

SHELTER MANAGEMENT TEXTBOOK

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"Guide for Community Fallout Shelter Management"
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PREFACE

This publication has been prepared by OCD Staff College, Battle Creek, Michigan, for use as a textbook for training fallout shelter managers and other key members of community shelter staffs. It is based on the results of numerous research reports of experiments with various groups of people occupying fallout shelters, as well as the theory and concepts developed during the presentation of scores of courses in shelter management at the Staff College. This textbook, however, is not to be considered a policy guidance document—such guidance is provided in the Federal Civil Defense Guide.

This text is primarily for use by students enrolled in shelter management courses, many of which are offered through the nation-wide facilities of the Civil Defense University Extension and Civil Defense Adult Education Programs. This publication may be used also by Federal, State or local agencies in their own civil defense training programs.

The content of this textbook is limited to the organization and management of a community fallout shelter. It does not describe equipment operation and maintenance, use of monitoring instruments, or other technical functions. Other courses and/or documents dealing with these subjects are available to students.

This textbook presents problems in shelter management and organization and proposes general solutions, or offers options. Solutions depend upon the existing conditions and available resources of the individual shelter, and hopefully, specific shelters can be discussed during classroom training sessions. The objective of the text is to acquaint the prospective shelter manager and staff members with the scope of their responsibilities, with the kinds of decisions they will have to make, and with those factors and resources having an important bearing in arriving at these decisions.

The emphasis is on the in-shelter period; that is, from the time of entry into the shelter to the time when fallout radiation levels are low enough to permit exit from the shelter. However, there are many additional functions that must be carried out in peacetime and in the post-shelter recovery phase. A chapter is devoted to the important planning and actions that should be taken prior to shelter occupancy, and another chapter to the post-occupancy management responsibilities.

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OVERVIEW OF SHELTER MANAGEMENT

History of Shelter Development

1.1 The Federal government has recognized the need to develop (make) plans which will insure the best possible use of the existing shelter space. Good plans require a basis of facts. The National Fallout Shelter Survey (NFSS) provided a comprehensive survey of existing buildings in the United States to locate those which could shelter 50 or more people and provide a protection factor of 40 (PF 40) or more. This information is used for Community Shelter Planning (CSP); and is regularly being updated. Other studies—Small Shelter Survey (SSS), Home Fallout Protection Survey (HFPS)—are being made to locate buildings with good protection which provide shelter for less than 50 people.

1.2 The information provided by these programs has been and will be used to develop community shelter plans for all areas of the United States. The community shelter plan gives people information on "where shelters are" and "where people should go." Shelter management is responsible for developing the plans for distribution of the population within the building or other shelters, and insuring their survival during the shelter stay.

Importance of Shelter Management

1.3 In the event of thermonuclear war, the responsibility for the safety and well-being of our protected population will rest, in large measure, upon those citizens who bear the title "shelter manager." It is their vital task to provide leadership in the shelter. Without such leadership the goals of physical survival and mental well-being of our population will be difficult to achieve.

1.4 The effective use of these shelters requires that a system of local direction and control be developed. This system, which includes an Emergency Operating Center (EOC) and intermediate levels of control where nec-

essary for organizing the individual shelters into effective operational units, is discussed in a later chapter.

1.5 The shelter manager functions as an *extension of local government within the shelter*, supervising shelter operations until organized units of government can resume direction of the community recovery effort.

1.6 The importance of leadership to survival has been amply demonstrated by many studies and reports of human behavior under stress. Studies of civilian populations and military units in wartime, studies of the effects of natural disasters, investigations of isolated and confined military units, all lend support to the conviction that leadership contributes significantly to the ability of groups to withstand stressful physical and social pressures. Experimental studies of groups confined in shelters for extended periods of up to two weeks also clearly indicate that competent leadership is a necessary ingredient for the successful achievement of group goals.

1.7 There is reason to believe that should war come, the shelter manager will represent, as did previous leaders in previous disasters, the key to survival for an important segment of the population.

The Role of The Shelter Manager

1.8 *The Mission of the Shelter Manager.* The mission of the shelter manager is to return as many shelterees as possible to the post-attack world, physically and psychologically capable of assuming their roles in the recovery and reconstruction of the society. Physical survival of shelterees is only one part of the shelter manager's goal. In addition to bodily survival, rebuilding the society requires strength, will, and knowledge. To the extent that these factors can be provided to the protected population by the leaders of a shelter,

they become an essential part of the mission of the shelter manager.

1.9 *Civilian vs. Military Leadership in the Shelter.* Many people have peacetime supervisory experience that could be put to very valuable use in shelter management in the event of a disaster. In fact, the basic recommendation for selecting shelter managers is to seek persons with civilian supervisory experience. However, there are several essential differences between civilian leadership and the requirements for successful shelter management that make it unrealistic to equate the two automatically. Some of the important differences are:

1. *The scope of leadership responsibility.*

Normally, in peacetime, a supervisor has responsibility for only certain aspects of a subordinate's behavior, and that for only certain hours of the day. In a shelter, the distinction between public life and private life is virtually nonexistent. The shelter manager must be prepared to deal with every aspect of the lives of all shelterees on a 24-hour basis.

2. *Requirements for decision making.*

Under the wartime conditions in which shelters will be occupied, rapid and decisive action on the part of the shelter manager is a requirement for group survival. Under such circumstances, a number of democratic procedures, in which the population voices its preferences, and a number of peacetime bureaucratic procedures, in which information passes relatively slowly up and down chains of command, have to be bypassed. The shelter manager must be prepared to act as an authoritative leader, making and implementing decisions rapidly.

1.10 Other factors that make shelter management different from normal day-to-day management are: (1) emotional reactions to attack and confinement on the part of shelterees, (2) the absence of normal sanctions (the power to reward or punish) in the shelter situation, and (3) the fact that many strangers may be present in a public shelter who are unfamiliar with the management structure of the organization.

1.11 On this basis, it would seem that a military type of leadership would be more suitable

to the shelter situation, in that military leaders have traditionally faced many of the problems described above. *HOWEVER*, the shelter manager is not a military figure commanding a military unit. His mission is to insure the survival of the population in his shelter, while maintaining to the utmost possible extent the values and standards of our democratic society. Although a manager may frequently have the legal status of a representative of local government during a nuclear emergency, he has few of the normal sources of governmental power at his disposal in the shelter. His leadership depends upon at least the tacit consent of the shelterees. This means that for practical as well as ideological reasons, his authoritative leadership should not extend beyond those in-shelter situations involving the safety and well being of the group which require unquestioned obedience.

1.12 Effective shelter leadership results from a combination of elements of both civilian and military leadership. The mark of the trained shelter manager is the ability to recognize and implement the appropriate leadership style.

1.13 *Responsibilities of the Shelter Manager.*

The responsibilities of a shelter manager are complex, difficult, and in some ways without precedent in our society. Some of the problems that a shelter manager will likely face may never have been experienced before. Other problems, while not unique in themselves, may occur in a shelter on a scale previously unknown. The following list of shelter manager responsibilities should convey some idea of the complexity of the job. It should be noted that many of the shelter operations and activities described among the responsibilities will not be carried out directly by the shelter manager, but, rather, by members of the management staff or by the shelterees themselves. However, the shelter manager retains the ultimate responsibility for all the plans that are made in-shelter, all the decisions that are reached and implemented, and all the operations that are carried out, regardless of who actually does the work.

1.14 It is the shelter manager's responsibility to:

1. See to it that the shelter is filled in a rapid and orderly fashion.

2. Insure that those protective actions against the effects of nuclear weapons, which are within the capability of the shelter, are taken.

3. Develop and implement plans for the satisfaction of basic human needs—a livable atmospheric environment, water, food, sleep, sanitation, and medical care—within the limits imposed by shelter resources and conditions.

4. Establish a shelter organization and a shelter schedule within which to carry out all shelter activities.

5. Maintain order and uphold the social standards of our society.

6. Develop and implement plans for in-shelter training of the population that will enhance their survival capabilities during and after the shelter stay.

7. See to it that the morale and motivation of the shelterees are as high as possible under shelter conditions by developing and implementing plans for religious, recreational, and social activities.

8. Prepare plans for in-shelter emergency situations, and implement plans if necessary.

9. Prepare for both temporary and permanent exit from the shelter.

Principles of Shelter Leadership and Management

1.15 For training purposes, it is useful to assign the title "shelter leader and manager" to the person in command of a shelter. "Leader" in this context refers to someone who has the personal qualities to exercise control over the members of a group, and to motivate them to achieve the common goals of the group. By "Manager" is meant someone who can organize and apply the resources of a group towards the achievement of its goals.

1.16 Both "leadership" and "management" are essential functions in the over-all direction and control of a shelter. The extent to which a shelter commander should act as a direct leader or as a "behind-the-scenes" administrator depends upon the size and con-

figuration of the shelter and the needs of the shelterees.

1.17 *Principles of Shelter Leadership.* Among the cardinal principles of leadership of a community fallout shelter are the following:

1. *Assume command rapidly.* People will take shelter with little information as to what to do and what is expected of them. It is up to the manager to provide this information and, in so doing, to establish himself as their leader. The longer the appointed manager delays in this, the greater the chance that an "emergent leader" will take over, with potentially damaging consequences.

2. *Demonstrate authority.* It is by his action and not merely by symbols that the manager will demonstrate his authority and capability. During the initial stages of the shelter stay, the manager should stress the readily visible, personal leadership aspect of his position at the expense of some of his administrative duties.

3. *Delegate authority.* The manager must maintain his capability to perceive, evaluate, and make decisions on the overall shelter situation. Consequently, he can not afford to be unduly burdened with every management detail, and should delegate authority to chosen subordinates.

4. *Refrain from personal overinvolvement.* In a similar fashion, the manager must avoid being identified with the problems of an individual or group of individuals in-shelter. His concern should be for the welfare of the entire shelter population. Intense interest by a leader in the problems of selected individuals may be harmless or even expected under normal conditions, but in a shelter it can have a negative effect on harmony and morale.

5. *Establish a priority of actions.* Even after successful delegation of the less important tasks to subordinates, there will remain a series of duties left to the manager—some of greater importance than others. Oftentimes, situations may make simultaneous action mandatory, or two problems will arise whose solutions are in conflict with one another. A list of manager priorities is an important requirement. A

checklist should be prepared to which the manager can refer, especially during the first few days of the shelter stay.

6. *Provide an example for shelteree behavior.* After establishing himself as the leader in the eyes of the shelterees, he will be looked to for cues on proper behavior. Many adjustments will have to be made in long-established habits and customs and the manager should be a model for appropriate shelter behavior. Also, the knowledge that the leader, himself, is conforming to the new and strange regulations tends to make the adjustment more acceptable to all shelterees.

7. *Recognize the changing needs of the shelter population.* The condition of the shelter and its occupants will be quite different after a week than it was the first few hours after entry. It is crucial that the manager be aware of the changing needs of shelterees and adapt his leadership style to meet these needs. See Shelter Phases on the following pages.

8. *Keep people informed.* One of the most important, continuing responsibilities of the shelter manager is to provide shelterees with as much news about the shelter and the outside world as possible, on a regularly scheduled basis. In the absence of information from management, shelterees will manufacture and transmit their own news, in the form of rumors. If left unchallenged, rumors can negatively affect relationships between shelterees, the efficient operation of the shelter, and the authority of management.

9. *Recognize the importance of motivation.* As almost a summary of leadership principles, it can be stated that the history of human behavior under stress has shown motivation to be a key to the survival of groups under adverse conditions. The manager, by orientation and training, and by the personal example he sets, must generate and maintain in the shelter population a desire to survive and rebuild.

1.18 *Principles of Shelter Management.* Some of the principles of shelter management that are relevant to a wide variety of shelter systems are:

1. *Begin organization rapidly.* Unless shelter teams are preselected and are available, the manager should begin the necessary shelter operations with a temporary staff that can do the job. It is not necessary that he pick the best possible person for each position—speed is essential in forming such teams as Security, Communication, Sanitation, Medical, Rodef, and a team to operate vital equipment. Replacements by better-trained people can be made later, after the shelter has passed the initial stages of operation.

2. *Make a preliminary estimate of the situation.* As soon as possible after entry, stock should be taken of both the human and material resources of the shelter. A realistic plan for in-shelter survival cannot be developed without information about the condition of the shelter, its population, and the external environment.

3. *Develop a shelter schedule.* A goal to strive for is the early introduction of a shelter operations and activities schedule. This serves to establish a rhythm and a pattern to the shelter life, which will be a positive factor in the adjustment of shelterees. The manager, however, should be aware of the probability that the schedule may not function smoothly the first day or two, due to the initial disaster reactions by the shelterees. As a result, some activities that are not essential to survival should be kept from the schedule until shelterees indicate a readiness to accept them. Formal recreation is an example of such an activity.

4. *Keep shelterees occupied.* A goal of shelter management is to provide as many shelterees as possible with an assigned task to perform during the confinement period. Keeping people occupied at useful tasks is recognized as one of the most effective means for maintaining shelteree morale. The exception to the principle of maximum assignment is in tasks that require trained personnel, such as medical or equipment repair tasks. Even here, however, untrained persons can be recruited to aid the trained staff members.

5. *Recognize the need for compromises in management decision making.* It will be

impossible to satisfy everyone in the shelter. Some people will feel hot at the same time that others feel cool; some people will be thirsty and others not; tasks teams may be competing for valuable shelter resources such as illumination and ventilation. The manager will constantly be faced with problems requiring "trade-offs" (compromises) between competing or conflicting requirements or expectations. Whenever possible, the reasons for selecting one course of action over other alternatives should be explained to the shelterees concerned.

Shelter Phases

1.19 The evidence is clear from experimental studies and historical instances of long-term confinement that a shelter stay can be divided into three phases, each with its management implications. However, the strict definition of each phase, its duration, and its impact upon leadership and the shelter population depends upon knowledge of a particular shelter, its resources, its occupants, and its leadership. Consequently, the following descriptions of shelter phases—entry, routine and emergence—and their implications for management should be regarded as generalized guidelines that will fit a large number of shelter situations, but not all.

1.20 *The Entry Phase.* The entry phase extends from the time that the shelter is opened until the population has been received and routine operations have been initiated. The manager should arrive at the shelter prior to the general population. He will then have time to evaluate the shelter readiness for occupancy, inventory its resources, and prepare himself for the assumption of command. Being there when the shelterees first start arriving will also tend to strengthen his authority, and give him an immediate opportunity to demonstrate his capability.

1.21 It is more likely that the manager will arrive during the population movement to the shelter. In either case, his initial responsibilities are to prepare the shelter for occupancy, assume command and supervise filling the shelter, and initiate protective actions and start-up procedures.

1.22 Because shelterees may be anxious and fearful concerning the attack, the manager should stress the protective capabilities of the shelter and the availability of supplies. Reassuring the population in the face of unknown dangers will require great leadership skill and continual communications between the manager or staff members and the shelterees. "Keep talking! Keep reassuring!" is a cardinal leadership principle in the entry phase.

1.23 Should the manager arrive *after* the bulk of the shelterees, he may be faced with the presence of an emergent leader who has already taken over. Under such circumstances, rather than alienate what leadership has emerged in his absence, the assigned manager should incorporate this person or persons into the organizational structure that he establishes.

1.24 *Initial Orientation and Organization.* The initial orientation and organization will consume the next few hours after shelter entry. This period is characterized by two major management tasks:

- (1) preliminary orientation of the shelterees, and
- (2) initial organization of the shelter.

Most of the communication between management and the shelterees in the entry phase is of two kinds: (1) supportive, consisting of reassurances to buoy shelteree spirits, and (2) directive, commands pertaining to where to go and what to do.

1.25 As soon as it is feasible, one or more briefings (depending upon the size and configuration of the shelter) should be held, during which the characteristics and requirements of shelter living are briefly spelled out to the entire population. The details of shelter living can be presented at a later time, perhaps through community group meetings. What should be communicated initially is an outline of shelter requirements and a feeling for what an extended shelter stay will be like. At the same time, communications to the shelterees should still retain the early reassurances, because many shelterees may still be anxious and fearful about their survival chances.

1.26 Three things must be organized during the shelter stay: (1) people, (2) resources,

and (8) activities and living patterns. To the extent that a shelter has a preselected staff, a predeveloped operations plan, and a pre-established schedule of activities, it will have accomplished some of these objectives prior to shelter occupancy. Otherwise, the following initial organization steps must be taken.

1. Organization of shelterees into community groups and selection of essential task teams.

2. Organization of resources in the form of supply inventories and initial plans for the allocation of water, food, medicine, etc.

3. Organization of activities and living patterns in the form of a schedule for operations during the first day, planning for the "permanent" shelter schedule, and the development of a set of shelter rules.

1.27 *Securing the Shelter.* Under certain conditions, the manager may consider allowing persons into the shelter after its planned capacity has been reached:

1. When it is known that there are no other safe locations in the neighborhood which persons can be expected to reach in a reasonable amount of time.

2. When the people who are seeking entry to the shelter after its capacity is reached are few in number.

3. When the shelter possesses augmented capabilities in regard to essential resources which can be stretched to accommodate the post-capacity arrivals.

4. When all indications are that a comparatively short shelter stay is expected.

1.28 One immediate but temporary solution which may be feasible in many situations is to offer the late arrivals space in the building, which might offer protection against radiation, but outside the marked shelter area. A more permanent solution could later be reached from among the following alternatives:

1. Provide people in less-protected areas of the building with essential supplies from the shelter.

2. Bring them into the shelter if it can be shown that they can be accommodated without endangering the original shelterees.

3. After radiation levels subside, relocate them to a nearby shelter.

4. Send out an emergency team to procure additional supplies for them.

5. Rotate places with volunteers from the marked shelter, to equalize exposure to radiation.

1.29 If after having considered the above procedures, there still remain people outside whose admittance will endanger the lives of those already in the shelter, the shelter should be secured, and alternate solutions should be established for accommodating those seeking admittance. This point may be reached when the shelter is filled to its maximum capacity—considering all available supplies and space, or when uncontrolled movement to and from the shelter jeopardizes management control. Shelter Complex Headquarters or the Emergency Operating Center should be contacted for guidance.

1.30 The exact procedures for closing the shelter will depend on the type and number of shelter entrances. In most shelters, normal room doors and/or improvised doors will be used in securing the shelter.

1.31 A security team should be placed in charge of the closing operations. Their duty is to verbally direct shelterees who cannot be accommodated in the shelter to other shelters or to other portions of the building which provide some protection. Because radiation levels near entranceways may be relatively high, personnel monitoring doors or entrances may have to be rotated.

1.32 *Initial Operations.* This stage is made up of the first day or two in shelter. It is the period during which the shelter becomes fully organized, and shelterees begin to involve themselves in the range of activities that constitute daily shelter living. Such activities as feeding, sick call, sleeping, and training are experienced for the first time as planned activities. It is an important period of adjustment for the shelter population. The procedures of shelter living are explained, demonstrated, practiced, and implemented.

1.33 Within this period, what may be referred to as a new "definition of the situation" should begin to occur for most shelterees. For one thing, the overwhelming

initial concern with the disaster and with immediate survival may, by this time, begin to shift to an orientation focusing upon survival of an extended shelter stay. Secondly, as shelterees enter into the stage of organized group living, their fears about survival in the shelter, and the strangeness and austerity of shelter life should lessen, barring emergency situations.

1.34 During this time, the manager will have to continue his strong personal leadership. First, to serve as a teacher and a model of appropriate behavior. Secondly, some shelterees may be fearful about their chances for survival, and about the fate of missing relatives and friends.

1.35 *The Routine Phase.* This period extends throughout most of the shelter stay. Most shelterees will have made an adjustment to their environment during this time. The authority of the manager and his staff should have "taken hold" sufficiently so that the manager no longer has to be continuously visible of the population. He can spend more of his time carrying out his administrative duties.

1.36 During the routine phase there may occur temporary dips in morale brought on by monotony and austerity. This mood of lethargy and lack of motivation is quite natural. When it occurs, the manager should provide some variety in the shelter system (for example, permitting new task assignments, introducing new activities, varying the shelter schedule slightly).

1.37 It is also possible that periods of heightened activity and agitated behavior may punctuate the routine phase. News from the outside world, or the unplanned emergence of an uninformed, action-oriented rival to the shelter manager, may trigger attempts to "do something besides just sit here."

1.38 The problem of an individual who wants to leave before it is safe to do so may arise in shelter. The manager or a staff member should make perfectly clear to the individual the physical consequences of a trip to the outside and the impact his leaving may have upon the shelter population. The person should be discouraged by all persuasive means from leaving.

1.39 A significant part of training activities during the routine phase should deal with preparation for post-shelter living. This will give individuals an acquaintanceship with survival techniques. But, more than that, it will lend support to a shift in shelter orientation towards the future. Belief in a future in which the individual can survive and society can be rebuilt is one of the most important lessons that shelterees can learn during their temporary stay in-shelter.

1.40 *Emergence Phase.* As the time for leaving the shelter draws near, the mood of the shelterees may likely change. The change will be due to two factors: (1) an impatience to leave the shelter, and (2) anxiety over what they will find when they exit, and what will happen to them after they leave. Leadership should be oriented towards keeping individuals from leaving the shelter prematurely, and in allaying fears about the state of the world outside.

1.41 Before leaving the shelter, every effort should be made to communicate with the local control center, primarily to ascertain the radiation levels at various distances from the shelter. Full-time shelter egress should not be the decision solely of the shelter manager, but should be coordinated with the control center.

1.42 Prior to permanent emergence from the shelter, it may often be possible to make brief trips to the outside to replenish supplies, initiate local recovery operations, etc. The temporary exit may also bring positive psychological consequences, by providing first-hand reports of external conditions, as well as welcome, albeit temporary, relief from an extended period of confinement.

1.43 *Post-Exit Shelter Occupancy.* Even after radiation has descended to safe levels, it may still be necessary or desirable to keep community fallout shelters open as temporary centers where people can sleep and be fed during the initial phases of recovery operations. During this transition period, changes in the role of the shelter manager may be expected. Local authorities will assume the responsibilities for maintenance of law and order, mass feeding and shelter, and general restoration of the community. In doing so, however, they may wish to work directly

through the shelter manager in use of shelter facilities and the existing shelter organization. The manager and staff, therefore, may be asked to continue as administrators and managers of large groups of people even though their primary leadership responsibilities have been generally fulfilled.

Shelter Emergencies

1.44 A shelter emergency can be defined as: *an event which seriously, and oftentimes rapidly, threatens the survival of the shelter population.* While it is impossible to specify the exact nature of shelter emergencies, the major causes of such situations can be described. These are: (1) structural damage to the shelter as a result of weapon effects, (2) fire in the shelter or in the surrounding area, (3) dangerously high radiation levels in-shelter, (4) severely high temperatures, (5) imbalances in atmosphere components (extremely high carbon dioxide concentration or presence of other noxious elements), and (6) depletion of essential supplies, such as water.

1.45 Any shelter emergency must be evaluated in relation to external radiation levels, leading to three types of command decisions: (1) to combat the emergency situation using the resources of the shelter, (2) to augment shelter resources by sending individuals or small groups from the shelter on emergency missions, and (3) to relocate the population and resources if the shelter becomes uninhabitable. The latter two decisions are discussed as follows.

1.46 *Emergency Missions.* Although the reasons for emergency missions will vary in urgency and type, there are at least four categories of emergency missions which may occur: (1) supply trips for such items as water, medicine, and food; (2) service missions for activities such as decontamination, repair, or recovery operations; (3) voluntary trips, such as medical personnel responding to a shelter call for medical aid; and (4) reconnaissance for availability of critically needed shelter space.

1.47 The shelter manager will have to determine the priority for each mission by evaluating the need for the trip versus the risk, which is primarily one of radiation exposure.

If communications are available, he will contact Shelter Complex Headquarters (SCH) or the Emergency Operating Center (EOC) for instructions.

1.48 One example of a decision which a shelter manager may face is the following. If a shelter has water stored for 50 shelter spaces and the shelter contains 200 persons, the manager may need to find additional water sources while radiation levels are still dangerous, especially if temperatures are high. To decide when to send an emergency water supply team, the manager will have to consider the following factors: (1) how long can the water supply be made to last, (2) how long can people survive without water after it is gone, (3) how close is a probable water source, and (4) how long (how many trips) will it take to get an adequate supply. These factors must be weighed against the risk from outside radiation levels: (1) how much exposure the mission team has already received, and (2) how much more they or other teams should be allowed to receive. This information should be transmitted to the next level of command for operational instructions.

1.49 *Shelter Evacuation.* Evacuation of the shelter should be carried out *as a last resort* under extreme conditions. Under conditions such as fire (particularly a mass fire), heavy structural damage, or highly inadequate ventilation, the shelter manager may have to evacuate a shelter for other shelter areas to avoid fatalities among shelterees.

1.50 If at all possible, either the Emergency Operating Center should be contacted or a reconnaissance mission should precede general evacuation of the shelter. A team should be sent out to locate alternative areas affording protection.

1.51 Except in the case of mass fire in which persons may have to flee from the entire surrounding area, the manager should attempt to find shelter areas in the following general priority: (1) parts of the building adjoining the shelter areas which may offer some protection against radiation, (2) other areas in the same building such as upper floors, (3) buildings adjoining the shelter facility which provide protection in passage from one to another, (4) buildings adjoining the shelter

which may require some passage through open areas, and (5) other buildings in the area.

1.52 If it is possible to delay the evacuation of a shelter to the optimum time, the shelterees will receive considerably lower radiation exposure in the process of movement. For example, if a shelter has been so badly damaged that it no longer affords sufficient fallout protection, it may be possible to find better-protected areas in which all shelterees can be temporarily crowded (so long as ventilation does not become a critical problem), even if most shelterees have to remain standing for what appears to be an unusually long period of time. Or, if ventilation in a shelter is extremely inadequate, it may be possible to remain in the shelter temporarily by instituting

the most rigid atmosphere and temperature control procedures. Although the above solutions may only be temporary, they might make the ultimate evacuation a safer operation.

1.53 Because shelter emergencies will require rapid evaluation and response from management, it is highly desirable that a plan for shelter contingencies be developed prior to shelter occupancy or, at the very least, early in the confinement period. This plan should contain the information necessary to assess an emergency situation, such as location of nearest shelters and nearest stores, the radiation protection in other parts of the building, emergency exits, etc. The plan should also contain alternative solutions to likely shelter emergencies in as much detail as possible.

RADIOLOGICAL PROTECTION

The Importance of Radiological Protection

2.1 Protection against radiation is the reason for the existence of the fallout shelter system. All other elements of management responsibility are affected by the requirements and restrictions imposed by the activity of radiological protection.

2.2 The level of radiation is the major determinant of the length of the shelter stay; it is also highly related to the level of austerity of a shelter stay through its influence on the decision to augment or replenish supplies; it is a factor that must always be given high priority in the assessment of shelter emergencies.

2.3 Although major decisions in a disaster should not be made on the basis of the long range effects of radiation, the manager should be aware of these potential effects.

Management Goals

2.4 There are four factors to consider in attaining adequate radiation protection. One is to locate people in the best protected areas of the shelter, as determined by the use of radiological instruments. Another objective is to retain the people in the shelter until the radiation outside has decreased to an acceptable level. The third and fourth goals are to keep radioactive particles from entering the shelter area in any large quantity, and to decontaminate shelterees and/or supplies that have radioactive particles on them and remove these particles from the shelter.

2.5 The shelter manager cannot be expected to have all the necessary skills and knowledge to conduct a radiological protection program. However, he must have an understanding of the nature of fallout radiation in order to evaluate the technical information provided by his staff and reach the appropriate command decisions.

2.6 To support management decisions and technical operations, the *Handbook for Radiological Monitors* (FG-E-5.9), prepared by the Office of Civil Defense, is included in the Federally provided kit of radiological equipment. The Handbook provides basic information about detection, measurement, and reporting of radiation. A shelter manager may also obtain technical assistance from a radiological defense officer, if the shelter has communications to an EOC.

Characteristics of Fallout Radiation

2.7 *The Formation of Fallout.* When a nuclear weapon is detonated near the surface of the earth, great amounts of surface materials, such as soil and debris, are drawn up into the intensely radioactive ("mushroom") cloud, where some of the materials are vaporized and others become molten. When sufficient cooling has occurred, the radioactive elements produced by the nuclear explosion become incorporated with the particles of soil, debris, etc. The solid radioactive particles thus formed that descend rapidly to the earth are known as "fallout."

2.8 The rate at which fallout particles return to earth and the distance they are borne aloft depend upon many factors. One factor is the size of the particles. Larger particles will fall to earth closer to the point of burst than smaller particles. Atmospheric conditions, such as precipitation and wind speed and direction at different altitudes, are also important factors. The characteristics of fallout are also determined by the type of burst and the characteristics of the weapon that was detonated.

2.9 Because of the variation in the above-mentioned factors, it is extremely difficult to describe the exact fallout patterns that will result from a nuclear explosion. The area of fallout danger from a single nuclear explosion might cover several hundred miles downwind,

a few miles upward, and tens of miles cross-wind.

2.10 A distinction is often made between early (local) fallout and delayed (or world-wide) fallout. Early fallout consists of those particles which reach the earth within 24 hours after a nuclear weapon burst. It is early fallout against which the shelter system is designed to protect the population. Delayed fallout returns to earth as late as months or years after the explosion, and is largely a long term ingestion hazard rather than an external exposure hazard.

2.11 It is important to understand that fallout is not a mysterious, invisible, or unrecognizable substance that strikes without warning. Fallout particles look like sand or dirt, and they accumulate on surfaces in the same manner as sand or dirt.

2.12 *Types of Radiation Produced by Fallout.* The danger from fallout is due solely to the radiation that it emits. Three types of radiation are given off by radioactive fallout: alpha particles, beta particles, and gamma rays. The amount of alpha radiation is insignificant, and is therefore not a consideration in shelter management. Beta particles are not very penetrating (for example, they cannot penetrate heavy clothing). Biological damage from beta radiation would occur only if the fallout material is ingested or (in the first day or so after the burst that produced it) is allowed to remain for some time on the skin or hair. The most serious threat to man from fallout comes from gamma radiation. Gamma rays are very much like X-rays. They are highly penetrating and can pass through matter, damaging or destroying living cells.

2.13 *Estimating the Decay of Radioactivity.* Radioactivity diminishes or decays at a specific rate through a natural process which cannot be altered. This decay rate is expressed by the term "half-life," which is the period of time that it takes for the radiation rate of a radioactive element to decrease to half its initial value. For example, iodine 131, with a half-life of eight days, loses one-half of its radioactivity in this time, half of the remaining radioactivity in the succeeding eight days, and so on. Almost 200 radioactive elements are found in varying amounts during a nu-

clear explosion, each with its own "half-life," ranging from a few seconds to many years. The over-all decay rate of fallout results from the combined radiation decay rates of all these elements.

2.14 The rate of reduction in the radiation level of a particular quantity of fallout is determined by many factors, about which sufficient information would not be known to civil defense officials at the time of an attack or shortly thereafter. Therefore, it is convenient, for planning purposes, to use a rough approximation of the rate of radiation reduction, known as the "7/10 rule." Provided that fallout is completely down, it can be assumed that the radiation dose rate will decrease ten times for every sevenfold increase in time after the nuclear blast. For example, if all fallout had accumulated, and if the radiation dose rate had been 300 Roentgens per hour (300 R/hr) one hour after blast, it would decrease to about 30 R/hr seven hours after the explosion. In approximately two days after the blast (7 x 7 hours), the rate would be about 3 R/hr; and in approximately two weeks (49 x 7 hours), the rate would be reduced to about .3 R/hr. If the duration of the shelter stay must be estimated early in the absence of sufficient monitored data, an initial estimate of two weeks should be made.

Effects of Fallout Radiation

2.15 *Radiation Sickness.* Radiation sickness is the result of accumulated exposure to radiation. Its effects vary from barely detectable symptoms to death, depending upon: (1) the total dose absorbed by the body, (2) the time interval over which the dosage is accumulated, and (3) the amount of the body exposed to radiation. For example, a short term dose of about 600 roentgens received in less than three days over the whole body will probably result in death for almost everyone so exposed, while the same dose evenly spread over a year will cause no serious illness, although some longer term effects might occur.

2.16 *It must be emphasized that radiation and radiation sickness are not contagious.* Radiation is emitted by radioactive particles. Once these sources of radioactivity are removed or shielded, the threat of further ex-

posure is removed or reduced. Radiation sickness resulting from exposure can in no way be transferred or caught by other shelterees.

2.17 *Symptoms and Effects of Radiation Sickness.* Table I presents an approximate indication of the effects of radiation on human beings.

2.18 *Procedures and Guidelines.* It may be difficult to diagnose radiation sickness in the early stages for two reasons: (1) the short duration of initial symptoms, and (2) symptoms of vomiting are common to radiation sickness, emotional reaction, and many other illnesses. It may also be difficult even for medical personnel to determine the severity of the case, because of the similarity between symptoms of moderate and severe radiation sickness.

2.19 Generally, it will not be necessary to provide intensive medical care to shelterees unless they have received more than 200 R exposure. The reader of this Textbook is referred to the "Handbook for Radiological

Monitors," and "Family Guide Emergency Health Care" (DOD/OCD and DHEW-PHS), for information on the care of patients suffering from exposure to nuclear radiation.

2.20 Keep the exposure of shelterees as low as practicable. With a good shelter in most fallout areas, it should be possible to keep exposures below 100 R during the first two weeks. For personnel engaged in emergency activities during and after the shelter stay, the total exposure should be kept below 200 roentgens during the first month of operation. Additional exposure should be less than 25 roentgens a week for the next five months.

The Basis of Shelter Protection

2.21 Fallout shelters combine both distance and shielding in providing protection against radiation. Distance is usually termed geometry shielding, and the shielding with materials is called barrier shielding.

