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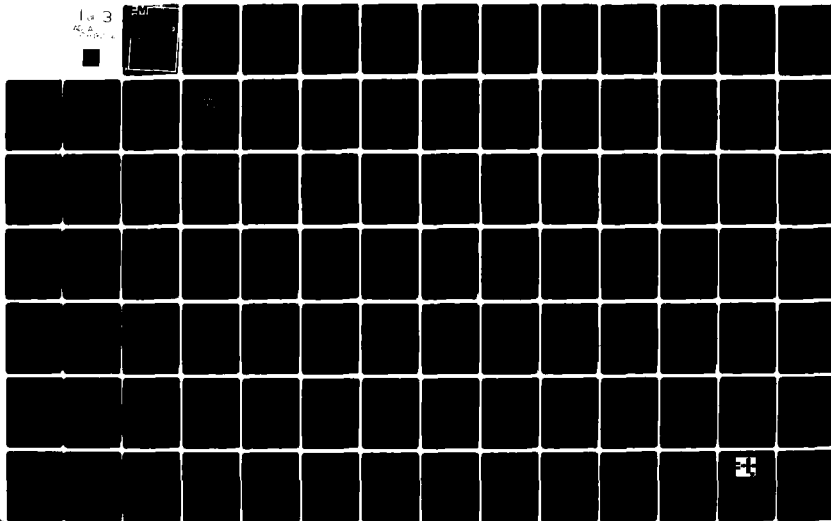
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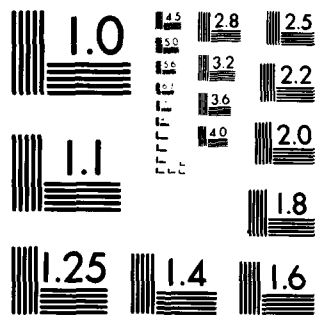
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**MODELS OF
SHELTER MANAGEMENT
TRAINING AND
DELIVERY SYSTEMS**

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MODELS OF SHELTER MANAGEMENT
TRAINING AND DELIVERY SYSTEMS

by

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Washington, D.C. 20472

Final Report
May 31, 1980

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The report presents a number of related analyses intended as input to model building efforts. For the training model, audience characteristics, the shelter environment, areas of responsibility, and instructional management considerations are examined and converted into a set of considerations and options. Three training configurations are then developed based on three training scenarios.

For the design of the delivery system, prerequisites and requirements are described and delivery components are defined. The viability of two candidate delivery agencies is then assessed with reference to system requirements and a number of organizational dimensions. Finally, optimal delivery strategies are described based on a combination of the capabilities of the two agencies.

A "conclusions and recommendations" section summarizes the major conclusions from the report and presents suggestions for future directions.

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EXECUTIVE SUMMARY

Policies adopted by the Federal Emergency Management Agency (FEMA) necessitate training a cadre of approximately 30,000 shelter managers during the years 1981-1983. The shelter manager would have two principal functions: (1) to become familiar with the assigned facility and prepare it for use during a crisis; and (2) to manage congregate care/shelter facilities during an emergency. A Request for Proposals (RFP) was issued seeking scientific input into the design of a training system and a compatible delivery system that would establish the capability to train the required number of shelter managers. This report summarizes the findings from a project which was carried out in response to this request.

The purpose of the project was threefold: (1) to design a shelter management training system (SMTS) that would display training requirements, specifications, and strategies for providing the competencies needed to carry out shelter management functions; (2) to design alternative and complementary training delivery systems (SMTDS) that would make use of existing arrangements of host organizations and societal groups; and (3) to develop recommendations for implementing the above goals. The Shelter Management Training System and its complementary Shelter Management Delivery System must provide for training during four different time phases: (1) peacetime; (2) an extended crisis-expectant period; (3) a short crisis-expectant period; and (4) no preparation/short-warning period, under a variety of performance conditions (e.g., large/small shelters, target/host area, etc.), and by means of a flexible arrangement of delivery agencies capable of providing training and support in all community situations.

The report is divided into four chapters. The content of each chapter is briefly summarized below.

Chapter One presents some of the background with regard to Civil Defense policies and practices that gave rise to the need for shelter management training. This chapter also describes some of the methodological features that were incorporated into the design of the SMTS and the SMTDS.

Chapter Two begins with analyses of the various audiences for shelter management training and of the variety of shelter environments that must be accommodated by the training design. Results are then presented from an analysis of the prerequisite skills that trained shelter managers must possess and the responsibilities they must assume. Next, the various instructional options are considered in separate analyses that attempt to provide answers to the questions of where, when, and how shelter management training should be conducted. The product of these analyses is an ideal image of a Shelter Management Training System that is responsive to the most probable training situations.

Chapter Three presents a discussion of the requirements for good delivery. Organizational characteristics and features of agencies are described that have implications for a candidate agency's efficacy for delivering shelter management training. Two of the most important candidate agencies, the American National Red Cross and the community college system, are then analyzed according to these characteristics. Alternative models of delivery using these two agencies are presented and other options for delivering Shelter Management Training are briefly discussed.

Chapter Four has two parts. In the first part, a summary of and conclusions from the investigation are presented. The second part lists and discusses recommendations for further design, development, and pilot testing.

Included among these recommendations is a proposal that SMTS and SMTDS be defined as part of a larger FEMA training system and a plan for the collaborative development and pilot testing of a multi-agency shelter management delivery capability.

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CHAPTER I

BACKGROUND AND APPROACH

In this chapter, we will present our perceptions of the context and concepts which form the background for our development of a Shelter Management Training System (SMTS). We have based our work on an analysis of factors related to the shelter system and to shelter management in the literature of Civil Defense, and on a methodology that has proven useful for the design of instructional systems.

Section A of this part of the report will discuss briefly the larger civil defense system into which the shelter program and shelter management training must be integrated and will consider some of the reasons why such a training system is necessary. Section B will present an overview of the methodology used, including a summary of the design principles and procedures used in the project. Finally, Section C of the Introduction presents some of the important constraints on the inquiry.

A. Shelter Management and Civil Defense--the Need

Before attempting to design any training system, it is necessary to consider the history of the subject area, discipline, profession, or larger system for which the training system is being developed. A knowledge of this history is necessary in order to fully understand the present need; to appreciate the attitudes and values of the individuals who have shaped the system; and to identify some of the institutions, arrangements, and resources with which the new training system must interact.

The Shelter Management Training System (SMTS) is intended to provide training which will prepare individuals to manage congregate lodging facilities and fallout shelters during a nuclear war or other crisis requiring the

protection of the population. The system becomes a part of the Shelter Program, which in turn is the complement of the Crisis Relocation Plan within the U.S. Civil Defense program. In the next subsection, we will consider briefly past and present aspects of the Civil Defense program which have affected and currently affect the design of the SMTS.

1. Civil Defense in the 1980's

In each decade, this country has seen changes in the American attitude toward the possibility of war. These changes have been accompanied by a developing awareness of the need for Civil Defense. At the same time, developments in weaponry and in the military potential of both the great and smaller powers have required that the methods used to defend a civilian population change as well. The current Civil Defense system is the result of these changes in the nature of the threat and the public's perception of that threat.

a. The strategic significance of Civil Defense. In the wars that have been fought since the beginning of the twentieth century, the proportion of civilian to military casualties has steadily increased. One reason for this has been the fact that a modern war requires an immense amount of support, not only in the form of pay and food for the soldiers, but in the form of ammunition, weapons, equipment and other war materiel. World War II saw the first large-scale attempts to defeat an enemy by destroying its ability to support a war, with the consequent destruction of the means of production and the surrounding civilian population. According to Lenin:

The primary productive factor of all humanity is the laboring man, the worker. If he survives, we can save everything and restore everything...but we shall perish if we are not able to save him.
(Journal of Civil Defense, 1979, p.23)

Presumably, the converse is also true: Destruction of an enemy's work force would in the long run be even more effective than destruction of the soldiers. If international tensions should escalate to the point of war, citizens of all countries involved would be in danger. In the United States, it is estimated that at least 400 areas would be possible targets, as indicated on the risk map on page 4. These "risk areas" include the homes of about two-thirds of the population (DCPA, 1979a). The nature of an attack could range from the destruction of a single city as a warning, to tactical attacks on specific industrial or military targets, to an all-out attack on American industrial capability (DCPA, 1979b). The effects of any attack would include physical destruction of people and property due to the blast wave and fire in the immediate vicinity of a nuclear detonation, deaths due to fallout, damage to the economic and social system, and deaths resulting from the deterioration of conditions following the attack.

