcher (i.e., the person who assigned mobile units to fire locations and coordinated their reports with the news programming at the station). These dispatching activities were performed by the news director and other members of the in-station emergency news staff.

Thus, in-station news work also expanded, requiring more or less round-the-clock attention from members of the ZEEL staff. The two announcers who, under normal conditions, work week-ends and vacations only, became full-time newsmen during the emergency. They worked in the station's news room, recapping news directly from ZEEL's on-the-air coverage of the fire (rather than from tapes as would be done normally). They also went on board with these news summaries every twenty or thirty minutes. Other staff who worked as in-station newsmen included the news director, the salesman, and the office secretary. The latter worked in the office answering telephone calls and taking messages. When these messages needed to be broadcast immediately, she would make the announcements herself in order to save time and reduce the possibility of error.

Nine members, altogether, of the ZEEL staff were involved directly in news work -- gathering, editing, and broadcasting -- during the emergency. These nine were augmented by a number of volunteers who worked the peak hours of the emergency; we shall comment on the activities of these volunteers later in this paper.

The emphasis on news during the emergency period effectively displaced some members of the staff from their regular positions in the organization's division of labor. The sports and music directors became a mobile newsmen and full-time announcer, respectively; the engineer and chief announcer became mobile newsmen; the sales manager functioned as assistant station manager; the salesman, as a newsmen. Thus, sports and music direction, sales activities, and engineering were all curtailed by the disaster. The sports director prepared only one sports report during the emergency period. The necessity for music direction also declined markedly during the emergency; music was "filler" for the time between news, emergency announcements, interviews, and the like. The music director worked on board full-time during ZEEL's emergency broadcasting. Of the three members of the sales department, only the assistant sales manager actually worked (just part of the time) on advertising. Emergency advertisements for products and

services useful during the disaster were broadcast; normal advertisements were dropped. Finally, because none of the station's electronic equipment malfunctioned, the engineer could devote all of his time to news work. Had technical difficulties arisen, he would, of course, have worked to rectify them.

Members of the radio station's office staff felt the effects of a significant increase in a second, but related, set of emergency demands. Like the demands for broadcast news, these too concerned the dissemination of disaster information. Telephone callers, anxious to receive the latest information about the fire, began calling the radio station during the early hours of the emergency period (i.e., Tuesday afternoon, September 22). By evening of that first day of the emergency, the number of information calls began declining while those either offering or requesting emergency assistance began increasing. During the peak hours of the emergency, between seventy and eighty such telephone calls were received at ZEEL every hour, according to staff estimates.

To meet these demands, the three members of the office staff (together with a number of volunteers) devoted most of their time to telephone answering and tasks directly related to telephone inquiries. Normal office tasks, like general typing and correspondence, were suspended altogether, while the time spent on other routine work was greatly reduced. Bookkeeping, for example, was hardly done at all; the bookkeeper worked full-time at telephone answering. Weather tape preparation, usually the secretary's job, was not done during the emergency. As has been mentioned, the secretary made fire announcements directly on the air. (At times, prepared tapes of fire information were used in responding to telephone inquiries.) The station's log was written by the office supervisor (the "traffic") but with less attention to detail than normally. The office supervisor performed this task in addition to telephone-answering and related activities -- e.g., taking messages, relaying them to other workers at the station, and releasing disaster information.

Assisting in the intra-organizational communication during the peak hours of the emergency were the "runners." This role was performed by two high-school students who were familiar with the operation of ZEEL and who carried messages, written and oral, from the office to the news personnel and among the other workers at the station. Like all of the volunteers at ZEEL, the runners were not "walk-in's"; they had some previous ties with the radio station and its staff.