2.22 The effects of distance can be illustrated as follows: Fifty percent (50%) of a person's

TABLE I.—*Expected Effects of Short Term Gamma Radiation Doses*

ACUTE DOSE (ROENTGENS)	PROBABLE EFFECTS
0 to 50	No obvious effect, except possibly minor blood changes.
80 to 120	Vomiting and nausea for about 1 day in 5 to 10 per cent of exposed personnel. Fatigue but no serious disability.
130 to 170	Vomiting and nausea for about 1 day, followed by other symptoms of radiation sickness in about 25 per cent of personnel. No deaths anticipated.
180 to 220	Vomiting and nausea for about 1 day followed by other symptoms of radiation sickness in about 50 per cent of personnel. No deaths anticipated.
270 to 330	Vomiting and nausea in nearly all personnel on first day, followed by symptoms of radiation sickness. About 20 per cent deaths within 2 to 6 weeks after exposure; survivors convalescent for about 3 months.
400 to 500	Vomiting and nausea in all personnel on first day, followed by other symptoms of radiation sickness. About 50 percent deaths within 1 month; survivors convalescent for about 6 months.
550 to 750	Vomiting and nausea in all personnel within 4 hours from exposure, followed by other symptoms of radiation sickness. Up to 100 per cent deaths; few survivors convalescent for about 6 months.
1,000	Vomiting and nausea in all personnel within 1 to 2 hours. Probably no survivors from radiation sickness.
5,000	Incapacitation almost immediately. All personnel will be fatalities within 1 week.

exposure dose from a large, flat area, such as a parking lot, would be received from the radioactive fallout within a radius of about 25 feet; 75% within a 50 foot radius; and 25% beyond a 50 foot radius. The fact that dose rates decrease with distance from a fallout field is important to us when we discuss the protective features of large buildings.

2.23 Gamma radiation loses energy by interacting with the material through which it passes. Any physical barrier, such as a wall or partition, will reduce gamma radiation exposure. The amount of shielding, thus produced, is directly proportional to the mass per unit area through which the radiation must pass. For example, a concrete wall eight inches thick is a better shield than one four inches thick. Also, high density material, such as concrete, brick, and sand, make better shields than wood.

2.24 If two buildings are of the same height and similar construction, but of different area, the protection from ground contamination would be greater on the first floor in the building with the larger area. On the other hand, if two buildings are of equal area and similar construction, but differ in height, protection from ground contamination would be greater on the upper floors of the higher buildings. However, the top floors of the building may offer less protection than the middle floors because of roof contamination. Examples of barrier shielding in structures are walls, floors, and ceilings.

2.25 The effect of geometry shielding and barrier shielding are combined into a term very useful for considering the effectiveness of various types of shelters. This combined term is *THE PROTECTION FACTOR*: *The relative reduction in the amount of radiation that would be received by a person in a protected location, compared to the amount he would receive if he were unprotected.*

2.26 If a shelter has a protection factor of 100, an unprotected person would be exposed to 100 times more radiation than someone inside the shelter. Defense Department studies indicate that during nuclear attacks which could occur over the next few years, over 90% of the people who would otherwise die from the effects of nuclear radiation would survive

in shelters with a protection factor of 40. It will frequently be possible to build fallout protection into new structures by simple design changes.

2.27 The Federal Government is presently stocking shelters with 50 spaces having a protection factor of 40 or greater. Although the protection factor is a useful concept for shelter planning, it is only an average estimated figure. A single shelter may contain spaces with widely varying protection factors. For this reason, after fallout arrival, the shelter manager should determine the best protected area(s) of the shelter through monitored dose rate readings.

Protective Actions Against Fallout

2.28 *External Protection Procedures Prior to the Arrival of Fallout.* Under certain conditions, simple tasks performed outside the shelter prior to the arrival of fallout can provide added fallout protection for exposed parts of ground-level or below-ground shelters. These tasks should be performed *only* if (1) there is little probability of blast during the time the work team would be outside the shelter, (2) the procedures employed can actually increase the protection of the shelter, (3) trained or knowledgeable personnel are available to carry out the actions.

2.29 The procedures consist of piling earth or sand (loose or in bags) against windows, doors, and other openings (not the ventilation outlets). Also useful for this purpose are building materials (e.g., concrete blocks) which may have been set aside for emergency protection, or which may be normally available.

2.30 *Internal Protection Procedures Prior to the Arrival of Fallout.* Those openings which have been strengthened on the outside with sand, dirt or building materials may be strengthened on the inside with the same materials. In addition, shelterees should be directed to shield doors, windows, and other exposed areas with available dense materials, such as book cases with books in them, filing cabinets, and other heavy office equipment. In the absence of other materials, cartons of shelter supplies may be stocked up against openings for protection.

2.31 Unless a shelter facility has special plans for augmenting radiological protection, only simple protective actions should be considered. In implementing protective actions against fallout, care should be taken to avoid increasing the hazards to shelterees from the effects of blast. So, for example, shelterees should be kept at a distance from cartons or other materials that have been stacked in front of openings.

2.32 *Internal Protection Procedures After the Arrival of Fallout.* The shelter should be surveyed to find the safest locations for shelterees. As dose rates increase with fallout arrival, it may become necessary to increase the population density of the shelter in the best protected areas. As dose rates decrease with radioactive decay, the population density may be decreased for greater comfort. This flexibility in the utilization of shelter space allows the shelter manager to make the maximum use of shielding while dose rates are dangerously high, and to provide for comfort when dose rates reach more tolerable levels. The reader is referred to the "Handbook for Radiological Monitors" for detailed guidance on monitoring operations.

2.33 If radiological readings cannot be made, shelterees should be located in areas next to walls which are below ground level. In a tall building, the population may be located in the center core at least two stories below the roof, ledges, roofs of other buildings or annexes, and two stories above the ground level, as well as in basement areas completely underground.

Fallout Radiation Monitoring

2.34 The tasks of radiation monitors are to measure, record, and report radiation doses and dose rates. The activity of monitoring serves several functions in the shelter. The monitors will provide the shelter manager with information which can enable him to make the appropriate decisions concerning shelteree protection. In addition, monitoring provides the shelter population with tangible evidence that shelter management is implementing protective activities on behalf of the shelterees. Finally, monitoring represents a useful task that shelterees can be trained to perform. Both the training and the actual monitoring will con-

tribute towards keeping people occupied during the shelter stay.

2.35 *Basic Terms and Concepts.* The basic information about radiation required by the shelter manager falls into two categories: the measurement of *total accumulated exposure to radiation (dose measurement)*, and the *instantaneous rate of exposure (dose rate measurement)*. A simple analogy may be made between these measurements and the measurement of travel in a car. The reading on the odometer, or "total mileage accumulated" meter in a car, is analogous to the dose measurement; and the reading on the speedometer, or "rate of travel" meter, is analogous to the dose rate measurement.

2.36 Gamma radiation exposure is measured in units called roentgens.

Instruments designed to measure total radiation exposure dose accumulations are called *dosimeters*. Dosimeter readings are expressed in roentgens. Instruments designed to measure radiation exposure dose rates are called *survey meters*, and their readings are expressed as roentgens per hour.

2.37 *Monitoring Information Needed for Management Decisions.* In general, the shelter manager needs the following basic information: (1) time of arrival of fallout, (2) measurable radiation in-shelter, and (3) emergency information. An in-shelter radiological emergency is defined as a situation in which the dose rate may be ten roentgens or more per hour, or an exposure dose within a two-day period is 75 roentgens or more. This indicates that the in-shelter exposure may result in serious injury or death if no remedial action is taken.

2.38 *Monitoring Equipment.* Because the human senses cannot detect the presence of radiation, radiological instruments must be used to determine the current rate and accumulated amount of radiation at a given location.

2.39 The Office of Civil Defense has provided monitoring equipment in all Federally stocked shelters. The equipment is described in detail in the *Handbook for Radiological Monitors*.

The instruments of primary importance are:

1. *The CD V-715 survey meter.* This is a high-range gamma survey meter for general operational use. It will be used by monitors

for much of the radiological survey work following a nuclear attack.

2. *Dosimeter.* The dosimeter is used to measure the in-shelter dose of shelterees, and the outside dose of those participating in outside operational missions.

3. *The CD V-750 dosimeter charger.* The charger is used to read and charge civil defense dosimeters.

2.40 Monitoring Procedures and Guidelines. Specific monitoring procedures are described in the "Handbook for Radiological Monitors," which is supplied with each set of OCD operational instruments.

2.41 Frequent readings in several areas of the shelter should be made. All shelter openings, particularly door and window areas, should be checked. If the intake for a ventilation system is near occupied areas, it should also be monitored regularly.

2.42 Everyone entering the shelter after fallout has begun to descend should be inspected for the presence of radioactive particles on his person, clothing, and belongings. It is not necessary to use radiological instruments to accomplish this. Visual inspection will generally be adequate to detect fallout particles on one's person and belongings. A similar inspection procedure should be followed with food brought into the shelter after fallout has arrived.

2.43 A record of cumulative group exposure should be kept, as well as individual dose records for those on authorized emergency missions. These records will assist the manager in deciding who can leave the shelter, for what reasons, and when.

2.44 If a shelter does not have operable radiological equipment or communications, the following guidelines may help to determine the arrival of fallout. In the daytime, either a white plate or white cloth may be placed in an exposed area outside the shelter door. Fallout will be visible on it. If it is nighttime, a flashlight beam will illuminate fallout as it descends. These are poor procedures at best, and should be considered only in the absence of alternative detection methods. Without operable equipment or an external communication capability, the shelter manager will have no way to detect radiation rates. Normally, this infor-

mation is available over the Emergency Broadcast System (EBS).

Decontamination

2.45 Decontamination refers to the reduction or removal of radioactive fallout from an area, object, or person.

2.46 Decontamination may be accomplished by (1) removing fallout from locations where it constitutes a hazard, (2) reducing the amount of radiation emitted by covering the material, or (3) isolating the contaminated material until time and weathering can make it safe to remove.

2.47 Most in-shelter decontamination can be carried out without special facilities, using the simple procedures described in the "Handbook for Radiological Monitors." It is important for the shelter population to understand that the presence of fallout particles on a person or object does not make him or it radioactive. Removal of the fallout particles removes any possible radiation hazard to others from the formerly contaminated person or object.

2.48 *Personnel Decontamination.* If inspection reveals that a person is contaminated, simple decontamination procedures should be instituted. Combs and brushes may be used effectively to remove radioactive particles from personnel and their clothing. If such items are not available, brushing off particles with the hands is an acceptable substitute. Brush off shoes, and shake or brush clothing at the entrance of shelter area. Brush, wipe thoroughly, or wash contaminated portions of the skin and hair.

2.49 *Area Decontamination.* If small amounts of fallout penetrate a shelter opening, they can be swept out much as sand might be. Any attempt to remove a considerable amount of fallout material from a large area in the shelter may result in considerable radiation exposure to decontamination personnel. Therefore, unless there is an immediate, important need for the contaminated space, it is preferable to isolate the area rather than carry out active decontamination procedures.

2.50 *Food and Water Decontamination.* OCD supplies of food and water stocked in the shelter will not require decontamination. Should inspection of other food and water supplies

reveal the presence of radioactive particles, simple remedial procedures should be followed. In general, fallout on food should be treated much as any grit or sand that one might encounter on one's food, at the beach for instance. The normal tendency would be to remove as many of the grit or sand particles as possible before consuming the food item. The same procedure should be adopted in dealing with fallout.

2.51 The appropriate management principle may be stated as follows: If food is contaminated, remove as much of the fallout as is feasible from it. If noncontaminated food is available, consume it first. If all the available food is contaminated, and shelterees are hungry, serve this food after decontaminating it as thoroughly as is feasible.

2.52 The management principle for dealing with contaminated water is identical to that for fallout on food: (1) Serve uncontaminated water first, if available. (2) Apply simple decontamination procedures to water which contains fallout particles. Filtering water through

paper towels or layers of fine cloth is one approach. Allowing water to stand until fallout settles to the bottom and then siphoning off the uncontaminated upper layer is another. Boiling or chlorination will not remove contamination. (3) Serve water, if it is potable from a medical standpoint, even though it may contain some radioactive particles, if necessary.

2.53 Because water is vital for survival, it is important that the manager not deny water to the shelter population unnecessarily, in the name of radiological protection.

Radiation Levels and Shelter Exit

2.54 Brief trips from the shelter and permanent emergence from confinement must be coordinated with the local control center if possible. In the absence of any external communication, the guidelines for permissible exit activities under different radiation conditions, presented in Table II, should be evaluated by the manager in reaching any decision pertaining to shelter exit.

TABLE II.—Suggested Limits for Shelter Exit

# OUTSIDE DOSE RATE HAS FALLEN TO: (in R/hr)	RECOMMENDATIONS
Less than 0.5	No special precautions necessary, except to sleep in the shelter.
0.5 to 2	Outdoor activity (up to a few hours per day) tolerable for essential purposes. Eating, sleeping, and all other activities should be conducted in the best available shelter.
2 to 10	Very short periods (less than an hour per day) of outdoor activity are tolerable for the most essential purposes. Shelter occupants should rotate outdoor tasks to minimize total doses. Rescue, repair, communication, and exercise may safely take place in less than optimum shelter.
10 to 100	Time outside of shelter should be held to a few minutes and limited to those few activities that cannot be postponed for at least one more day. Insofar as possible, all people should stay put in the best available shelter no matter how uncomfortable.
Greater than 100	Outdoor activity of more than a few minutes may result in sickness or death. The only occasions which might call for moving are: (1) risk of death or serious injury in present shelter from fire, collapse, thirst, etc. and (2) present shelter is greatly inadequate—might result in fatality—and better shelter is only a few minutes away.

2.55 In planning permissible exit activities, based on Table II, it is important to take into account the age of the fallout. If for example, an external reading of 2 R/hr was obtained after one day in the shelter, it would mean that the total radiation exposure of the shelterees

would be much less than if a reading of 2 R/hr was initially obtained only after a week in the shelter. Consequently, in the former instance, the rules for permissible external activities can be relaxed somewhat; whereas, in the latter case, they should be made more stringent.

OTHER WEAPON EFFECTS

Blast

3.1 The blast from a nuclear explosion accounts for a high amount of devastation in the area surrounding the point of detonation.

3.2 In most community shelters, it will not be feasible to initiate active protective measures against blast effects during the period of shelter occupancy. However, it is still important that the manager be aware of blast effects so that he can avoid carrying out shelter activities that might increase the hazards to the in-shelter population, should the facility be subject to damage from blast. In addition, some managers will be in positions where they can implement simple procedures to increase protection against blast.

3.3 *Characteristics of Blast.* Immediately after a nuclear explosion, a wave of hot, compressed air will move outward from the fireball at a little faster than the speed of sound. The wave, accompanied by devastating winds blowing *away* from the blast, will envelop and squeeze objects in its path with pressures in excess of normal atmospheric pressure. At a point when the pressures and wind speed decrease to normal, a suction effect will be caused by air rushing into fill the vacuum created by the fireball. Pressures will drop to below normal and winds will blow *toward* the detonation. Although pressure will quickly return to normal, winds may continue for several minutes.

3.4 The effects of blast are devastating within a limited radius. The range of effects depends largely upon the size of the weapon and the type of detonation. The range of blast damage from an air detonation may be 30 to 40 per cent greater than from a surface detonation of the same size bomb.

3.5 *Effects of Blast. Damage to property.* Buildings may buckle, blow apart, or sustain

lighter degrees of damage, depending upon such factors as size of weapon, distance from burst point, material, construction, and shape of the building. Even if a building housing a shelter is damaged by blast, the shelter itself may remain intact and provide radiation protection with few or no repairs.

3.6 *Damage to personnel.* Injuries from blast can stem from two main causes: (1) flying missiles, such as debris, glass, etc.; and (2) physical displacement, in which the person is hurled to the ground or against other objects.

3.7 *Protective Actions Against Blast.* The protective actions mentioned in this section are intended for shelters that have not been constructed to withstand blast. Discussion of protective actions in blast shelters is beyond the scope of this document. Because hastily constructed barriers within the shelter can increase the hazard to shelterees, it is recommended that no internal makeshift blast-protection procedures be adopted. In ground-level or below-ground shelters, barriers such as an earthenwork or sandbag wall can be thrown up outside and in front of the shelter opening. Inside the shelter, sandbags and earth may be piled against those shelter openings also protected on the outside.

Initial Nuclear Radiation

3.8 Initial nuclear radiation consists of the gamma rays and neutrons produced during the nuclear explosion and within one minute after it. The characteristics of initial radiation will not be considered here. If a person is within the range of a fatal dose from initial radiation, the blast and thermal effects would be so destructive that survival would probably be impossible except in an underground blast shelter, which would also offer some protection against initial radiation.

Thermal Effects

3.9 Characteristics of Thermal Radiation. A good deal of the energy released by a nuclear weapon is in the form of thermal radiation. This refers to thermal pulses which travel from the fireball at the speed of light. Thermal radiation is capable of producing a great deal of damage and a large number of casualties.

3.10 The following illustrates the destructive potential of thermal radiation: An air burst of a one-megaton weapon can set fires up to a distance of nine miles, cause burns to persons up to 12 miles away, and cause eye damage at greater distances. A surface burst can ignite fires up to six miles away and cause burns up to a distance of approximately eight miles.

3.11 The effects of thermal radiation are greatly influenced by a number of environmental factors. Most important among these are: (1) the nature of the combustible materials present in the environment, and (2) weather and climate (clouds, smoke, and haze all serve to attenuate thermal radiation, and moisture content significantly increases the ignition threshold of easily combustible materials).

3.12 Effects of Thermal Radiation. The effects of thermal radiation, which are important to note here, are burns and fires. Thermal radiation from nuclear weapons can cause burns on the skin and damage to the eyes of exposed personnel, and scorch, char, or ignite combustible substances.

3.13 Burns directly caused by thermal radiation are called "flash burns." Flash burns generally occur on areas of exposed skin, such as the face, arms, hands, and legs. These burns are usually less severe than flame burns, which may be caused when thermal radiation ignites combustible materials.

3.14 Another effect of the thermal pulse is flash blindness, or temporary loss of vision from the extreme brightness of the flash.

Although persons who look directly at the flash may receive permanent damage, most persons will see an indirect flash and will likely suffer only temporary damage.

3.15 Fires which may result either from direct or indirect effects of a nuclear detonation may cause heavy property damage.

3.16 Protective Actions Against Thermal Radiation. Because thermal radiation does not penetrate solid, opaque material, closed fallout shelters will offer considerable protection against flash burns. To insure protection, closed doors and covered windows will be necessary, although the latter may create a potential fire hazard if drapes or blinds are used.

Mass Fires

3.17 Causes of Mass Fires. Mass fires are not likely to occur in most areas of the United States. Fires which burn out of control may spread into a mass fire. The spread of the fire depends upon several factors, including the number of points at which fires will originate, the character of the surrounding area, terrain, and weather. One type of mass fire which may occur under certain limited conditions is a firestorm, which originates from many separate but simultaneous fires. The superheated air from these fires is sufficient to create strong air currents which cause air from outside the fire area to be drawn in, creating an intensely burning fire.

3.18 Protective Actions Against Mass Fires. In the event of a mass fire, the shelterees may face several problems: carbon monoxide, superheated air, and extremely high temperatures. Unless the shelter has the capability of being sealed for a minimum of several hours, it is possible that the shelter may have to be evacuated if a mass fire seems likely to envelop the area. For more information about protective actions against fires, see Chapter 7.

PRE-OCCUPANCY MANAGEMENT RESPONSIBILITIES

The Importance of Pre-Occupancy Management Planning

The survival capability of any shelter can be increased dramatically by plans made and actions taken prior to shelter occupancy. If possible, the survival stocks that OCD provides should be augmented. This is especially important for such items as illumination and communication equipment which are not included in the Federal shelter-stocking program. However, establishing and maintaining the operational readiness of a community shelter is far more than just a matter of procuring supplies and equipment. Equally if not more important are the procedures for organizing and operating the shelter that can be developed in the form of a shelter plan.

In this chapter, some of the major considerations in pre-occupancy management planning are discussed. The two major subdivisions of pre-occupancy management responsibility are: (1) the establishment of operational readiness, and (2) the maintenance of operational readiness.

Community Shelter Planning

4.1 Because of its great lifesaving potential, the development of a nationwide fallout shelter system—and its effective use in time of attack emergency—is the heart of the civil defense program. The basic aim is for each locality to be able to make effective use of the best protection from fallout available to its citizens. This, in turn, requires that each citizen know where to go and what to do in case of nuclear attack, and that the mayor or other chief executive, plus the key officials and agencies of local government, know what to do to advise and assist their citizens.

4.2 The Community Shelter Planning (CSP) process¹ provides for getting information to each citizen on where to go and what to do to

make the best use possible of fallout protection existing in each locality. It also provides a basis for updating civil defense emergency plans, so that local government agencies—under the direction of mayors or other chief executives—as well as key nongovernmental activities, would be ready to carry out survival operations, based on the use of existing fallout shelter.

4.3 The effective conduct of survival operations during a nuclear attack emergency requires that governments at all levels be prepared to control and direct emergency operations, to protect life and speed recovery. Over-all control at each level would be the responsibility of the chief executive.

4.4 *Need for an Emergency Operating Center (EOC).* The number and nature of problems arising from a nuclear attack—or from a natural disaster—would differ substantially from those arising in peacetime governmental operations. Also, gathering essential information in a period of emergency, its evaluation and resulting decision-making, and direction of necessary actions would require continuing and close liaison between key officials.

4.5 This can be accomplished best in an adequately planned and protected Emergency Operating Center (EOC). An EOC is a facility having some degree of fallout protection, and planned and equipped so that chief executives and their key officials can meet the emergency responsibilities of government.

4.6 *Development of EOC's Using Existing Resources.* State governments and hundreds of counties and municipalities throughout the Nation have already established emergency operating centers. The majority have done this on their own, with little or no Federal assist-

¹ See FCDG, Part D, Chapter 3 and Appendices, on Community Shelter Planning.

ance, by making use of facilities, equipment, and supplies *already existing*.

4.7 Many of these EOC's are in daily, around-the-clock use for normal governmental operations; for example, police or fire dispatching, or the daily functions of a local civil defense office. Most are capable of being converted quickly to emergency use in event of attack or peacetime catastrophe. Nearly all have at least a fair degree of fallout (radiation) protection. Some are capable of meeting the requirements of large and complex urban communities.

4.8 There are still, however, hundreds of other communities that have not yet established emergency operating centers. This leaves a gap in the total nonmilitary defense structure and survival capability of the Nation.

4.9 States and political jurisdictions, regardless of size, should establish EOC's.² This is true if only a minimum of operational features can be provided at first. Two reasons are sometimes given by local government officials for not establishing emergency operating centers: (1) "too costly," and (2) "too complex an undertaking." These reasons are not valid, since adequate centers can be established at very modest cost to State and local government, and OCD recommends standards (to be met as feasible) for EOC's.

4.10 *In most instances, effective emergency operating centers can be established through use of facilities, equipment, and supplies already existing in a community.* All that may be needed is some adjustment in use of floor space in a local government building, with a more effective tie-in of existing communications.

4.11 *Basic Elements of EOC Operation.* Four elements are basic to operation of an EOC: (1) fallout (radiation) protection, (2) trained people to carry out essential EOC functions, (3) communications and warning capability, and (4) necessary equipment and supplies.

4.12 Local government direction and control would also include control during the in-shelter period. This could include direction to Shelter Complex Headquarters and thence to shelters as to when it would be possible to send small parties out to secure additional food or water, or when it would be possible for the entire population to leave shelters.

4.13 A Shelter Complex Headquarters is a shelter with communications to the EOC, designated to control a maximum of 25 individual shelters in its immediate vicinity. Where a fire captain, for example, is designated as Shelter Complex Director, his fire company should, if possible, be located in the same shelter, to facilitate control if intra-complex firefighting operations are required—and are permitted by fallout—during the period when the population is in fallout shelters.

4.14 Also, local military units, especially of the reserve components, may have shelter requirements which should be met if they are to survive as intact, organized units, capable of either civil defense support or military missions. The local planner and CD director should contact local military unit commanders to coordinate plans; the military commanders will probably wish to consult with State-level military support planners in the office of the State Adjutant General.

4.15 *Local Government Direction and Control.* Experience in scientifically controlled test exercises, involving local officials in EOC operations simulating an actual emergency, has shown that these officials can and will make emergency decisions rapidly and effectively—provided they have an adequate EOC facility to work in, the necessary communications, and a working knowledge of EOC staffing and procedures. Properly organized EOC's are also highly effective in natural disasters, as experience has repeatedly shown.

4.16 Accordingly, localities should give priority attention to developing a capacity for direction, establishing an EOC facility, wherever possible, by inexpensive modifications to an existing city hall or other building already affording fallout protection and including provision for the necessary communications. An in-place direction and control capability should also include plans for staffing and organizing the EOC with key officials of local government, under the mayor or other chief executive as well as familiarizing them with EOC procedures. The emergency staff should also include key personnel from the nongovernmental sector, who

² See FCDC, Part B, Chapter 3, Appendix 1 on program emphasis, which includes developing a capability for CD direction and control as a priority activity.

have resource-management assignments under State or local emergency plans.

4.17 *State Government.* State governments must be able to provide support for political subdivisions within their States. Organization and procedures are normally set forth in State emergency plans, which in turn are based upon applicable State laws. In many larger States, legislation and plans provide for an intermediate level, the State area. State areas are often highly desirable, to limit to a feasible number the points with which the State EOC must maintain contact.

ESTABLISHING OPERATIONAL READINESS

4.18 Establishing operational readiness means bringing the shelter to a state of preparedness so that it can be put in use at a moments notice should the need arise. The steps in achieving readiness are described below.

4.19 *Determine Shelter Requirements and Capabilities.* The first step is to determine what survival capabilities the structure provides as it stands, and what is required to reach the desired level of survival capability, which at the very least must be equal to the standards established by the Federal Government in the marking and stocking program.

4.20 *Stock the Shelter.* After determining the requirements necessary to achieve the desired capability level, consideration should be given to the amounts and kinds of equipment and supplies which will be needed.

1. *Valuable supplemental supplies.* Consideration should be given to adding the following to the stocks.

- a. Additional sources of water.
- b. Emergency lighting equipment.
- c. Communications equipment.
- d. A set of basic tools.
- e. Some sleeping materials.
- f. Training and administrative materials.
- g. Recreational materials.
- h. Additional medical supplies.
- i. Additional food supplies.
- j. Additional sanitation supplies.
- k. Emergency power sources.

2. *Sources of supplies.* Supplementary

supplies may be procured in a number of ways, among which are provision by local government, purchase by building owner, or adaptation of supplies already in the shelter facility. Additional supplies may also be obtained prior to arrival of fallout.

3. *Getting supplies to the shelter.* After determining what supplies are necessary or desirable and the procurement source, arrangements must be made to get the supplies to the shelter. This may be accomplished by local government transportation, volunteer organizations, use of building staff, and commercial hauling, to list a few.

4. *Locating supplies in-shelter.* The decision as to where to locate the shelter supplies can be a crucial one, especially if it is impossible to store all the supplies in the main shelter area. Supplies should be placed so that (a) they may be easily monitored and inventoried, (b) they remain in good condition, (c) they are safe from unauthorized use, and (d) they can rapidly be brought into the shelter (if they must be stored outside the shelter area).

ORGANIZING THE SHELTER

4.21 The minimum number of shelter managers and assistants necessary to direct and control shelter operations will range from one person trained in shelter management for every 75 persons to be sheltered (in the case of 50-100 person shelters) to one for every 375 persons (in the case of 5,000-10,000 person shelters). Specific management requirements will also depend upon the shelter configuration, status of supplies, availability and competence of the shelter leadership, and the shelter environment. In small shelters, successful completion of tasks may require action only by the shelter manager and a few assistants. In large shelters, it may be necessary to organize a number of teams—each with a specific responsibility. More detailed guidance on staffing patterns for shelters of various sizes and configurations, desirable staff experience and training, and shelter operational requirements is presented in the following chapters of this text.

STAFFING THE SHELTER

4.22 Some of the factors to consider in staffing the shelter are:

1. The optimum organizational size and structure, given the nature of the shelter and its likely occupants.
2. Methods for selecting and recruiting a shelter management staff.
3. Amount and type of training for shelter staff, and likely shelterees. (Prior to shelter occupancy).

DEVELOP A SHELTER MANAGEMENT AND OPERATIONS PLAN

4.23 The Community Shelter Plan provides allocation and movement of the population to shelter. A shelter management and operations plan is a set of specific and detailed procedures, rules, task assignments, and the like, pertaining uniquely to the organization and operation of an individual shelter. A complete shelter management and operations plan would define:

1. How to distribute the population within the building or other shelter facility.
2. How to assume and maintain command of the shelter, with special guidance prepared for the contingency of an untrained manager.
3. The resources of the shelter, with brief instructions on how to use them.
4. How to organize the shelter into core management staff, task teams, and community groups, indicating the specific duties and responsibilities of each position in the organization structure.
5. How to schedule and carry out shelter operations and activities, indicating the activities that are necessary and appropriate at different stages of shelter occupancy.
6. Possible emergencies in shelter, and how to cope with them.
7. Preparation for exit and procedures for handling temporary emergence and full-time exit from shelter; also, management responsibilities in the postshelter phase.
8. Procedures for communicating with shelter complex headquarters, or the EOC.

COORDINATE WITH OTHER ORGANIZATIONS AND AGENCIES

4.24 In developing a shelter capability, coordi-

nation with local authorities should take place with regard to zoning laws, or regulations pertaining to such matters as water supply, storage of fuels, and sanitation.

4.25 Shelters should also coordinate with governmental and other agencies in developing and testing procedures for operation in emergencies. This includes plans for emergency communications between shelters and control center(s), for emergency location of shelterees should a shelter become uninhabitable, and for replenishment of supplies when temporary exit from the shelter becomes possible. All of these questions should be covered in the emergency operation plan for the local community.

MAINTAINING OPERATIONAL READINESS

4.26 Once the shelter has been brought to a desired level of preparedness, it will be necessary to periodically review all elements of the shelter system to insure that the operational readiness of the shelter is maintained. This includes carrying out the following steps.

4.27 *Check and Evaluate Equipment and Supplies.* Equipment and supplies should be checked at regular intervals to assure that they have not been damaged or misappropriated. Radiological instruments should be checked for operability.

4.28 Many of the supplementary supplies that have been locally provided will have a long shelf-life. Others will have to be rotated periodically.

4.29 Shelter power, ventilation, and communication equipment should be periodically checked and test run, and the fuel supply should be monitored regularly.

4.30 *Determine New or Modified Shelter Requirements.* There are a number of possible occurrences that call for a reevaluation of the shelter system. These include:

1. Changes in the structure of the building.
2. Changes in the occupancy and use of the building.
3. New or revised municipal regulations.
4. The availability of new types of equipment.
5. New or modified guidance from OCD.

6. Changes in shelter staff personnel.

7. Changes in the Community Shelter Plan, or the local concept of operations.

4.81 Test Procedures and Train Personnel. If changes have been made in the shelter system, these should be reflected in the shelter management and operations plan, and in all other guidance materials applicable to the specific shelter. Even if modifications to the shelter have not taken place, management and operational procedures should be periodically tested, preferably by operational exercises.

4.82 Communicate Shelter System Information. All members of the shelter staff should be kept informed of changes in the shelter system, especially changes that pertain to someone's specific job assignment. If at all possible, the likely occupants of the shelter should be kept informed of major changes in the shelter system.

4.83 Coordinate with Other Agencies. Participation in local alerts or other disaster exercises constitutes a valuable aid in maintaining operational readiness of a shelter.

ORGANIZING THE SHELTER POPULATION

Importance of Organizing the Shelter Population

5.1 Man is a social animal who has always joined with his fellows to solve the substantial problems of his existence. There can be no doubt but that in any shelter, under any conditions, attempts will be made by the population at organizing themselves into groups. In all but the smallest shelters, these attempts may be ineffectual in the absence of any guidance or plan, or trained person who can direct the efforts to organize.

5.2 The shelter manager's responsibility is to organize people into an *appropriate set of groups* that combines to form a functioning society capable of achieving the goal of group survival.

Immediate Organization Upon Shelter Entry

5.3 If occupants of a shelter have been organized into groups as part of peacetime preparedness, their organization can start functioning at the time of shelter taking. What of the shelters without pre-occupancy groupings? They must establish some form of organization in the initial period of shelter taking. The cardinal principle governing initial organization is that the organization must fit the requirements of the shelter entry period. In large shelters, it will usually be a good management practice not to attempt to establish the complete network of shelter groups and teams during the immediate entry phase. What is needed at the outset is one leader (or several, depending upon the shelter) to direct the filling of the shelter and the initial protective actions; traffic assistants to aid in filling the shelter; perhaps a medic, if both the need and capability exist; communications to contact EOC; and sanitation to set up the toilet facility. In a large shelter, people should be directed to form temporary groups of 200-400 persons, with each

group given a Shelter Manager (division leader). In addition, other leadership (unit, section, department, and core management) must be established as soon as possible.

5.4 Within the entry period, as the need for additional teams or groups presents itself (for example, a communication team or a repair team), these can be selected on a temporary basis using volunteers with the appropriate skills. It is only after the manager has assumed command of the shelter and taken care of the initial protective actions that he should begin forming the permanent and full complement of groups described in this chapter.

Types of Shelter Groups

5.5 There are four basic forms of shelter grouping. These are introduced in the following section, and each type is discussed in detail in subsequent sections of this chapter.

5.6 *Core Management Staff.* Core management is a general term for the members of the management staff who have the major supervisory responsibility for running the shelter. This includes the shelter manager and his key deputies. The larger the shelter, the greater the number and levels of core management that could be incorporated into the organizational structure.

5.7 *Task Teams.* These are relatively small groups whose leaders and members provide the operational, technical, and special services necessary for shelteree survival and adjustment. Specific operations such as feeding, radiological monitoring, and training will be carried out by task teams.

5.8 *Community (Living) Groups.* Community groups are the subdivisions of the shelter population into what might be thought of as the equivalents of families, streets, neighborhoods, and municipalities. The purposes of the living groups are (1) to provide individuals with the

gratification they receive from group membership, and (2) to permit management to implement activities and allocate resources more effectively.

5.9 Advisory Group(s). This is a group that acts as a liaison group between the management staff and the shelter population. Composed of representatives from the general shelter population as well as core management, the advisory group functions as a staff body that provides the manager with information and counsel.

The Core Management Staff

5.10 Size and Composition of Core Management Staff. For effective command/control, the top management group should remain fairly small. In a shelter area the top management staff should usually not be more than four or five in number. The members in the top echelons of management should generally be the

Manager, Deputy Manager, Deputy for Operations, Deputy for Technical Services, and Deputy for Special Services.

5.11 In any shelter, it is recommended that at least one member of the management staff be on duty at all times while people are awake, and on-call while they are sleeping. If the shelter is operating on more than one sleeping shift, it is reasonable to have several deputies, each deputy in charge of a shift.