Obviously the effects on people would be much less severe if people could be protected in some way. A number of basic approaches to Civil Defense have therefore been developed in this country and abroad. Some countries, like Norway and Sweden, have constructed in-place shelters (blast shelters) for their urban populations, which can withstand the effects of nearby nuclear blasts. A second solution is to plan procedures to evacuate a majority of the target area population to less vulnerable host areas (crisis relocation). A third approach is for individual families to develop blast and fallout protection in their own homes.

The Soviet Union appears to have the most comprehensive Civil Defense system of any nation (DCPA, 1979a). Its program is nationwide, consisting of over 100,000 full-time personnel at all levels of the government and economy. Blast protection has been developed for Soviet leadership and for

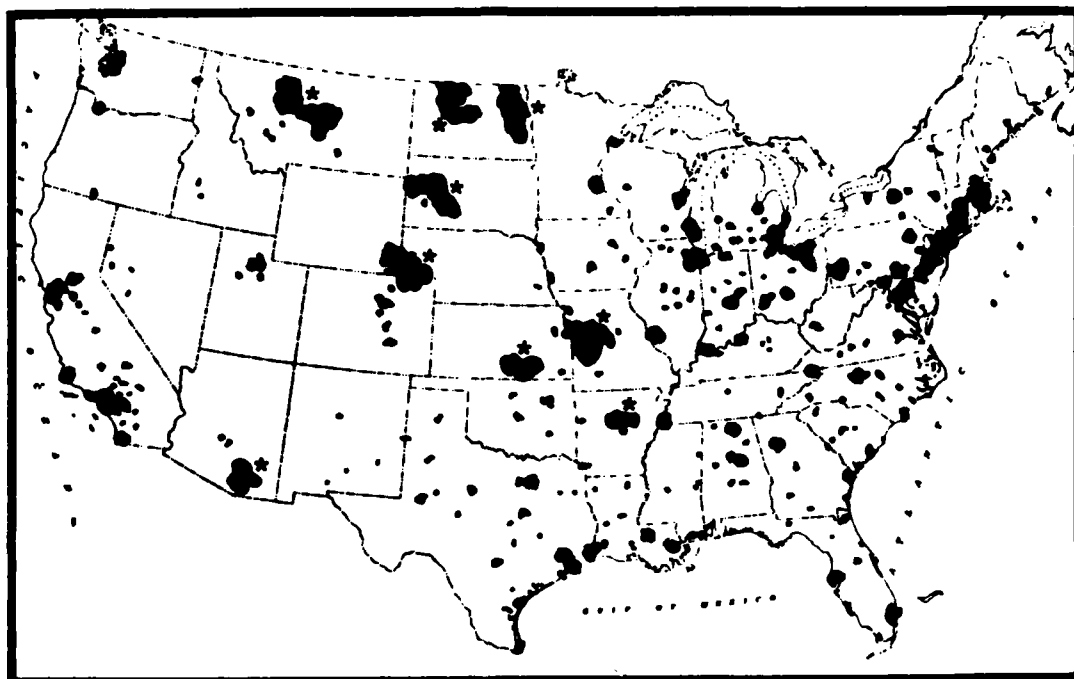


Figure 1. Nuclear risk map showing U.S. military bases, industrial areas, and cities. The nine starred areas west of the Mississippi are ICBM complexes. About 41 of the smaller darkened areas are bomber bases or ballistic missile submarine ports. The rest are various other military bases plus metropolitan areas (250 cities with populations over 50,000). (From Materials for Presentation on Nuclear Civil Protection, DCPA, 1979, p. 42.)

10-20 percent or more of the urban population, including essential workers. Evacuation plans which could be effected in about a week would allow the bulk of the urban population to leave the cities and enter rural fallout shelters. The Soviets have an historical precedent for such a massive relocation, having done so during World War II. In addition, a large proportion of the population has been involved in Civil Defense training and practice exercises for many years. It is estimated that this system of blast shelters and evacuation would enable the Soviets to protect 90% of their population in the event of a nuclear war.

Given the possibility that the current Soviet Civil Defense system would not only enable the USSR to preserve most of its population, but to rebuild their economic capability in two to four years as well (DCPA, 1979b), many experts believe that a serious strategic imbalance exists between the United States and the USSR. T.K. Jones' testimony to the Senate's Joint Committee on Defense Production included the statement that:

These Soviet preparations substantially undermine the concept of deterrence that forms the cornerstone of U.S. security....Under such a condition, the so-called balance of terror shifts significantly in favor of the Soviet Union. In any future confrontation, should the Soviet Union execute its civil defense plans, the consequence of further escalation would be disastrous to the United States. It might well be tolerable to the Soviets. (DCPA, 1979a, pp. 19-20)

Even if such passive defense preparations were not sufficient for a great power to face the prospect of nuclear war with equanimity, it is felt that the willingness to prepare for war might be considered a test of a country's "resolve," and that:

Marked asymmetries in our apparent ability to protect our populations might affect one's perceptions, either ours or the Soviets' or third countries...of where we are relative to each other....It might also make us more vulnerable to coercion. (DCPA, 1979a, p. 22)

It is apparent that a well-planned and credible Civil Defense program could be a deciding factor in deterring or defusing the escalation process leading to a nuclear war.

b. Background of the shelter program in U.S. Civil Defense. Observation of the British bomb shelter program during World War II and, more dramatically, of the effects of the Atomic bomb on the unsheltered populations of Nagasaki and Hiroshima, made it obvious to planners in the 1950's that an effective Civil Defense program must incorporate a shelter program. But, the choice and development of an approach to Civil Defense that would be both effective and acceptable has been influenced by a number of factors, not the least of which has been the history of the "cold war" between the major nuclear powers (Harris & Wanner, 1975).

The early fifties saw the development of a national Civil Defense program in which families were encouraged to adapt basements or develop their own bomb shelters. However, a number of factors including the supremacy of American nuclear capabilities at that time led to a situation where trust was placed in military rather than Civil Defense.

In 1961, the Berlin Crisis and reported developments in Soviet weaponry sparked new public interest in protection. The National Fallout Shelter Survey (NFSS) was initiated to "identify, license, mark with distinctive signs, and stock with essential food and other supplies, suitable public fall-out shelter space in existing structures, mines, caves, and tunnels throughout the United States" (Harris & Wanner, 1975, p. 23). Work on the development of public shelters was accompanied by renewed interest in the construction of private ones. In 1962, the Cuban Crisis accelerated Civil Defense activities.

But the public shelter program faltered again during the late sixties. Although public information on self-protection continued to be distributed, the shelter program remained incomplete (e.g., an AIR study in 1966 noted that public fallout shelter spaces were marked for 44% of the population, but stocked for only 21%)(Bend, Cohen & McDaniel, 1966). As international tensions decreased during the seventies, public interest shifted from Civil Defense to other matters including preparation for natural disasters. Our Civil Defense actions began to be identified with our disaster preparedness activities-- an "all risks" policy reflected in President Ford's 1975 statement, "Through development of the capability to support and assist our citizens in time of war, we are also improving our ability to respond to humanitarian needs during natural disasters" (Harris & Wanner, 1975, p. 28).

The policy of Mutual Assured Destruction (MAD) had also tended to discourage obvious Civil Defense activities (DCPA, 1979a, 1979c). However, in the mid-seventies, government studies indicated that the Soviet's blast shelter and relocation capability, which made it possible for them to protect 90% of their population, represented not only a defensive imbalance but a strategic threat as well (DCPA, 1979a). Presumably, the relative invulnerability of the Soviet civilian population would allow Soviet leaders to hold our cities as hostages while they conducted some kind of offensive move on another front.

Studies of U.S. protection capability indicate that in-place shelters now available are likely to protect only 30-40% of the population. Extensive development of blast shelters might eventually protect 90% of the population, but it would be extremely expensive in time and money. Studies of this sort led to the conclusion that a Crisis Relocation Program, which might protect as many as 80% of the population, was the best and most expedient option. As a result of Presidential Decision #41 (1978), implementation of the program

was set to begin in 1980.

c. The place of shelters in Crisis Relocation Planning. At present, in-place sheltering in the cities using the shelter facilities now available is considered a complementary (and second-best) alternative to relocation. According to a DCPA document prepared in October 1977, full viability of the in-place shelters would require at least a year of intensive effort (including stocking and marking of shelters, training of managers and radiological officers, local planning, and public education).