Note should be taken now of one additional modification in the division of labor during the emergency. Under normal conditions, the sales manager assumes the administrative duties of the assistant station manager position only when the owner-manager is absent. For much of the first 24 hours of the emergency, the owner-manager had to be away from the station. After his return, however, the sales manager continued to serve as an assistant manager, coordinating the various activities of the regular staff and volunteers. The owner-manager constructed a work schedule for the station personnel, organizing into a more coherent effort the more or less ad-libbed early responses of ZEEL to the emergency. Thus, another effect of the disaster on the division of labor was to increase the demand for active coordination of the staff's activities. We shall pursue this point in more detail in the next section of this paper.

Overall, then, the impact of the disaster on the division of labor was to de-emphasize some activities -- like sports and music direction, sales, and routine office work -- and to increase the importance of other activities -- like those associated with the news division and telephone inquiry. Finally, its effect was to increase the demand for intra-organizational supervision.

Disaster Authority Structure

This description of the authority structure of ZEEL during the emergency period will consist of two parts: the first will briefly describe authority in ZEEL during the initial response of its staff to the fire (roughly the first 24 hours); the second part will describe the authority relations among radio station staff and volunteers from the second day through the end of the emergency period.

ZEEL's response to the emergency began with the decision (made by one of the office personnel) to interrupt the station's coverage of a ball game with the news that the fire, which had begun earlier in the afternoon, was spreading and would seriously threaten the city. This decision to cover the fire generated a number of more or less ad-libbed activities by the station's personnel. These activities were not random, of course, but reflected the staff position of each individual: office personnel, responding as well as they could from their limited knowledge of the disaster situation, answered the steadily increasing volume of incoming telephone requests for fire information. Most program personnel were away from the station at the time; many responded to the emergency by driving their cars (equipped with mobile radio units) to the scenes of the fire and reporting their observations back to the station.

This pattern of somewhat uncoordinated information gathering and disseminating continued through the initial hours of the emergency period. During this time, for example, as many as seven radio station personnel were out covering the fire at the same time, leaving only one person in the news room. As yet no volunteers worked at the station.

By the following evening (i.e., Wednesday), it was clear that the fire would not be quickly contained; instead, the personnel of ZEEL were covering what was certain to be a major disaster, the duration of which could not be known at that time. The owner-general manager, who had returned to the community by that time, imposed a more systematic division of labor on his staff, greatly reducing the number of reporters in the field and increasing the number of personnel working at the station's news room as recappers, dispatchers, etc. He also devised a schedule of work hours, giving each member of ZEEL some time away from the station's 24 hour coverage of the fire events. His staff could not sustain the accelerated pace of emergency activities of their first 24 hours over the next 48 without some relief. Everyone needed some time off. Even so, all staff members worked 19 to 22 hour days during the Wednesday afternoon to Friday noon period. All staff, that is, except one -- who was severely criticized by the rest for observing a normal work day during these unusual circumstances.

The owner-manager's efforts to coordinate the disaster activities of the staff did not appear to result in any significant increase in intra-staff second and third-level authority relations. As the staff members tended to do during normal times, so during the disaster most of them carried out their tasks more or less independently of direct supervision by other staff. Even the decisions of the owner-manager were not always recognized as indisputable. For example, he requested that two reporters who had been riding together in one of the station's mobile units work from separate vehicles. They decided not to follow the owner-manager's request because they believed that the fire conditions were too dangerous to risk working separately.

During the emergency period independent decision-making (in contrast to countermanding an order) was also characteristic of the ZEEL authority structure just as it had been during normal times. Program personnel continued to make their own work decisions: mobile news personnel most frequently decided for themselves which areas of the fire they would cover and whom they would interview; in-station news personnel made their own decisions on news priorities; and on-board announcers had to make their own decisions about the relative importance of music, news, personal announcements, and mobile-unit reports. The increased pace of their activities also required that they make numerically more decisions than normally.

Office staff also found themselves in a situation which required that they make their own on-the-spot decisions. Telephone callers could not be put off; they were concerned with "life and death" matters (e.g., "Should I evacuate?") which had to be answered immediately. Office personnel discovered that they were expected to make more decisions and much more serious decisions during the emergency. By contrast, their decision-making responsibilities during normal times typically concerned fewer and significantly less weighty matters.