5.12 Responsibilities, Qualifications, and Recruitment Sources. See Table III.

5.13 Succession of Command. It is desirable for the core management staff to agree upon an order and procedure for taking over shelter command in the event of the absence or incapacitation of the shelter manager. An order of succession of command that is recommended is:

1. Deputy Shelter Manager.
2. Deputy for Operational Services.

TABLE III.—The Core Management Staff

	RESPONSIBILITIES	QUALIFICATIONS	SOURCES	WHEN SELECTED
SHELTER MANAGER	See Chapter 1	Previous management experience; stable personality.	Managers, superintendents, executives, and officials.	As soon as possible, but not later than increased readiness phase.
DEPUTY SHELTER MANAGER	Same as shelter manager.	Same as shelter manager.	Same as shelter manager.	As soon as possible, but not later than increased readiness phase.
DEPUTY FOR OPERATIONAL SERVICES¹	Assumes responsibility for such tasks as food, water, sanitation, medical care.	Same as shelter manager.	Staff service heads and middle-level administrators.	As soon as possible, but not later than increased readiness phase.
DEPUTY FOR TECHNICAL SERVICES	Plans and oversees such tasks as radiological protection, communications, safety, maintenance, and supply	Preferably engineering background; supervisory maintenance or construction experience.	Technical staff heads, engineers, etc.	As soon as possible, but not later than increased readiness phase.
DEPUTY FOR SPECIAL SERVICES	Plans and implements shelter training program, recreational and religious activities and special services.	Background in training, educational or social work, plus some management experience.	Training and education director, social work supervisor.	As soon as possible, but not later than increased readiness phase.

¹ Functions may be combined with those of Deputy for Technical Services and or Deputy for Special Services in small shelters.

² In small shelters, the function of this Deputy may be taken over by a community group leader or other member of management staff.

3. Deputy for Technical Services.
4. Deputy for Special Services.
5. Group leader from the highest level of community grouping.

Task Teams

5.14 *Number, Size, and Composition of Task Teams.* The number, size, and composition of task teams are not standard for all shelters but are determined by the requirements of a particular shelter. The two basic questions to ask in forming task teams are (1) have all the tasks associated with the operations and activities of this shelter been assigned to a group, and (2) have as many people as possible been given

jobs to do to keep them occupied, and to get them involved in the affairs of the shelter.

5.15 Operations such as communications, fire watch, security, sanitation, radiation protection, and, perhaps, medical care, should be scheduled on a 24-hour basis.

5.16 In setting up a team schedule, it may be feasible, in many cases, to assign team members to a relatively brief, daily "tour of duty." One reason for this is to rotate as frequently as possible the less pleasant tasks such as toilet monitoring and the passive, largely uneventful tasks such as the fire watch. Another reason is the goal of providing everyone in-shelter with a useful job to perform.

5.17 *Duties, Responsibilities, and Criteria for Selection of Task Teams.* See Table IV.

TABLE IV.—Task Teams

	DUTIES AND RESPONSIBILITIES	SOURCES AND QUALIFICATIONS	SIZE/COMPOSITION OF TEAM/ NUMBER OF SHIFTS	SELECTION PRIORITY
RADIOLOGICAL DEFENSE	Maintain protection against fallout by monitoring, decontaminating, increasing shielding, etc. Measure, record, and advise management on radiation, and indicate necessary actions.	Background in science, knowledge of electronic instrumentation, highly desirable. Scientists, science teachers, electrical repairmen, etc.	Size of team ranges from 2 to 6 monitors. Monitoring is a continuous activity, requiring a team on duty around the clock.	Team should be pre-selected and pre-trained. Should be one of the earliest teams recruited.
SUPPLY	Storage, security, inventory, and issuance of all shelter supplies.	Supply and parts distributors, warehouse supervisor, manager of a store.	Depends on nature and amount of supplies, location, and supply management procedures.	Immediately after entry, to begin inventorying of supplies.
TECHNICAL OPERATIONS, REPAIR, AND MAINTENANCE	Assess and repair damage to shelters, maintain operability of all shelter equipment, support the radiological team in augmenting shelter protection against fallout, and handle all repair contingencies.	Equipment maintenance and repair experience. Maintenance personnel, engineers, construction men, electricians, plumbers, and building superintendents. Supervisory background helpful.	Depends on complexity of shelter configuration and extent of auxiliary equipment.	Ideally, should be selected before shelter entry, in order to familiarize self with shelter facilities and equipment.
MEDICAL	Responsible for shelteree health, operation of sick bay, control of medical supplies, training	Licensed physician, dentist, registered nurse, pharmacist, licensed veterinarian, practical nurse,	Depends on size and medical needs of the shelter. May need someone on duty at all times.	Immediately after entry, unless team and team head have been selected before entry.

TABLE IV.—(continued)

	DUTIES AND RESPONSIBILITIES	SOURCES AND QUALIFICATIONS	SIZE/COMPOSITION OF TEAM/ NUMBER OF SHIFTS	SELECTION PRIORITY
	shelterees in first-aid procedures.	trained medical corps, student of medicine, dentistry, veterinary, first-aid training.		
FIRE	Prevent, detect, extinguish fires internal and external to the shelter; train team and other shelterees in fire prevention and fighting, conduct emergency fire drills.	Background in fire prevention or fire fighting. Volunteer firemen etc.	Team size dependent on shelter size and number of shelter areas to be monitored. A fire watch should be maintained in all parts of the shelter at all times. Team can probably use a large number of people on several shifts.	Fire team should be recruited almost immediately after people begin to arrive. Must immediately collect additional shelter fire-fighting equipment in the building and may have to fight fires.
SAFETY AND RESCUE	Rescue persons trapped in shelter area; prepare, orient, and drill shelterees on emergency procedures in cooperation with other pertinent teams; support protective actions conducted by the radiological team.	Background in industrial safety, police work, emergency maintenance, or military experience. Plant safety engineers, safety personnel, etc.	Safety team size depends on shelter size and configuration. Rescue team is usually composed of 5 to 8 men.	Should be pre-trained, if possible, or as soon after entry as feasible.
COMMUNICATIONS	Setup and maintain communication equipment. Monitor and record incoming and outgoing messages. Transmit messages to appropriate shelter management.	If complex equipment available, background in operation and repair of equipment desirable. Electronic technicians, ham operators, engineers, radio dispatchers, etc. Stenographers, secretaries.	Depends on communication capability and message load; must have person on duty at all times.	Should be pre-trained, if possible, or as soon after entry as feasible.
ADMINISTRATION	Maintain shelter records, conduct shelter registration, help collect private property, provide administrative support.	Experience in office management. Office managers, executive secretaries, corporate administrative assistants, secretaries.	No formal requirements for size or composition of team.	Should be selected before the shelteree registration.
WATER	Inventory, ration, tap, and purify; schedule, distribute, and monitor use of water.	If only OCD survival rations, no special qualifications other than good health. The team head should have	Depends on size of shelter, nature and amount of supplies.	After initial actions completed, but within a couple of hours of entry

TABLE IV.—(continued)

	DUTIES AND RESPONSIBILITIES	SOURCES AND QUALIFICATIONS	SIZE/COMPOSITION OF TEAM/ NUMBER OF SHIFTS	SELECTION PRIORITY
		supervisory experience. If additional building sources used, may need plumber or repair personnel to assist.		
FOOD	Inventor; and determine food rations, schedule, distribute and monitor use of food.	If only OCD survival rations, supervisory experience and good health.	Depends on size, complexity of shelter, and nature of supplies.	Several hours prior to first feeding.
SANITATION	Set up and maintain toilet facilities; collect and dispose of garbage and waste. Maintain shelter cleanliness, establish personal hygiene procedures. Coordinate with medical in preventive sanitation and body disposal.	Knowledge of preventive medicine and importance of sanitation; knowledge of building sanitation systems; supervisory skills. Sanitation engineer, hygiene teacher, plumbers, building custodian, etc.	Multiple shifts advised to rotate the responsibility of performing unpleasant duties. Team may be subdivided into toilet team, trash and garbage team, body disposal team, and personal hygiene team.	Early in the entry phase.
SECURITY	Direct shelteree movements on entry or exit; guard supplies; control outbreak of disorder; guard major offenders who are isolated from other shelterees.	Experience in control of large numbers of people. Police, MP, plant security officer, etc.	Depends on size of the shelter, the extent of actual or potential problems.	Traffic assistance will be needed immediately for shelter entry. Other members of the team should be selected as soon as possible.
NIGHT WATCH	Maintain order in the sleeping area; assist shelterees who require aid, monitor toilet facilities; keep watch for hazardous conditions such as fire; guard shelter supplies; report all serious problems to management personnel.	Team head is member of management staff; team from mature and responsible adults on a rotation basis.	Usually 2 monitors for each 200 sleepers; time of each shift should not exceed 2 hours; number will depend upon emotional state of shelterees, supplies, and equipment to be monitored.	Selected before "lights out."
PSYCHOLOGICAL FIRST AID (In many shelters, may be combined with other special service team.)	To assist emotionally disabled people to return to normal functioning as quickly as possible and to help seriously disturbed to be more comfortable.	Ideally, should have previous training or experience in dealing with emotional problems. Also have adequate personal adjustment to the shelter situation. Psychiatrists, psychologists, social	As many qualified persons as are needed and available should be assigned to this team. First aid will be most effective if one person can be assigned to a single shelteree at a time.	Set up as needed.

TABLE IV.—(continued)

	DUTIES AND RESPONSIBILITIES	SOURCES AND QUALIFICATIONS	SIZE/COMPOSITION OF TEAM/NUMBER OF SHIFTS	SELECTION PRIORITY
		workers, vocational counselor, teachers, shelter leaders, or clergy.		
TRAINING AND EDUCATION	Train shelterees for shelter survival and adjustment; teach basic management and technical skills necessary to carry out in-shelter tasks; on-going education of school children; post-shelter preparation.	Background in teaching. Teachers, training directors, school administrators, etc.	Depends on size of shelter population. Training activity should be interspersed throughout the day.	Chosen as needed in the shelter.
SUPPORT AND SPECIAL SERVICES	Care for children, elderly, and infirm.	Child-care team should be composed of females with child-care experience; for care of elderly, use mature persons.	No formal requirements; continuous care may be necessary in specific cases. Use as many people as possible.	Set up as needed.
RECREATIONAL ACTIVITY	Plan and implement activities programs, e.g., arts and crafts, spectator entertainment, reading activities, etc. Allocate available recreation material, and improvise additional materials.	Experience in planning and guiding recreational activities, e.g., counselors for youth groups, community welfare center personnel, and playground supervisors and workers.	Depends on size of shelter population, especially the number of children, the amount and type of recreation material, space available for this activity, and shelter temperature.	Set up as needed.
RELIGIOUS SERVICES	Organize, conduct religious services, console and comfort shelterees.	Member of the clergy or religious laymen.	Composition should conform to the distribution of religious affiliations among the shelter population.	Set up as desired by shelterees.

Community Living Groups

5.18 Types of Community Groups.

1. The Unit. (Group of 7-12 persons).

The unit is the smallest formally established shelter group. Within the unit, the individual's emotional needs will be fulfilled. It is the group of family, friends, or neighbors who will recognize the individual as a person rather than a face or a number.

2. The Section. (Group of 40-60 persons).

The section is generally the key community

group in a shelter. Like the unit, the section serves the emotional needs of the shelterees by offering group identity and a sense of belonging, though at a less intense emotional level than the unit. In addition to its morale function, the section also occupies a key position in the social structure of the shelter. Its members participate in a majority of shelter activities as a group, including: sleeping, eating, and training. It is the group within which informal methods for social control can develop and operate, and it par-

ticipates in making democratic decisions about shelter procedures.

3. *The Division.* (Group of 200-400 persons).

The division is the level of community grouping that is essential for management control in shelters of 500 persons and over, and may be desirable for shelters of 300-400 persons.

It would be extremely difficult for a shelter manager to coordinate the activities of 1,000 shelterees, organized into 20 sections. However, by establishing four groups of 250 people each, and delegating management authority to the leaders of each group, the shelter becomes more effectively organized. The division leader's function is to plan and oversee the activities of his group in coordination with top shelter management.

4. *The Department.* (Group of 1,000-1,500 persons).

5.19 In shelters with populations of several thousand it may become quite unwieldy for a manager to interact directly with 10 or more division heads. Therefore, another grouping level will be necessary for over-all management control. This level may be called the department. The term "department" usually refers to a large segment of an organization with a special set of functions. However, in a community shelter, all departments will have similar func-

tions. The term "department" has been selected because of its connotations of size and complexity; no connotation of specialization is intended.

5.20 *Duties, Size, Composition, and Selection of Community Groups.* See Table V.

The Advisory Group

5.21 *Duties and Responsibilities.* The advisory group is the liaison between shelterees and the shelter manager. This group presents the shelter population's problems and suggestions to the manager and assists him in evaluating and resolving group and individual problems dealing with the maintenance of order, morale and motivation, shelter schedules and routine activities, the use of supplies, and other issues affecting the shelter population.

5.22 *Size and Composition of the Advisory Group.* In order to operate effectively, the advisory group should be relatively small in size, with not more than seven members. It should be composed of members elected by the shelterees. In shelters in which many of the shelterees are strangers to each other, it may be difficult to elect representatives to the advisory group on any meaningful basis. In such shelters, it may be desirable to delay permanent formation of the advisory group until the shelter has settled into a routine phase.

TABLE V.—Community Groups

	DUTIES AND RESPONSIBILITIES OF LEADER	SIZE AND ORGANIZATION OF GROUP	WHEN TO ESTABLISH GROUP	SELECTION OF LEADER	ASSIGNMENT OF SHELTEREES TO GROUP
UNIT	Maintains order and control of group; counsels, advises, and consoles individual shelterees; conveys complaints and problems to the section head; carries out duties assigned him by the section head.	Seven to 12 persons—dependent upon natural grouping of shelterees and size of shelter.	After section has been established and leaders appointed.	Should be chosen by unit members, unless they are children or other dependent types.	On the basis of kinship, friendship, and common interests.

TABLE V.—(continued)

	DUTIES AND RESPONSIBILITIES OF LEADER	SIZE AND ORGANIZATION OF GROUP	WHEN TO ESTABLISH GROUP	SELECTION OF LEADER	ASSIGNMENT OF SHELTEREES TO GROUP
SECTION	Has direct operational supervision over group; insures provision of food, water, sleep arrangements, etc.; maintains sanitary standards; supervises shelterees participation in training, social-recreational activities; supervises service activities; maintains communication between shelterees and management; maintains order.	Between 40 and 60 persons—not so large that leader cannot know all members or observe their behavior.	Established first.	Preselected or appointed by shelter manager prior to community grouping. If all section members know one another, may be selected by them.	On the basis of entry order, or as a result of splitting up already formed divisions. Reassignment should be permitted for reuniting family, friends, relatives, etc.
DIVISION	Generally responsible for well being of division members; delegates direct responsibility to subordinate section heads; plans activities and use of resources; reports directly to core management.	200 to 400 persons—dependent on shelter size and configuration.	Should be first group established if shelter is large and trained leadership exists.	Selected prior to shelter occupancy or appointed by management prior to division formation (based on knowledge of person's qualifications).	Based on time of entry, or formation prior to shelter entry. Reassignments should take place as necessary.
DEPARTMENT	Exercises command/control over all divisions and sections in his jurisdiction. In many cases, departments may function with almost complete autonomy in regard to daily activities.	1,000 to 1,500. Normally consists of from 4 to 6 divisions.	Should be established as soon as possible.	Same as division leader—should be provided with same training as shelter manager.	Based on time of entry or formation prior to entry.
ADVISORY COMMITTEE	Acts as liaison between shelterees and the shelter manager to present shelteree problems and suggestions to the manager; assists	For effective co-operation, committee should not have more than 7 members. Should meet at a specified time each day, with provi-	Should be selected whenever shelterees are familiar enough with each other to be able to elect committee (either late in initial	By election of the committee members.	Elected by shelterees, plus appointment of 1 or 2 management representatives.

TABLE IV.—(continued)

TABLE V.—(continued)

	DUTIES AND RESPONSIBILITIES OF LEADER	SIZE AND ORGANIZATION OF GROUP	WHEN TO ESTABLISH GROUP	SELECTION OF LEADER	ASSIGNMENT OF SHELTEREES TO GROUP
	management in evaluating and resolving group and individual problems.	sion for emergency sessions at any time.	organization or early in routine phase).		

Establishing a Shelter Group Structure

5.23 The previous pages have dealt with the description of the various groups that contribute to the operation of the shelter. To allow shelter management to make efficient use of the population resources, these groups must be integrated into a hierarchical organizational structure as represented by the organization charts in Figures 1 through 6, on the following pages. The goals of the structure are: (1) to make clear the channels of communication between different shelter groups and leaders; (2) to identify areas of responsibility for each shelter group and leader, thereby avoiding conflict, duplication of efforts, etc.; and (3) in general, to permit the shelter manager to function effectively by delegating authority to various levels of subordinates, and at the same time to maintain over-all command of the shelter.

5.24 *Factors to Consider in Organizing Shelter Groups.* Just as a small business firm is organized differently than a giant corporation, small shelters should have a different arrangement of groups than large shelters. Besides the size of the shelter, other major factors that should be reflected in the organization chart are:

1. The configuration of the shelter (whether the shelter consists of a single space or many physically separated areas).
2. The capability of the shelter (whether it depends solely upon OCD supplies or has extensive augmented facilities).
3. The shelterees (whether everyone knows each other, works for the same organization, or are essentially strangers to each other).
4. The availability of trained management (whether preselected, pretrained man-

agement is available or the management positions will be filled in-shelter with the best people available).

5.25 The organization charts in Figures 1 through 6 should be regarded as merely illustrative of the different ways in which differently sized community shelters can be organized.

The Relationship Between Shelter Groups

5.26 Everyone in the shelter will be assigned to community groups. Able-bodied shelterees will, in addition, have an assignment in one of a number of task teams that are separate from community groups. In organizing a shelter, the question of the jurisdiction of task teams and community groups and the priority of their tasks should be faced to avoid squabbles over responsibility for persons and activities.

5.27 *The Jurisdiction of Community Groups.* The line from the shelter manager through the division and section heads represents the basic line of command in the shelter.

5.28 If the manager wants to communicate with an individual shelteree, or wants information about him, the normal approach is through the community group heads. Similarly, if someone in-shelter wants to communicate with the manager, it should be accomplished through the community group heads.

5.29 If corrective actions must be applied, they should be the responsibility of community group heads, except in the event of a serious offense, in which case a security team may have to play a role.

5.30 A head of a community group is responsible for the members of his group as they take part in shelter activities; that is, as they are

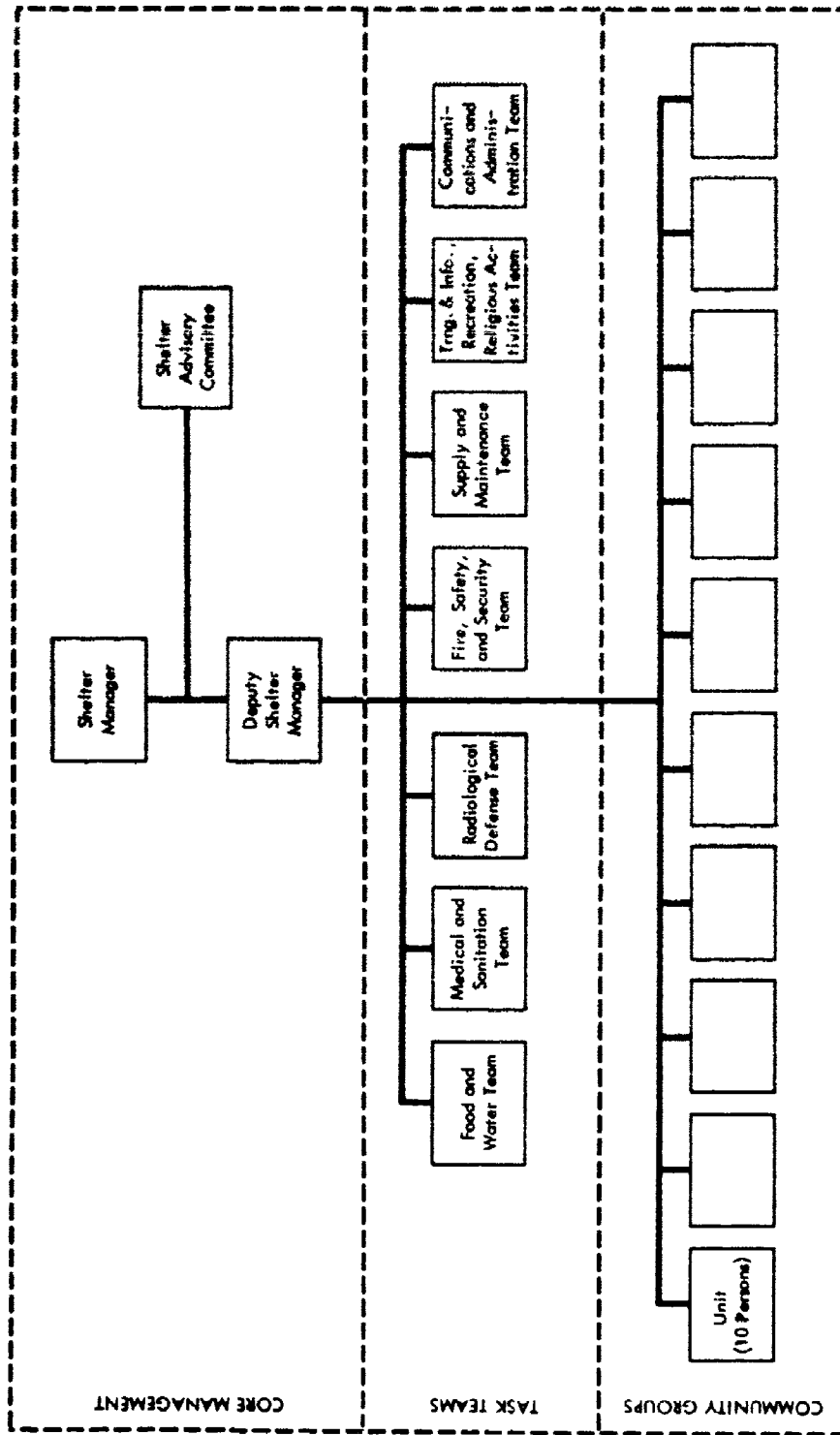


Figure 1. Sample Organization of a 100-Person Shelter

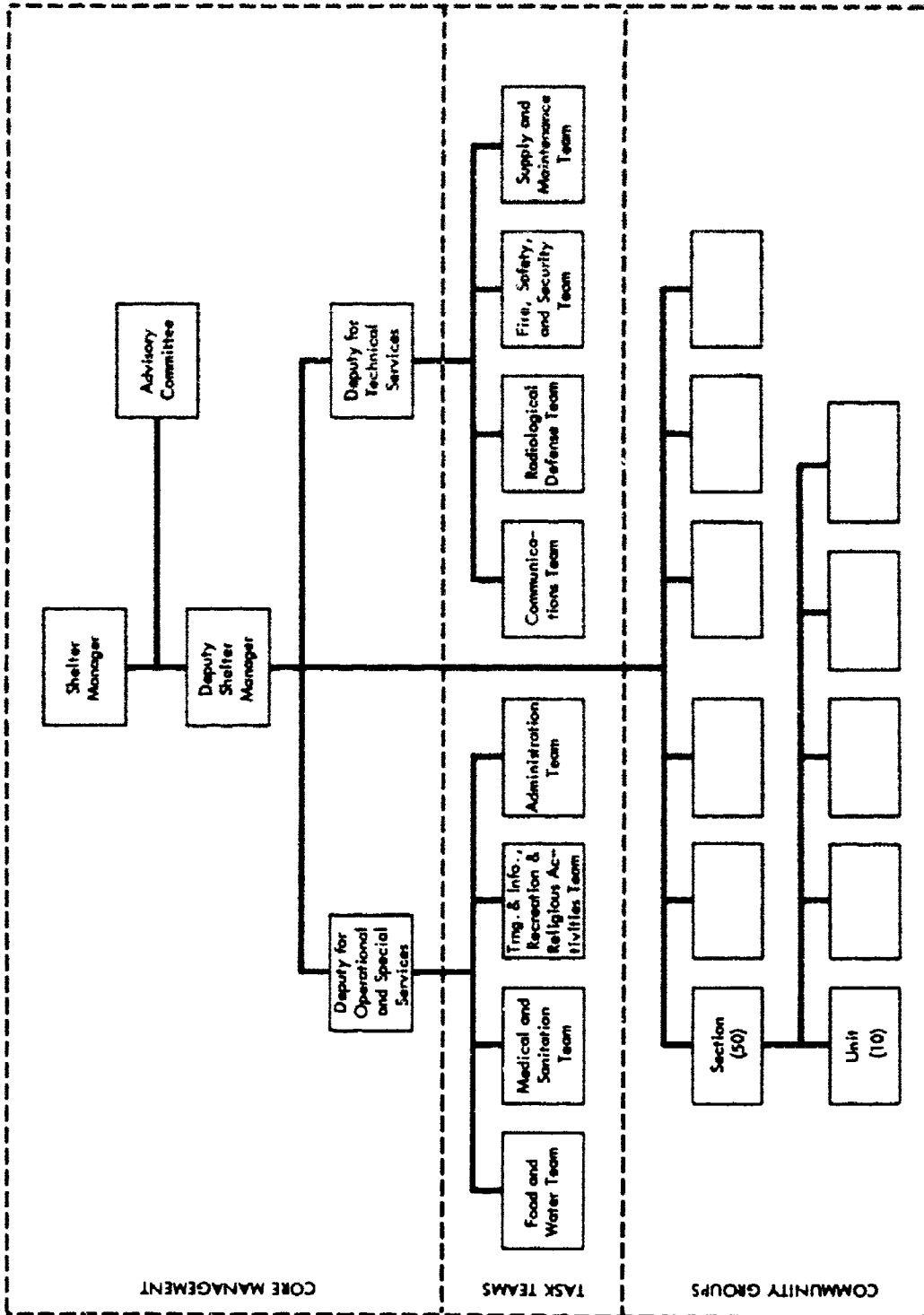


Figure 2. Sam Organization of a 300-Person Shelter

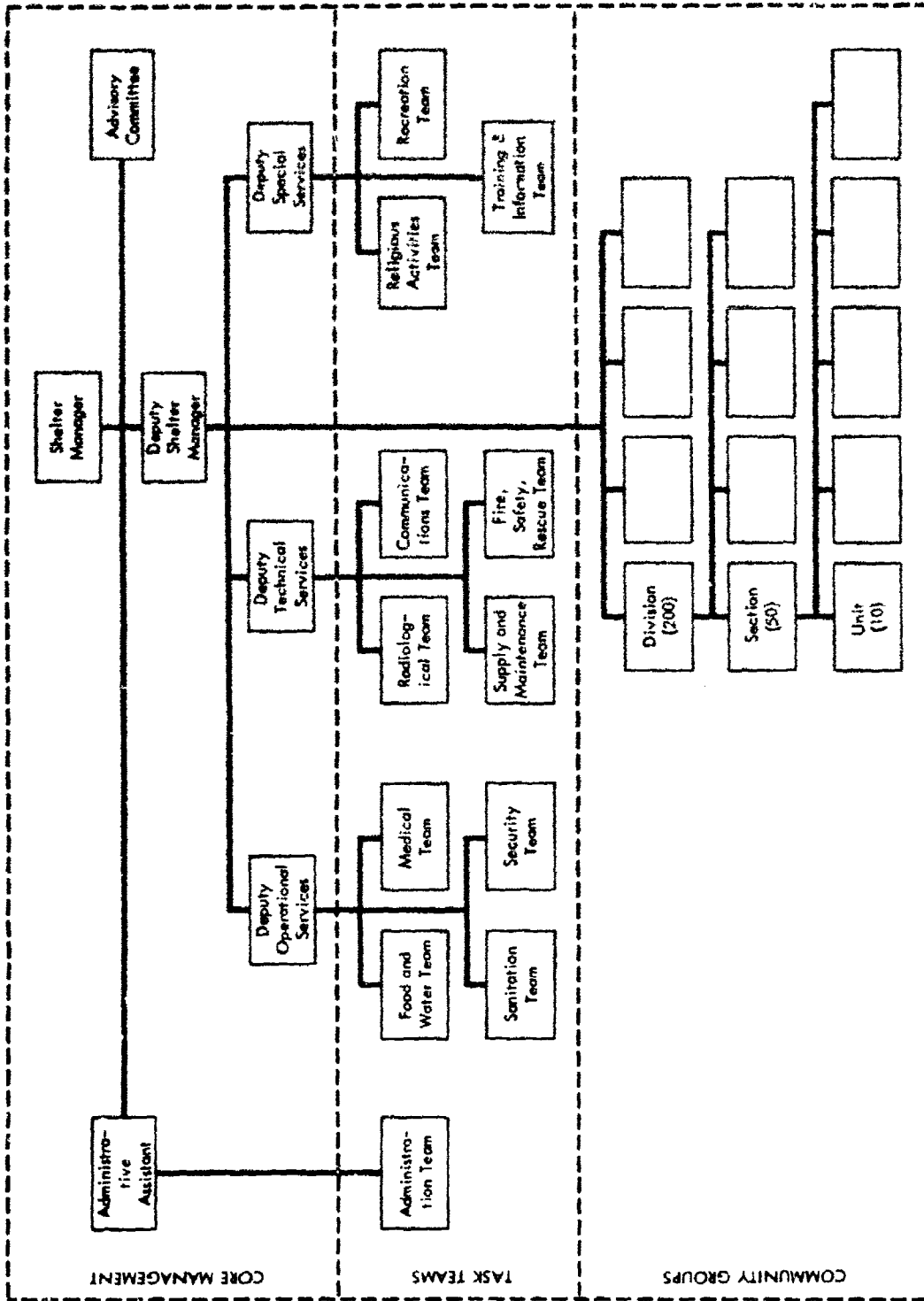


Figure 3. Sample Organization of an 800-Person Shelter

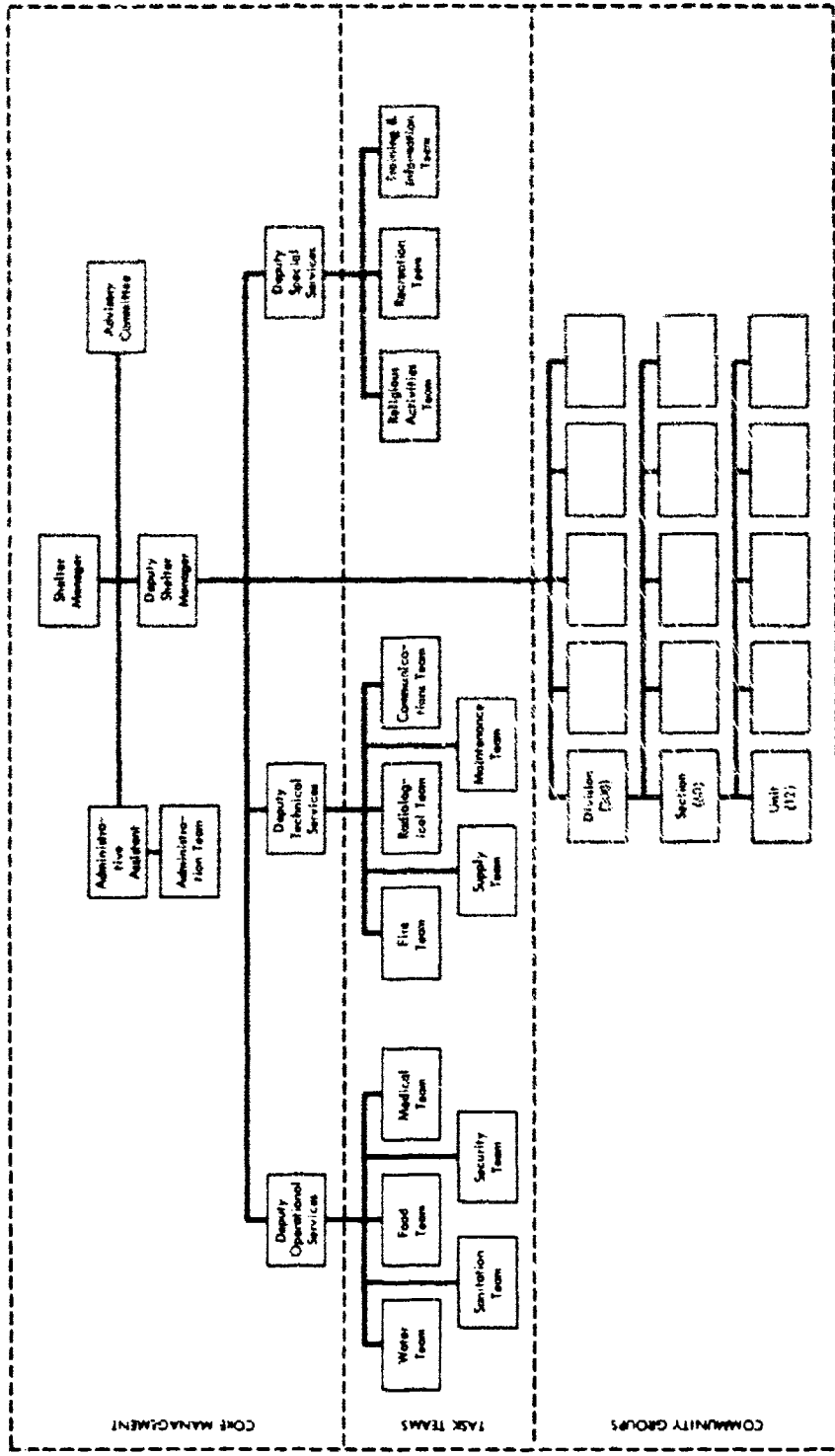


Figure 4. Sample Organization of a 1,500-Person Shelter

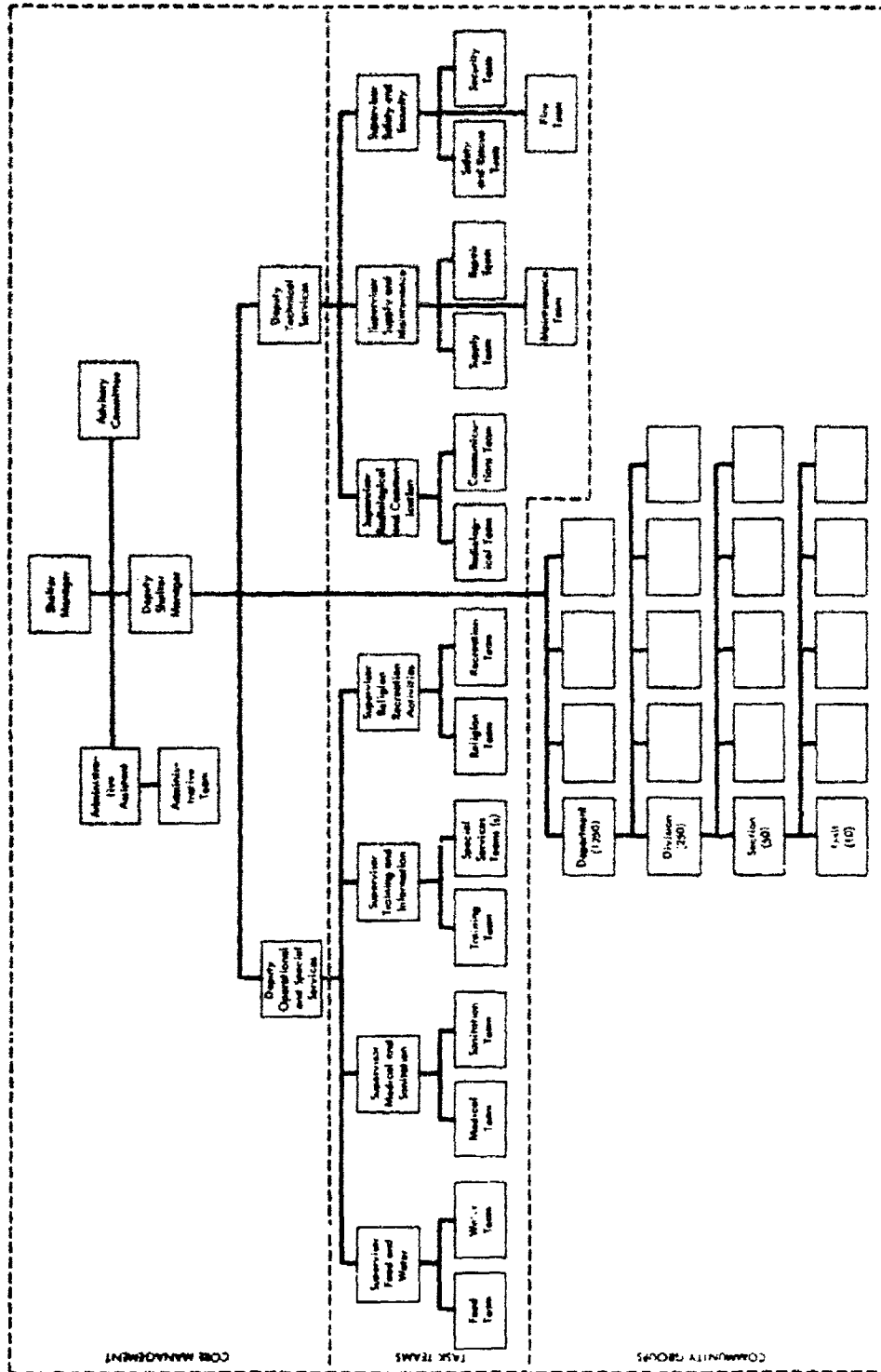


Figure 5. Sample Organization of a 5,000-Person Shelter

fed, as they are given training, as they sleep, and so on. The community group head is not responsible for planning or implementing a particular shelter operation; that is the duty of the appropriate task team.