Crisis Relocation Planning was started in most states during 1977, and detailed local plans are scheduled for completion by 1983. According to DCPA:

Planning provides for keeping essential services and industries in operation in risk areas during the period of evacuation, by key workers commuting from nearby host areas. Host area plans emphasize temporary lodging of evacuees in non-residential structures, feeding, and development of fallout protection primarily by placing earth beside and on top of existing structures identified by engineering surveys. (DCPA, 1977, p. 3)

According to a common scenario in which a week elapses between the relocation order and the attack, the population might be sheltered in the following ways:

- military or civilian leaders protected in blast shelters (Emergency Operation Centers) in or near target areas or host areas;
- a small proportion of population protected to some extent in fallout shelters located in target areas;
- relocated populations protected in upgraded group shelters in host areas;
- relocated populations protected in upgraded private homes in host areas.

In the case of "key industries" or organizations which have developed their own relocation plans, all the employees of certain companies might be relocated to the same town or shelter. Evacuation assignments for special populations would be made by local planners working with host community governments.

d. Public attitudes towards sheltering and crisis relocation. A 1978 survey conducted by Jiri Nehnivajsa of the University of Pittsburgh (Nehnevajsa, 1979) focused on issues of credibility and acceptance of national Civil Defense policies. A sample of adults from all over the country were asked questions relating to Civil Defense. Their responses were analyzed to provide information on: (1) credibility--people's perception of the threat and the effectiveness, utility, and relative advantages of Civil Defense practices; and (2) acceptance in terms of attitude towards willingness to get involved in, and actual participation in Civil Defense activities. This latter analysis is of particular interest in the context of the present report since it addressed questions of whether people in risk areas would relocate to safer areas during a period of high international tensions and of how willing people in potential host areas would be to receive them.

Survey results indicated that almost half the population might evacuate spontaneously during a period of extreme threat, and that even more would relocate given a Presidential order. This would bring the total number of evacuees to 69.1% of the population. Many, however, indicated doubt that there would be enough warning time for them to evacuate safely. Nevertheless, despite some doubts, 78% of the population believe that the United States ought to develop Crisis Relocation Plans.

With regard to shelters, 32.4% of those surveyed were in favor of public fallout shelters, and a clear majority felt that shelters should be built, marked, and stocked. Many felt that blast as well as fallout shelter protection should be provided. As much as 37% of the respondents had considered sheltering in their basements. Public support of a crisis relocation policy is reflected in the finding that 72% of the population indicated a willingness to share their basements or home with others if necessary.

Although these findings show that there is considerable national support for relocation, for sharing a shelter with others, and even for opening one's home to strangers, there is some evidence that such studies may not have asked the right questions. British experience in World War II and Dutch experience during a flood in 1953 indicate that despite willingness, social and cultural differences between evacuees and hosts can cause difficulties (Beach, 1967; Iklé & Kincaid, 1956). An American study reported that when an evacuation experience was satisfactory, it was usually because the evacuees were friends or relatives of their hosts and because they stayed too short a time for friction to develop (Iklé, 1964). This report also pointed out that since cities have larger proportions of non-white residents than do rural areas, it would be impossible to find sufficient numbers of "peer families" to match urban residents with (Iklé & Kincaid, 1956, pp. 11-61). Despite public support for a Crisis Relocation and Shelter Program, such a program might present problems which should be anticipated in Civil Defense planning and in the training of individuals entrusted with congregate care.

2. The Need for Training

There are a variety of reasons why there is a need to train the individuals who will be in charge of congregate lodging facilities and fallout shelters. These reasons include but are by no means limited to the following:

- Shelter management denotes a wide assortment of responsibilities. The American National Red Cross examined the shelter management problem and identified scores of discrete administrative, organizational, operational, and technical duties and services. On the basis of the enormity of the tasks that have to be carried out alone, some prior familiarization seems to be required.
- Some shelters will be quite large. The job of managing and satisfying the needs of thousands of evacuees is too complex to be left to an emergent leader (Miller, 1960).
- Shelter management will occur during a crisis situation. A crisis situation, and especially a nuclear crisis situation, is a peculiar one. It will be difficult for an individual to cope with varieties of crisis-related problems based on experience alone (Hilmar, 1960).
- Many shelter management problems will be technical in nature (e.g., ventilation). Technical problems call for technical skills that require practice and would be difficult to learn on the spot.
- Every contingency cannot be worked out in advance. There is a need to have individuals who are oriented to the "big picture," and the overall status of people and resources in order to deal with contingencies and to prevent them from becoming problems (Carr, 1968).
- Recruitment alone cannot be relied on to produce that mix of knowledge, skills and dispositions that characterize a successful leader.
- People tend to follow leaders that they judge to be prepared and composed and mistrust leaders that they believe to be inexperienced and unprepared.
- One of the most crucial periods in shelter life will be the first few hours. The intensity of this period and the number and kind of tasks that must be performed makes it necessary that managers receive extensive pre-training.
- The overall boost in effectiveness associated with trained vs. untrained leaders found both in naturalistic settings, e.g., the British experience in World War II (Guskin, 1960) and in experiments in the area of shelter management (Smith, 1966) makes it apparent that training may not only be the key to a smooth in-shelter operation but to the successful transition to post-shelter life as well.

B. Methodology

Just as the medium used affects the content of a message, a Research and Development methodology inevitably affects the nature of an R&D product. An understanding of the conceptual framework for this project is therefore essential for the comprehension of the material in this report. In this section, we will discuss two fundamental aspects of the methodology: the interdependence of training and its delivery, and the principles of system design.

1. Training and Delivery

A systems approach to the design of an educational system--a system whose major purpose is to educate--requires that attention be paid to the different levels that affect or are involved in the educational process. Viewed broadly, the educational system of which shelter management training is a part can be described with reference to five levels.

The first, and most inclusive level is the societal. The societal level consists of the general population whose needs the system must meet and which is the ultimate source of both system resources and clients. The institutional level is the policy-making level of an organization or agency. In the present context, the institutional level is represented by the national and regional offices that administer the national Civil Defense System. Policies developed at the institutional level are implemented at the organizational level. In that instance, the organizational level is represented by local offices in the Civil Defense System. These offices in turn assign responsibilities for shelter management training to individuals, programs, or departments within or outside the agency who are then charged with carrying out the training. The resultant arrangements and practices constitute the instructional level.

Finally, the learning experience level is embodied by the shelter management "classes" and the trainees. Figure 2 presents a more detailed depiction of the levels of the system.

Level in the Hierarchy	Civil Defense Entity	Personnel Involved	Activities
Societal Level	Citizens of the United States	Individuals without CD Affiliation	Expressing needs, Influencing Policies Providing Resources
Institutional Level	National, regional, state-level agencies concerned with civil defense	Administrators	Set policy and guidelines, manage and disseminate R & D, receive, evaluate, data
Organizational Level	Local Civil Defense offices	Local administrators and managers	Authorize and organize resources for training
Instructional Level	Department or program responsible for shelter management training	Instructors or trainers	Set objectives, develop instructional arrangements, conduct training
Learning-Experience Level I	Shelter management classes	Prospective shelter managers (trainees)	Learn how to manage a shelter
Learning-Experience Level II	Congregate lodging facility or fallout shelter	People living in the shelter (volunteer team leaders, etc.)	Learn how to participate in survival activities

Figure 2. Systems levels involved in shelter manager training.

In this report, we will be dealing primarily with two levels of this hierarchy--the Organizational Level, represented by the model for a Shelter Management Training Delivery System (Part III), and the Instructional Level, represented by the model for a Shelter Management Training System (Part II).

a. Instructional systems. An instructional system has been defined by Smith as "an integrated set of media, equipment, methods, and personnel efficiently performing the functions required to accomplish one or more

objectives" (Smith, 1966, p. 18). It is the means by which the instructor arranges and manages the activities at the learning-experience level that enable students to attain system objectives.

Figure 3 shows a general model of an instructional system developed by Smith. The model displays how a system's functions must interact in order to accomplish instructional objectives.

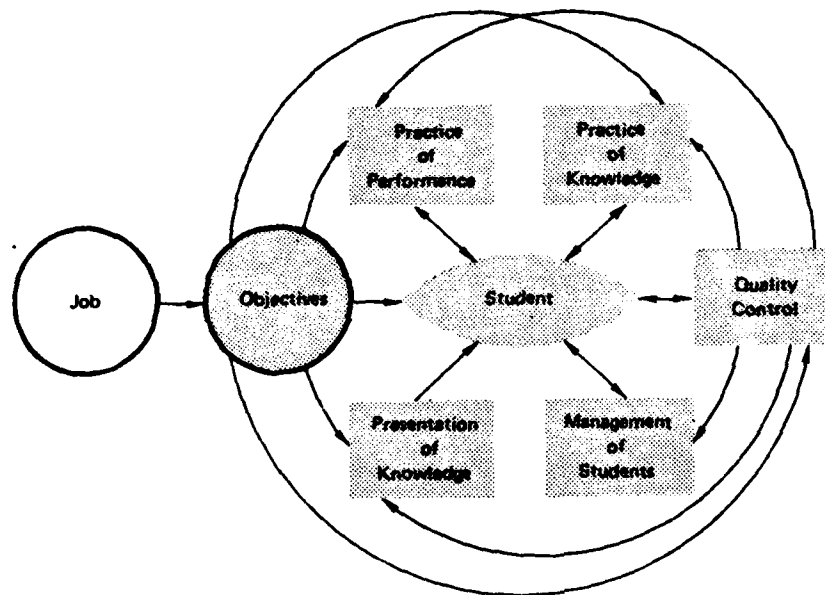


Figure 3. A model of an instructional system. (From Smith, 1966.)