This pattern of increased decision-making responsibility among ZEEL staff was the result not only of changes in staff work (i.e., increased work load and changes from routine tasks to emergency responsibilities), but was also the result of the addition of volunteers to the organization. (See Figure 3.) Particularly in the case of the volunteer runners and the volunteers who assisted the office staff in their telephone work, relatively detailed instructions had to be provided for them by the regular members of the organization. The volunteers who assisted the program staff with news work required somewhat less supervision because many were professionally involved in broadcasting or allied fields. These volunteers included, for example, a police dispatcher, a local radio station manager, and a motion picture actor. Nonetheless, the presence of these "strangers" added, in effect, a lower level to the station's authority structure. (These volunteers were not, in fact, "strangers." Most of them were friends of the staff members of ZEEL; one was a staff member's spouse. Reports on the number of volunteers vary from eleven to twenty.) During the time these volunteers worked at ZEEL -- Wednesday evening through Friday noon -- their integration into the emergency operations of the station required that they be supervised by members of the regular staff. As one staff member put it, these volunteers "brought a lot of confusion." The three office personnel supervised the high-school boys who served as runners and the volunteer telephone-answerers. The

in-station programming staff supervised the volunteers who assisted with news recapping, dispatching, and announcing.

The station's return to a normal distribution of authority and division of labor began Friday afternoon. By Saturday morning the demobilization of its personnel was complete.

Conclusions

The question which we have asked in this paper is "What effect -- if any -- did the disaster have on the structure of the organization?" The normal and disaster structures of ZEEL have been contrasted through descriptions of their respective divisions of labor and authority structures. In this final section of this paper we shall identify the broad patterns of change which these descriptions have revealed. Thus, our first answer to the question posed above is "Yes, the disaster did have certain effects on the organization."

What were these effects?

In the first half of this paper, the division of labor at ZEEL was characterized as having an almost equal ratio of personnel to positions. With the exception of the "announcer" position which is occupied by a number of persons on a part-time basis, none of the positions in the organization were filled by more than one person. In some cases positions were filled only by fractions of persons: the sales manager and assistant station manager positions, for example. This structural characteristic required considerable virtuosity on the part of the staff, almost all members of the staff routinely playing multiple work roles in the organization.

As a result of the disaster, the number of separate positions within the organization declined while, at the same time, the number of personnel available to fill them increased. This increase was a result not only of the presence of volunteer workers, but also of the "round-the-clock" service of all save one of the regular ZEEL staff. A consequence of these changes was a tendency among the staff to become, as it were, "specialists" rather than "virtuosi." This tendency was most pronounced among the program personnel. The sports director, chief announcer, and engineer became full-time mobile unit news men; the music director became a full-time announcer. Among office personnel, telephone inquiry became something of a specialty. The sales manager became a full-time administrator as did the owner-manager. Although this pattern of specialization did not affect all staff members equally, it appears as a relatively visible change in the organization's division of labor.

Increasing specialization requires increased coordination. As the members of ZEEL became more unlike each other in their work roles, the need for a more formalized coordination of their activities increased. In response to that necessity the owner-manager imposed from the top the work schedule and division of tasks we have described in the preceding section of this paper. In addition

to this innovation in the authority structure at the top, the disaster required a deepening of the station's authority structure at the bottom. The addition of volunteers resulted, as we have seen, in an increase by one of the levels in the organization's authority structure. Thus, the emergency transformed ZEEL's "shallow" or "flat" normal authority relations into a somewhat "deeper" set of relationships.

The effects of the disaster on the radio station were to specialize the personnel by reducing the number of positions and increasing the number of persons and, at the same time, to formalize their authority relationships, both at the top and the bottom of the structure. Neither of these effects can be said to have transformed the organization in a fundamental or sweeping fashion. Both can be said to have revealed the malleability of the organization in disaster conditions.