5.31 This point can be clarified by an example. A training session has been planned by the training team to take place at a certain time and place, and to cover a specified subject. Either a member of the training team or an expert (e.g., medical or radiological team member) is to conduct the session. The responsibilities of the section head are to see to it that members of his group attend the training session. After the training session, the section head may be asked to carry on further discussion of the subjects covered with his group members.

5.32 *Task Team Jurisdiction.* Generally speaking, the appropriate task team head, or his supervisor in a large shelter, is the responsible person in matters dealing with a specific shelter operation. This covers the internal organization and operation of a task team, and includes such issues as the selection and specific assignment of task team members, the number of persons to be on duty at a specific time, and the length of each shift. When a shelteree is "on duty" with his task team, the team head is responsible for him. Responsibility means knowing where the individual is, and what he is doing.

5.33 *Coordination Between Teams and Groups.* There are many decisions pertaining to shelter organization and operations that affect both task teams and community groups. For example, to the food team, a certain number of meals served at certain times may appear to be the most efficient way of operating a feeding program. Community group leaders may argue that the feeding schedule that is optimal for the food team is not well tolerated by shelterees, and they may suggest a revised schedule. This pattern can emerge in any number of ways in the shelter.

5.34 The ideal solution is to have a shelter operational plan developed prior to occupancy, in which shelter planners spell out the procedures that should be adopted in relation to all operations and activities. But even the most comprehensive plan may have to be modified

in the light of actual shelter conditions. Therefore, procedures need to be established whereby jurisdictional disputes between shelter groups can be prevented or resolved.

5.35 *Reassignment of Shelterees Within Groups and Teams.* Many shelters can expect a good deal of reassignment of people from one community group to another in order to reunite family and friends, or to bring together shelterees with similar interests and backgrounds. The process of initial organization may go more smoothly if shelterees are told that subsequent reassignments will be considered by management.

5.36 Under certain conditions, it may be advisable to consider shelteree reassignment from one task team to another, after a specified "tour of duty" on one team. This would most likely occur in task areas that do not require specialized skills. The purposes for task team reassignment are to insure that some of the unpleasant but necessary shelter tasks get accomplished by rotation of assignments. Volunteers will be procured more easily for unpleasant tasks if they know that they will be reassigned after a period of time. Secondly, reassignment should introduce some variety into the individual's routine and may act, in instances, to perk up shelteree motivation.

Registration and Identification of Shelterees

5.37 In few shelters will management know all the occupants and have all the necessary information about them with which to organize the shelter efficiently. Therefore, a registration procedure must be implemented to acquire data about shelterees for use in assigning them to teams and community groups.

5.38 In addition, all but the smallest community shelters will need some type of identification system, to serve the following purposes: (1) indicate at a glance who the members of the management staff are, (2) possibly indicate the members of task teams who must have rapid, unhampered movement in-shelter, and (3) identify individual shelterees and their community group assignments.

5.39 *The Shelteree Registration Form.* The shelteree registration form provides management with data on the manpower resources within the shelter, by indicating the distribu-

tion of skills and talents. It provides information which can be used as a basis for assigning shelterees to community groups. Finally, it serves as an aid in such recovery operations as location of family members, return of personal property, and population censuses. A sample registration form is presented in Appendix A.

1. *Improvising a shelteree registration form.* In the event that registration forms have not been stocked in the shelter, shelterees can be asked to write their names, occupations, and special skills on almost any scrap of paper. This will at least allow for rapid organization of task teams. The other types of information on the registration form may be verbally elicited by unit and section leaders in interviews with their group members.

2. *Filling out the registration form.* In many shelters, registration will be a time-consuming task. Therefore, it may be advisable to divide registration into two periods. Only certain questions pertaining to immediate organization and operations need be answered initially. After shelter groups have been organized, the form can be returned to shelterees for completion.

3. *Maintaining the registration form.* A major responsibility of the administrative team is to keep shelter records up-to-date and as accurate as possible. Certain vital information should be recorded in the registration form including births, deaths, major violations of rules, heroic actions, and

the like. After emergence from the shelter, the form should be turned over to the appropriate authorities for use in community recovery operations.

5.4 *Shelteree Identification*

1. *Identification of management personnel.* The command capability of the manager and his top staff will be enhanced if they are constantly visible to shelterees. Headgear and/or armbands are the most common symbols of management that are likely to be available to any great extent. Headgear is more effective because it can be more easily recognized in-shelter, but armbands are simpler to improvise, and may therefore be the more popular method of leadership identification.

2. *Identification of individual shelterees.* Interaction among shelterees is facilitated if people's names are known to others. In addition, identification by name is more satisfying to the individual than is a series of impersonal numbers or letters. If the shelter contains an adequate stock of tape, each shelteree should be given a piece upon which he can write his name and indicate the groups to which he has been assigned.

5.41 In the absence of tape, improvised identification methods can be devised, such as a piece of cardboard attached to a pocket or label with a pin, or even an individual's name written directly on an article of clothing with a lipsticker, if no alternative presents itself.

ORGANIZING SHELTER RESOURCES

The Need for Organizing Shelter Resources

6.1 The goal of the shelter system is survival and not comfort. Few community fallout shelters will be stocked with the wide range of material goods to which most of us have become accustomed. The responsibility of the manager is to develop and implement a plan for the allocation and use of the resources of the shelter that will result in survival and well being for the largest number of shelterees. In the event of a short shelter stay, there may not be any major problems regarding shelter supplies. But, in an overcrowded shelter, with a forecast of a long confinement period, the manager may be faced with literally life and death decisions concerning vital supplies.

6.2 The impact of shelter resources will not only be felt in terms of physical survival. The manner in which shelter resources are handled by management has great potential effects upon the motivation and morale of the shelter population. Should shelterees perceive that vital supplies are being allocated casually or injudiciously, the result may be hostile words or actions that can threaten the stability of the shelter.

Basic Approaches to Supply Management

6.3 A supply plan that may be ideal for one type of shelter may be very inefficient when applied to a different shelter type. Therefore, the strategy for control of resources must be based upon a consideration of such factors as size and configuration of the shelter, amount, types and location of resources, and estimated length of shelter stay.

6.4 There are three general approaches to the supply management program in a fallout shelter. These may be referred to as the (1) centralized, (2) decentralized, and (3) combined approaches. Of all the methods discussed, the combined approach appears to be the most effi-

cient method for the widest range of shelter types.

6.5 *Centralized Supply Management.* This approach calls for location of shelter resources in *one area* of the shelter, under the supervision of the supply team leader, who issues supplies to other appropriate group and team leaders at the appropriate times.

6.6 The attractiveness of this approach lies in its simplicity. Management control of resources is made easier. Less total space is required. On the other hand, crowding around the central distribution area, length of time for supply distribution, and "red tape" involved in issuing supplies may become a problem in some shelters. Centralized supply may be the answer if (1) the shelter is small, (2) all supplies have been placed in a single area prior to occupancy, or (3) floor space is at a minimum.

6.7 In all cases management should insure that specific times are set for general issue on a controlled basis, thus avoiding congestion, unwarranted milling around, and confusion at the supply point. This would also enhance the capability of making emergency supply issuances with a minimum of delay.

6.8 *Decentralized Supply Management.* There are two different decentralized supply approaches. They are: (1) *the functional approach*, and (2) *the area approach*. The former calls for locating the supplies dealing with each specific task in a separate place in-shelter under the responsibility of the appropriate task team. Area decentralization involves setting up a number of supply areas in different parts of the shelter, each stocked with the full range of supplies, for a designated segment of the shelter population.

1. *Functional decentralization.* Using this approach, each task team controls its own supplies. All the supplies associated with the

particular task are either brought together to the team area, or the team is located in the supply area. Community group leaders, or individuals authorized to pick up resources, go to a different team area for each type of supply. The task team head is responsible for providing the manager with up-to-date information on the status of his resources.

Functional decentralization results in a rapid distribution of supplies, accurate supply status information, and closer connection between a given type of supply and the shelter team that would use it. On the debit side, this approach might lead to greater shelter traffic, greater difficulty in ascertaining the total supply picture, and greater difficulty in supervising over-all supply operations.

Use of the approach is recommended if separate areas have been provided for each task team, or if different types of supplies have been placed in different areas prior to shelter occupancy.

2. *Area decentralization.* The approach is basically the same as the centralized method. The only difference is that instead of one central area, supplies are stored at several locations, each serving all the supply needs of a segment of the population.

The approach is recommended (a) where the shelter configuration consists of widely separated areas, floors, or rooms, and (b) where the shelter is large.

6.9 *The Combined Supply Management Approach.* This supply management method may be the most efficient approach to the supply problem for the greatest number of shelters. The combined approach incorporates elements of both the centralized and decentralized systems. Shelter resources are kept under the supervision of a supply team at the designated supply area. The supply team gives each task team its quota of supplies at regular intervals, which may be daily, twice a day, every two days, or whatever is determined as necessary. The task team carries the materials to its own location in the shelter, and there dispenses it to individual or groups.

6.10 Each task team keeps records of its own supplies, while the supply team maintains inventory control over all shelter resources, taken as a whole. The combined approach per-

mits rapid access to the total supply picture in a shelter; it should cut down the supply distribution time considerably over the centralized approach, especially if each task team can pick up enough supplies at one time to last a day or more. The combined approach also allows the task team to distribute its own supplies, which may lead to a more efficient use of resources.

6.11 The combined approach is not without its potential problems. By introducing an additional stage between supplier and consumer, the possibility of supplies being lost, damaged, or misappropriated is increased. Except in the large or multi-area shelter for which the combined approach is inefficient, or for the very small shelter for which it is unnecessary, the combined method appears to be the most reasonable approach to supply management.

Factors to Consider in Managing Shelter Resources

6.12 *Sources of Supply.* The basic material resources of most community shelters will consist of the supplies stocked by OCD, plus any additional survival items that may have been provided by the local community or the building owner. It would be advantageous if additional readily available supplies could be brought into the shelter to augment the survival stocks. Some of the sources of additional supplies that should be tapped by shelter management are described below.

1. The building in which the shelter is located may contain many useful items that can be brought in by shelterees at the time of shelter taking. Examples are: fire-fighting equipment, flashlights and lanterns, food, writing and recreation supplies, fans, and tools.

2. Among the personal belongings that shelterees bring with them are very likely to be many useful items. (See Private Property, para. 6.25.)

3. Improvisation is another source of shelter resources. Many useful items can be fashioned from materials that are available in the shelter. (See para. 6.16.)

4. Sources external to the shelter, such as neighborhood stores, may be used to replenish supplies when radiation levels permit brief trips from the shelter.

6.13 Supply Inventory. As soon as possible after shelter entry, an inventory of shelter resources should be carried out. In large shelters it may not be feasible to perform a careful inventory of all shelter supplies immediately. In lieu of this, the manager should be provided with initial *estimates* of the amount, type, and location of shelter resources. This should be followed by a detailed inventory after the population is organized.

6.14 Initial management decisions concerning the allocation of supplies should be based on the assumption that no additional supplies will be obtained for up to two weeks. Consideration might also be given to the possibility of using the available supplies for a short time in the recovery phase, since the shelter may remain the temporary base of recovery operations.

6.15 Distribution of Supplies. Distribution refers to the process through which resources are made available to the "consumer"—the individual shelteree. There are three major approaches to distributing supplies to shelterees: (1) the fixed-point method, (2) the moving-point method, and (3) the combined method.

1. *Fixed-point method.* In this approach, individual shelterees go to a fixed supply point to receive their allotment. Fixed-point distribution allows for greater control of resources. However, it also requires much more movement in-shelter. In general, fixed distribution should be considered in small, non-complex shelters, or those with special facilities such as a cafeteria. However, even in large shelters, medical supplies should preferably be distributed by fixed point (patients come to medical area for treatment).

2. *Moving-point method.* In this approach, a member of a task team or supply team brings supplies to the shelterees in their living areas. Moving-point distribution minimizes traffic problems and may be considered in shelters in which movement must be kept to a minimum (overcrowded shelters, or those with severe temperature problems). In order to be effective, moving-point distribution requires equipment such as a cart or dolly, to move supplies through the shelter.

3. *Combined approach.* This method, as the name implies, combines the features of the other two methods. A representative of a group

of shelterees (usually a unit head) picks up the supplies for the group from a fixed point and brings them back to the living area where they are distributed to the group members. The combined approach appears to be the method of distribution that is applicable to the widest range of shelter situations.

6.16 Multi-Purpose Use of Supplies. A major ingredient of a shelter supply program is the effective use of shelter supplies for purposes not originally intended. This refers to purposes that are "in addition to" and not "instead of" the original planned use. Some examples of the multi-purpose use of common shelter resources are listed below.

1. Filled cartons can be employed as building materials to erect a temporary barrier for a separate management, medical, sanitation area, or whatever else is deemed desirable.

2. A large number of filled cartons stacked together may have enough density to provide some radiation protection.

3. Cardboard from empty cartons, placed over metal water drums, can make a seat or table, or even sleeping area.

4. Empty cardboard cartons and metal food containers can be used to collect and store all types of objects, from garbage to personal belongings.

5. A male urinal can be improvised from two five-gallon food tins snugly fit into an empty food carton.

Shelter Records

6.17 Much of the information on shelter resources and events that reaches management will be in the form of shelter records. In addition to the in-shelter use of such records, they will be valuable to governmental authorities after the occupancy period in regrouping the population and initiating the reconstruction activities. Samples of the shelter records discussed in this section are presented in Appendix A.

6.18 The Shelter Log. The shelter log is the document that will contain a listing and a description of all the significant events that occurred during the shelter stay.

1. *Description of the log.* Any notebook or pad can be used as the shelter log. Be-

cause this is a document that will be turned over to the authorities after the shelter stay, it is suggested that the most substantial book or pad available be used for this purpose.

2. *Maintaining the shelter log.* The task of maintaining the shelter log is one of the key responsibilities of the administrative team. Entries should include events such as:

- a. Changes in vital statistics (births, deaths).
- b. Other important medical events (cases of major physical or emotional illness).
- c. Serious violations of shelter rules and corrective actions applied.
- d. Major management decisions.
- e. Daily summaries of shelter status and problems.

6.19 *The Communications Log.* Messages entering or leaving the shelter should be entered in the communications log. This log should be maintained by the communication team, on a 24-hour basis. Separate sheets should be used for incoming and outgoing messages.

6.20 *The Radiation Monitoring Log.* The radiation monitoring log will contain the periodic readings of radiation levels for a given time for specified areas within a shelter, and the accumulated doses for each area.

6.21 *Shelteree Radiation Exposure Record.* This form is used to record daily radiation exposure doses which shelterees may receive. The record can be utilized in several ways:

1. Radiological monitors and all persons who may be exposed to high radiation should have a personal radiation exposure record. It may be maintained individually or by a clerk assigned to this function.
2. At the discretion of the manager, each shelter occupant can be issued a radiation exposure record. As approved by the shelter manager, persons can be advised once daily through group announcements of their estimated exposure during the previous 24 hours. This may become complicated, however, if the shelterees have been rotated to keep radiation exposure evenly distributed.
3. Before emergence from the shelter, each person should be informed of the accu-

mulated dose he has received through the shelter stay.

6.22 *Medical Records.* A record of all medical events should be kept by the medical team. The names of people with medical problems should be entered, as well as their symptoms and any medication issued. The level of detail in the medical records will vary with the extent of medical problems in a shelter. Under conditions of widespread illness, it will certainly not be reasonable to record every minor medical discomfort. However, any medication issued should be recorded.

6.23 *The Supply Status Summary.* In order to allocate shelter resources efficiently and equitably, up-to-date information on the overall status of the shelter supplies must be provided. The Supply Status Summary serves this purpose.

6.24 In addition to the Supply Status Summary for OCD stocks, a similar chart should be prepared for locally provided stocks, and for additional supplies brought into the shelter, where these categories are applicable.

Private Property

6.25 Everyone will bring personal items into the shelter, if only the contents of pockets and purses. Some people who have prepared themselves prior to the attack may bring in many items of survival equipment and supplies. The materials that shelterees carry into the shelter with them may constitute an important shelter resource.

6.26 *Materials Likely to be Brought into Shelter.* The following represents a partial list of useful items of personal property that can reasonably be expected to be carried into the shelter, without advanced preparation on the part of shelterees: pocket knives, nail clippers and files, pens, pencils, writing pads (especially if the shelter is located in an office building), cosmetics (for use as improvised writing materials), pen-lights, non-prescription medicines (such as aspirins), hair pins, clips, tie clips, portable radios, lighters and matches, handkerchiefs, scarves, belts, ties, and paperback books.

6.27 It may be necessary to exclude certain possessions from the shelter, either temporar-

ily or for the duration of the shelter stay. Pets may be a fairly common example of this category. Large bulky items, such as suitcases or trunks, may also have to be excluded from the shelter living area at least temporarily.

6.28 *Procedures for Dealing with Private Property.* Personal items brought in by the population should not be confiscated from their owners; they should be requested by shelter management and volunteered by their owners. The basis for the request should be the value of personal possessions to the survival of the group. Many people will understand the value of their possessions to group survival without appeals from management, and will volunteer them as soon as asked. Others may have to be shown that, when used for the common good, an item can contribute more to everyone's survival (*including the owner's*) than if the owner were to keep it solely for his own purposes.

6.29 Even such items as weapons, liquor, and drugs should be requested by management as elements contributing positively to survival

rather than as potentially dangerous possessions that may cause in-shelter problems.

6.30 A list of specific items of potential value should be made up and communicated to the shelterees. The list should be as broad as possible, so that many shelterees will have something to contribute. If only a handful of people who had the foresight to prepare themselves for a shelter stay are asked to contribute, they may be resistant. However, if there is a broad base of contributions, everyone offering what he has, the resistance may be lessened.

6.31 Some shelterees will not want to offer their personal belongings for the benefit of the group. The fact that such items have not been volunteered does not mean that they should not be entered among the shelter resources. It may be possible to allow the owner to retain possession of some items of private property and to use them to carry out group survival activities. An example of this is the possible appointment of the owner of the only radio in the shelter as the communications monitor.

6.32 A record should be kept of the possessions that shelterees have volunteered.

ORGANIZING ACTIVITIES AND PATTERNS OF LIVING

A shelter stay under emergency conditions will be a strange and frightening experience for the confined population. One of the most potent positive factors in the adjustment of shelterees to shelter living is firm leadership, visibly acting in the group's behalf. One of the important ways in which shelter leadership can be brought home to the population is through the establishment and maintenance of a plan for shelter living. Included as major portions of this plan are a set of rules for shelter living, and a schedule of shelter activities and operations. Rules and schedules serve to inform shelterees what they must do to maximize their survival chances. Shelter living patterns, represented by rules and schedules, also serve to make the future less uncertain by introducing predictability into the shelter situation and indicating to shelterees that the standards of the pre-shelter society will be maintained to the fullest possible extent.

The Basis of Social Control in-Shelter

7.1 Every group, from the small family to the entire society, has rules that must be adhered to over the long run by the members of the group if it is to achieve its goals. Social control refers to the ways in which a group maintains order, by establishing rules, communicating them, insuring that they are obeyed, and applying corrective actions in the event of violations.

7.2 Because a community fallout shelter during its period of occupancy represents a temporary, miniature version of our society, one can examine the basis for maintaining order in a shelter by comparison with the basis of social control in the larger society.

7.3 The rules of a society are of many different types, ranging from the habits and conventions of daily routine living to the deeply held moral principles for which people are pre-

pared to sacrifice everything, including their lives.

7.4 The rules of the society are obeyed for a number of different reasons. Because we are taught them from infancy on, many of the important rules have become internalized; that is, they have become part of our way of thinking and behaving. We obey them with little or no questioning, regardless of whether people are watching us or not; regardless of whether, at a given moment, the rules are to our advantage or not.

7.5 Rules are also obeyed because of the direct influence of other persons. Other persons include family, friends, authorities, everyone with whom we interact. We conform because we know that in so doing we strike a responsive chord in other persons with whom we associate or wish to associate, and are rewarded by them in deeds or words, or merely by the knowledge that they think well of us.

7.6 The influence of other persons upon our conformity to rules is felt in an additional important way. We know how others will respond if we violate the rules. From a look of disappointment to a prison term, the reaction of others to a group member's failure to conform is a factor in maintaining order in any group.

7.7 We follow rules for still another important reason. As rational beings, we can frequently recognize that a certain way of doing things will lead us to our intended goal more rapidly, efficiently, or economically. We follow a pattern of behavior because it makes sense to do so.

7.8 In spite of the fact that some of the customs and laws are contradictory, archaic, or not enforced, an overwhelming proportion of the population conforms without incident to the rules of the society. All indications are that our system of laws and our patterns of con-

formity to them will not be shattered by a nuclear attack upon our country. It can be expected that a large majority of the population taking shelter will be pre-disposed to obey the rules of the shelter, for the reasons discussed above.

7.9 However, there are factors associated with a disaster that create a potential for social control problems. These include the immediate danger in which people are placed or imagine they are placed, concern for the safety of loved ones, the belief that nuclear attack represents the end of civilization or of our society, and the unfamiliar and austere nature of shelter living.

7.10 Overcoming the potentially disruptive effects of the above-mentioned factors is a major task of shelter management. In brief, the manager's responsibilities are: to construct a social situation within the shelter which insofar as possible is modeled upon the characteristics of the pre-shelter society; to motivate people to behave appropriately by continually reinforcing "the rightness" of democratic values and beliefs; and to sustain faith in the continuing existence of the society and in its capability to recover and rebuild.

Establishing Shelter Rules

7.11 *Types of Shelter Rules.* Shelter rules can be divided into *prescribed rules and elective procedures*. Prescribed rules are established by management and should be altered only by management. They regulate behavior that involves the safety and well being of the shelter population. Elective procedures are rules that are determined by the shelterees. A number of questions of shelter living can be left to shelterees for solution, according to their wishes, as indicated by some form of democratic procedure.

7.12 Almost every aspect of shelter living should be governed by rules. This includes:

1. Entering and leaving the shelter.
2. All daily operations, such as feeding, sleeping, medical care.
3. The use of all shelter equipment.
4. Many types of personal behavior that are potentially disruptive: use of alcohol and drugs, sexual behavior, fighting, gam-

bling, inappropriate use of supplies, and smoking.

7.13 *Procedures for Developing Rules.* *Develop rules early.* Wherever possible, specific rules should be made in advance of a shelter problem, rather than in response to it. The early development of a set of rules will tend to strengthen the image of management authority and capability.

Determine whether elective or prescribed rules. As a step in the development of a system of shelter rules, the manager must decide which rules can be left to the determination of shelterees, and which must be established by management.

Consider purpose of rules. The manager must evaluate what each rule is supposed to accomplish. He must determine whether it applies to all or to some shelterees, or whether it is to be in effect at all times or selected times, in all locations or in specified locations.

Coordinate the development of rules. Because of complexity of the shelter system, rules pertaining to one facet of shelter life will have effects upon other aspects of the shelter. A procedure that is required to solve one in-shelter problem may create another problem. The manager and his advisors should evaluate the consequences of a specific rule in relation to other specific shelter rules and to the system of rules as a whole.

Make only necessary rules. The manager should consider whether a formal rule is necessary for a particular shelter problem or whether the informal pressures applied by group leaders and shelterees are sufficient to control the problem.

7.14 *Informing Shelterees about Rules.* Early in the shelter stay, the manager or members of his staff should conduct a general shelter orientation session, at which time the important shelter regulations and the reasons for them should be described.

7.15 The various team leaders should be briefed in detail about the rules pertinent to their specific areas of responsibility, and they, in turn, should discuss the rules in all necessary detail with the members of their respective teams.

Maintaining Order In-Shelter

7.16 Developing a set of rules is one management problem; ensuring that the rules are implemented is quite another. The following section discusses some of the issues relating to social control—the maintenance of order—in a shelter.

7.17 *Preventing Social Control Problems.* One of the best ways of maintaining order is to identify and respond to potential social control problems before rules are actually broken. Although preventive measures will not likely solve all problems of social control, they should lessen the chance of occurrence of major rule infractions.

7.18 There are many areas of management behavior that can be directed toward this end. In general, management should communicate to the shelter population the desirability of maintaining, where appropriate, the patterns of behavior that were prevalent in pre-shelter society. In addition, the management staff should communicate to the shelterees the content of, and rationale for shelter rules, and, by their personal behavior, be a model for shelterees to emulate. Items, such as weapons and valuables, which may become the cause of conflict, should be kept under the control of management. Perhaps most important of all, shelterees should be informed of the ways in which they can communicate any grievances or complaints they might have to management before their dissatisfaction reaches a level where it results in social control problems.

7.19 *Evaluating the Significance of Rule Violations.* Criteria for defining social control problems. Social control problems can be thought of as behavior on the part of one or more persons that jeopardizes the survival and adjustment chances of a, or many of the shelterees.

7.20 Some violations of the rules are more critical in-shelter than they would normally be. Such problems as disobedience of the rules, hoarding supplies, and general uncooperativeness, may assume greater importance in-shelter than would usually be attributed to them. Other forms of behavior usually frowned upon will have to be tolerated within limits in-shelter. Scanty dress is one example; lack of privacy, another.

7.21 *Serious In-Shelter Offenses.* A serious management problem can result from the cumulative impact of minor violations of rules. Under certain conditions, a social control problem will pose a threat to the shelter in spite of the fact that the specific violation may be closer to being a petty annoyance than a criminal act. What makes this a serious situation is the number of people who are violating the rule, and the time and conditions under which they have chosen to do so. For example, if one person on one occasion drinks more water than his ration calls for, it might be considered a minor problem, whereas if a number of shelterees refuse to abide by the rules for water rationing over a period of time, shelter survival may be jeopardized.

7.22 The second type of major in-shelter offense is that of the unpredictable, individual, violent act. Certain violations pose grave problems for management, regardless of how infrequently they might occur. A single criminal act, such as murder, rape, or other felony, can instantaneously upset the stability of the shelter.

7.23 *Evaluating Deviant Behavior and its Effects.* If a social control problem arises in-shelter that is more than a personal quarrel between several shelterees, a rapid assessment of the situation must be made. The evaluation should include the following points:

1. What is the nature of the disorder (exactly what is happening)?
2. What are the immediate effects upon shelter survival?
3. What are the apparent causes of the situation?
4. What are the appropriate corrective procedures?
5. How many shelterees are actively involved?
6. Does the situation appear to have an organized basis?
7. If so, who are the leaders and whom do they appear to represent?
8. What is the "mood" of the shelterees who are not actively involved at the moment?

7.24 *Applying Corrective Actions.* The appropriate corrective action depends on the seri-

quency of the offense, in terms of group survival. Corrective actions may range from a few words quietly spoken to a minor offender by his friends or relations, to arrest and physical restraint for the most serious offenses.

7.25 There are certain corrective actions that are to be avoided because of their effect on other shelterees. In this category are expulsion, physical punishment, denial of survival necessities such as food and water, or humiliating penalties such as shaving the head or wearing special clothing or symbols. Above all, in applying corrective actions, the manager must, himself, realize and make it clear to others that he is concerned only with group survival, not with the administration of justice to an individual who has broken a shelter rule.

7.26 The administration of corrective actions is the duty of the shelter manager. He may seek the advice of members of his staff, but the responsibility is his. Such procedures as mock trials with shelteree juries determining guilt or innocence are not recommended. This does not mean that the manager should not be advised by members of the shelter staff in the matter of corrective actions. Especially valuable would be the advice of professional persons in the law enforcement and legal fields. The manager may also want to sample shelteree opinion, through the advisory committee, before applying corrective actions.

7.27 *Administrative Considerations in Social Control.* Major violations should be entered into the shelter log. Information about the violation and the offender should be listed, including the corrective action that was administered by the shelter manager. After the shelter stay, this information should be turned over to the appropriate authorities, who will determine whether further action is necessary.

7.28 If communication is possible between the shelter and the control center, the shelter manager should inform the control center of instances of major deviance, and of the corrective actions that have been taken. Before the end of the shelter stay, the manager should coordinate with the control center about the disposition of individuals who have committed serious offenses while in-shelter.

The Shelter Schedule

7.29 Given the multiplicity of tasks to perform in a shelter, a formal schedule of activities is a requirement for effective management. A schedule also serves a basic purpose for shelterees. It introduces a rhythm, an order, into shelter life; it tells the individual what he can expect and when.

7.30 If a schedule is not available at the time of shelter occupancy, it should be developed as soon as possible by the manager and his staff. High-priority activities (e.g., radiological protection, medical care, food and water distribution) should be scheduled very early in the shelter stay. Activities such as planned recreation might benefit by a delay of several days before being introduced into the shelter schedule.

7.31 The schedule should not be regarded as a rigid, inflexible guide to daily activities for the length of the shelter stay. Many factors, such as shelter emergencies, heat and/or lack of ventilation, and initial unfamiliarity with duties, may bring about changes in the schedule. In addition, there may be reasons for purposely modifying the schedule to provide shelterees with some welcome variation in the daily routine.

7.32 Sample schedules for the routine phase of shelter occupancy are presented in Appendix A.

7.33 *Factors Influencing the Shelter Schedule.* The following points should be taken into consideration in developing a shelter schedule.

1. *Short attention span.* Under the physical and psychological conditions prevailing in the shelter, it will be more difficult than usual for shelterees to focus their attention upon a person or persons for an extended period of time. Consequently, activities should not be scheduled for periods longer than an hour without short breaks to allow shelterees to stretch and relax. If shelterees appear to be having difficulty in maintaining attention, it may be necessary to schedule even shorter periods of a particular group activity.

2. *Spread activities throughout the day.* Such activities as training and recreation should not be concentrated in one part of

the shelter day, but rather should be blended into the schedule so that morning, afternoon, and evening each contain training and recreation sessions.

3. *Schedule training activities when shelterees are most alert.* Because of their importance, training sessions should be held when shelterees have the greatest attention span. In shelters with survival food stocks, mealtime and clean-up can be regarded as a relaxing activity. It may, therefore, be desirable to schedule training sessions for adults shortly after meals or breaks, when shelterees should be rested, and hunger and thirst are not competing for the individual's attention.

4. *Naps and daytime rest periods.* On the sample shelter schedule, two half-hour nap periods are suggested during "quiet activities" time. There is ample evidence to suggest that adults, as well as children, will require naps. Additional opportunities for naps and rest periods are built into the schedule in the times allotted for certain sedentary activities. Feeding is a good example. Although an hour is scheduled for feeding the entire shelter population, each shelteree will spend considerably less time than that in receiving and consuming his portion of food and water. He can spend the remainder of the hour in rest or quiet activities.

5. *Water and biscuit breaks.* Several water and biscuit breaks are recommended in the schedule. The food consumed in breaks will be subtracted from the daily individual ration, and does not constitute a caloric bonus. The advantages of food and water breaks are threefold.

a. The palatability of the survival ration may be enhanced if individuals eat only a few biscuits at a time.

b. Feelings of hunger and thirst may be assuaged by having a number of small meals at shorter intervals as opposed to eating and drinking larger portions only three times a day.

c. The "coffee break" as a cultural phenomenon in our society can be carried over to the shelter as a relaxing, cohesion-producing portion of the morning and afternoon.

7.34 *Factors to Consider in a Two-Shift Schedule.* Some shelters may have to incorporate a two-shift schedule due to lack of space for sleeping. It is important to realize that the two-shift schedule is more than just a one-shift schedule carried out at two different times. Two factors to consider in developing the two-shift schedule are: (1) optimum use of common time (that is, when both shifts are awake), and (2) noise and other distractions—assign the awake shift to relatively quiet duties while the other shift is sleeping.