In the present context, the Job is that of the Shelter Manager and consists of all the tasks which the manager of a congregate lodging or fall-out shelter must be able to perform. From an analysis of these tasks, one may derive behaviors which can be written as behavioral objectives in the areas of knowledge, skills, and attitudes. When the student or trainee has attained these objectives, he or she will be able to perform the shelter manager's job.

In the instructional situation, the trainer presents the student with knowledge and arranges for him/her to practice using that knowledge through various strategies of instructional management. Quality control, or evaluation, is applied in order to determine whether or not the training has been successful.

Smith presents the components of an instructional system as an interactive cycle. Gagné and Briggs (1974) describe in more detail, a series of linear instructional events. However the two approaches to defining the instructional process can be related as follows:

<u>Gagné and Briggs</u>	<u>Smith</u>
Gaining attention.	Analyzing the job.
Informing the learner of the objective.	Objectives.
Stimulating recall of pre-requisite learned capabilities.	
Presenting the stimulus materials.	Presentation of knowledge.
Providing learning guidance.	Management of students.
Eliciting the performance.	Practice of knowledge. Practice of performance.
Providing feedback assessing performance.	Quality control.
Enhancing retention and transfer of learning.	

The process by which an instructional system can be designed for Shelter Management Training will be described in Section 2.

b. Delivery systems. The concept of a "delivery system" probably first reached public awareness in the context of the space program, where it was used to refer to component equipment and activities required to get the payload (men, scientific equipment, fuel and supplies, etc.) from the launch point to the point of destination.

In recent years the term has been adopted by instructional designers to describe the arrangements, activities and support materials which work together to deliver a given instructional system to its users. The delivery system can therefore be seen as including the instructional system it delivers, just as the organizational level embraces the instructional level.

Banathy (1977) describes a delivery system for educational change as performing three major functions: defining and displaying the desired change, designing the institutional adaptations needed for the change to take place, and arranging for change implementation and management. In addition, the designer of a delivery system must do the following:

1. consider how the instructional system can be applied in a variety of user settings;
2. consider the effects of delivering the instructional system at all five levels of the educational system;
3. consider simultaneously and interactively the instructional system's environment, goals, functions, components, and processes.
4. establish an interface between the instructional system and the constraints of the real world.

It is apparent, therefore, that the delivery system concept includes and draws upon concepts and strategies from areas such as dissemination, implementation, institutionalization, and organizational change. In Part III of this report we will discuss the influence of relevant literature on the development of delivery systems, as well as the role of the delivery

system in providing an interface between the instructional system and the Civil Defense system as a whole.

2. System Design

The process by which one arrives at an instructional or delivery system is design. Banathy (1979) describes the design process as follows:

Design is concerned with how things ought to be. Design explores and devises systems that attain goals, and it seeks out paths leading towards them. Design releases our creative potential. It involves us in an unbounded speculation about reaching desired outcomes. The designer sets forth ideal images of a desired future state and, considering constraints, seeks to devise ways and means by which to get as close as possible to the ideal. (p. 2)

For Banathy, design is a process of disciplined inquiry having five major components:

- The analysis of the design problem and the formulation of the goals or requirements of the system to be designed, or the specification of the system state we wish to attain;
- The devising of a set of differentiated alternatives, alternatives that are acceptable representations of the future system state;
- The display of criteria by which to examine the alternatives;
- The selection of the most promising alternative(s); and
- The communication of findings.

Unlike the natural and behavioral sciences, in which the goal is analysis, such fields as engineering depend more heavily on synthesis and design. Analysis is concerned with describing the way things are and how they work. Synthesis and design is goal-oriented inquiry that is concerned with the way things ought to be. The process of constructing and reconstructing systems is the principal methodology of design (Gephart, 1978).

The design of training and delivery systems for shelter management involves the synthesis of information from a variety of sources which must then

be interfaced with the requirements of the social and instructional setting in order to present an image of what Shelter Management Training ought to be. Some of the principles, strategies, and constraints of this process are described below.

a. The design process. The basic design process for any educational system involves the interaction of four operations: input, transformation, output, and feedback/adjustment (Banathy, 1977). These operations may be defined as follows:

- Input consists of information gathered from a variety of sources about every aspect of the educational system being addressed, from the learner and instructional environment to the content or competencies being taught.
- Transformation covers the major activities of establishing objectives, selecting appropriate content, methods, and educational resources, and developing assessment procedures and implementation arrangements.
- Output includes the results of transformation activities in which a "model" of the proposed instructional system is described and tested against an analysis of the system into which it will have to fit.
- Feedback involves analysis of the assessment and revision of the model so that it can be used as a basis for development of instructional programs or products.

Figure 4 shows relationships of these operations when applied to the development of the Shelter Management Training System.

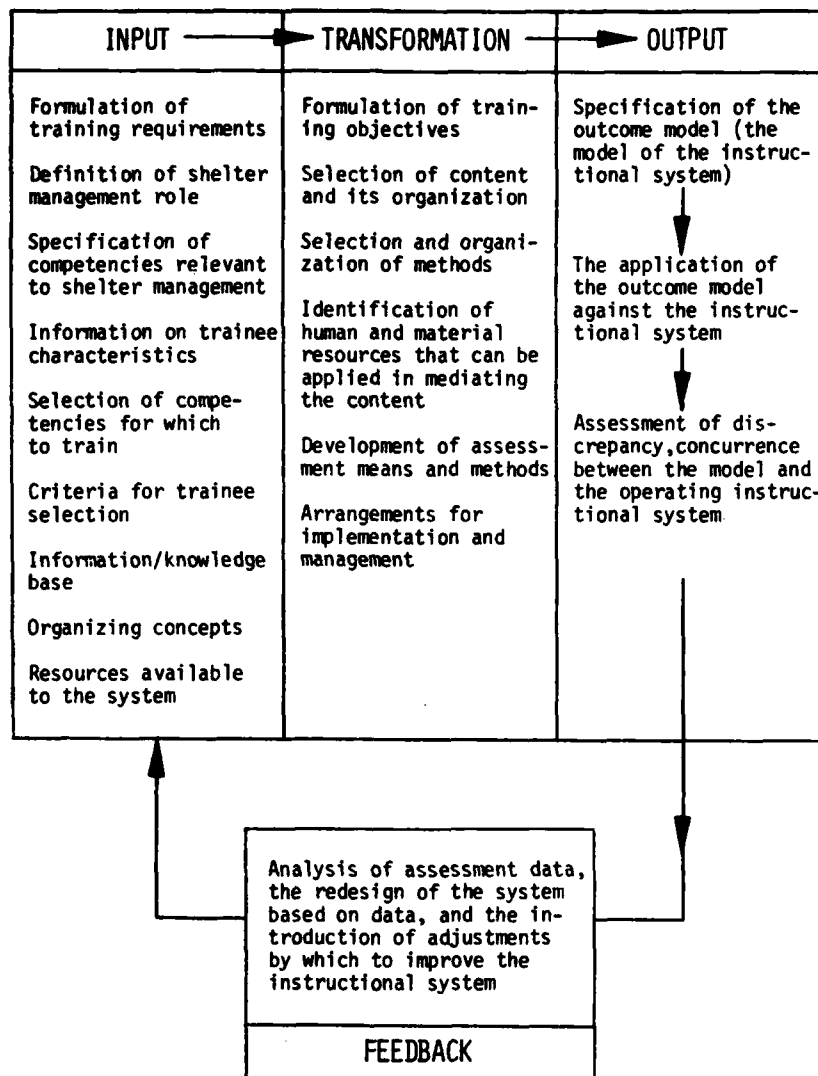


Figure 4. Model of an instructional systems design. (Adapted from Banathy, 1977.)

The four operations we have just discussed can be considered as covering the first of several stages which lead to the actual development and testing of an instructional product. These stages and the relationships displayed among them are in the diagram below.

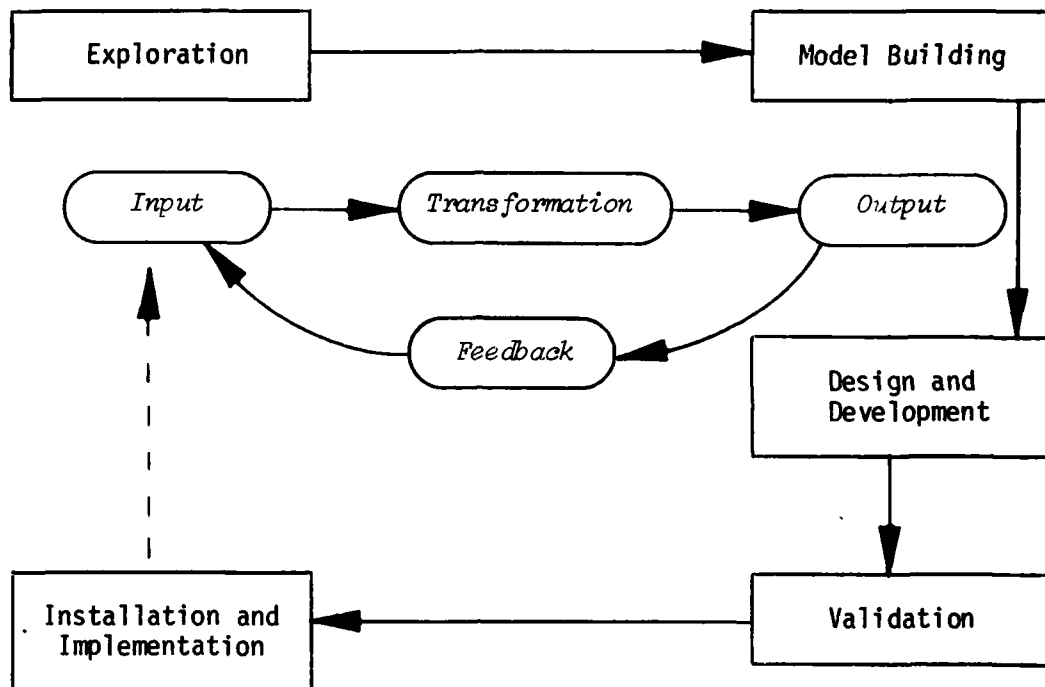


Figure 5. Stages in the development of an instructional product.

The stages can be defined as follows:

- Exploration stage. The identification of the product or system that should be analyzed or the problem that needs to be solved.
- Model building stage. (1) The construction and testing of alternate conceptual models in order to determine what the product or solution should be able to do and how it should look; (2) the plan for development, validation, and installation.
- Design and development. The design and the building of a working product or solution.
- Validation. The supervised testing and revision of the working system with appropriate audiences.
- Installation and implementation. The "hands-off" trial of the system under naturalistic conditions.

In this report, we are concerned with the first cycle of design activity, in which the input provided by an extensive exploration of relevant literature is transformed through a variety of analyses into output in the form of the Shelter Manager Training and Delivery System Models.

b. Modeling the system.* One of the most prominent activities in the process of design is the development of a "model" of the system being addressed. As used here, the term model refers to the conceptual representation of "something to be constructed," such as a product or solution to be developed. Its outcome is a description of what the product should be able to do, what it should look like, and perhaps, a plan for how it will be developed.

Spending the time to develop such a description of a proposed product or program gives the developer the freedom to speculate freely and consider a broad spectrum of alternative approaches to the problem with a comparatively modest investment of time and resources. Careful evaluation of a model for an educational product can identify potential problems or deficiencies. If these are corrected in the design stage, the developed product will require less revision. When time allows, a number of alternative model solutions to an educational problem should be developed and then compared and synthesized to arrive at the most useful product.

In constructing a model of a training system or subsystem, one may choose to focus on either its structure (aspects or components and relationships among them) or its processes (the learning stages and activities involved in those stages). Both structure and process are of equal importance: they are the two sides of the systemic coin. Which one is emphasized may depend on the nature of the system involved or the use to which the model will be

* Adapted from Banathy, Developing a Systems View of Education, pp. 77-79.

put. Diagrams illustrating examples of structural and process models appear on pp. 23 and 24.

In this report, we present "models" of two systems involved in the training of Shelter Managers--the Shelter Management Training System, and the Delivery System that supports it. In modeling the Training System, we are primarily concerned with structure, i.e., with understanding what the system should include--what content, behaviors, instructional strategies, etc. could or should be covered. In describing the Delivery System, however, we are interested not so much in the various agencies concerned as in the process by which they provide the training.

c. Design principles and assumptions. There are, in addition to the design strategies and procedures just described, an array of principles and assumptions which, if they do not constrain choices and decisions about the design of the systems, will at least be given high priority.

One of the most basic of these is the systems perspective (Banathy, 1978) discussed in an earlier section. The most relevant characteristics of this perspective include:

- Holism is the idea that complex phenomena must be explained by the entire set of relations between their components, and must be described as more than a collection of discrete parts;
- System behaviors include such non-obvious behaviors as communication, control, adaptation, learning, and self-organization;
- Relationships within systems are essentially orderly and can be defined and predicted from the study of comparable systems;
- Open systems feature a dynamic interplay of processes and are regulated by negative feedback (which adjusts or corrects system operations back to their original course) or positive feedback (which stimulates a system to redirect or transform itself);
- Interdisciplinary approaches are most appropriate for the study of systems.
- An intrapolative (ideal system model) approach is used rather than extrapolating from what already exists.

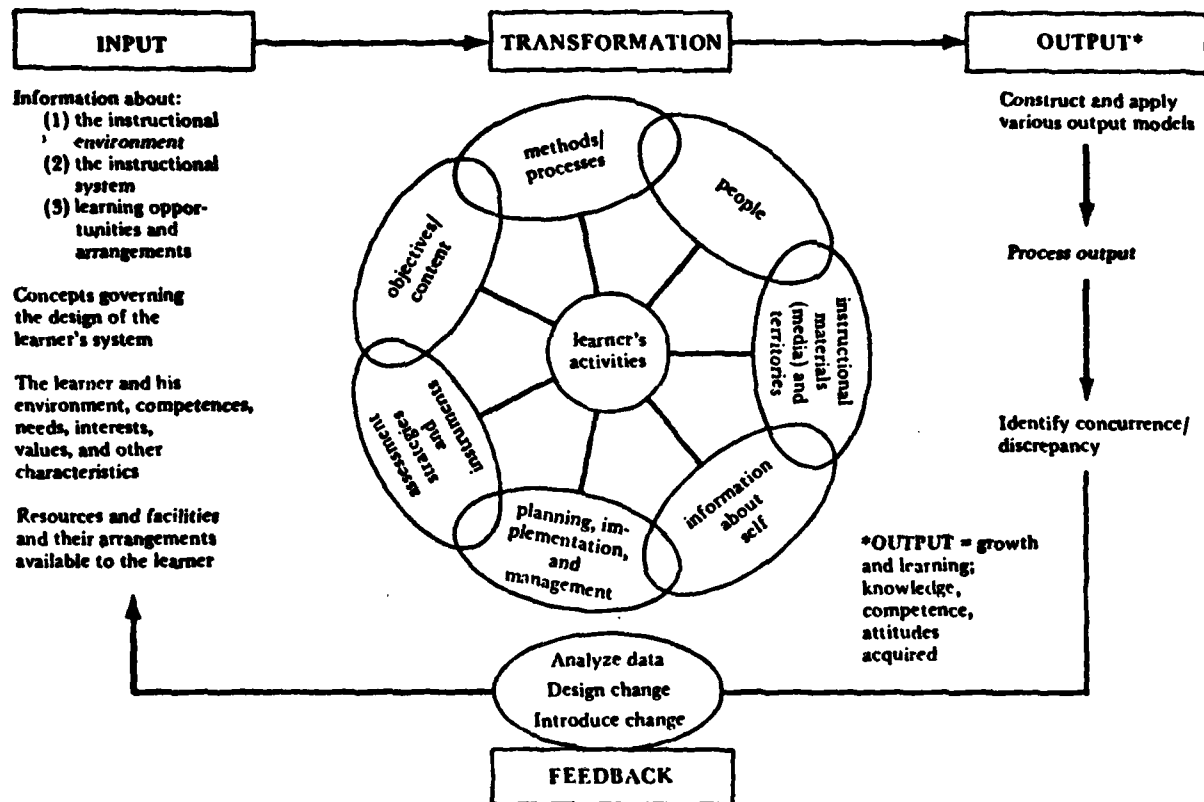


Figure 6. Learner system, a process model.
 (From Banathy, 1977, p. 110.)