ATMOSPHERE AND TEMPERATURE CONTROL

The Importance of Atmosphere and Temperature Control

Of all the basic human needs described in this document, the one with the most immediate and widespread impact upon survival is atmosphere and temperature control. The phrase "atmosphere and temperature control" covers several problem areas, each vital for sustaining life.

Generally speaking, these problems are dealt with through methods of *air exchange*; that is, the introduction of ample quantities of fresh air into the shelter and the simultaneous removal of stale air.

Most community shelters currently lack the equipment to achieve air exchange mechanically. The majority of shelters will have to depend upon the natural circulation of air through the shelter to solve their atmosphere and temperature control problem.

Management Goals

8.1 The major management goals fall into three categories. One is concerned with maintaining the temperature of the shelter within survival bounds. The second deals with the control of the critical atmospheric components, namely, carbon dioxide and oxygen. The third goal is the control of noxious substances, which can be fatal (as in the case of carbon monoxide), or which can negatively affect shelter efficiency and morale (as in the case of odors).

The Concept of Air Exchange

8.2 Air exchange is the introduction of fresh air into the shelter and the simultaneous removal of stale air from the shelter through natural or mechanical means.

8.3 Natural ventilation is the circulation of air through wall cracks, open doors and win-

dows, around closed doors and other openings present in shelters which are above ground, or in unsealed basements.

8.4 Forced or mechanical ventilation is the more effective method for providing air exchange. This method employs mechanical equipment such as fans and blowers to exchange air.

8.5 *Determining Shelter Air Exchange Requirements.* It is difficult to determine the amount of air exchange which will be necessary in a given shelter. The volume of exchange required will depend upon size of the shelter, number of shelterees, and outside environmental conditions, such as the temperature and humidity. In a shelter using mechanical ventilation, three cubic feet of fresh air per person per minute has been widely suggested as a minimum rate of air exchange for maintaining a safe atmospheric composition. However, this rate of exchange will be inadequate for limiting the increase in temperature and humidity during warm weather unless supplementary cooling is provided.

8.6 *The Concept of Effective Temperature.* "Effective temperature" is a useful concept for classifying the effects of temperature on the comfort of the shelter population. "Effective temperature" is a composite measure of temperature, humidity, and air movement. As an example, if the temperature is 75 degrees Fahrenheit, the humidity is average, and there is sufficient air movement, the result would be a quite comfortable environment; however, with no perceptible air movement and high humidity, the same temperature would create an uncomfortable situation. The concept of "effective temperature," then, indicates that the three variables of temperature, humidity, and air movement should all be taken into consideration when evaluating the suitability of a given shelter environment.

Controlling Temperature in Naturally Ventilated Shelters

8.7 Causes of Temperature Extremes. The causes of temperature extremes in shelters generally fall into one of two categories: (1) those due to external conditions (e.g., the temperature of the air being drawn into the shelter), and (2) those due to events within the shelter. By far the most important factor in the latter category is the body heat generated by shelter occupants. In a crowded fallout shelter, most of the body heat will be dissipated by releasing heat and moisture to the shelter air. Heat may also be generated by hot plates or heating units used to prepare food or by shelter machinery.

8.8 Effects of Temperature Extremes. The range of temperature from 68-72°F. effective temperature normally provides optimum comfort. Many shelters will experience temperature conditions that are more severe than the optimum range. However, effective temperature between the range of 78-85°F. can be tolerated by most people for long periods of time. With effective temperatures higher than 85°F., heat-stress reactions become progressively more intense, with debilitation and even death as possible outcomes. At high effective temperatures, work efficiency will decrease. Those performing physical activities may suffer increased accidents from inattention and poor judgment, and the quality of sustained intellectual tasks will decrease due to the inattention produced. Irritability and expression of aggression may be common. Generally, the lower range of tolerability extends downward to 50 degrees with adequate food and clothing.

8.9 Detection of Temperature Extremes. To determine high effective temperature when instruments are not available, the body temperature of approximately ten per cent of the population can be checked at half-hour intervals when high effective temperature is suspected. In a very large shelter a check of two per cent of the population may be adequate in any one shelter area. If the average rise in body temperature of the sample approaches two degrees Fahrenheit above normal, remedial action should be taken. For accuracy, temperatures should never be taken after physical exertion.

8.10 Limited Control of High Effective Temperature. The control of high effective temperature in naturally ventilated shelters is limited to two procedures—the reduction of heat-producing activities and the utilization of initial coolness within the shelter.

1. *Avoiding heat-producing activities.* The most important heat-producing elements in the shelters are the shelterees themselves. Management should encourage the cessation of all but vital activities, encouraging rest periods and other sedentary activities. Other areas for management concern are the control of heat-producing appliances and the prevention of evaporation (a heat-producing process) from such sources as open water cans, garbage, etc.

2. *Utilize initial coolness.* Initially, the earth surrounding an underground shelter may give some cooling effect for the first day or two, after which the temperature in the shelter will increase rapidly. If entry occurs during hot weather and the shelter feels comparatively cool, the shelter should not be heated.

8.11 Control of Low Effective Temperature

1. *Physical activity.* Unrestricted activity, exercise, and close body contact will help to raise both the body and the shelter temperatures.

2. *Hot beverages and food.* Heated food and beverages will make people feel warm, and will thereby aid morale considerably.

3. *Improvised covers.* Covers may be improvised from newspapers (which can be wrapped around the body), cardboard, or any other available materials.

Maintaining Atmospheric Balance in Naturally Ventilated Shelters

8.12 A life-sustaining atmosphere must retain a relative balance of atmosphere components. An excessive increase in carbon dioxide and an excessive reduction of oxygen must be prevented, and all toxic or noxious components, such as carbon monoxide, must be kept to a minimum.

8.13 Oxygen Carbon Dioxide Balance. When discussing oxygen/carbon dioxide requirements, two factors must be taken into consid-

eration: (1) the absolute amount of each in the atmosphere, and (2) the relative amount of one to the other. Air normally contains approximately 21 per cent oxygen by volume and 0.02 to 0.04 per cent carbon dioxide. When oxygen drops below 14 per cent by volume, and/or carbon dioxide rises to two to four per cent, adverse physiological symptoms will begin to occur. However, even in cases where the percentage of oxygen remains high, an excess of carbon dioxide will have adverse effects. While extremes greater than this may be tolerable for a very brief time, all studies indicate that a low-oxygen to high-carbon-dioxide ratio over more than a few hours can be fatal or highly damaging.

8.14 Causes of Oxygen/Carbon Dioxide Problems. The major problem is carbon dioxide. Unless there is adequate fresh-air supply, carbon dioxide will tend to build up rapidly, and symptoms of excess carbon dioxide may be in evidence even before the oxygen levels have dropped significantly. Carbon dioxide is a product of combustion (burning) and results from: (1) human metabolism of food, (2) open flames, (3) smoke or exhaust from auxiliary power sources within the shelter, or (4) even cigarette smoking. Since most shelters will not have auxiliary power sources, the major cause of carbon dioxide will be the result of human activity.

8.15 Symptoms and Effects of Oxygen/Carbon Dioxide Imbalance. As the level of carbon dioxide content rises, breathing becomes deeper and quicker. As the level reaches the maximum allowable content, nausea may occur, followed by inability to coordinate and unconsciousness. Carbon dioxide in excess of ten per cent will produce unconsciousness. The symptoms of oxygen deficiency are similar to alcoholic intoxication, and include impairment of vision and reaction time, anger, and extremes of exhilaration, boisterousness, and even hallucinations. Fingernails and lips will turn blue. Below five per cent concentration of oxygen, death will occur within a few minutes.

8.16 Detection of Atmosphere Imbalances. Shelterees may be affected by atmosphere imbalances without becoming aware of the cause. It may be difficult to distinguish the effects of atmospheric imbalances from other conditions

with similar symptoms. However, atmosphere imbalances should affect a number of shelterees almost simultaneously as contrasted to individual anxiety reactions. If one shelteree faints, it may be a result of emotional stress; however, if several persons faint, the manager should suspect atmospheric imbalance as the possible cause. If people located near fresh-air intakes seem to be in much better condition than those who are distant from the intakes, an atmospheric problem should be suspected.

8.17 Other Noxious Atmospheric Components

1. *Carbon monoxide.* Carbon monoxide is colorless, odorless, and tasteless, and therefore extremely difficult to detect. Carbon monoxide may have serious cumulative effects in very minute quantities. It may be a problem whenever ventilation or exhaust is inadequate.

Carbon monoxide is given off by engine exhaust fumes, tobacco smoke, or open flames. For this reason, any engines in-shelter should be located in a separate room with special exhaust ports. Smoking may have to be curtailed if a forced-ventilation system is not available, and open flames should be allowed only if proper exhaust is available.

Symptoms of carbon monoxide toxicity are flushed skin, dizziness, lack of strength, poor balance, fainting, and mental confusion. Unconsciousness and death can result quickly.

2. *Other gases.* Certain common substances may be dangerous in a closed, poorly vented shelter. A partial list of things to be avoided includes cleaning agents, solvents, degreasers, carbon dioxide refrigerants, ammonia, pressurized dispensers or aerosols, broken mercury thermometers, and some types of fire extinguishers.

3. *Odors.* While people will be able to adapt to most offensive odors after a few hours, odors resulting from sanitation problems, illness, or death can be objectionable—even fear producing—and may contribute to a loss of appetite, nausea, and irritability. Although these odors might not force anyone out of the shelter, they may make adjustment to shelter living more difficult.

8.18 Control of Atmosphere Components. There are three basic approaches that can be taken by management to "normalize" the shelter atmosphere.

1. Control those devices and/or activities that produce atmosphere imbalance or noxious odors. This would include proper venting of power equipment, control of smoking, control of shelteree activity (for oxygen and carbon dioxide balance), and isolation of garbage and body wastes.

2. Open shelter windows and entrances to provide for additional air circulation.

3. Move shelterees to other areas within the shelter or, as a last resort, to other shelters.

Augmented Atmosphere and Temperature Control Facility

8.19 Elements and Problems of Mechanical Ventilation System

1. *Equipment.* The problems which arise in the use of mechanical ventilation will generally be associated with operation, maintenance, and limitations of the equipment. Depending upon the capacity and efficiency of the equipment, it may also be necessary to augment a mechanical system with procedures recommended for natural ventilation, in order to increase the comfort of the shelter.

2. *Power supply.* All forced-ventilation systems will require some type of power, either electrical (from a public utility or auxiliary power sources) or manual (such as the pedal-operated packaged ventilation kit).

3. *Technical personnel.* Although a mechanical ventilation system can generally be operated by untrained persons, a competent technical supervisor and crew should handle repair and maintenance aspects of the ventilation system. Where ventilation kits are sup-

plied, instructions with the kits will have to be followed carefully and exactly.

4. *Technical information.* Technical manuals on deployment, operation, maintenance, and repair for each piece of shelter equipment should be attached to that equipment or located in a convenient place.

5. *Temperature variation.* The air at the intake opening of a mechanical ventilation system may be relatively cool and drafty compared to the hot, humid air at the exhaust outlet. Consequently, shelterees may tend to crowd toward the intake opening to compensate for the temperature variations. Because this condition may create friction over shelter location assignment, the shelter manager may wish to arrange some form of rotation.

8.20 Filtration. Filters are not a part of the Federal marking and stocking program. However, some shelters with augmented capabilities have filters. There are important implications for shelter management stemming from the use of filters. These include:

1. *Insufficient air.* When a filter is used in a forced-ventilation system, energy is required to overcome the resistance which incoming air meets when being pulled through the filter. As it becomes clogged by dust or particles, resistance to air flow increases and the rate of air flow may be substantially reduced. Although filters vary in dust-holding capacity, if the filters are clean at the beginning of occupancy, the increased resistance due to two weeks of operation should not be excessive.

2. *Susceptibility to damage.* Almost all filters are susceptible to blast damage. Humidity is a problem particularly for chemical or charcoal filters, which can be destroyed by high humidity. Without air-conditioning capabilities, these filters may have limited life.

WATER

The Importance of Water

9.1 Of all the provisions stocked in a public shelter, water is the most directly and immediately related to survival in an extended shelter stay. The shelter supplies provided by the Federal government for qualified shelters are indicated in Appendix B. The amount of water contained in the OCD water drums will provide less water per person than we normally consume. However, it has been demonstrated that people can survive on one quart of water per day under the following conditions.

1. When temperature and humidity fall close to the optimum (68-72°F. effective temperature).
2. When vigorous physical activity is restricted.
3. When salty or other thirst-provoking foods are eliminated from the diet.
4. When illness and injuries that increase an individual's need for water (diarrhea, burns) are absent from the shelter. It should be recognized that increased temperature sharply increases water requirements.

9.2 Water deprivation will have both physical and emotional consequences. After a certain period of time the physical damage to the body becomes irreversible; increased water intake does not lead to recovery after this point. A four or five day period of total water deprivation will result in the death of a large part of the shelter population. Water deprivation results in impaired mental functioning, ultimately leading to states of hallucination and confusion.

9.3 The importance of water to survival is a fact that may enter into a number of crucial shelter management problems. For example: (1) trips outside the shelter to replenish water stocks may be required before external radiation levels are completely safe, and (2) shelter reaction to lack of water or what are

perceived as unfair practices in the distribution and use of water, may threaten the maintenance of order.

Management Goals

9.4 The major responsibilities of shelter management in regard to water are: (1) to control the use of, and distribution of, water supplies, (2) to obtain and render potable, alternate sources of water, and (3) to control those aspects of shelter life that bear on water consumption, such as the shelter diet, the activity level, and use of heat-producing equipment.

Shelter Water Resources

9.5 *OCD Stocks.* Current OCD supplies provide 17.5 gallon steel drums including polyethylene liners for water storage. When filled, each drum will supply water for five shelter spaces at the rate of one quart per person per day for two weeks. These water containers and liners serve a dual purpose; when emptied they are to be used as toilets.

9.6 *Additional Sources of Water.* A major management obligation is to explore the possibilities of obtaining water from sources other than the OCD supplies.

1. *Public water system.* A number of shelters located in areas remote from any nuclear blast may find the public water system in operation after an attack. However, rather than depending on the uninterrupted operation of the public system, it may be desirable to fill bathtubs, sinks, buckets, etc. to provide as much water as possible in the shelter in the event of subsequent unavailability of public water supplies.

2. *Water external to the shelter.* In this category are water-storage tanks, OCD-stocked containers in other areas or shelters, and wells that may have been especially dug with the shelter in mind.

2. *Water internal to structure.* A number of shelters will have a significant quantity of water within their own structure. The major source will be the building water system, in pipes, water closets, etc. Liquid-packed foods and ice from refrigerators are also included in this category.

Making Water Usable

9.7 In most cases, the primary water supply stocked in the OCD drums will be drinkable without any additional treatment required in-shelter. However, water from other sources may have to be decontaminated and/or purified.

9.8 *Decontamination.* The decontamination of food and water is discussed in chapter 2, paragraphs 2.50-2.58.

9.9 *Purification.* Water purification means the removal of harmful contaminants other than radioactive particles from the water supply. The three types of impurities which will be encountered most frequently are bacteria, foreign bodies, and toxics (e.g., anti-rust chemicals).

9.10 The likelihood of encountering toxic elements in the shelter water supply will be small. Bacteria may be combated with water-purification tablets, which are provided in Federally stocked shelters. Several drops of chlorine household bleach or tincture of iodine added to each quart of water also can be quite effective, as will boiling the water for at least one minute.

9.11 Foreign bodies may be removed by filtering the water through filter paper, gauze, fiberglass, or finely woven fabric; or by allowing the water to stand until the sediment settles, and pouring off the "clean" water.

9.12 *Aeration.* Water that has been stored in a closed system or a container for any length of time may be experienced by many people as having a bad taste. While the water may be perfectly drinkable, shelteree acceptance may be affected because of the belief that the water is unsafe. Water that has been stored for an extended period can be made more palatable by aeration; that is, by carefully pouring the water from one container to another several times.

Control and Use of Water

9.13 Because water is essential for life, it is of primary importance to prevent its waste and to ensure that it is rationed fairly. Even when shelter water supplies appear plentiful, the shelter manager should initially operate under the assumption that unforeseen factors such as overcrowding, loss of water, or an extended shelter stay may reduce the availability of water. In addition, it may be desirable to save water for the immediate post-shelter period, if possible. All this makes a plan for the control and use of water and its strict implementation necessary.

9.14 *Tapping OCD Water Drums.* In order to tap water containers with a minimum of loss, the bag must be siphoned with the provided tube. Directions for the use of the siphon are included among the Federal stocks. Starting siphon action by mouth suction is unnecessary, unsanitary, and must be discouraged.

9.15 In order to stop the flow of water, either a medical clamp found with the syringe in some OCD medical kits, or some type of improvised clasp or tie (for example, a paper clip) should be used. When the water in the drum is too low to flow freely, the drum should be elevated so that water can continue to flow. After the water supply has been depleted, any additional water which has spilled into the outer bag should be used before the empty drum is used for other purposes.

9.16 *Tapping Other Water Sources.* The procedures to obtain water from such sources as pipes, water tanks and closets, and storage tanks all basically involve similar steps. Someone with a knowledge of the building water system should be consulted to assist in the location of valves and other system components. At the time of shelter entry, all water intake valves for the building, and for individual tanks should be shut off. Then a valve or faucet at the highest, radiologically safe point should be opened, to provide the required pressure for tapping the source. To conserve water, all water taps except the one required for pressure should be closed.

9.17 *Equal versus Special Rations.* Generally, an equal portion for all, no matter how limited, will be the most acceptable form of ra-

tioning, particularly in larger shelters. If, however, the shelter population is highly motivated and cohesive, different rations may be established for different people, according to their needs. For example, persons engaged in physical activities, diabetics, persons suffering from burns, etc., may require more than the normal ration in order to function, or even survive.

9.18 Scheduling Water Servings. Water should be served at regular intervals during the day. A schedule of five or six water servings per day is recommended, to be distributed with each serving of food. Sample daily water distribution times are indicated in the shelter schedule, Appendix A. In small shelters, a water record may be kept for each shelteree by the water team, allowing for flexibility in water rationing.

9.19 Drinking Containers. Each shelteree should have his own container for the duration of the shelter stay. Some Federally provided stocks contain covered plastic cups in the sanitation kits, while others contain plas-

tic-lined paper cups. Shelterees should be cautioned about care of the cups, as they must be made to last for an extended period of time. If there is sufficient space and equipment, a rack or similar device may be constructed for the storage of drinking cups. Regardless of how cups are stored, each person should put his initials or name on his cup for identification purposes.

9.20 Other Uses of Water. Although water may be desirable for other shelter functions, such as personal hygiene, sanitation, fire suppression, and decontamination, these are secondary uses and other alternatives to water will frequently be available. If, however, drinking water is more than adequate for all eventualities, management may allocate water for the above purposes.

Non-contaminated water which is considered nondrinkable because of impurities may be used in fire fighting, decontamination from fallout, sanitation, personal hygiene, and heating food containers.

SAFETY

The Importance of Safety Activities

During the course of a shelter stay, the structural integrity of the shelter and the safety of its occupants can be threatened by many environmental conditions. Some of the potential hazards are associated with the weapon effects discussed in previous chapters. Some threats may be independent of weapon effects (e.g., a fire in-shelter caused by carelessness). Shelters that contain safety and repair equipment and personnel trained in their use will have more alternatives in combating environmental threats, and will require a well-developed plan for conducting safety activities. However, even in shelters that have little or no equipment, some form of planning is necessary to allow the manager to select the best course possible in an emergency situation.

In the event of actual or threatened structural damage to the shelter, the manager will have to make several vital decisions.

1. Can protective or corrective actions be taken in time to maintain the integrity of the shelter against fallout?
2. If this cannot be done, should the shelterees be relocated, or should the actions be continued with the realization that some of the shelterees may receive high doses of radiation?
3. What information should shelterees be given and what instructions issued so that they can help, or at least not hinder, the necessary operations?

Management Goals

10.1 The objectives of a safety program are: (1) to develop and maintain a capability to combat specific environmental threats, such as fire; (2) to organize the various teams and special groups that may be necessary as part

of the safety program; and (3) to prepare shelterees, through information and training, to respond appropriately to shelter emergencies.

Fire Prevention and Control

10.2 The goal of fire safety is to prevent fires from starting in the shelter and to extinguish all fires in-shelter and within the structure housing the shelter.

10.3 *Causes and Effects of In-Shelter Fires.* Fire prevention will have to deal with several types of fires: (1) those caused either directly or indirectly by nuclear weapons, or (2) in-shelter fires unrelated to weapon effects, caused by smoking, heat-producing devices, flammable elements, or spontaneous combustion.

10.4 Fire can affect a shelter, its equipment, and inhabitants through: (1) flame damage; (2) the effects of smoke, toxic fumes, or oxygen depletion; or (3) the toxic actions of certain kinds of chemical fire extinguishers. In addition to these physical effects, management may face a serious problem of uncontrolled response to fire by shelterees, which can cause needless damage, injuries, or death.

10.5 *Fire Prevention and Detection Procedures and Guidelines.* As soon after shelter entry as feasible, management should emphasize the importance of fire prevention and instruct shelterees in the fire regulations that will apply.

10.6 The second step should be an inspection of the shelter to locate and dispose of fire hazards, such as old papers and oily rags.

10.7 A general fire watch should be established to observe all possible sources of fire. Instruments such as smoke detectors and heat sensors will seldom be found in a shelter. Therefore, a fire watch is the most practical approach for fire detection. A fire watch con-

ists of a number of shelterees who are assigned regular fire-monitoring shifts to inspect given areas of the shelter. The number of people on fire watch depends upon the size and configuration of the shelter, but at least one person should be on this watch at all times.

10.8 Certain items should be given special attention in a fire-monitoring program. Among these are exposed shelter wiring, shelter machinery, oxygen containers, volatile substances (such as fuel, solvents, and cleaning agents), and any flammable debris.

10.9 After a fire watch is organized, the emergency exits should be noted and shelterees drilled in evacuation procedures.

10.10 Restrictions may have to be imposed on smoking and the use of highly flammable materials. It may be desirable to establish a special smoking area away from flammable material, preferably near a ventilation exhaust, and containing sand pails or other suitable containers for matches and cigarette butts.

10.11 *Fire Suppression Equipment.* Fire-fighting equipment is not being stocked at present by the Office of Civil Defense. However, dry-chemical fire extinguishers and pails of sand or water placed in stirrup-type water pumps are recommended by OCD.

10.12 Many buildings will have portable extinguishers, which can be collected and brought into the shelter at the time of shelter taking. The extinguishers should be placed in strategic and accessible areas, near equipment, smoking areas, and other sources of potential hazards.

10.13 *Fire Suppression Procedures and Guidelines.* There are three basic methods for putting out fires. They are: (1) removing the fuel, (2) taking away the air, and (3) cooling the burning material below the point of combustion. Table VI will indicate some common types of material which may be available for putting out specific types of fires.

10.14 Whatever method is employed must not endanger shelterees by the release of smoke and/or toxic gases as a result of the extinguishing procedure. Certain types of extinguishers may be dangerous, and should not be used in small rooms or other confined spaces with limited ventilation. This includes carbon dioxide, carbon tetrachloride, and bromotrifluoromethane extinguishers. If no other extinguishers are available, however, a calculated risk will have to be taken with their use.

TABLE VI.—Common Fire-Fighting Materials

TYPE OF FIRE	POSSIBLE EXTINGUISHING MATERIALS	COMMENTS
Wood, paper, cloth or rubbish.	Water, sand, earth, brooms, blankets, etc. may be used to suffocate the fire.	Water is likely to be essential for drinking purposes, and will probably not be available for fire fighting. Non-potable water can be used for fires. Sand will be difficult to use on irregular surfaces. brooms, thick coats, blankets, rugs, particularly if dampened, can be used to smother small fires.
Oil, gas, or grease.	Dry chemicals, CO ₂ , sand or water in a fog or fine spray.	It may be difficult to breathe if dry chemicals or CO ₂ are used in a small room. A heavy stream of water may spread the fire.
Electrical	Dry chemicals, CO ₂ . Sand—if not in danger of damaging machinery. As a last resort—water, after having made sure to turn off electrical current.	Until the power is turned off, there is the danger of electrocution if water is used. Also, water may damage the machinery.

FOOD

The Importance of Food

Healthy individuals should be physically able to survive a shelter stay without any food. In spite of this, the availability of a food supply should be a major consideration in the management of any shelter.

If shelterees are expected to participate in post-shelter recovery operations, they will require food during the confinement period. Even more to the point, the absence of food or its mishandling can create serious management problems in a community shelter. Food has tremendous emotional significance in our culture, and the failure of management to provide what is perceived as a basic need, can easily jeopardize leadership effectiveness.

Finally, many shelters can expect occupants who because of age or infirmity are less able to withstand the rigors of confinement without food, or are unable to accept the survival rations. In such groups, the shelter manager may be confronted with problems of actual physical survival.

Management Goals

11.1 The management objectives pertaining to food are: (1) control and distribution of food resources, (2) maintaining edibility of food stocks, and (3) solution of special feeding problems such as those posed by infants, the elderly, and the infirm.

Shelter Food Resources

11.2 *OCD Survival Rations.* The Federal Government is supplying survival rations to all marked shelters. The current stocked survival ration provides 10,000 calories per shelter space. This amounts to approximately 700 calories per day for as long as two weeks, at the marked capacity of the shelter. The currently stocked survival rations are described in Table VII.

11.3 *Other Sources of Food.* A number of buildings in which shelters are located contain vending machines, concessions, kitchens, and similar sources of food. These supplementary stocks can be brought into the shelter at the time of entry, or when temporary emergence from shelter becomes possible. Some shelters with an augmented food capability will be able to approximate a standard diet for their occupants during all or part of the shelter stay.

Control and Use of OCD Survival Rations

11.4 *Rationing.* Under shelter conditions, food supplies will have to be strictly apportioned for the duration of the shelter stay. Shelter management should explain the reasons for rationing and maintain close control over food distribution procedures to insure that rationing is carried out according to plan.

11.5 Before the ration can be determined a census of the shelter population and an inventory of the food supplies must be taken, and an estimate of the duration of the shelter stay made.

11.6 Even if an apparent surplus of food exists, some food reserves should be allowed for unexpected problems or for the initial post-shelter phase. Among the anticipated conditions that may force revision of the rationing procedures are: (1) over crowding, (2) food spoilage or loss, or (3) a period of confinement beyond the estimated length of stay.

11.7 In general, an equal ration for all shelterees will be the most acceptable form of rationing. If, however, the shelter population is highly motivated and cohesive, different rations may be established for different people, according to their needs. For example, persons engaged in physical activities, ill people, pregnant and lactating women, and adolescent males may be given slightly larger rations.

TABLE VII.—Food Container Data

Item	Can Size (Gal.)	Cases Per Case (No.)	Case Approx. Outside Dimensions (Inches)	Net Weight Per Case (Lb.)		Pieces Per Lb. (No.)	Approx. Size Piece (In.)
				Max.	Min.		
Biscuit or Cracker	5	2	19½ x 9½ x 14½	36	24	89 Min	2 x 2
Biscuit or Cracker	2½	6	26½ x 11½ x 13½	42	40	62 Min	2½ x 2½
Bulgur Wafer	5	2	19½ x 9½ x 14½	64	64	24 Avg	1½ x 1½
Carbohydrate Supplement	5	2	19½ x 9½ x 14½	74	64	80 to 120	

Crackers and biscuits are in unit stacks of individual pieces, double pieces or quadruple pieces. Wafers are in 2-unit stacks of individual pieces. Carbohydrate supplement is bulk packed. An individual cracker, biscuit, wafer, or carbohydrate supplement piece constitutes a single piece.

The quantity of food to be issued for each meal must be determined by the Shelter Manager on the basis of the anticipated period of occupancy and the actual number of shelter occupants.

If such a procedure is adopted, the reasons behind it should be made clear to the shelter population.

11.8 Because some shelterees may never eat as much as allotted, and others may not eat their total ration at every meal, some flexibility may be introduced into the rationing system if shelter size and manageability make it possible. In small shelters, a food account or record may be kept for shelterees allowing them to take different amounts of food at different times, drawing against their daily food ration. This has a sanitation advantage over permitting the individual shelteree to keep his uneaten crackers in his pockets, and also provides greater management control over food supplies.

11.9 *Scheduling Meals.* Even if the food supplies are very limited, it is desirable to serve meals on a regular schedule. It is recommended that shelter management try to distribute five or six servings throughout the day in conjunction with the serving of water. This may take the form of (1) three larger servings at hours corresponding to normal mealtimes and two or three smaller amounts between meals, or (2) five to six equal servings throughout the day. See table VIII.

11.10 The reasons for distributing five or six smaller portions of food through the day are: (1) to make the survival rations more palatable by serving smaller quantities at any one time, (2) to reduce the feelings of hunger due to the limited amounts of food, and (3) to break the monotony of the routine by

TABLE VIII. Issue of Single Pieces Per Serving* (Approx. 125 calories)

(Issue one of the six portions below)

1. Crackers or biscuits/5 gal. can	6
2. Crackers or biscuits/2½ gal. can	4
3. Wafers/5-gal. can	1½
4. Crackers or biscuits/5-gal. can and Carbohydrate Supplement	4 2
5. Crackers or biscuits/2½ gal. can and Carbohydrate Supplement	3 2
6. Wafers/5 gal. can and Carbohydrate Supplement	1 2

* Based on issue of 6 servings per day.

Each water storage container holds 70 quarts of drinking water (17.5 gallons). A siphon hose and instructions for use in drawing water from the water drums are contained in each sanitation kit. Drinking cups and lids (6 oz. capacity) are also contained in the sanitation kits.

scheduling food and water "breaks" during the day.

11.11 The first meal can be served as soon as the shelter has been organized into living units and feeding procedures have been determined. Also to be considered before serving the first meal is shelteree reaction to food which will be affected by their reaction to disaster and the time since their last pre-shelter meal.

11.12 *Preparation for Survival Rations.* The OCD survival ration does not require any special preparation. However, careful attention should be paid to any variation in packaging, size, or perforation pattern of the

crackers or wafers to assure that an equitable ration is given to each shelteree. It is also important that the procedures used for distribution of the rations meet the highest possible sanitary standards.

11.13 *Distribution of the Survival Rations.* The three methods for distributing the survival ration are the fixed-point, moving-point, and combined methods. The approaches are described in Chapter 6, paragraph 6.15. Unless special conditions are present in a particular shelter (1) the same distribution method should be selected for both food and water distribution, and (2) only one serving of rations should be distributed to shelterees at a time.

11.14 *Consumption of Survival Rations.* Management can anticipate some problems concerning the acceptance of survival rations. Some shelterees may be reluctant to try survival rations or may find them unpalatable. With increased hunger, however, this initial reluctance will tend to disappear. Other shelterees may find the rations initially palatable, but due to the unrelieved monotony of the diet, they may find it more difficult to accept the rations after a period of time. Any food variety that can be introduced into the diet will increase acceptability and may prove to be a significant morale factor.

Feeding Infants and Aged Shelterees

11.15 The ideal food for infants is breast milk, and lactating women should be encouraged to feed infants other than their own if they have an adequate supply of milk. If breast feeding cannot be accomplished or if such feedings must be supplemented, a formula should be used. One standard formula consists of evaporated milk (one can) and water (19 ounces).

11.16 For infants or the elderly unable to chew or swallow the bulk, a gruel can be made of the wafer by the addition of water, or crackers can be softened by dipping them in water.

Shelters With Augmented Food Capabilities

11.17 Few shelters will have food supplies approximating a standard diet. Those which

do will require detailed plans for the food preparation, food service, and food distribution phases of their feeding activity. It can be assumed that the personnel responsible for food preparation have been designated in advance, and familiarized with their duties.

11.18 The following are some factors to consider in establishing an augmented feeding program in-shelter.

1. *Relationship of food to water.* When augmented food supplies are to be used, an additional water supply is almost always necessary. An augmented diet is likely to include some high protein foods which will raise the water requirements. Also, water will be needed for clean up of eating utensils and cooking facilities, and often for the preparation of food.

2. *Stringent sanitation requirements.* An augmented food capability imposes a requirement for stringent sanitation procedures. As discussed in paragraph 14.20, high sanitary standards constitute a basic shelter defense against the spread of disease. Procedures for clean up and garbage disposal must be more elaborate in a shelter serving standard food items. Precautions must also be taken to avoid spoilage of food, with its threat to health.

3. *Heating or cooking foods.* Several factors must be considered before food and water should be heated: (a) the effect upon temperature and humidity, (b) the power drain, and (c) the potential hazards in preparing and distributing hot foods under shelter conditions.

4. *Eating utensils.* Normally, it can be expected that shelters with augmented food capabilities will have sufficient eating utensils, and the supplies to keep them clean. If not, plates can be improvised from other shelter materials. If, for some reason, there is no way to clean plates and utensils, shelterees should be allowed to keep their own and be responsible for cleaning them as best they can.

5. *Shift feeding.* In large shelters with an augmented food capability, it may be necessary to feed the population in shifts.

SLEEP

The Importance of Sleep

Sleeping is a vital human activity that requires careful consideration in shelter organization and operations. Although sleep deprivation is less of a threat to physical survival than, for example, water deprivation, long-term and widespread disturbances in sleeping can contribute to serious shelter problems. Shelterees reaction to extended periods of sleeplessness may be either apathy and listlessness, or, on the other hand, irritability; or may be a combination of the two. This may be accompanied by physical symptoms, such as headache and nausea. Performance of tasks requiring concentration may also be impaired.

In-shelter sleeping arrangements can affect all other activities. Sleep requires more time and space than other activities, and therefore influences the physical organization of shelter space and the scheduling of other tasks.

The material in this chapter pertains largely to the shelter that does not have a pre-planned system of bunks or cots for sleeping the total shelter population.

Management Goals

12.1 Management goals in this area are threefold. The first goal is to establish sleeping arrangements. This encompasses such factors as the sleep schedule, the location of the sleeping area, and the grouping and positioning of sleepers. The second goal deals with the provision of sleeping facilities; i.e., the bedding and other sleep equipment that management may provide or improvise. The third objective is the solution of sleep problems and the control of potential nighttime disturbances.

Establishing Sleeping Arrangements and Facilities

12.2 Procedures and Guidelines

1. *Simultaneous versus shift sleeping.* If adequate space is available, it is better to plan to sleep the entire shelter population at one time, rather than in shifts. Simultaneous sleeping offers fewer problems in such areas as noise control, shelteree movement within the shelter, and scheduling of activities. Also, from the health point of view, it is desirable that only one person use a particular cot, mattress, blanket, etc.