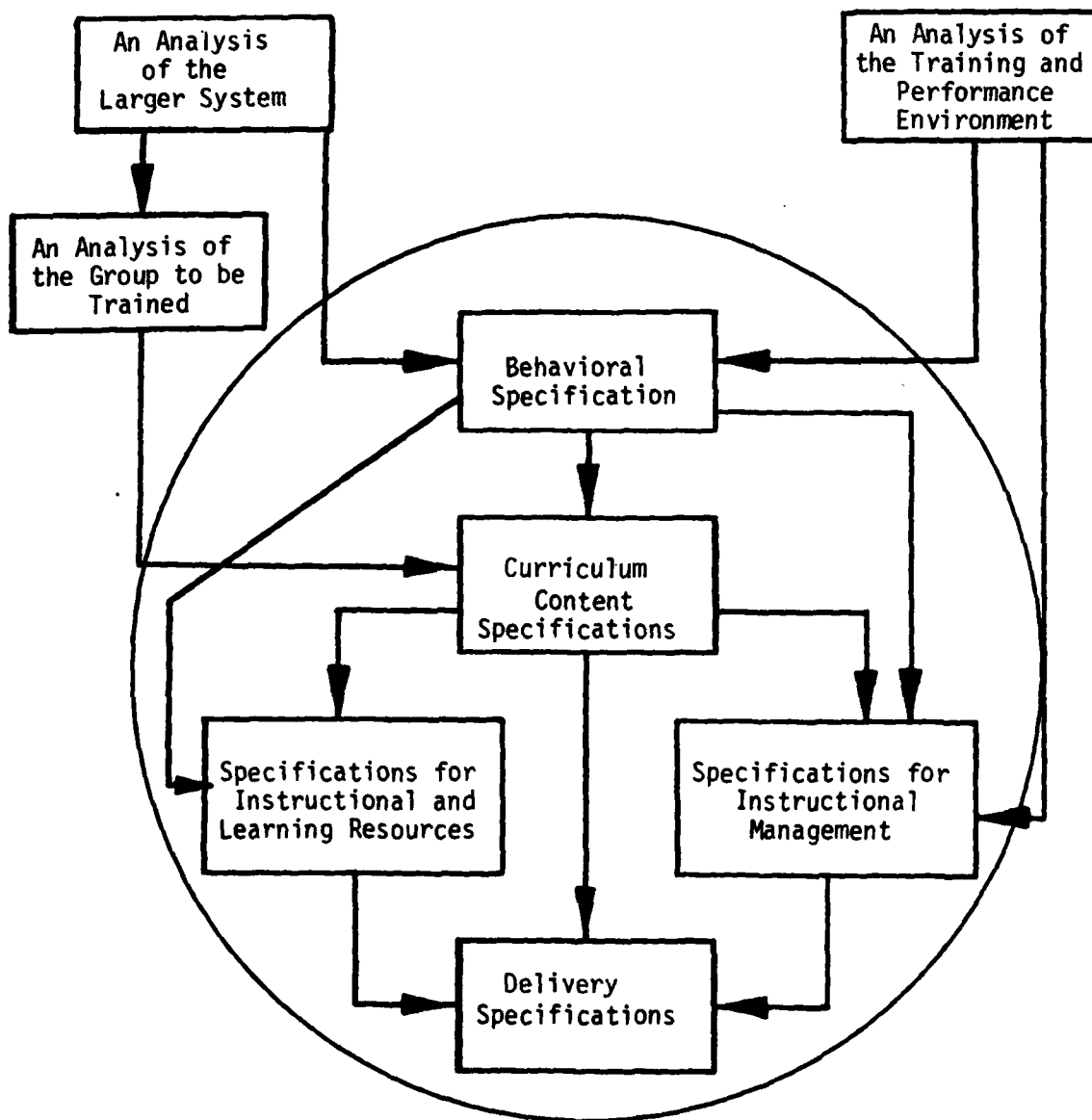


Figure 7. A structural model.

There are a number of assumptions about instruction and learning that may be relevant to this context. These assumptions are derived from our experience in the development of instructional systems for various purposes. They may not be universal laws but their ubiquitousness requires that we examine their appropriateness for the shelter management context. These assumptions include:

- task analysis--the derivation of learning goals from the requirements of the situation in which the learning will be used; teaching students only what they need to know and be able to do to function competently in the criterion situation (i.e., managing a shelter);
- experiential learning--to construct learning and practice situations which resemble as closely as possible the criterion situation;
- spiral sequencing--to establish learning sequences which spiral on one another in such a way that learners continually receive practice on important skills and transfer from simple to complex skills is maximized;
- the use of instructors as facilitators of learning--to put the primary responsibility for the management of learning in the hands of the learners; to use instructors as coordinators of learning arrangements and providers of guidance;
- team learning--to organize learners into teams when appropriate in order to capitalize on the motivational advantages of social learning.

Some of these assumptions about learning are reflected also in the way the research staff organizes its own activities. These activities are characterized by:

- participative design--the designers work closely with representatives of the group who will eventually use the system as well as with content experts;
- cyclic development--the evolution of the system proceeds in a series of cycles in which conceptualization and development are modified by evaluation in successive stages as the system progresses from model through prototype testing and implementation.

These then are the basic design processes and principles which will govern our approach to the problem of designing training and delivery systems for Shelter Management.

C. Constraints of the Inquiry

There are two major types of constraints that must be held in mind when discussing the training and delivery systems presented in the report. Both types of constraints derive from uncertainties. First, there are uncertainties that relate to the design process itself and the environment within which the design process occurs; and second there are uncertainties associated with the process being modeled, e.g., shelter life.

1. Design Uncertainties

Classic systems analysis typically begins with an operating system that is definable and stable. Even in situations where a new system must be built to accomplish some function, the parameters for that system are usually clear to the designer. These parameters usually include well established and concrete components such as a physical setting or a piece of technology.

The design task for the Shelter Management Training and Delivery System is quite another story. There is no concrete embodiment for these systems, no physical setting, and no existing technology. Further, the system within which these systems must fit--the Civil Defense System--is quite fluid, unstable and ill-defined. The situation is further exacerbated by uncertainties regarding the future of political and monetary support for Civil Defense, the historic diffusiveness of civil defense activities and components, the newness of current Civil Defense policies and practices, the lack of up-to-date literature about these policies and practices, and the recent reorgani-

zation of the Defense Civil Preparedness Agency into the Federal Emergency Management Agency.

One additional constraint that places a severe limitation on the design of the training and delivery system is the absence of data. No data were available to us concerning the successes and failures of previous attempts to train shelter managers and to deliver such training in varying fashions. Also, data on shelter living, on the recruitment and selection of shelter managers, and on the delivery of other aspects of civil defense training was quite sparse.

The result of these design constraints is a situation where we must design a "loosely coupled system" according to "fuzzy systems theory" (Cavallo, 1979). With such scant knowledge of design parameters and conditions relating to the national Civil Defense system and how the Shelter Management Training System must articulate with this broader system, the present report must be viewed as a first approximation in systems design.

2. Uncertainties in the Performance Environment

The second type of constraint grows out of uncertainties with regard to what can be expected to happen in a nuclear crisis. In other words, the design task must depart from a set of assumptions about the major variables (e.g., time, space) and the major actors in the system (e.g., shelter managers, local civil defense directors). Since we must have at least a tentative image of the training situation in order to proceed, we have used the best information available to formulate the following assumptions:

- There will be sufficient monies allocated to provide for the training of minimal competencies on the part of shelter managers and to provide for whatever follow-up training and support systems are required by the nature of the task.

- The recruitment and selection of shelter manager trainer/instructors and shelter managers will be conducted by FEMA with attention paid to getting experienced and competent trainers for the former and managers of large groups of people for the latter.
- There will be sufficient time between the order to evacuate and the time when the shelter can be secured for an attack for training to take place.
- The time inside the shelter will not exceed 7-10 days.
- The present technology for monitoring radiological contamination is sufficient.
- Shelters are being selected to provide an adequate environment for shelterees and to protect inhabitants from the effects of nuclear weapons. It is not necessary to train shelter managers to make decisions regarding the adequacy of assigned shelters.

CHAPTER II

THE SHELTER MANAGEMENT TRAINING SYSTEM

As we indicated earlier, a Shelter Management Training System should provide the instruction which would enable a trainee to manage a congregate lodging facility or a fallout shelter if a nuclear attack were expected. In this chapter, we will present a summary of the information which provided input for the design of such a training system, a description of the transformation of this information, and the end result in the form of a Model of a Shelter Management Training System.

The figure presented below displays the interrelationships among the analytical and design activities that were conducted as steps in the design of a model for a Shelter Management Training System. The figure can be used as a guide to the contents of this chapter.

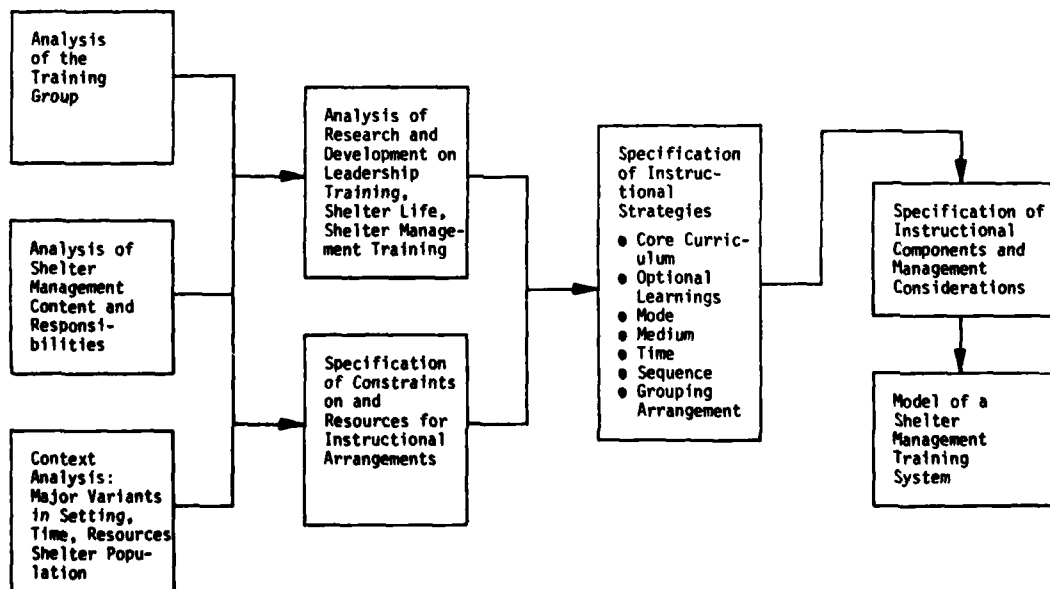


Figure 8. Design model for a shelter management training system.

A. Introduction

The design of a model for a Shelter Management Training System is built upon a number of "givens." These include the Civil Defense system to which the proposed training system will contribute, the specific tasks as formulated in the project contract, and the constraints and possibilities governing the approach to the task.

1. The System in Context

The purpose of the Civil Defense system in the United States is to develop plans and make preparations which will protect the civilian population in the event of a war. As such, it is part of the national emergency management system which provides for protection against technological and natural disasters. Current policy holds that "attack preparedness is the primary objective of the CD program, with improved state and local readiness for peacetime emergencies being a secondary but desirable objective." (DCPA 1979a, p. 63). Protection against enemy attack is seen as being primarily a federal responsibility, while state and local authorities take primary responsibility for preparing for other kinds of disasters.

At the local level--the level at which emergency preparedness for any kind of disaster is planned and implemented--the "dual use" concept allows for the development of plans which cover a variety of possible emergencies. Guidance and support for emergency planning comes to local governments via the ten regional branches of the Federal Emergency Management Agency (FEMA).

Local emergency planning groups may be constituted in many ways. However, in preparing for Civil Defense operations, they are all generally held to be responsible for certain functions. A synthesis of guidelines and organizational charts from a variety of federal, state, and local sources provides the following list of functions:

- Disaster Planning and Coordination--activities involved in identifying and linking relevant organizations or agencies and developing a local disaster plan.
- Recruitment and Training--activities involved in identifying and recruiting individuals who can perform emergency roles and in providing appropriate training.
- Developing a Shelter Program--locating, marking, and stocking in-place and host area shelters.
- Relocation Planning--developing evacuation plans for organizations and the general population.
- Communication and Warning--developing equipment, procedures, and materials for warning the populace of impending danger, and communications during a disaster.
- Radiological Monitoring--providing equipment, designing procedures and establishing training necessary to monitor radiological fallout in the in-shelter and post-shelter environment.
- Security--developing plans, procedures, and techniques for providing health, welfare services and basic resources (food, clothing, etc.) during a disaster.

It is evident that, as a sub-system of the Civil Defense system, the Shelter Management Training System would be the concern of those involved in recruiting and training those involved in development of the shelter program. The organizational activities and relationships involved in actually providing this training will be discussed at length in the presentation of the Shelter Management Training Delivery System (Part III of this Report).

2. The Task

Given the above analysis, our task in designing a Shelter Management Training System is to devise a model for training which can fit into the Civil Defense system, and which could prepare Shelter Managers to (1) become familiar with the assigned facility and prepare it for use during a crisis; and (2) manage congregate care/shelter facilities during an emergency (Far West Laboratory, 1979, p. 2).

In order to achieve this goal, the training system must fulfill the following requirements:

- It must include objectives;
- It must include specifications for content;
- It must include specifications for the format, mode, and media to be employed in instruction;
- It must provide ways for learners to practice and demonstrate their mastery of the knowledge and skills being taught;
- These must be accompanied by evaluation procedures which can be used by learners to assess their achievement;
- The total mix of experiences and activities which comprise the training system must produce an individual who can function effectively in the role of a shelter manager.

3. The Approach to the Task

Our approach to the design of a model for a Shelter Management Training System involved working through the "Input/Transformation/Output/Feedback" process described in Part I of this Report.

a. Input tasks. The purpose of input tasks is to develop an information knowledge base which will support development of the model. The first task in this area was to identify sources of potentially useful information and to collect studies, reports, and other materials for analysis. Those materials which proved useful appear in the reference list at the end of this chapter.

The project identified categories of information which should be collected, and grouped these categories into two major areas. These areas are:

1. Characteristics of the potential training group--background, identity, motivation, and personal characteristics of those people most likely to become shelter management trainees; and
2. Characteristics of the performance environment--information about the facilities and situations in which the manager will have to operate, including the implications of different resource, location,

and size configurations, time periods, characteristics among the sheltered population, and emergency scenarios.

The results of these analyses appear as sections B and C of this part of the Report.

b. Transformation tasks. Once the necessary background information had been collected, the project put together the array of content and techniques in order to derive a model. Tasks in this area include:

1. defining competencies or behaviors involved in the shelter manager's job;
2. defining the content which a trainee must master in order to acquire these competencies;
3. identifying instructional experiences and arrangements which can be used to train learners to acquire these kinds of competencies;
4. identifying available instructional resources in the area of shelter management and evaluating their potential to effect training.

The results of these activities appear as sections D and E of this part of the Report.

c. Output tasks. The major output task was to assemble conclusions and considerations into a model for a Shelter Management Training System. This model was derived by considering several alternative configurations of content, learning experiences, and resources, and selecting the one which seemed most likely to achieve system goals. Because different situations might require a different mix of components, the procedure for combining the components and considering the results is also presented.

This information appears as section F of this part of the Report.

d. Feedback. The feedback step in the process is not covered in this Report since the project is a preliminary investigation only. Feedback activities would consist of a pilot test of the model in the context of a

specific environment and delivery system, resultant revisions, and then the development of a training package for testing

B. The Audience for Shelter Management Training

Analysis of the training audience is one of the first tasks in the design of an instructional system for several reasons. First, as is true for all instructional systems, it is crucial to begin with a description of the learners--who they are, what they're like, what they know and don't know, and what they need. Such an analysis provides a framework within which to make decisions about what content needs to be covered, at what level, and using what kinds of instructional techniques. In this section, we will discuss major characteristics of the prospective training group for shelter management and the implications of these characteristics for the design of the system.

1. Procedures and Sources

In order to characterize the kind of people who might become shelter managers, we began by identifying a number of questions that might focus the inquiry. These questions included the following:

- What kinds of people usually volunteer for Civil Defense training programs? Can they be characterized in terms of education, socio-economic status, etc.? Are they homogeneous or do they fall into several groups?
- What motivates people to volunteer for duties like shelter management?
- What factors in the training environment might affect the kind of people that volunteer?
- According to those who have written about shelters and their management, what qualities should a shelter manager have?
- What do they already know that might help them manage or learn to manage a shelter?
- What characteristics do they have as adult learners that differentiate them from other learners?