The major advantage of shift sleeping is that it saves space. However, the utilization of space might be limited by the requirements to lower noise and illumination levels, so as not to disturb those on the sleep shift. If shift sleeping is required, it is recommended that the number of shifts be kept to two, if at all possible. This will permit a large period of time daily when all shelterees are awake for activities in which the entire shelter population should participate. Two-shift sleeping will also allow time for daytime naps and rest periods for children and others requiring them.

2. *Location of the sleeping area.* The principal considerations involved in locating the sleeping area include shelter size and layout, ventilation, noise and light, and location of toilet facilities.

When shift sleeping is to be used, the sleeping area must be separated from the activity area, either by a barrier or by physical distance. This has a twofold purpose: to insure that sleepers are not affected by ongoing activities in the shelter, and that activities are not constrained by the requirement to keep light and noise at a level so that people can sleep.

3. *Grouping of sleepers.* It is recommended that shelterees be separated in the sleeping area on the basis of sex, age, and marital status. Unmarried men and women, and also those who are married but are unaccompanied by their spouses or children, should be grouped by sex and assigned to separate sleep areas. It is also advised that infants and preteenage children sleep in close proximity to their parents.

The most effective plan for grouping is to use physically separate areas for a dormitory for single men and one for single women. Family groups should sleep together in a third location.

If the shelter consists of a single space, single men and women can be assigned sleep positions at opposite ends of the shelter, with family groups in between.

4. *Positioning of sleepers.* If shelterees are arranged in certain standardized sleep positions, the spread of respiratory ailments may be decreased. The most frequently recommended position is for shelterees and their neighbors to sleep in a head-to-toe arrangement. See Figure 7.

12.3 *Equipment and Supplies.* The manager of a shelter without bunks or cots must make a decision as to whether shelterees should sleep on the floor or whether sleeping facilities can be improvised from available materials in the shelter.

1. *On-the-floor sleeping.* The simplest solution is for everyone to sleep on the floor. Although uncomfortable, this can be accomplished without serious health consequences unless the floor is wet and cold. If

anything can be placed between the sleeper and the floor, acceptance of on-the-floor sleeping will increase. Items that might serve this purpose are rugs, carpets, drapes, cardboard, even several layers of paper, gym mats (in a school shelter), coats, and the like.

2. *Other improvised facilities.* Certain shelters may have "build-in" features that can be used for sleeping purposes. In a shelter containing an auditorium, the seats will make quite comfortable sleeping facilities. In a filled parking garage, cars may well provide space for sleeping. Very adequate non-tiered bunks for infants and small children also may be made from cardboard cartons.

12.4 In a number of shelters, it will be possible to improvise a bunking system by modifying existing facilities. This will usually require a fair amount of time, manpower, and, often, some tools. This approach should be attempted only when the anticipated benefits are great; that is, when tiered bunks will greatly increase the amount of shelter space available for other purposes.

12.5 The development of such sleeping facilities is largely a matter of ingenuity. One method which has been demonstrated as feasible is to fasten together six or seven multi-tiered, open-backed metal bookcases or stock shelves.

12.6 As mentioned above, an improvised mattress will tend to increase shelteree comfort. Blankets will not be necessary in the warm environment of many shelters. In those shelters in which blankets are needed, they may be improvised from among such sources as clothing, towels, newspapers, etc. If needed, pillows can be improvised out of similar materials.

12.7 It is desirable to erect partitions in the sleeping area. Partitions serve to separate the sleeping area from the daytime area, which is a requirement for shift sleeping. Secondly, partitions can be used to segregate the sexes during sleeping hours, which will help maintain social control in the shelter.

12.8 Before cartons of supplies are used for partitions, the consequences of the loss of

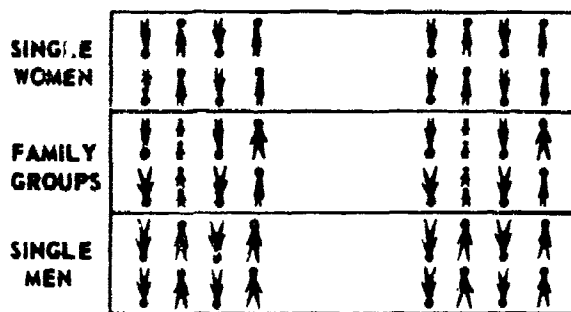


Figure 7.—Sample Sleeping Arrangement

space which the partitions take up should be weighed.

Sleep Problems and Their Control

12.9 *Sleep Requirements.* It is difficult to establish a specified number of hours as a minimum sleep requirement. The amount of sleep required varies greatly with the individual and the situation. A majority of adults get between six and nine hours of sleep daily, but this cannot be taken as a standard for in-shelter sleep requirements. As a rule, children and elderly and infirm people will require more sleep than the general adult population. It is natural, and to be expected, that most shelterees will experience partial or total sleeplessness the first few days in the shelter. After the first few days, many people will tend to sleep or rest more than they did prior to entering the shelter. This may be due to a decreased intake of oxygen, water, or food, and the monotony of the environment.

12.10 *Sources of Sleep Problems.* Generally, sleep problems fall under two headings: (1) problems caused by environmental conditions or austere sleeping facilities, and (2) problems caused by shelteree behavior. Problems created by such factors as temperature or humidity extremes are examples of the first category. Crying children may create a problem of the second category.

12.11 *Maintaining Order During Sleep Hours.* The hours of sleep offer a stern test for shelter management. If order can be maintained

at that time, then, from a management point of view, the shelter is in fairly good condition. Maintaining order during sleep hours is concerned with the following factors.

1. *Control of noise levels.* Noise within the sleeping area must be kept down to a level that will not interfere with shelteree sleep.

2. *Control of light level.* "Lights out" for sleep should prevail for the entire sleeping group. Individual shelterees should be discouraged from such activities as reading via flashlights after this time.

3. *Maintaining social standards.* High social standards should be maintained in the sleeping area. This pertains especially to sexual behavior. The shelter staff should try to identify *potential* problems and keep them from becoming *actual* problems.

4. *Providing assistance to shelterees.* During sleeping hours, shelterees may require assistance. These include people who cannot sleep, people who require medical attention, people using the toilet facilities, etc. One of the purposes of the sleep watch will be to render assistance to shelterees during sleeping hours.

5. Some form of relaxing activity, such as reading stories preparatory to turning lights out, can be an important factor in achieving control during sleep hours.

6. Smoking should not be allowed in the immediate sleeping area, since it will interfere with the rest of a number of shelterees.

SANITATION

The Importance of Sanitation

Every community requires sanitation procedures in order to preserve the health and well being of its members. The problem of sanitation is an especially serious one within the shelter community because of the extended period of confinement under crowded conditions and because of the limited sanitation facilities that will be found in most shelters.

Maintaining the highest possible sanitation standards is a major shelter weapon for preventing or controlling the outbreak of disease. In addition to its impact on health, sanitation is also directly involved with shelter morale. The austere and different shelter procedures pertaining to personal habits can create negative emotional reactions if shelter management is lax in maintaining high sanitation standards.

Management Goals

13.1 The major responsibilities of shelter management in regard to sanitation are: (1) to supervise the establishment of toilet facilities adequate to the needs of the population, (2) to supervise the maintenance of shelter cleanliness, and (3) to determine what personal hygiene procedures may be permissible under shelter conditions.

Toilet Facilities

13.2 *Equipment and Supplies.* OCD-stocked shelters are supplied with kits containing sanitation supplies to meet the needs of the rated capacity of the shelter. Initially, the drum containing the sanitation supplies is to be set up as the toilet, according to the instructions found with the supplies. However, as soon as empty steel water drums become available, they should be used as toilets.

13.3 In a number of shelters, normal flush toilets may be operable and accessible. They

should be used only if the available water supply is more than adequate to meet shelter drinking needs.

13.4 Among the contents of the sanitation kit for toilet use are toilet paper, a commode seat, and a chemical disinfectant. A slurry of water and soap from the medical kit may be made to reduce bacterial infection of the hands and promote general sanitation. If towels are not available, the hands may be air dried.

13.5 *Procedures and Guidelines.* The location of the toilet facilities is a matter that will require management attention. The sanitation area should be set up away from the living areas and the food and water handling areas, and, if possible, near a ventilation exhaust, to control odors and fumes. In locating the toilet area, it should be kept in mind that the sanitation kits will be inconvenient to move when filled.

13.6 How many commodes to set up at one time is dependent upon a number of factors. These include: (1) whether or not separate male and female facilities have been established, (2) whether or not populations with special sanitation needs are present (e.g., young children), and (3) whether or not medical conditions resulting in increased toilet use have occurred.

13.7 In the absence of abnormal conditions, one sanitation kit for every 50 shelterees may be considered a rough guideline.

13.8 Another management consideration is to keep the toilet areas shielded from general view, either by locating toilets in a separate room or by erecting improvised partitions. Acceptance of the toilet facilities will tend to be enhanced if separate toilet areas are set up for men and women.

13.9 In order to increase cleanliness in the toilet area, both males and females should be

asked to perform all toilet functions in the seated position. When using toilet facilities, children should be accompanied by adults to increase cleanliness. This includes young children who are normally thought of as being toilet trained.

13.10 Because toilet traffic may be heavier at certain times of the day, such as early morning or late evening, the manager may have to establish special procedures for controlling the rate and timing of toilet use during periods of heavy use.

13.11 *Special Problems.* Infants and young children in diapers may constitute a serious problem for toilet sanitation. The basic alternatives are to improvise diapers, or to disregard diapers and clean up after each child.

13.12 Should an outbreak of illness causing diarrhea or vomiting occur, the sanitation facilities may be heavily taxed. Under such conditions, either more water drums should be made available for toilet use, or accessible flush toilets should be sought in the shelter structure. The empty food container cans may be used for such emergencies and for routine use.

Shelter Cleanliness

13.13 *Equipment and Supplies.* The supplies currently provided by OCD do not include cleaning materials. If sanitation facilities are adequate, some of the chemical disinfectant may be used in cleaning and in treating non-toilet waste materials.

13.14 Cleaning equipment in the form of dust pans, litter cans, and boxes can be improvised from the cardboard and metal containers in which the OCD supplies are stocked. Many shelters will have access to regular cleaning supplies stored somewhere in the shelter structure, which will greatly simplify the problem of maintaining shelter cleanliness.

13.15 *Procedures and Guidelines.* Because of the fire, health, and morale consequences, trash and garbage should be removed from the shelter, or at least from the living area as soon as feasible. The manager should see to it that regular and frequent clean-up periods are held in-shelter, including one after every meal. The shelter population should be

informed that many items that would normally be disposed of as trash can be put to good use in-shelter. This refers to waxed paper, empty boxes and tins, newspaper, etc. If the manager has determined that an ample water supply exists in the shelter, some water may be used in cleaning the shelter, but extensive use of water for cleaning is recommended only where the water supply is practically unlimited and where high humidity is not a problem.

Personal Hygiene

13.16 *Equipment and Supplies.* Personal hygiene items provided in the OCD stocks consist of sanitary napkins and toilet paper. Articles such as soap, razors, toothbrushes, etc. will very likely not be available in a shelter, although some individuals may bring such articles with them. However, even if such articles were stocked, the restriction on water consumption would severely limit their use.

13.17 *Procedures and Guidelines.* Because cleanliness is a positive morale factor for many people, it may be desirable to introduce some rudiments of personal hygiene by the ingenious use of available or improvisable facilities. So, for example, in shelters with an adequate water supply, sponge bathing should be permitted, especially for young children of diaper age and women. An occasional sponge bath may become a powerful morale booster.

13.18 If such improvisation is not possible, it should be remembered that most people will adjust rapidly to a soapless and toothbrushless environment, as illustrated by the likely reaction to body odors in-shelter. Evidence suggests that shelterees, after a short period of time, will adapt to body odors. Only after leaving the shelter, breathing relatively fresh air, and returning to the shelter will people notice the extent of the odors to which they had adjusted.

Shelters With Augmented Sanitation Capabilities

13.19 Most of the procedures and guidelines pertaining to OCD sanitation stocks also apply to shelters with augmented sanitation capa-

bilities. The status of the water supply remains the major management consideration in evaluating the use of flush toilets, sinks, and showers. In shelters with an increased

food capability, the clean-up and garbage-disposal problems may be more extensive, but they follow the general sanitation procedures adopted for an OCD-stocked shelter.

MEDICAL CARE

Importance of Medical Care

Medical problems that may occur in-shelter will have important implications for management, not only because ill or injured shelterees may be unable to contribute to the survival effort, but also because illness or injury may create morale problems both for the patients as well as others.

The medical problems of a shelter are three-fold: the normal illnesses of incoming individuals, the possible epidemic spread of communicable or other diseases within a confined and overcrowded shelter, and the injuries and illnesses directly or indirectly caused by the effects of nuclear or other weapons.

The supplies, equipment, and medical-care pamphlet in the Federally provided medical kit are intended for the treatment of minor ailments and injuries. They do not provide a capability to deal with major medical problems. However, the management task in regard to medical care is the same in all shelters, regardless of their capability. It is to ensure that the medical personnel and medical material in a particular shelter are organized and directed against the pattern of illness and injury, to maximize the likelihood of attaining the basic shelter goal of group survival.

Management Goals

14.1 Management goals in the area of medical care fall into four categories.

1. The first concern is to establish a medical capability within the shelter. This capability includes medical personnel, the preparation of areas within the shelter for diagnosis and treatment centers, and provision and proper utilization and control of medical supplies and equipment.

2. The second area that management must concern itself with is the setting up

of procedures by which sickness, injury, and other medical problems can be detected.

3. The third goal is provision of treatment for the range of illness and injuries that may occur within the shelter. This may extend anywhere from dispensing medicine at daily sick calls by untrained personnel to more extensive treatment given by a medical doctor in the treatment area.

4. The fourth goal is setting up a program of preventive medicine. This includes the formulation of a group of behavior guides and preventive measures that will ease the burden on the shelter medical facility.

Establishing A Medical Capability

14.2 In some public shelters, such as those located in hospitals, a medical capability will either be built into the shelter or convertible to shelter use according to a pre-arranged plan. In many public shelters, however, the medical capability will consist largely of the medical kits stocked by the Federal Government. The materials presented below are directed towards the latter type of shelter.

14.3 Supplies and Equipment

1. *Stocked.* Medical supplies should be constantly kept under watch and, if possible, stored under lock and key. The medical-treatment area is an ideal area for storage. In order to maximize control over these supplies, a daily inventory should be carried out and a medical log should be kept.

Relatively few shelters will stock emergency supplies of special drugs, such as insulin. If a person has entered a shelter without his vital medication or has depleted his supply and is in danger of death, volunteer donors of medicines should be sought from among other shelterees suffering from the same ailments.

2. *Improvised and supplemental.* The limited medical capability in a Federally stocked shelter can be somewhat enhanced by the use of improvised medical supplies. Some examples of medical improvisations are: (1) the use of sanitary napkins as medical dressings, and (2) the use of items of clothing as bandages.

In a number of buildings in which fallout shelters are located, there are first-aid or sick-room supplies that have been stocked for peacetime use, and that may be incorporated into shelter supplies.

3. *Distribution of medical supplies.* The distribution of supplies should be under the over-all jurisdiction of the medical team leader. At least one member of the medical team should be given the specific assignment of control and distribution of supplies.

In dispensing medication to shelterees, there are three cardinal principles to observe.

a. *Give only the immediate dosage,* to prevent waste or loss of supplies and/or inappropriate usage.

b. *Take medicines "on the spot"* in the presence of a member of the medical team.

c. *Keep a record of patient's medication.* It is important from the treatment standpoint to be able to find out how much of what types of medications have been administered to a patient.

14.4 *Procedures and Guidelines*

1. *Medical team personnel.* Medical care is one of the few shelter activities for which extensive previous training is extremely desirable. The medical team should be selected very carefully, according to the guidelines in para. 5.17.

2. *Medical areas.* All shelters should have at least one area set aside for the use of medical team personnel for the diagnosis and treatment of illness and injury. This is distinct from a sick bay, or hospital-like section of the shelter, where severely ill and injured shelterees may be isolated from the remainder of the group.

The sick bay refers to an area in the shelter that should be set up if the shelter contains persons with communicable diseases or serious ailments or injuries that require isolation from the rest of the population. The

reasons for isolating the seriously ill are: (1) to provide a setting within which the patient can be given the most effective treatment and care, (2) to reduce the possibility of the spread of contagious disease in-shelter, and (3) to control the potentially demoralizing effects that the appearance and behavior of severely ill or injured persons may have on other shelterees.

Procedures for Detection of Medical Problems

14.6 The following alternatives for managing medical diagnosis may be used singly or in combination, depending upon the size and configuration of the shelter, the extent of illness and injury in the population, and the availability of trained medical personnel.

14.7 *Detection of Medical Problems at Point of Entry.* This method is quite limited in its applicability because it requires that a trained medical person be stationed at the entrance to the shelter to direct the obviously sick and injured to a separate part of the shelter for immediate treatment or further diagnosis. This approach requires: (1) trained medical personnel, (2) relatively slow rate of shelteree entry, and (3) relatively low proportion of patients among incoming population.

14.8 *Detection of Medical Problems after Shelter is Filled.* After the shelter has been filled, either (1) people with serious medical problems should report to the treatment area, or (2) members of the medical team should circulate through the shelter "spot diagnosing" severe injury or illness.

14.9 *Detection of Medical Problems from Registration Forms.* Included in the registration form will be space for the enumeration and description of medical problems. The completed forms should be reviewed by a trained medical person.

14.10 *Detection from Medical Examination.* After the shelter has been organized and a schedule of activities put into effect, medical problems will, in the main, be detected by examination at daily sick call or on rounds made by the medical team.

Treatment of Medical Problems

14.11 The following materials do not contain any detailed information about treatment of

specific ailments or injuries, but focus upon the management responsibilities in regard to a program of shelter medical care. *Guidance for in-shelter medical treatment is contained in a pamphlet stocked with the OCD medical supplies.*

14.12 Emergency Treatment. The major load on emergency treatment capabilities may be during the initial entry phase when entering shelterees may require this form of treatment. However, the need for emergency treatment may arise at any time during shelter occupancy; therefore, this capability should always be available. Effective management of emergency treatment requires:

1. A capability for rapid and accurate diagnosis.

2. A capability for expansion of the medical areas, so that sudden increase in medical problems can be accommodated by expanding the size of the treatment area and/or sick bay.

3. Rapid movement of supplies and personnel. The capability to cope with medical emergencies is increased as the ability to move equipment and people with ease is increased.

14.13 Sick Call. Sick call is the medical procedure whereby ambulatory patients are examined and receive treatment at a centralized location. After the shelter schedule has been put into effect, sick call should be held on a daily basis, or more often for large shelters or those with extensive illness or injury. Preferably, sick call should be held in the diagnosis and treatment area.

14.14 If many people are expected at sick call, some procedure should be established for maintaining order among shelterees waiting for treatment. One procedure is to hold sick call on a community group basis. Each section or unit can be assigned to sick call at a specified time, according to a schedule worked out by the medical team.

14.15 Medical Rounds. Medical rounds is a procedure whereby members of the medical team circulate through the shelter and diagnose and treat cases of illness and injury at the point where shelterees are located. Medical rounds can be used as the basic treatment procedure or in conjunction with sick call. Like

sick call, medical rounds should take place on a daily basis. Not all shelterees will have a need for a circulating medical team. Medical rounds will probably be effective in very crowded shelters, in large shelters with extensive minor illness, or in shelters with a substantial number of trained medical people.

14.16 Self-Care. Self-care is a procedure whereby shelterees minister to some of their own medical needs and, in a similar fashion, help other shelterees. In large shelters with extensive medical problems and limited resources, a considerable portion of the medical program will consist of self-care. The effectiveness of self-care can be increased by providing all shelterees with demonstrations of simple first aid and rudimentary practical-nursing procedures that are relevant to the shelter situation.

14.17 The basis of medical self-care consists of keeping the sick and injured clean and comfortable, and of maintaining their spirits. It may also include such simple medical tasks as changing dressings or monitoring the patient's condition; but, as a general rule, it precludes specific medical treatment. Self-care will likely be the basic approach to treatment for those with minor injuries and illnesses, for those with chronic conditions that cannot be relieved in-shelter, and for those shelterees who are beyond medical help.

14.18 Establishing Priorities for Treatment. All sick and injured shelterees should receive some form of medical care. However, in many cases, there may not be enough drugs or other scarce medical supplies to meet the needs of a shelter. In such cases, a management decision must be made as to which patients receive the scarce drugs or supplies and in what priority. The following guidelines are intended not as recommendations, but merely illustrations of possible approaches. This difficult decision must be made by the manager and the medical team head based on the particular medical situation in each shelter.

1. *Priority on the basis of traditional selection criteria.* A general procedure for allocating medical resources consists of utilizing the pre-disaster standards of American society. This means that medication should be given to persons who are in greatest need

—that is, who are suffering the most. Secondly, it means that for patients with the same level of seriousness of injury or sickness, treatment should be initially given to those groups that are traditionally served first in our society—women, children, and the aged.

2. *Priority on the basis of medical prognosis.* Using this priority, medical treatment should be given first to those sick and injured whose chances for survival will be most greatly enhanced by the receipt of drugs or other treatment. In order for this approach to be effective, a trained medical person is required to assess medical problems and place patients in the proper treatment categories.

Preventive Medicine

14.19 A crucial goal of the medical program is the prevention and control of epidemics and injury in the shelter through a comprehensive program of preventive medicine.

14.20 *Procedures to Combat the Occurrence and Spread of Disease. Maintaining high sanitary standards.* Sanitation and preventive medicine go hand in hand. One of the major weapons against the occurrence of disease is high sanitary standards. Among the standards to be maintained to the highest extent possible are those dealing with: (1) the purity of food and water, (2) personal cleanliness, and (3) cleanliness of shelter areas. A program of sanitation also represents the best shelter defense against vermin, such as lice, fleas, mites, ticks, flies, mosquitoes, and rats, that are capable of creating medical problems via transmission of disease.

14.21 Insects and animals such as these should be disposed of where found. However, chemical insecticides, especially aerosol sprays, should be used with extreme caution, and only under conditions of adequate ventilation.

14.22 *Maintaining rapid diagnostic capability.* A rapid capability to diagnose illness is a distinct advantage in a campaign to limit the spread of disease. However, one must assume that such a capability will exist only in shelters with a highly trained medical person.

14.23 *Isolating shelterees with contagious diseases.* A major method to prevent the spread of disease is to separate the sick from the well.

14.24 *Treatment of shelterees with contagious or communicable diseases.* Not many shelters can be expected to stock vaccines or other special medicines that will prevent contagious diseases from developing or limit their effects. However, the drugs that will be commonly found in shelter medical kits, when used by trained medical personnel, can help in combating communicable and contagious diseases.

Disposal of the Dead

14.25 Death poses significant problems for shelter management. There is the health problem concerning the possibility that the body will host disease-producing organisms. Secondly, there is a problem concerning the emotional impact of death on the shelter population. Death also has legal ramifications.

14.26 *Indications of Death.* The absence of heart beat, pulse, and breathing for about 20 minutes are some of the early signs of death. Several hours after death, body temperature will drop and rigor mortis will set in.

CAUTION. Great care must be exercised in the pronouncement of death by persons who have not been medically trained. Cases of severe shock and/or poisoning may leave a person paralyzed, and it may be difficult to detect breathing in the early stages of such conditions.

14.27 *Procedures in the Event of Death.* The personal effects of the deceased should be collected and given to the family if they are present in the shelter. Otherwise, private property found on the body should be tagged and stored in the administration area or some other designated section of the shelter. Records should be kept of all deaths in the shelter. Some form of identification should be attached to the body before it is put away. The circumstances of the death should be indicated in the record; whether from natural causes, specific injury, unknown origin, or other causes, as appropriate.

Religious services for the dead should not be too elaborate. A simple service should be held by the shelter manager or a member of the religious activities team.

14.28 *Body storage and disposal may involve two phases.*

1. *Body storage within the shelter.* The body should be wrapped in a sheet, blanket, or other materials and removed from the main shelter area and placed out of sight of the other shelterees as soon as possible.

2. *Movement of the body outside the shelter and subsequent burial.* As soon as

the external radiation levels are tolerable enough to permit short trips to the outside, the body should be moved and buried under at least three feet of dirt or earth. Guidance on this action should be obtained from the EOC.

ILLUMINATION AND POWER

Importance of Illumination

15.1 At the present time, the Office of Civil Defense is not stocking community shelters with any emergency illumination equipment. This does not mean that illumination is not important. The reason for not including flashlights or similar devices is the belief that a large proportion of fallout shelters will retain the use of normal electric power and, therefore, normal illumination. But the possibility of extended periods of darkness in a community shelter should not be ignored. There are few, if any, more difficult management problems than maintaining control of a group under adverse illumination conditions, including perhaps total darkness. Shelter living will be austere and emotion laden under the best of circumstances. When one adds the impact of extended periods of darkness, the survival goal becomes harder to achieve.

Management Goals

15.2 The responsibilities of management in regard to illumination are: (1) to ensure that as many portable auxiliary lighting devices are brought into shelter at entry time as possible, (2) to control the use of emergency lighting in the event of normal power failure, and (3) to evaluate the importance of illumination in establishing locations for different shelter activities.

Normal Shelter Illumination

15.3 *Equipment and Supplies.* Whether the shelter has incandescent or fluorescent lighting would seem to make little difference so long as the amount of illumination is sufficient. There are different characteristics of these sources, however, which should be known to shelter management because of the effects that these differences might have under certain shelter conditions.

1. *Fluorescent lights* There is little or no glare from this type of fixture. Light is fairly evenly distributed and produces only one-fourth as much heat as do incandescent bulbs giving the same amount of light. This is probably the most significant feature of fluorescent lighting in shelter. The coating of the fluorescent tube contains substances that can have toxic effects if introduced into the body through cuts. Therefore, should breakage occur, broken pieces should be picked up very carefully and disposed of immediately.

2. *Incandescent lights.* Incandescent lights are more reliable than fluorescent, especially if there is some impairment of the commercial or auxiliary power supply which results in frequent voltage dips.

15.4 *Procedures and Guidelines.* *Illumination recommendations for shelter activities.* It has been observed that when the situation demands, people can successfully perform exacting tasks under lighting conditions which would normally be thought of as wholly inadequate. Most shelter functions such as eating, toilet use, and general maintenance could be adequately conducted in light levels between one and five footcandles (a well-lighted business street measures about 2.5 footcandles). Of course, higher levels are desirable and would facilitate the efficiency with which these activities could be accomplished.

15.5 Medical areas will require the most light, especially if extensive medical treatment, such as surgery, is involved. Though 20-50 footcandles would represent poor lighting for such activities, it should be possible to function at these levels without great difficulty. For some medical functions, levels as low as ten footcandles would prove sufficient.

15.6 Lights in the sleeping area should be of low intensity though bright enough to permit free movement of the shelterees.

15.7 Where conditions require, materials can be read under very substandard illumination. Because of individual differences in the ability to read in poor lighting, the manager should recruit persons, very likely younger people, who are able to read best under these conditions.

15.8 *Control of illumination levels.* Control of lighting in all areas can be accomplished by one of two methods. The first involves differential switching where separate switches control different lights. When, however, switches do not provide sufficient control, it will be necessary to manipulate light levels by loosening or tightening bulbs in their sockets. This holds true whether lights are of incandescent or fluorescent type. It may be necessary to improvise some means for reducing glare if the only light sources are bare incandescent bulbs. This is especially true for sleeping areas.

15.9 *Maintaining the diurnal cycle (day-night cycle).* Maintenance of the diurnal cycle may prove to be an important factor in shelter organization and shelteree morale. The cycle helps to maintain the concept of the passage of time in days and, as such, provides a measure of length of stay in-shelter.

Emergency Lighting

Equipment and Supplies

The following types of devices may be present in some shelters.

15.10 *Generator lighting.* The lighting capability from in-shelter generators is the most desirable, since, with sufficient fuel, moderate lighting can be provided for the duration of the shelter stay. Because auxiliary generators do not usually provide power equal to that supplied commercially, it will be necessary in many cases to reduce the number of lights in use when changing over to an auxiliary system.

15.11 *Battery-powered lighting.* Battery-powered light sources are valuable in offsetting the effects of a prolonged total power failure. Their portability makes them especially useful. Because of the necessity for preserving battery strength, battery-powered devices should receive carefully controlled use, especially where battery replacements are not readily available.

15.12 *Other light sources.* Non-electric light sources, such as kerosene lamps, candles, cigarette lighters, matches, and open flames in general, should be used only under emergency conditions and then only for short periods of time. In addition to the effects on the shelter atmosphere, light sources requiring an open flame constitute a definite fire hazard.

15.13 The CDV-750 dosimeter charger can be used as an emergency source of light.

15.14 *Procedures and Guidelines.* Unless the auxiliary illumination equipment is extensive or the shelter stay is known to be a short one, emergency lighting will have to be strictly controlled by shelter management. This may mean no lights used without management authorization. In extreme cases, it may even be necessary to implement brief, planned periods of darkness to conserve limited light resources. In above-ground shelters, enough natural light may be present in shelter areas to allow for the necessary activities to be carried out, at least for the period of daylight.

Auxiliary Power

15.15 Shelters using various types of equipment, such as forced-ventilation systems, will be dependent upon a source of power to operate the equipment. Because OCD does not stock auxiliary power supplies at present, most shelters will have to rely upon normal electric power. Some shelters, however, are equipped with auxiliary sources of power for emergency use. The following paragraphs describe some management considerations in the use of emergency power systems, without going into any technical details about operation or maintenance.

Equipment and Supplies

15.16 *Motor-driven generators.* Diesel or gasoline engine-driven generators offer the greatest emergency power capability. However, there are sources of difficulty with management implications in operating a motor-driven generator in the shelter. These are described under Procedures and Guidelines.

15.17 *Battery power.* Large, dry cells to power "trouble" lanterns, portable radios, and similar equipment can be useful within limitations. Some of the constraints upon the use of battery power are their limited power with-

out recharging and the fact that machinery and lighting systems will usually require special adaptation for battery operation.

15.18 *Manual generators.* Although this type capability can offer little more than battery-strength power, manually operated equipment has few of the drawbacks that are inherent in other types of machinery. Even if other equipment is available, the back-up capability offered by manual equipment should not be overlooked. Bicycle-type generators, for example, could supply low-level lighting almost indefinitely. A similar arrangement for the mechanical operation of exhaust fans would also be valuable should the primary system fail.

15.19 *Procedures and Guidelines.* An initial managerial responsibility involves preparation for activation of emergency power equipment in the event of commercial power failure. During shelter entry, auxiliary power units should be checked for operability by someone familiar with the system. The exhaust system is a critical checkpoint when the generator engine is located inside the shelter space or if fumes could enter from an adjacent engine room. The quantity of fuel immediately available will determine whether equipment can be used continuously. If other fuel is stored nearby, it should be transferred to the shelter area if possible.

15.20 Some of the management considerations in the use of motor-driven generators are:

1. *Exhaust.* If the exhaust system is faulty, the presence of carbon monoxide from the engine becomes a real danger. Engine exhausts should be vented, in a closed system, through pipes or ducts leading outside the shelter building.

2. *Heat.* Internal-combustion engines generate heat, especially when in continuous operation. Engines located within the shelter may raise temperature and humidity, thereby affecting shelterees' thirst, energy levels, etc.

3. *Fuel.* Fuel in or near the shelter constitutes a fire hazard. Extreme caution must be exercised in operations involving fuel.

4. *Motor-fuel consumption.* Fuel consumption should be monitored. If a shortage appears to be developing, and if there is little hope of replenishing the fuel supply within a reasonable period of time, intermittent use of equipment is suggested.

5. *Location.* Frequently, existing engines will be located in radioactive areas, creating problems of access by repair personnel in the event of equipment trouble.

6. *Noise.* While not directly related to survival, the generator noise level can have important psychological effects. Machinery could be especially disturbing during sleeping hours.

COMMUNICATION

Importance of Communication

A communications capability provides shelter management with an instrument for coordinating every phase of shelter living, and allows the manager to establish and maintain his authority. Establishing communications with the EOC is one of the first acts of shelter management after shelter entry.

Communication contributes to the improvement of shelter morale by alleviating the tension of the unknown. Information that is provided to shelterees serves to control rumors and lessen anxiety and fear. Communications in the form of instructions provide shelterees with knowledge of their duties, and of the rules and regulations that apply in the shelter. In turn, information from the shelterees will aid management in the anticipation and elimination of shelter problems.

In addition, some form of communication with the outside world is necessary in order for management to make decisions relating to partial and full emergence from the shelter.

Management Goals

16.1 Management objectives in regard to shelter communications are: (1) to establish a capability to communicate both within the shelter and, if possible, with the outside world, (2) to implement procedures for regular communication from management to the population at large, and (3) to implement procedures that would allow the shelter population to communicate with its leaders.

Establishing a Shelter Communications Capability

16.2 *Equipment and Supplies.* Currently, shelters are not stocked with communications equipment by the Office of Civil Defense. However, many shelters will have access to equip-

ment for communication within the shelter and also with the outside world.

16.3 *External communication equipment.* If phone lines and circuits remain operable, telephone communication will be an important means for communications to and from the outside world. However, phone use will have to be strictly controlled. Normally, telephone communications will be available in or near the shelter area.

AM radios will be the source of Emergency Broadcast System (EBS) messages. A battery powered radio is especially valuable, because of its independence of electrical power.

In the absence of electronic means of communication, runners may be sent out on short trips to obtain information or communicate with nearby shelters or control centers, once the radiation has been reduced to a permissible level.

16.4 *In-shelter communication equipment.* In small shelters, the manager may be able to project his voice enough to be heard by the entire shelter population. In large shelters, when communication with the total group is necessary, it may be possible to improvise megaphones from rolled paper, cardboard, or magazines.

16.5 Written notices may be posted on regular or improvised bulletin boards. In addition, signs and posters dealing with rules and procedures may be posted throughout the shelter.

16.6 Those shelters equipped with P.A. systems, battery-powered megaphones, or intercom systems require persons to maintain and operate them. Equipment that would constitute a serious drain on auxiliary power sources should be used sparingly.

16.7 Procedures and Guidelines

1. *Inventory and check equipment.* An inventory should be taken of all available equipment which has been brought into the

shelter and is operable. The manager could request that transistor radios or other equipment that may be used in communication should be lent to the management staff for use during the shelter stay.

2. *Establish a communications area.* A communications area located in or near the management area should be established as soon as possible.

3. *Maintain control over equipment.* Stringent control over equipment is necessary. Only authorized personnel should be permitted use of the communication equipment. Personnel should be assigned to protect the instruments when they are not in use.

4. *Establish an internal communication plan.* As part of the process of shelter organization, procedures should be determined for disseminating different categories of information from management to shelterees and vice versa. Examples of categories of information are: (a) emergency: critical information pertaining to danger or threat to survival, (b) operational immediate: important information necessary to carry out shelter activities, and (c) routine: non-essential information.

Communication to the Shelter from External Sources

Types of Incoming Messages

16.8 *Emergency Broadcast Systems (EBS).* Through this system, emergency information including messages from the President and National, regional, State, and local broadcasts will be disseminated to the public. The radio stations that are part of EBS will continue to broadcast on normal frequencies at normal power during civil defense emergencies. However, they will not use their call letters. EBS stations have, or will have, fallout protection built into key operating areas of the stations, and will be provided with emergency generators to assure an uninterrupted power supply.

16.9 *Control centers.* In time of attack, various levels of government will be operating within control centers. The local control center will be linked with shelters in the area, radiological monitoring stations, medical centers, and emergency operating centers of higher govern-

ment. Among the types of information that might be supplied by the centers are:

1. Information on local environmental conditions.
2. Information pertaining to time of shelter exit and recovery operations.
3. Decisions reached by government concerning in-shelter and/or recovery problems.
4. Requests for specific information.
5. Location of family members.

16.10 *Other shelters.* Under certain conditions, information exchange will take place between shelters directly. For example, a shelter may lose communication with the control center but may retain a capability to reach a nearby shelter.

Procedures and Guidelines

16.11 A member of the communication team should monitor all incoming messages. If the shelter contains people with stenographic training, it would be useful to assign them to the communication area to obtain an accurate transcript of the message(s) for the communications log. All messages should be entered in the communications log (see Appendix A).

16.12 The content of all incoming messages must be evaluated by the manager based upon the source of the information, other information available to him, and the possible effects of the messages upon the shelter population. Decisions should then be reached as to when and how information should be presented to the shelterees. Pertinent information should not be withheld from the population. However, much of the incoming information may be technical in nature and not of interest to the average shelteree. Also, the content of specific messages may be misinterpreted by the population, unless put in the proper context, with unfavorable consequences for shelter morale and, possibly, maintenance of order.

Communication from the Shelter to External Recipients

16.13 Types of Outgoing Messages

Reports to the control center. Most external communication from the shelter will be with a control center or a shelter complex head-

quarters. Likely information to the control center includes:

- a. Shelter open and staff present.
- b. Rate of shelter entry.
- c. Shelter full.
- d. Damage report.
- e. Reports of shelter emergencies.
- f. Regular shelter status reports.
- g. The state of the radiological environment outside or inside the shelter.
- h. Responses to specific inquiries by the control center.

16.14 *Procedures and Guidelines.* The emergency operations plan for a community may specify the *types* and *times* for communication between shelters and control centers or shelter complex headquarters. In the absence of planned procedures, control centers may inform shelters of communication requirements and constraints after the attack. In any event, shelter management should be aware of the many responsibilities of the control center and should not burden emergency operations centers with non-essential messages.

Communication from the Shelter Manager to Shelterees

16.15 *Types of Information to Convey to Shelterees.* Information pertinent to shelter entry and initial orientation.

1. Directions to proper location within the shelter as the shelterees enter.
2. Introduction of manager and staff—establishment of the authority of the manager.
3. Reassurance about the protective capabilities of the shelter.
4. Reassurance that changes in initial organization will be made later on as needed (for example, uniting families).
5. Statement of important rules that must be put into effect immediately.
6. Assignment to initial duty posts of vital significance.
7. Basic protective actions that all shelterees can take.

16.16 *Information pertinent to the routine phase.*

1. Review of general conditions in the shelter.

2. Review of conditions external to the shelter.

3. Reports on radiation levels at indicated intervals from official civil defense broadcasts.

4. Reports on the state of the Nation.

5. Local damage reports.

6. Special emergency notices issued from local government.

7. Description of shelter facilities and available supplies.

8. Statement of manpower requirements needed in-shelter.

9. Reassurances and compliments to shelterees and review of shelter-wide problems.

10. Deflation of rumors that may have spread through the shelter.

16.17 *Information pertinent to the emergence phase.*

1. External radiation levels, including remaining "hot spots."

2. Estimated time for temporary shelter egress, and how long it is safe to stay out.

3. Information as to where and how shelter supplies may be replenished.

4. Post-attack plans, detailing where people should go and what they should do after shelter egress.

5. Review of training highlights in such fields as decontamination and first aid.

6. Manpower requirements for recovery.

Procedures and Guidelines

16.18 *Initial instructions and briefings.* As the shelter is being filled, instructions should be provided to the population concerning where they should go and what they should do. Traffic assistants can be used to pass along necessary information at entry time. As mentioned previously, the entering population should be continually reassured about the capabilities of the shelter.

After the shelter is filled and before the shelter is completely organized, there is a great deal of important information that must be presented to the population within a short period of time. This should be accomplished through one or more short shelter briefings by the manager or his key deputies.

In cases where the manager cannot speak directly to all shelterees, it is advisable that early in the shelter stay he arrange to speak to every group in-shelter, if only to introduce himself.

16.19 Daily briefings. At least once a day, a briefing should be given to all shelterees covering the topics listed under routine information. The briefings should be a scheduled activity. It is important that shelterees know that at least once a day, at a specific time, they will be brought up-to-date on the shelter and environmental conditions. Even if there is no new information to report, the daily briefings will have important purposes. For one, the news that there is no new information, no change in the situation, is important information. Secondly, the daily briefing can be used to puncture the rumors that will inevitably arise in the shelter. Also, a scheduled briefing serves as a sign to shelterees that management recognizes the importance of communication to the population. Normally, a morning and evening briefing should be established.

16.20 Unscheduled communications. Information pertaining to emergencies or those requiring immediate action must be communicated rapidly to the population as the situation arises. One procedure is to select a simple code word or, in a small shelter, a gesture such as raising a hand, all shelterees also raising their hands, to preface important, unscheduled information. During the initial orientation, shelterees can be informed that when they hear this word or see this gesture they should immediately quiet down and listen for an announcement.

Communication from Shelterees to Management

16.21 Types of Information to Convey to Management. The following are types of information that management needs from shelterees.

1. Information obtained from the registration forms which will supply the basic information on the background, special skills of the population, etc.
2. Reports on equipment and supply status.

3. Reports on inadequacies in material, shortages, or breakdowns in procedures.

4. Health status.

5. Requests for changes in the organization of the shelter.

6. Requests for assistance in carrying out shelter duties.

7. Reports on the general progress of routine shelter operations.

8. Reports on emergencies.

9. Reports of rumors or problems within the shelter.

Procedures and Guidelines

16.22 Utilizing the chain of command. It should be made clear to the shelter occupants that it is impossible that every problem be taken directly to the manager and solved by him. It is the function of the group leaders and of management staff members to provide a degree of isolation between the manager and the complaints of individual shelterees. A set of procedures should be implemented to govern non-emergency communications between shelterees and management, using the chain of command that has been set up in a particular shelter. This chain of command does not necessarily hold for all types of shelteree problems. A medical emergency or a serious violation of shelter rules will require the immediate attention of the manager and the appropriate team leaders.

16.23 Group sessions. It may be beneficial to have occasional group sessions in which a shelter group, or even an entire small shelter, can discuss problems with its leaders. Group sessions may provide management with a better over-all picture of the nature and extent of their problems. Group sessions present the shelter manager or his representative with the opportunity to answer shelteree questions, and discuss shelter policies directly with a fair-sized number of shelterees. A group session should be called upon shelteree request and/or if management feels it will serve a useful purpose.

TRAINING

Importance of Training

There are several reasons why training is an essential activity in a shelter. Through training, persons will be provided with factual information about their current status and what is likely to occur in the future. In the absence of accurate information, rumors abound, doubts may grow, and shelteree resistance to management authority may increase.

A second purpose of training is to provide each person with the information he needs to know to survive, do his job, and get along with his fellows while in the shelter. Thirdly, in-shelter training should help prepare the population for survival in a potentially hostile post shelter world.

Training provides a realistic and useful way to occupy shelterees during the day, and is an especially worthwhile way to channel the energies of school-age children.

Management Goals

17.1 The shelter manager's training responsibilities consist of (1) supervising the development and implementation of a training program appropriate to the needs and capabilities of the population, and (2) providing or supporting shelteree motivation to participate in training activities.

Establishing a Training Program

17.2 *Shelter Training Subject Matter.* Generally, the content of an in-shelter training program will fall into the following categories:

1. *Training for in-shelter living.* What each occupant should know about the shelter and its facilities, emergency procedures, first aid, psychological problems, and similar subjects.
2. *Training for post-occupancy living.* What each shelteree should know about the

recovery period, including where to obtain food, water, medical care, and shelter, or how to provide for these needs on one's own.

3. *Training for management and technical positions.* What each untrained shelteree who has been selected to fill a management or task team position must know about his job.

4. *Ongoing education for children.* A limited continuation of schooling for youngsters, primarily those of grade-school age.

5. *Training for post-occupancy community activity.* The post-occupancy period may require an increased capability in medical, welfare, fire, and police. Volunteers from the shelter population should be trained to perform these functions.

17.3 *Supplies and Equipment.* Few shelters will have elaborate supplies and equipment with which to implement a training program. However, in almost all shelters, some materials will be available or can be improvised for use in training. These include:

1. *Stocked or commonly available materials.*
 - a. Manuals, handbooks, and guides covering various aspects of shelter living, either stocked in-shelter or brought in by previously trained personnel.
 - b. Textbooks.
 - c. Children's books for ongoing educational activities.
 - d. Blackboards or bulletin boards.
2. *Materials useful for improvisation of training supplies.*
 - a. Newspapers, magazines, cardboard for writing paper.
 - b. Lipsticks, other cosmetic sticks for crayons.
 - c. Magazine rolled up for a megaphone.
 - d. Cardboard for bulletin board.

17.4 *Procedures and Guidelines.* An ideal training area may be difficult to locate. Insofar

as possible, the training area should be amply illuminated and ventilated, free from distractions, and have sufficient space so that participants can sit comfortably and both see and hear the instructor.

17.5 The method of training that is most effective for a particular course depends upon the content of the course, the size and configuration of the shelter, the educational level of the shelterees, the make-up of the training team, and the educational materials and aids available in-shelter. Among the training methods that will find use in a shelter are: (1) lecture, (2) demonstration, (3) small-group discussion, (4) on-the-job training, (5) individual instruction, and (6) self-instruction.

17.6 In order for a training program to be successful, procedures must be geared to the condition of the shelter and its occupants. The following guidelines are applicable to a wide range of shelter training situations.

1. Make the training content meaningful and useful.
2. Maintain a slow pace; continually stress and review major points.

3. Invite shelteree participation; permit shelterees to try out procedures.

4. Vary the training method to maintain attentiveness.

5. Use all available visual aids.

6. Relate training program to estimated duration of shelter stay.

7. Keep training sessions short; about 30 minutes is a good guideline.

17.7 Generally, training sessions should begin after the shelter has been organized, a schedule implemented, and a training team selected and given an opportunity to prepare its program. Among the first types of training that should be carried out in-shelter are for previously untrained management or task team personnel. Also important in the early stages is instruction pertaining to shelter rules and procedures. Training for post-shelter living and ongoing education activities for children can begin after the shelter has settled into a routine phase.

PSYCHOLOGICAL SUPPORT

The Need for Psychological Support

Nuclear attack will subject shelterees to many stresses. In the minds of most shelterees will be thoughts about the feared weapon effects, loss of loved ones, disruption of normal patterns of living, shelter confinement, and an uncertain future.

Under such conditions, it will be only normal for people to react both emotionally and physically. Most people should be able to adapt to the realities of the situation with relatively mild and temporary symptoms of emotional and/or physical upset. Some shelterees, however, may suffer more prolonged and serious reactions to the stresses of nuclear attack.

In addition to dealing with the general human reaction to disaster, the shelter manager will have to cope with the special needs of children and old people, as well as problems which some shelterees may bring with them to the shelter, such as alcoholism, drug addiction, and mental illness.

Management Goals

18.1 The goal of psychological support is to buoy up the morale and mental well-being of shelterees, insofar as possible under conditions of a nuclear attack. This may be accomplished by: (1) helping to alleviate the mental anguish of individuals who are suffering from reactions to disaster, and (2) preventing psychological problems from creating a dominant mood which could be detrimental to shelteree adjustment.

18.2 However, there are very real limitations to what can be accomplished in-shelter with limited staff and facilities. Shelter management should try to help as many shelterees as possible to adjust to the realities of the disaster situation. Although it cannot hope to provide a total program to control reactions to disaster, shelter managers should become thoroughly

familiar with the guidance available on how to aid emotionally disturbed people in times of disaster.

General Principles of Psychological Support

18.3 The principles that underlie psychological support in a shelter may be grouped into the four areas discussed below. Some of these points have been discussed in another context in the first chapter of this document.

18.4 *Effective Management.* Probably the most important source of psychological support to shelterees will be effective management. Effective management is a product of several factors. The first is personal leadership. In a crisis, people will seek and readily follow a leader who can provide direction, inspire confidence, and help to structure a disordered situation. Effective management is demonstrated by the successful organization and conduct of shelter operations and activities. Patterned routines such as feeding, sleeping, medical care, and sanitation will help to define the new environment as well as establish as much continuity as possible with pre-shelter routines. The third ingredient in effective management is communication with the shelterees to help them define what has happened, is happening, and can be expected to happen.

18.5 *Interaction with Others.* Sympathetic and friendly interaction with others is one of the keystones of successful psychological support. The manager may enhance such interactions in several ways, particularly by strengthening shelteree ties to their community groups and allowing groups to express problems and exchange ideas.

18.6 *Goal-Oriented Behavior.* When an individual is under stress, two important sources of psychological support are: (1) having something useful to do, and (2) knowing how to do it. In assigning tasks, the manager should be aware of the likely effects of stress upon

shelterees performance, including his own performance. People under stress may tend to:

1. Act impulsively and with a feeling of inappropriate urgency.
2. Concentrate their attention on the immediate task and have a lack of awareness of larger problems.
3. Lapse into old habits of response and forget what they have been trained to do under disaster conditions.
4. Do less well with complex and skilled tasks than with simple tasks.

If the manager can recognize these potential reactions to job assignments and make allowances accordingly, performance will tend to be improved.

18.7 Control Measures. Psychological support in the shelter should emphasize kindness, reassurance, and sympathy. Actions which might be interpreted as threatening or punishing should be taken only if a person's behavior becomes dangerous to himself or others, or becomes so disturbing as to affect shelter operations. These measures should be limited to the following:

1. *Use of drugs.* Phenobarbital is supplied in OCD-stocked shelters. Directions for its use are located in the medical kit. If a qualified medical person is available to prescribe and administer, its use may be considered more or less routine rather than extreme.

2. *Confiscation of potentially dangerous property.* Shelterees may have or may attempt to obtain property that can be dangerous to themselves or others. Disturbed persons, particularly those with delusional symptoms, will, at times, appropriate items that can be used as weapons. Persons who are alcoholics and drug addicts may go to great lengths to obtain alcohol or drugs. Other disturbed persons may appropriate essential shelter supplies as a source of security. If such persons refuse to give up potentially dangerous items after management has explained the reasons for relinquishing them, it may be necessary to confiscate the property through the efforts of the security team. Most items will have been voluntarily surrendered during the entry phase when shelterees would have been asked to contribute

items for the common use, or for care and safekeeping.

3. *Restraint.* The use of restraint should be avoided, if at all possible, not only because it can be interpreted as punishment, but also because it will frequently antagonize disturbed persons and make them more violent and noisy.

If restraint cannot be avoided, wrapping a person in sheets, blankets, or similar items is probably the most effective and safest method of restraint. Use of rope, belts, and ties should be avoided, if possible, because of the likelihood of interfering with circulation. Generally, a person aroused by the stress and strain of emergency will quiet down in five to ten minutes if restrained firmly, but patiently.

A restrained person should be removed to a separate area, if possible, where he should be constantly attended and kept as comfortable as possible. As soon as medical personnel or the manager judge acute danger to have passed, he should be released.

Psychological First Aid

18.8 The Nature of Psychological First Aid. Symptoms of psychological reaction to disaster will normally begin to decrease spontaneously within a few hours. Whenever this spontaneous recovery fails to occur, the individual may require the assistance of "psychological first aid" to help speed recovery.

18.9 Psychological first aid is the immediate support provided for individuals in emotional trouble. In general, the earlier psychological first aid is given, the more effective it will be. Through a brief interview, sympathetic encouragement, and job orientation, an attempt is made to return moderately disabled persons to relatively normal functioning in a short time, and to help more serious cases to be as comfortable as possible. Arrangements should also be made for referral to the most qualified member of the medical team for possible dispensing of stocked phenobarbital.

18.10 Psychological First Aid Procedures. The basic technique of psychological first aid is a relatively brief (up to ten minutes) interview with each person having difficulty recovering from disaster reactions. An interview is usually initiated upon the request of the person

seeking aid or upon request of a group leader or staff member who perceived the problem. A single session may be sufficient for some persons; a series over a period of days may be required for others.

18.11 The major purposes of the psychological first-aid interview are to: (1) permit expression of shelteree problems, (2) provide reassurance to shelterees, (3) identify potentially dangerous persons, and (4) identify useful skills among interviewees which they can pursue after they have sufficiently recovered.

18.12 Psychological first aid interviews should also reveal which individuals are ready for a useful role in the shelter. Participation in very simple tasks such as clean-up and routine clerical activities may provide a valuable first step toward fuller readjustment and participation. For those individuals whose reactions persist, continued assignment to simple tasks suited to their abilities and needs may occupy them and help to minimize the disturbances which they can create.

18.13 In administering psychological first aid, personnel should be prepared to cope with the following difficulties.

1. *Their own reaction.* Personnel must be able to submerge their own reactions to disaster, and avoid conveying a sense of superiority that they have been successful at doing this.

2. *Fatigue.* When fatigued, it is best to take a short break before resuming counseling.

3. *Hostility from shelterees.* Some of the hostility held for the shelter manager and other figures in authority may be directed against psychological first aid personnel.

4. *The non-responsiveness of disturbed persons.* Even though some persons will not respond to attempts to talk with them, the aid persons should continue the interaction unless more harm than good seems to be resulting.

Types of Maladaptive Responses

18.14 A maladaptive response refers to behavior that seriously interferes with an individual's adjustment to the disaster situation

or with the organization and operation of the shelter. It is beyond the scope of this document to present a systematic discussion of severe emotional reactions and their treatment in-shelter. The objective of the following brief and necessarily oversimplified description of major types of maladaptive responses is merely to acquaint the manager with some of the more serious emotional conditions that may be found in any community shelter.

18.15 *Fear Reactions.* In a nuclear disaster, almost everyone will be afraid to varying degrees. However, fear reactions may be so severe as to seriously incapacitate some people. Extreme fear will be expressed in many ways: as an unwillingness to leave a particular place; a need to avoid certain people or almost total dependence on others; orally, in the form of screams, moans, or other expressions, and in its most dangerous form as panic or uncontrollable flight.

18.16 *Physical Reactions.* For a few people, disaster stress may result in more severe and long-lasting physical symptoms than would normally be experienced. This includes completely debilitating stomach distress, imaginary symptoms of radiation sickness, functional blindness, or loss of the use of arms and legs.

18.17 *Depressed Reactions.* It would be abnormal for people not to have initial feelings of depression in the event of a nuclear attack. Most people, however, will be able to function after a while, in spite of their depressed reaction. Some people may be so overwhelmed by grief or hopelessness as to be unable to function in any coherent fashion. They may either withdraw from social contact or may constantly impose an expression of their own problems on others. Loss of will to live and thoughts of suicide may be common among persons with depressed reactions.

18.18 *Overactive Reactions.* Many people will react to disaster stress by being unable to concentrate, sit still, or remain at any one task. When this reaction becomes extreme, persons may wander aimlessly or may engage in activity violent enough to endanger themselves or other people.

18.19 Some individuals suffering from overactive reactions may challenge established management by becoming spokesmen for militant

action; that is, they may want to do *something* about shelter problems without necessarily knowing what the problems or the appropriate solutions are.

18.20 *Dissociative (Out of Contact) Reactions.* Dissociated persons will appear to be "out of contact." In mild cases, they will give an impression of shocked helplessness, while in severe cases they may be totally mute and not react at all to other people or physical needs.

18.21 *Delusional Reactions.* The fallout shelter situation will have an element of unreality for everyone. To some shelterees, this note of unreality may become dominant. Normal cautiousness and doubt about a strange and stressful situation may give way to deep-rooted suspicion of fellow shelterees. In extreme cases the individual may develop delusions of shelterees being in league with the enemy.

Special Problems

18.22 The shelter manager will be faced not only with the problems of psychological reactions to disaster, but also with the unresolved problems of individuals which existed prior to the attack and which may be amplified by disaster. Two such problems are alcoholism and drug addiction.

18.23 *The Use of Alcohol.* Persons who are dependent upon alcohol in their normal lives may bring a supply of alcoholic beverages with them to the shelter. If any significant quantities of alcohol are present in the shelter, the manager is faced with the choice of (1) confiscating the alcohol and using it as a medical resource, (2) confiscating it and storing it away until time of exit, or (3) making no effort to confiscate supplies of alcohol.

18.24 None of these alternatives is likely to be ideal. Confiscation may pose a threat of conflict and challenge to authority. Failure to apportion supplies of alcohol when individuals may feel a need for them may create tensions between shelter management and some of the shelter inhabitants. Uncontrolled consumption of alcoholic beverages may result in excesses which could seriously disrupt the shelter. If a person who is an alcoholic is without a source of supply in-shelter, he may attempt to drink hair tonic, medicinal alcohol, or other harmful substances, and may have to be forcibly restrained

from doing so. He may also try to leave the shelter in search of supplies.

18.25 *The Use of Drugs.* Drugs stocked in the shelter will be required for medical and psychological treatment. Attempts on the part of drug addicts to appropriate drugs stocked in the shelter should be forcibly resisted. If there is an alcoholic or addict in-shelter who is experiencing withdrawal symptoms, doses of phenobarbital, if available in consideration of other needs, may be prescribed by the most qualified member of the medical team, in accordance with the treatment recommended in the medical-care booklet packed in the medical kits.

18.26 Although seldom fatal, withdrawal symptoms are very painful and disturbing to those who witness their effects. The person suffering such symptoms should be kept as quiet and comfortable as possible, and constantly attended by at least one and preferably two able-bodied persons. The addict beginning to suffer or fearing withdrawal is likely to leave the shelter in search of drugs. It may be necessary to apply restraints to both the drug addict and the alcoholic to prevent them from harming themselves and others.

Children and the Aged

Two classes of shelterees for whom the shelter manager may have to consider somewhat specialized psychological support are children and the aged.

Children

18.27 Children are often more psychologically resilient than adults, particularly if they can face an emergency in familiar surroundings with family and friends. In general, children tend to take their behavior cues from adults. If family or friends exhibit fear or grief, the children will tend to show similar reactions. However, children exposed to the effects of a nuclear attack may become severely upset even if adults remain outwardly calm. Such children will need special care and support.

18.28 To reduce the emotional stress which children may experience, it is suggested that:

1. Children be kept with their parents or friends.

2. They be given constant reassurance about the present and future and, in turn, be given opportunities to express their feelings.

3. Children who enter the shelter without family or close friends should be assigned to a substitute parent (a mature adult who is aware of the needs of children).

4. Children be provided with supervised recreation and educational activities, and that older children be given useful tasks to perform.

18.29 Considerable blocks of time should be scheduled for this activity. It requires serious attention by shelter management, because the behavior of children can be a potent factor in the maintenance of order in-shelter.

The Aged

18.30 Elderly people are likely to present special psychological problems in the shelter. In particular, some aged people (1) may be prone to confusion in new surroundings and situations, (2) may be "in the way" of operations and activities which can be annoying to other shelterees, (3) may find it more difficult to accept the realities of a nuclear attack than younger people, or (4) may tend to be somewhat rigid in their views with respect to appropriate behavior on the part of others.

18.31 In the event such problems emerge, a special service team to assist the aged in their adjustment to the realities of the external situation and the problems of shelter living should be established. Special group activities, for the aged should be a regular part of the daily schedule.

RELIGIOUS, RECREATIONAL, AND SERVICE ACTIVITIES

Importance of an Activity Program

An organized effort by management to engage shelter occupants in spiritual, service, and recreational activities will result in increased morale and greater motivation on the part of the population. An activity program is important for a number of reasons. It tends to reduce negative emotional states, such as fear or grief. It also aids in the breakdown of interpersonal barriers leading to greater cohesion and cooperativeness among shelterees. Planned social and recreational activities provide management with the means to control unwanted activities, such as gambling, quarrelling, and aimless milling about. Planned activities also help make time pass more quickly. Participation in service-type activities makes many people feel a sense of having contributed something worthwhile, thus giving them relief from tension and raising their morale. Finally, religious activities will be a source of comfort and strength to many shelterees.

Management Goals

19.1 The goals of an activity program are twofold. First, the manager should supervise the establishment of a program of social, spiritual, and service activities in-shelter. Secondly, he should encourage the shelter population to participate in this program on a voluntary basis.

Establishing an Activity Program

19.2 *Equipment and Supplies.* Many shelters will have minimal material for free-time activities, including Bibles, paperback books, and board games. If not actually stocked, such materials may be brought into the shelter by the incoming population. The ingenuity of shelterees in improvising materials such as check-erboards and pieces, cards, etc., will be an important factor in the success of a recreational program. The mere act of creating these mate-

rials provides a valuable cohesion-producing experience.

19.3 *Procedures and Guidelines.* Among the conditions that must be assessed prior to initiation of recreational activities are: available space, shelter configuration, temperature, ventilation, illumination, and food and water status. For example, if the shelter temperature is high, physical exercise should be avoided.

19.4 Free-time activities in-shelter should be closely tied to the needs and characteristics of the population. Early in the shelter stay, voluntary activities are likely to include service and religious activities. Spectator entertainment would be inappropriate during the initial hours of occupancy. After the first few days of the shelter stay, lighter and more relaxing activities can be introduced into the schedule.

19.5 Such factors as age, sex, socio-economic status, ethnic and religious backgrounds, skills, and interests should be considered in establishing an activity program. A variety of activities should be offered which shelterees may enter into on a voluntary basis. Shelterees should be encouraged but never coerced to participate in free-time activities.

Shelteree Service Activities

19.6 Service activities include: caring for infants, young children in groups, and the ill and injured; giving psychological first aid; and enhancing the appearance of the shelter. These should be regarded as important morale-maintaining activities, whose benefits have been discussed in previous chapters.

19.7 The care of children is an especially critical activity that should not be left solely to the responsibility of parents or one individual on an unorganized basis.

19.8 It is best to establish a roster of personnel interested in participating in specific service activities. As many people as possible should be encouraged to participate in these activities.

Religious Activities

19.9 At the request of the shelter population, religious activities should be included in a shelter program. Depending upon the circumstances, three kinds of religious activities seem appropriate: (1) non-denominational services, (2) denominational services, and (3) self-initiated prayer and meditation. Participation in religious services should be voluntary.

19.10 When formal religious leaders are not available to conduct denominational services, non-denominational services are the practical solution. Such services may incorporate non-denominational prayers, inspirational talks, periods of silent meditation, and the singing of hymns. The type of service conducted in the U.S. military services is an excellent guide.

19.11 Denominational services are more likely to stimulate religious feelings in people who have strong ties to their own religion. If possible, denominational services should be conducted privately, in a separate room or semi-enclosed space.

19.12 Self-initiated prayer and meditation cannot be planned as can religious services. However, "quiet" hours could be used for such religious activity. One way such self-initiated activity can be stimulated is by providing space and time for individual prayer and meditation.

19.13 These should be regarded as important morale-maintaining activities, whose benefits have been discussed in previous chapters.

Physical Fitness Activities

19.14 No significant physical impairment results from two weeks of relative inactivity. However, some exercise may be desirable to condition shelterees for the rigors of post-shelter life, dissipate unused energies, and alleviate insomnia. The two types of exercise most suitable for shelter environment are: (1) self-initiated mild exercise, and (2) calisthenics led by trained group leaders for short periods of time. Isometric exercises appear particularly suited to the shelter situation.

19.15 There are severe limitations to a physical fitness program in-shelter due to the fact that vigorous physical activity may liberate unwanted heat. Also, shelterees may need to conserve their body energy and fluids because of

rationed food and water. When temperatures are high or food or water scarce, such activities should be suspended.

Arts and Crafts

19.16 Arts and crafts can sustain the interest of shelterees, especially school children, for relatively long time periods. They require little physical exertion, thereby generating little heat or noise, and products can be shown and admired. Participants may be encouraged to make posters that can be placed in the shelter to remind the population of important shelter rules, or to signal the location of special areas in the shelter. Emphasis must be placed on improvisation and ingenuity in using available materials. Some activities would be: pencil sketching, cutting designs from paper, constructing wire figures, and making mobiles.

19.17 These activities are best performed in a supervised group in order to insure effective participation, conservation of materials, lessening a commotion, and clean-up after completion of the activities.

Social and Recreational Activities

19.18 The recreation team should capitalize on the shelterees' readiness to socialize, and utilize it to break down social barriers and inhibitions. Social activities considered appropriate to many shelter situations include:

1. *Small group games.* Such games serve a dual purpose. Individuals can be put to work developing the required materials. Once constructed, these improvised games can be enjoyed by a number of players and onlookers.

2. *Discussions.* Discussions can focus attention on methods for coping with post-shelter living, or they may be a valuable source of information feedback to shelter managers in the detection of heretofore unvoiced complaints.

3. *Group singing.* Group singing is an excellent mechanism for developing a spirit of camaraderie and providing an emotional outlet.

Spectator Entertainments

19.19 Management should make full use of the talents of professional or amateur entertain-

era. Skits, plays, and similar entertainment serve the dual roles of keeping participants occupied while providing entertainment for larger groups of spectators. Spectator entertainments are best held in the evening when shelterees may be most fatigued and in need of non-active entertainment.

Free-Time Quiet Activities

19.20 Quiet periods are essential. People need to have relief from organized activities in a shelter environment. Quiet periods also reduce the shelter noise level. They are particularly helpful at nap-time periods scheduled for young children.

19.21 It may be possible to establish some form of library in the shelter which would contain the books that may have been stocked in the shelter and those that shelterees brought with them. During the routine phase, books will become an important morale item, and management should implement some procedures for insuring that books get the widest possible distribution.

19.22 It should be recognized that many adults will want to nap or simply be by themselves. The recreation team should respect the wishes of those who seek this type of withdrawal.

POST-OCCUPANCY MANAGEMENT RESPONSIBILITIES

The Importance of Post-Occupancy Leadership

It is very difficult to describe in any detail what the tasks of the manager might be after the shelter has opened for permanent emergence. It is somewhat easier to specify management responsibilities during the period of temporary emergence, for at this stage the shelter still represents a transient home for most of its occupants.

Regardless of the vagueness with which one must describe the shelter manager's post-attack responsibilities, one thing is clear. Shelter managers constitute a powerful leadership force in the recovery and reconstruction efforts of any community. If the occupants of a shelter emerge safely, well, and with a motivation to rebuild, it will in no small measure be due to the efforts of the shelter manager. Therefore, it is only natural that this leadership source be utilized within a community until a more regular governmental apparatus has been established.

Management Responsibilities in the Temporary Emergence Phase

20.1 At this point, radiation levels permit egress from the shelter for short periods of time. Volunteer task teams may leave the shelter in order to accomplish tasks necessary to support continued shelter habitability. Notification from the EOC of the relative safety of exit should be obtained before anyone is permitted to leave the shelter. If possible, radiological monitoring instruments should be taken on missions.

20.2 *Reduce "Stored-Up" Shelter Problems.* It may be possible to take advantage of the temporary emergence phase to reduce some of the stored-up problems, such as the removal of waste and garbage, burial of the dead, relocation of the sick and injured to available hos-

pitals, and transfer of problem shelterees to appropriate agencies.

20.3 *Replenish Shelter Supplies.* Among the supplies that will be most needed are:

1. *Water.* The greatest emphasis is on replenishing the water supply. If uncontaminated or unpolluted drinking water is not available at this time, various packaged drinks and liquid-packed food will satisfy individual water needs and should be stocked in abundance.

2. *Medical supplies.* Very many shelters will be in need of medical supplies after an extended stay in-shelter. Among the supplies having a high priority are bandages, antiseptics, and non-prescription medicines (of the type in the medical kit). Drugs requiring special handling should be brought into the shelter only if there are trained medical personnel available.

3. *Sanitation supplies.* Toilet paper, paper towels, sanitary napkins, disinfectants, hand cleaners, plastic bags of all sizes, garbage cans or other containers which can be sealed, and any other items deemed necessary should be stocked.

4. *Food.* Although food is not essential for physical survival over the short run, foods that can be brought in to vary the survival ration may have a potent, positive effect on morale.

5. *Equipment.* Certain types of equipment that have been used up, or are not operating, should be replenished. This includes fire-suppression equipment, communications equipment, illumination equipment, and power supplies (batteries, small motors).

20.4 *Contact Local Officials.* If little or no communication has been possible during the in-shelter phase, an initial objective of the temporary emergence phase will be to establish contact with the local government officials.

Information concerning the state of the Nation, radiation and damage in nearby areas, projected time for safe general exit, and any further instructions should be gathered and passed on to the shelterees. In turn, local officials should be informed of the status of the shelter and its occupants.

20.5 Persuade Shelterees to Remain. After an extended stay under confined conditions, there may be those who feel it necessary to leave the shelter to see their homes, attempt to find relatives, and simply escape. The manager should attempt to dissuade shelterees from leaving the shelter and make them fully aware that the external levels are still dangerous. Usually, this will be in accordance with guidance or under direction from the Emergency Operating Center.

20.6 Damage Assessment. The task teams may also bring information concerning the extent of damage in the immediate area. This information, in conjunction with similar information from other shelter areas, can aid the local government in community damage assessment and the planning of recovery efforts. Such data should include differentials in radiation levels at various locations, should they exist.

20.7 Supply of Manpower Data. Finally, the shelter manager should supply all available manpower data to the local government for use in implementing the recovery plan. Information on types of skills possessed by shelterees, both men and women, would greatly assist authorities in obtaining the skills necessary for the various recovery operations.

Management Responsibilities During the Full Emergence Phase

20.8 Full emergence will occur when radiation conditions are such that shelterees may leave for the entire day and return to the shelter, as necessary, for meals and sleeping. In this period, the shelter becomes a base of operations for the implementation of recovery and reconstruction plans. Although local authorities will assume the responsibilities for maintenance of law and order, mass feeding and lodging, and general restoration of the community, the manager and staff may be asked to continue as administrators and managers in these efforts.

20.9 Reorganization and Restocking the Shelter. If damage to dwellings is heavy, or if other reasons for not returning to homes prevail, the shelter may be used to house portions of the population during the recovery phase. This would require reorganization by the shelter staff in terms of augmenting the shelter supplies and facilities, including:

1. *Water, bedding, food, and sanitation.* Water may still have to be stocked, bunking facilities and materials would be augmented or supplied, substantial and varied foods would replace the survival rations, and additional or more adequate sanitation procedures would be introduced.

2. *Additional space.* It should be possible to obtain additional safe space, since the fallout hazard is no longer prominent. Such space would permit more comfort and privacy among shelterees and would minimize the risks to health.

3. *Reorganization of shelter activities and task teams.* Various task teams could be dissolved; others may be augmented. If recovery operations are in progress around the clock, feeding and sleeping schedules must be worked out to accommodate the various working shifts. Children's activity schedules, including resumption of schooling, may be developed and implemented.

20.10 Communication. Governmental authorities may desire to use the established shelter organization as a means for rapid and accurate dissemination of information, both local and National. Because they have already been accepted as authorities, shelter staffs will be a valuable means of communication between the local government and the people.

20.11 Depopulation of Shelter. In the full emergence phase, more and more people will leave the shelter, especially as the radiation level becomes negligible. This will require continuous activity by the shelter administrators to adjust supply requests, fill openings in the records of those still present and complete the records of those having permanently left the shelter.

20.12 Dismissal of Staff Members. The relocation of the shelter population as reconstruction proceeds will probably permit the shelter manager to consider dismissing many of the

shelter staff so that they may assume other responsibilities.

20.13 *Return to Pre-War Use of Building.* It is possible that the building which houses the shelter will be returned to its pre-attack functions, even though the shelter area continues to function. A shelter in a telephone-company building may be such a case. Such a situation requires coordination among building owner, the shelter manager (if other than a representative of the owner), and the local authorities.

20.14 *Closing the Shelter.* With the progressive success of recovery activities, and with the diminution of radiation to a safe level, there remains a large area of administrative responsibility for the shelter manager before his job is finished. When so notified by local officials, the manager must begin the process of closing the shelter. The following items must be dealt with:

1. *Shelterees.* There may still be individuals who have no place to go when the shelter is closed. Local authorities must be supplied with their names and other relevant information so that they may aid in the process of relocation and rehabilitation of these people.

2. *Supplies.* The problem of remaining shelter supplies may be considered. The local recovery plans may make provision for the disposition of supplies through local authorities.

3. *Clean-up.* An important task is the final clean-up of the shelter before it is officially closed. Cleaning crews may be organized to remove all garbage and other waste, and to wash down and disinfect the entire shelter area.

- b. *Records.* Finally, all shelter records should be turned over to the local government.

SAMPLE SHELTER REGISTRATION FORM

FAMILY NAME _____ HOME ADDRESS _____
(please print)

FIRST NAME	AGE	SEX	SKILLS OR OCCUPATION	ILLNESS OR DISABILITY	TALENTS OR HOBBIES	ASSIGNED TO:	
						Unit/Section	Task Team
1. (head of family or single person)							
2. (others—indicate relationship to 1)							
3.							
4.							
5.							
6.							
OTHERS IN FAMILY— NOT HERE							
PRESUMED WHEREABOUTS OR UNKNOWN							

SUGGESTED SHELTER FORMS AND RECORDS

SHELTER LOG

SHELTER NO. _____ LOCATED _____

Event No.	Date/Time	Description of Event	Action Taken

COMMUNICATIONS LOG

No.	Date/Time		From	To	Message Content	Recorder
	Rec'd	Sent				

RADIATION MONITORING LOG

SHELTER

Shelter Areas		Date: 7/16		7/16								
		Time: 1800		1800								
		Dose Rate	Accum. Dose	Dose Rate	Accum. Dose	Dose Rate	Accum. Dose	Dose Rate	Accum. Dose	Dose Rate	Accum. Dose	Remarks/Initials
Area 1		1 r	1 r	.9 r	1.9 r							
Area 2		1.5 r	1.5 r	1.3 r	2.8 r							

RADIATION EXPOSURE RECORD

RADIATION EXPOSURE RECORD		
Name JOHN DOE		
Address 227 N. Moorland		
Battle Creek, Michigan		
Soc. Sec. No 545-26-5535		
Date(s) of Exposure(s)	Daily Dose(s)	Total Dose to Date
6/6/62	15	15
6/7/62	5	20
6/7/62	25	45
6/8-10/62	5	50
DATE		

FRONT SIDE

SAMPLE FORM

BACK SIDE

Date(s) of Exposure(s)	Daily Dose(s)	Total Dose to Date

SUPPLY STATUS SUMMARY (OCD) STOCKS

PRE-OCCUPANCY INVENTORY DATE OF INVENTORY:	INITIAL IN-SHELTER INVENTORY	AVAILABLE AS OF:				REMARKS
	DATE TIME	DATE TIME	DATE TIME	DATE TIME		
<u>BISCUITS</u>						
Cases, 2.5 gal. cans per case						
Cases, 5 gal. cans per case						
<u>WATER</u>						
Drums, 17.5 gal.						
Cartons, polyethylene liners 20 each						
<u>SANITATION KITS</u>						
Kits, Model III 25 persons						
Kits, Model IV 50 persons						
Drums, fiber (1 drum per kit)						
<u>CONTENTS OF KITS</u>						
Toilet tissue rolls						
Can openers						
Sanitary napkins, heavy duty, <u>diz.</u>						

SAMPLE DAILY SCHEDULE FOR SHELTERS

0700	Reveille	1430	Emergency drills
0730	Receive breakfast rations	1500	Water and biscuit break
0800	Eat breakfast	1530	Recreational activities
0830	Clean-up	1600	Recreational activities
0900	Sick call	1630	Free time for quiet activities
0930	Training session or group meeting or continuation of sick call or recreation	1700	Receive dinner rations
1000	Water and biscuit break	1730	Eat dinner
1030	Training session	1800	Clean-up
1100	Training session—Ongoing education for children	1830	Daily briefing
1130	Free time for quiet activities	1900	Training session
1200	Receive lunch rations	1930	Planned recreational activities
1230	Eat lunch	2000	Planned recreational activities
1300	Clean-up	2030	Free time for quiet activities
1330	Information and training session Nap for children	2100	Free time for quiet activities
1400	Information and training session Ongoing education	2130	Water and biscuit break
		2200	Free time for quiet activities
		2230	Prepare for sleep
		2300	Lights out

SAMPLE DAILY SCHEDULE FOR TWO-SHIFT SHELTERS

<i>SHIFT A</i>	<i>TIME</i>	<i>SHIFT B</i>
Lights on	0700	Recreation
Receive breakfast rations	0730	Recreation
Eat breakfast	0800	Free time for quiet activities
Clean-up	0830	Prepare for sleep
Sick call	0900	Sleep
Group meeting/sick call	0930	
Water break; opt. biscuit break	1000	
Training session	1030	
Training session	1100	
Free time for quiet activities	1130	
Receive lunch rations	1200	
Eat lunch	1230	
Clean-up	1300	
Training session	1330	
Training session	1400	
Water break; opt. biscuit break	1430	
Quiet recreation	1500	
Quiet recreation	1530	
Free time	1600	
Receive dinner ration	1630	
Eat dinner	1700	Reveille
Clean-up	1730	Receive breakfast rations
Free time	1800	Eat breakfast
Recreation	1830	Clean-up
Recreation	1900	Sick call
Shelter briefing	1930	Shelter briefing
Training session	2000	Training session
Emergency drills	2030	Emergency drills
Water break; opt. biscuit break	2100	Water break; opt. biscuit break
Free time for quiet activities	2130	Free time for quiet activities
Free time for quiet activities	2200	Receive lunch rations
Prepare for sleep	2230	Eat lunch
Sleep	2300	Clean-up
	2330	Training session
	2400	Training session
	0030	Water break; opt. biscuit break
	0100	Quiet recreation
	0130	Quiet recreation
	0200	Free time for quiet activities
	0230	Receive dinner rations
	0300	Eat dinner
	0330	Clean-up
	0400	Training session
	0430	Training session
	0500	Free time for quiet activities
	0530	Free time for quiet activities
	0600	Group meeting
	0630	Water break; opt. biscuit break

SHELTER SUPPLIES

PROVISIONED BY THE FEDERAL GOVERNMENT ¹	DESIRABLE SUPPLEMENTARY ITEMS																																																																																				
<p>1. Food and Water—Survival biscuits, crackers, wafers and carbohydrate supplement (10,000 calories per shelter space); water drums (to be filled by local authorities).</p>	<p>Ingredients for baby formulas, special food for dietary problems, variety of easy to store and prepare foods. Food heating equipment, disposable paper plates, utensils and cups. Canned liquids, such as fruit juices and soups. Extra water for cooking, washing, and decontamination.</p>																																																																																				
<p>2. Medical and Sanitation (instructions on medical care in shelter are contained in each kit).</p> <p style="text-align: center;">a. Medication</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Medication</th> <th style="text-align: left;">Unit</th> <th style="text-align: center;">Kit A (65 per- sons)</th> <th style="text-align: center;">Kit C (325 per- sons)</th> </tr> </thead> <tbody> <tr> <td>Acetylsalicylic acid tablets, USP, 5 gr., 500's (aspirin)</td> <td>bottle</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----</td> </tr> <tr> <td>USP, 5 gr., 1000's, (aspirin)</td> <td>bottle</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Cascara Sagrada ext., tablets (laxative), N.F., 4 gr., 100's</td> <td>bottle</td> <td style="text-align: center;">1</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Eugenol, USP, 1 oz. (toothache remedy)</td> <td>bottle</td> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Eye, nose (and ear) drops, ½ oz.</td> <td>bottle</td> <td style="text-align: center;">3</td> <td style="text-align: center;">18</td> </tr> <tr> <td>Isopropyl alcohol, N.F., 1 qt. (dilute for rubbing alcohol)</td> <td>can</td> <td style="text-align: center;">1</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Kaolin² and pectin mixture, 1 pt. (diarrhea medicine)</td> <td>bottle</td> <td style="text-align: center;">1</td> <td style="text-align: center;">6</td> </tr> <tr> <td>Kaolin² powder, 40 grams. (alternative items)</td> <td>bottle</td> <td style="text-align: center;">3</td> <td style="text-align: center;">16</td> </tr> <tr> <td>Penicillin G, tablets, USP, 250,000 units, 100's</td> <td>bottle</td> <td style="text-align: center;">2</td> <td style="text-align: center;">12</td> </tr> <tr> <td>Petroleum, white, USP, 1 lb. (petroleum jelly)</td> <td>can</td> <td style="text-align: center;">1</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Phenobarbital tablets;</td> <td></td> <td></td> <td></td> </tr> <tr> <td>USP, ½ gr., 500's</td> <td>bottle</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----</td> </tr> <tr> <td>USP, ½ gr., 1000's</td> <td>bottle</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Soap, surgical, 1 ½ oz., with 2% hexachlorophene</td> <td>cake</td> <td style="text-align: center;">6</td> <td style="text-align: center;">36</td> </tr> <tr> <td>Sodium bicarbonate USP, 1 lb. (baking soda) USP</td> <td>can</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Sodium chloride, USP, 1 lb. (table salt)</td> <td>can</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Sulfadiazine tablets:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7 ½ gr., 500's</td> <td>bottle</td> <td style="text-align: center;">1</td> <td style="text-align: center;">-----</td> </tr> <tr> <td>7 ½ gr., 1000's</td> <td>bottle</td> <td style="text-align: center;">-----</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Tablet, water purification, iodine, 50's</td> <td>bottle</td> <td style="text-align: center;">2</td> <td style="text-align: center;">12</td> </tr> </tbody> </table>	Medication	Unit	Kit A (65 per- sons)	Kit C (325 per- sons)	Acetylsalicylic acid tablets, USP, 5 gr., 500's (aspirin)	bottle	1	-----	USP, 5 gr., 1000's, (aspirin)	bottle	-----	3	Cascara Sagrada ext., tablets (laxative), N.F., 4 gr., 100's	bottle	1	6	Eugenol, USP, 1 oz. (toothache remedy)	bottle	1	1	Eye, nose (and ear) drops, ½ oz.	bottle	3	18	Isopropyl alcohol, N.F., 1 qt. (dilute for rubbing alcohol)	can	1	6	Kaolin ² and pectin mixture, 1 pt. (diarrhea medicine)	bottle	1	6	Kaolin ² powder, 40 grams. (alternative items)	bottle	3	16	Penicillin G, tablets, USP, 250,000 units, 100's	bottle	2	12	Petroleum, white, USP, 1 lb. (petroleum jelly)	can	1	3	Phenobarbital tablets;				USP, ½ gr., 500's	bottle	1	-----	USP, ½ gr., 1000's	bottle	-----	3	Soap, surgical, 1 ½ oz., with 2% hexachlorophene	cake	6	36	Sodium bicarbonate USP, 1 lb. (baking soda) USP	can	1	2	Sodium chloride, USP, 1 lb. (table salt)	can	1	2	Sulfadiazine tablets:				7 ½ gr., 500's	bottle	1	-----	7 ½ gr., 1000's	bottle	-----	3	Tablet, water purification, iodine, 50's	bottle	2	12	<p>Special medicines</p>
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¹ As of January 1948 (Federal Civil Defense Guide, Part D, Chapter 2, Appendix 1).

² Either the liquid or powder capable of being reconstituted by the addition of water may be furnished.

SHELTER SUPPLIES—Continued

PROVISIONED BY THE FEDERAL GOVERNMENT ¹	DESIRABLE SUPPLEMENTARY ITEMS
2. Medication and Sanitation—Continued	
h. Dressings	
Bandage, gauze, roller, 2" x 6 yd., 12s	Unit Kit A Kit C pkg. 1 8
Bandage, muslin, triangular, 37x37x52"	each 1 6
Cotton, purified, 1 lb.	pkg. 1 3
Pads, gauze, surgical, 4x4", 200s	pkg. 1 6
c. Other	
Applicator, wood, cotton tipped end, 1/4" x 6", 100s	Unit Kit A Kit C pkg. 1 6
Depressor, tongue, wood, 100s	box 1 3
Forceps, splinter, tweezer, 3 1/2"	each 1 1
Pit, safety, 1 1/2", 12s	pkg. 3 12
Scissors, pocket, straight, 4", double blunt	each 1 3
Syringe, fountain, plastic and attachment	each 1 1
Thermometer, human, clinical, oral, stubby bulb, with case	each 1 4
d. Sanitation	
Two sizes are furnished—Kit III with supplies for 25 spaces, and Kit IV for 50 spaces.	
	<i>Kit Type</i>
	<i>SK III SK IV</i>
Paper, toilet tissue	5 rolls 10 rolls
Seat, commode, plastic	1 each 1 each
Opener, can, hand-operated	1 each 1 each
Pads, sanitary, heavy	1 dozen 2 dozen
Pads, sanitary, regular	2 dozen 3 dozen
Hand Cleaner, waterless, Pt. (Note 1)	1 can 1 can
Gloves, polyethylene	1 pair 1 pair
Spout, dispensing, water	1 each 1 each
Tie-wires, bag closures	1 each 1 each
Cups and Lids (Note 2)	35 each 70 each
Commode chemical, liquid, bottle (Note 3)	1 pt. ea. 1 qt. ea.
Commode chemical, granular, packet (Note 3)	6 each 12 each
Bag-liners, polyethylene, commode	1 each 1 each
Instruction Sheet	1 each 1 each
Fiberboard Boxes	2 each 2 each
Fiber Drum (Note 4)	1 each 1 each
<p><i>Note 1</i>—This item not included in later provisions.</p> <p><i>Note 2</i>—Initial stocks contained 40 and 80 cups. More durable cups (55 and 70) are contained in later provisions.</p> <p><i>Note 3</i>—One or the other is included. Later stocks contain the packets.</p> <p><i>Note 4</i>—The fiber drum is used as the initial chemical toilet. Metal water drums are intended for this purpose after the water is consumed.</p>	
3. Radiological Defense—Shelter Radiation Kits, one per 50-1,000 shelter spaces (a "Handbook for Radiological Monitoring" is contained in each kit describing the instruments and their use.)	<p>Shallow pans and germicidal solution for hand washing.</p> <p>Infant supplies.</p> <p>Paper towels, disposable washcloth packets, deodorants, mouthwash, facial tissues.</p> <p>Trash cans, brooms, mops, dust pans, ash trays, plastic and paper bags, cog and wheel type can opener.</p> <p>Dry-bulb thermometers, humidity indicators.</p> <p>Clothes brushes, shower facilities, rain-coats, tarpaulins (plastic, cloth or canvas).</p> <p>Pails of sand and/or water, stirrup-type water pumps, dry chemical fire extinguish-</p>

¹ As of January 1965 (Federal Civil Defense Guide Part D, Chapter 2, Appendix 1)

Shelter Supplies—Continued

PROVISIONED BY THE FEDERAL GOVERNMENT ¹	DESIRABLE SUPPLEMENTARY ITEMS
4. Safety (fire protection, law and order, rescue)—none.	ers, tools (hammers, pliers, wrecking bars, screwdrivers, wrenches, saws, rope, shovels, jacks, flashlights, and batteries).
5. Communications—none.	
6. Sleeping equipment—none.	Battery powered or transistor radio, telephone and two-way radio, battery powered megaphones.
7. Administrative supplies—none.	Blankets, sleeping bags, mats, air mattresses, cardboard sheets, bunks.
8. Information and training—none.	Log sheets, pads, pencils, markers, bulletin boards, tacks, tape, chalkboards, string or twine, shelter registration forms.
	Training materials, books and equipment to meet recreational and spiritual needs.

¹ As of January 1965 (Federal Civil Defense Guide Part D, Chapter 2, Appendix 1)

REVIEW QUESTIONS

Chapter 1. Overview of Shelter Management

1. What effects, if any, would the size of a shelter tend to have on the role of the manager? How might the manager's job be different in a 2,000 person shelter as opposed to a 200 person shelter?
2. The trained shelter manager has been unavoidably delayed in reaching the shelter to which he has been assigned. When he arrives, he discovers that several people have "taken over" as emergent leaders. They seem to be well accepted by the shelter population, but they are not doing an adequate job in organizing the shelter. How should the trained manager handle this situation?
3. What are the ideal characteristics of a shelter manager in terms of background, skills and experiences, and personal qualities?
4. One of the crucial management responsibilities in the initial period of a shelter stay is assumption of command of the shelter. How might the manager assume command of a high-rise shelter or one with many physically separated spaces?
5. Of what practical significance to shelter management is the concept of "shelter phases?"

Chapter 2. Radiological Protection

1. Describe the major protective actions against radiation that can be put into effect inside the shelter prior to the arrival of fallout. When should these actions be implemented? What, if any, are the steps that can be taken outside the shelter to increase radiation protection; for what types of shelters might such actions be useful?
2. The shelter which you are managing has one small area that offers very high protection against radiation (with a protection

factor of over 500). However, most of the other shelter spaces fall into the 40-100 P.F. categories. The shelterees have not yet been made aware of the differences in protection at present; only you and the radiological team know of this situation. The external fallout levels give indications of becoming quite high. What, if anything, would you do with the high-protection area?

3. There are no trained RADEF personnel in your shelter and you must give the initial radiological briefing to a relatively unsophisticated shelter population. What are the major points about radiation and protective actions that you would want to be sure are understood by everyone in the shelter?
4. In the middle of the first night, 20 or so people present themselves at a shelter entrance seeking admittance. The radiological team leader reports to you that these people have been exposed to a dosage of over 500 roentgens within a relatively brief period. What are your decisions and actions?
5. An emergency situation has arisen that requires a team of people to leave the shelter temporarily, when the external radiation level stands at approximately 20 roentgens per hour. On what basis would you select members of the emergency team, and whom would you be most likely to use? What special instructions might you provide the emergency team before it begins its mission?

Chapter 3. Other Weapon Effects

1. What, if any, are the procedures that can be implemented in a fallout shelter that may slightly increase that shelter's protection against blast effects? Under what conditions should such procedures be attempted, if at all?

Chapter 4. Pre-Occupancy Management Responsibilities

1. Assuming that a shelter had a budget of several hundred dollars to supplement the survival stocks provided by OCD, what additional items should be considered for augmenting the capability provided by the Federally stocked supplies?
2. In a large, high-rise office building, what procedures might the assigned shelter manager adopt to select and recruit a shelter management staff (shelter deputies, community group leaders, and team heads)?
3. Do you agree or disagree with the following statement? Give reasons for your answer. "The job of the shelter manager really begins at the time warning signals are heard. During peacetime, the task of establishing and maintaining operational readiness of a shelter is basically the responsibility of the building owner or the normal management organization, or perhaps someone assigned to the job of shelter planner. The shelter manager should not have to concern himself with changing batteries or rotating food supplies."
4. In a large, high-rise shelter in an office building occupied by many firms and consisting of many shelter areas, what should be done in the event one or more companies refuse to participate in the shelter program? For instance, should the employees of the nonparticipating firms be considered as shelter occupants in the event of an attack? What tactics might be employed to get nonparticipating firms to contribute to the shelter program of their building?

Chapter 5. Organizing the Shelter Population

1. As the manager of a small shelter, how would you organize the population into community (living) groups? How many groups would you establish, with how many shelterees in each? In what order would you set up groups? How would you assign the population to living groups, and how would you select community group leaders?
2. Discuss question number 1, as the manager of a large shelter.

3. What are the major factors that determine how many and what types of task teams should be established in any public shelter? Which teams, if any, are essential in all shelters?
4. What is the proper role of the advisory committee in shelter affairs? Can an advisory committee function in a multi-story, high-rise shelter? How should this committee be selected?
5. Discuss the pros and cons of a shelter organizational structure that combines the task teams and community groups. This means that all people who are assigned to the same task team are thereby members of the same living units.

Chapter 6. Organizing Shelter Resources

1. Under what set of shelter conditions is the establishment of a separate supply team necessary, and under what conditions are other arrangements adequate to control shelter supplies? What organizational arrangements can be substituted for a supply team?
2. Isn't the keeping of shelter records merely a reflection of our normal over-organization and over-involvement with paperwork? Of what possible use could a shelter log and similar records be in a real emergency?
3. Why does management guidance emphasize the equal apportionment of survival supplies to all shelterees? Shouldn't shelter rationing take into account the fact that the survival needs of different people may vary considerably? Shouldn't shelter rationing be based on need and desire rather than on automatically equal apportionment?
4. It will take quite a long time until registration forms can be filled out and the results known to the manager, especially in a large shelter. What information about shelterees would the manager want to discover as soon as possible, and how might this be done without engaging in the time-consuming activity of filling out registration forms?
5. There are several basic approaches to the general problem of rationing supplies in a shelter. One approach is to start out initially with the lowest possible ration and increase it in the future as conditions permit. A sec-

ond approach is to initially distribute relatively large supply portions, and cut down later as needed. Finally, one can try to maintain as even a ration as possible for the duration of the shelter stay. Discuss the merits and disadvantages of these approaches.

6. What general decisions would you be faced with as the manager of a high-rise shelter in which most of the survival rations are located in the basement? What supply procedures would you adopt to implement your general decisions?

Chapter 7. Organizing Activities and Patterns of Living

1. What is the value of a shelter schedule? In developing a shelter schedule, what activities and operations should be planned for the first six hours? For the first 24 hours?
2. Which, if any, shelter rules should be left to the discretion of the shelter population? What factors does the manager have to take into account in determining which rules shelterees can make for themselves? How might the passage of time in shelter affect shelteree attitudes toward shelter rules?
3. Discuss the advantages and disadvantages of each of the following approaches to the development of shelter rules.
 - a. Establish an elaborate set of shelter rules covering all contingencies, including corrective actions to be invoked in case of violation. See that shelterees are informed about rules.
 - b. Establish a very general set of categories of rules. See that shelterees are briefed on the categories. Except for the most essential regulations, do not make up a detailed set of rules in advance of any social-control situation. Determine the appropriate corrective action at the time of any incident.
4. In peacetime, the innocence or guilt of persons who have been accused of breaking the law is very often determined by a jury of their peers. Therefore, in a shelter, the determination of innocence or guilt and the selection of the appropriate corrective action should also be left to a jury of shel-

terees. Discuss the appropriateness of this procedure.

5. It is now four days after time of shelter entry. A small group of about a dozen male adults, who have resisted you and your staff throughout the shelter stay, have now completely defied your authority. They are molesting women, taking rations at will, and generally terrorizing the surrounding group. They say they will burn the shelter down if they are expelled. At least one of them may be armed with a knife. What are your decisions and actions? What factors must you take into account in arriving at a decision?

Chapter 8. Atmosphere and Temperature Control

1. Discuss the procedures that you would implement in a naturally ventilated shelter, if the temperature has risen to a very uncomfortable level. What are the alternatives in the event that none of the suggested procedures serve to keep the temperature rise down?
2. It has often been demonstrated that, in a shelter, some people feel warm and others cold within what is supposed to be the temperature zone of optimum comfort. How would you handle the problem of widely divergent shelteree reactions to a given temperature level?
3. What special temperature and atmosphere control procedures would you set into operation in a shelter that is dependent upon fuel-burning machinery?
4. What special cautions, if any, should be exercised in a mechanically ventilated shelter equipped with filters?

Chapter 9. Water

1. What steps can be taken after shelter entry to augment the water supplies in the OCD drums? When and how should these steps be undertaken?
2. What are the factors to consider in selecting a method for distribution of water in a shelter? Discuss some of the advantages and disadvantages of several different approaches to water distribution.

3. Do you agree or disagree with the following statements, and for what reasons? There is no way to maintain sanitary standards in a shelter. Therefore, efficiency and conservation should be the goals in distributing water and other supplies, instead of going through the motions of maintaining sanitary standards. This means that, if necessary, someone should suck on the water hose to start the suction, or distribute water by dipping his cup into the drum and filling other cups from his. These methods are all right as long as the person performing them does not have any communicable disease.
4. What are the factors you would take into consideration before you would permit the use of potable water for any purpose other than drinking?
5. How does the human need for water fit into the total picture of shelter activities and operations? What would be the general effect upon shelter operations of a shortage of water? In turn, how do other operations, activities, and situations affect the amount of water required for survival?

Chapter 10. Safety

1. What are the basic rules related to fire prevention that all shelterees should be made to understand?
2. How would you organize the activity of "fire watch" in a shelter? Who, what, when, where, how many people, for how long a time should be involved in the fire watch?
3. Discuss the factors that you must take into consideration in assessing any structural damage that your shelter might have received.

Chapter 11... Food

1. Normal, healthy persons can survive two weeks without any food. Why then has so much money been invested in survival food supplies for community shelters, and why should there be any concern about the palatability of the survival rations?
2. The carbohydrate supplement is being stocked in shelters to add variety to the survival diet. Discuss the different ways in

which the supplement can be used as part of the shelter ration. What are some of the varied methods for distributing the carbohydrate supplement, and what are the advantages and disadvantages of each method?

3. What effect does the size and configuration of the shelter have upon the total food operation? Discuss how food storage and control, rationing, preparation, distribution, and consumption might be different in the large, high-rise shelter as compared to the small, single space shelter.
4. What factors should be taken into account in setting up a feeding schedule? How would size of shelter affect the schedule?

Chapter 12. Sleep

1. What decision alternatives are available to the shelter manager in the event that there are only enough bunks for half the shelter population to sleep on at one time, assuming there is enough floor space for the rest of the population to sleep on? Under what conditions might each alternative be the best possible choice?
2. Realistically speaking, can anything be done about persons who unwittingly, but regularly, keep others awake at night with cries, moans, or snores? How important is it to try to maintain quiet during "lights out?"
3. In a shelter inhabited by people of widely varying ages and states of health, it may be very difficult to get everyone to agree to a common time for "lights out." How might the manager deal with a situation such as this?
4. If members of the night watch are selected from among the shelter population, they may often not be willing to report incidents involving fellow shelterees to the manager. How can the night watch be made into a truly functioning arm of shelter management?
5. It has been demonstrated that many shelterees are more comfortable sleeping head-to-head, although a head-to-toe arrangement is frequently recommended as a sleeping position for health reasons. Should each individual be allowed to make his own de-

cision? If so, are there any other aspects of the sleeping problem that should be left to the will of the people? If this is not a decision for individuals to make, how should it be handled?

Chapter 13. Sanitation

1. Why is the maintenance of high sanitary standards given such emphasis in shelter management guidance, even though realistically such high standards may be very difficult to achieve in a group shelter?
2. It is possible that people might resent being assigned to a sanitation team, especially the toilet team. They may even refuse to accept an assignment to this team. How can the manager overcome this problem and recruit a sanitation team that will perform its tasks efficiently, without becoming a potential source of disturbance?
3. What are the most reasonable ways to deal with the diaper problem in a shelter with a large number of infants and toddlers? What are the advantages and disadvantages of each method?
4. Discuss the factors that must be taken into account in establishing a toilet area using OCD sanitation kits.
5. What are some of the potential problems associated with getting shelterees used to strange, new toilet practices, in view of the strength of normal habits?
6. What are some potential sanitation problems to anticipate in a shelter with an augmented food capability?

Chapter 14. Medical Care

1. The medical kits stocked by OCD provide a capability to perform first aid and to treat minor illnesses. Many shelters will contain people who entered the shelter with serious medical conditions unrelated to the effects of nuclear attack. What, if anything, can the shelter manager do to increase the survival chances of shelterees entering with serious medical problems?
2. Assuming a shortage of medical supplies, what criteria should the manager use in allocating the available supplies in a shelter with many patients of both sexes, all ages,

and suffering from ailments varying widely in their severity?

3. What combinations of shelter conditions would call for the establishment of a sick bay?
4. The dual-purpose use of supplies or equipment is a key principle of shelter management. What items likely to be commonly available can be made into improvised medical supplies and equipment?
5. What are the required actions on the part of the shelter manager in the event a death occurs in the shelter?
6. How should the manager staff a medical team in the absence of a licensed physician? If two or more physicians are present?

Chapter 15. Illumination and Power

1. What special cautions must be exercised in using fuel-burning equipment in a shelter?
2. Assuming that there are only three or four small areas of the shelter that have adequate lighting, what shelter activities or operations should be conducted in these areas?
3. Assuming a single flashlight as the only source of light available, what procedures might the manager adopt to maximize the useful life of the flashlight?
4. Can a small shelter be operated in almost total darkness (no lighting devices available)? Give reasons for your answer.

Chapter 16. Communication

1. Why is it so important to provide the shelter population with information on a regular basis, even though there may be little news to report?
2. In the absence of a telephone or public address system, it may be very difficult for a shelter manager to communicate with the population in a large, high-rise shelter. Under these circumstances, what are some possible procedures that can be adopted to separated areas of the shelter?
3. Under what conditions can a group session in which the shelterees collectively air their feelings be a valuable contribution to shelter adjustment? Under what conditions does it have the potential for becoming a disturbing influence in the shelter?

4. Why must communication between a shelter and the emergency seat of local government be strictly regulated?
5. What procedures should be established for monitoring incoming broadcasts of the Emergency Broadcast System and other communication channels? Should incoming messages automatically be broadcast throughout the entire shelter? Why (why not)?

Chapter 17. Training

1. Should a training program be considered as a required activity in a shelter, or should it be regarded as more or less an optional feature of a shelter stay? Give reasons for your answer.
2. How should the shelter manager deal with the problem of people who refuse to participate in training sessions? What should be done if a large number of shelterees, perhaps even a majority, resist participating in training?
3. In the matter of developing a training program, what should be the responsibility of the training team, and what the responsibilities of other teams (such as radiological and medical) whose members have the technical information to convey?
4. What kind of training for postshelter living can realistically be conducted during a shelter stay, in light of the uncertainties concerning the nature of the postattack world?
5. What kinds of needs and problems are likely to be faced in carrying out training activities for children?

Chapter 18. Psychological Support

1. What actions, if any, should be taken by shelter management, in the event that drug addicts are present in the shelter; in the event that alcoholics are present?
2. What set of shelter conditions would call for the establishment of a psychological first aid team?
3. Do you agree or disagree with the following statement, and for what reason? "The purpose of a fallout shelter is to keep people alive physically. As far as mental well-being is concerned, there will be ample time in the

postshelter recovery period to get people adjusted to living in a strange, new environment. To try to sustain emotional adjustment among the occupants of a shelter is an unreasonable goal, given human nature and the characteristics of shelter confinement."

4. After several days in the shelter, the deputy manager whom you appointed on the basis of his vast knowledge and experience starts to become very argumentative in his contacts with you. He tells others in the shelter that you are not doing your job properly. He begins to spend more and more of his time with a small group of people who apparently have been drawn together by their dissatisfaction with the way things are going in the shelter. How do you deal with this situation?

Chapter 19. Religious, Recreational, and Service Activities

1. Do you agree or disagree with the following statement? Give reasons for your answer. "Under conditions of actual attack, there will be no time for planned social and recreational activities in a shelter, no matter how long the period of confinement lasts. For one thing, people will be in no mood to play games. In addition, there are many shelter activities much more important to survival than recreation that will keep people occupied the length of the shelter stay."
2. A large urban shelter will very likely have members of many religious faiths and denominations. How should the shelter manager establish a program of religious activities, upon request of the shelterees, that will accommodate the wishes of the diverse faiths and denominations, without alienating any group of shelterees, and without interfering with shelter operations?
3. Describe some techniques for improvising equipment for common games with materials that are likely to be available in many public shelters.
4. What, if anything, should the manager do about people who refuse to participate in any planned social and recreational activities and prefer to remain isolated and withdrawn?

Chapter 20. Post-Occupancy Management Responsibilities

1. In the absence of an external communication capability, how, if at all, can the manager determine that it is safe and feasible for the confined population to leave shelter permanently?
2. Discuss what some of the major problems of the immediate postshelter situation are likely to be in an urban area of the country

that has been subjected only to fallout and not to any blast or fire damage. Would these problems be the same for a rural area under the same conditions? If not, how would they be different?

3. What are some conceptions of the role of the shelter manager in the immediate postshelter environment? Is it likely, or desirable, that he become a private citizen as soon as local government begins to resume active control of the community?

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