In order to find answers to these questions, we looked at literature in

the following major areas:

- public reactions to Civil Defense participation;
- studies reporting shelter occupancy simulations and research;
- guidebooks and training materials developed for shelter management;
- the literature on volunteerism;
- the literature on adult education.

2. Characteristics of Potential Shelter Managers

There are at present no data available on the kinds of people who have actually volunteered to be trained as shelter managers in the past. Comparatively small numbers of managers were trained during the late sixties when interest in such training was at its height (McConnell, 1979, p. 12). In any case, the people who might be expected to come forward during a crisis period would not necessarily have the same characteristics as the people who were trained in the sixties. This is also the feeling of the authors of the study on Public Information and Knowledge Requisites of a Shelter System, who state:

People who meet the selection criteria for important shelter positions better than do peacetime volunteers are more likely to be available for training and assignment during a high tension period. (Bend, Cohen & McDaniel, 1966, p. 31)

If this inference is reliable, the question becomes: Given the individuals who are likely to volunteer in a crisis situation, what represents a typical set of traits and characteristics and what characteristics would be most valuable? Information from the various literature cited above was analyzed with an eye to answering three sub-questions: What are the characteristics of volunteers; what constitutes desirable traits for shelter managers; and what characteristics of volunteer shelter managers must be considered for the design of instruction?

a. Volunteers. Whether they are being trained in a peacetime or crisis-expectant environment, shelter management trainees will more than likely be volunteers. We can therefore consider the literature on volunteerism in general and information about disaster volunteers and the results of a survey on volunteer support for Civil Defense in particular (Nehnevajsa, 1972) as sources of insight into trainee characteristics.

(1) *Peacetime Volunteers*. Volunteerism, though it is not confined to our society, is a peculiarly American phenomenon (Schindler-Rainman & Lippitt, 1977). Volunteers pervade all segments of the service professions including the emergency service areas.

The stereotype of the individual volunteer is the married, middle or upper class woman who contributes time on a regular or irregular basis to a charitable organization. The male counterpart of the stereotype is a middle class individual who volunteers for an organization which has a combined social and service function, such as the Lions Club or the Kiwanis. Many of these men are the husbands or sons of female volunteers (Schindler-Rainman & Lippitt, 1977). In recent years, retired people and teenagers, because of their numbers and their time, energy and skills, constitute an increasingly valuable volunteer population (Pell, 1977).

Schindler-Rainman & Lippitt (1977) conclude that the motivation to volunteer can arise from a need for self actualization (an inner-directed source) or from a debt to society (an outer-directed source) or from a sense of duty or feeling that they need to repay a debt to society (an other-directed source). No matter what the reason for volunteering, it's apparent from the literature that volunteers must receive realistic training and positive feedback for their service.

Volunteers are recruited in a variety of ways. Pell summarizes the favorite techniques as:

- Speakers-- with or without audio-visual materials;
- Social Functions-- teas, cocktail parties, etc.;
- Publicity-- in newspapers, radio and television;
- Paid advertising and direct mail;
- Personal contact--by representatives of the organization seeking volunteers, or by friends who are already volunteers.

A study conducted by the American Institutes for Research (Eninger & Fetter, 1963) includes recommendations for supplementing this list with the use of public figures and billboards and posters for recruiting Civil Defense volunteers.

(2) *Crisis Volunteers*. Whether in the context of "expanding" organizations such as the Red Cross, or in spontaneous response to an emergency, many people serve as volunteer leaders during crisis situations who might not otherwise become involved. Dynes (1968, pp.62-63) defines several categories of emergency volunteers, differentiated on the basis of their previous organizational connection and training.

- Regular Trained Volunteer-- previous organizational connection and training in the skill required for his/her emergency role, for example, a private physician who is chairman of the local Red Cross committee on medical and nursing aid.
- Emergency Trained Volunteer-- a person with relevant training for an emergency role who has not previously been involved with a disaster-relief organization.
- Regular Untrained Volunteer-- auxiliary helpers who are listed with an organization as an unskilled labor pool, to be called upon if needed.
- Emergency Untrained Volunteer-- "walk-ins," who appear on the scene of disaster relief operations and offer to help.
- Group Volunteers-- social or service organizations who offer their services as a unit, perhaps to take responsibility for some specific function.

In a situation where no organized emergency relief personnel have appeared to direct activities, emergent leaders may assume the initiative. When an official leader is not available, not visible, or does not assume leadership, emergent leaders usually take over. This would be the case, for instance, in a shelter for which no previously trained leader was available. According to Beach (1967) people will look first for leadership to an officially designated leader for that situation. However, if such a person is not present or does not inspire confidence, they will then turn to someone else with a known leadership role, e.g. a law enforcement officer.

(3) *Potential Civil Defense Volunteers.* Perhaps the most directly applicable information about potential volunteers for shelter management training comes from an analysis of a 1972 survey of attitudes towards civil defense conducted at the University of Pittsburgh's Center for Urban Research (Nehnevajsa, 1976, pp. 79-86).

The results of this analysis can be summarized as follows:

- 54.2% of the respondents stated they would "definitely" or "probably" volunteer for Civil Defense activities of some kind in a crisis-expectant situation; and between 13 and 17% of the respondents made definite commitments to volunteer.
- Southerners and westerners were more likely to volunteer than were people from the northeastern or north central states, and rural residents were more likely to volunteer than were inhabitants of metropolitan areas.
- The most probable Civil Defense volunteers (for Civil Defense in general) would tend to be "single, black males, young (in their teens and twenties), in middle income brackets, with a high school education or some college and working class identifications." However the most probable volunteers varied somewhat by location, as indicated in the table below.

Table 1
Most Probable Civil Defense Volunteers
by Age, Sex, Race and Region

	METROPOLITAN AREAS		CITIES		RURAL AREAS	
	<u>Race/Sex</u>	<u>Age</u>	<u>Race/Sex</u>	<u>Age</u>	<u>Race/Sex</u>	<u>Age</u>
NORTHEAST	Black women	35-49 50-64	White women	18-34 35-49	White men	35-49 18-34
NORTH CENTRAL	Black men	18-34 50-64	White men	18-34 35-39	White women	50-64 18-34
SOUTH	White women	18-34	Black women	18-34	Black men	35-49
	White men	50-64	White men	35-49	Black women	50-64
WEST	Black women	50-64	White women	35-49	White men	18-34
	White women	18-34 35-49		18-34 50-64	White women	35-49

- Democrats and Protestants were somewhat more likely to volunteer than were other political or religious groups, but this also varied according to locality.
- People who believed in the possibility of U.S. involvement in a war of any dimension, who felt that Soviet strength was greater than American strength, and who felt that a sheltered population could survive, were more likely to volunteer than those who considered war unlikely or unthinkable.
- Favorable attitudes towards Civil Defense in general and towards various Civil Defense programs accompanied greater willingness to volunteer.

Nehnevajsa concludes that the pool of potential Civil Defense volunteers ought to be large enough to meet personnel needs, given a crisis situation.

b. Desirable traits. Although sufficient numbers of volunteers might be available for Civil Defense activities, not everyone would be interested in serving as a shelter manager. What is more important, not everyone would be suitable. One source of information on who the most desirable shelter manager trainees might be is the Civil Defense literature related to shelter management

and training. Descriptions of the kinds of people who would make the most desirable shelter managers tend to focus on personal qualities, skills in leading or managing, and experience or status. Because similar characteristics are mentioned in many of the sources, we have summarized them in Table 2.

Almost all of the writers on this subject assume that people with management experience in business, the military, or elsewhere will be able to transfer their skills to the management of a shelter (depicted in Figure 9). However, several writers point out that this transfer is more likely to be effective if the shelter situation resembles the manager's work setting with regard to the size and complexity of the operation, the people involved, and the nature of the facility itself. For instance, the manager of a resort hotel who might continue to manage his/her hotel after it had become a congregate lodging facility would already be familiar with the building and its resources as well as with the care and feeding of large numbers of people.

Another important observation is that the most desirable leader may be a different individual at various phases of an emergency. A study of individual and group behavior in a coal mine disaster (Beach & Lucas, 1960) indicated that two types of leaders emerged. A task-oriented leader, who was individualistic, problem-oriented, and whose lesser social skills were compensated for by his energy, led during the first part of the emergency when the trapped miners were trying to break free. Later, when they were waiting for rescue, socially-oriented leaders emerged who were sensitive and empathetic, oriented to group needs, and possessed high communication skills.

Table 2

Leadership Qualities Emphasized in the Literature on Shelter Management

Leadership/Management Skills	Experience/Status	Personal Qualities
Extrapolate from present situations to future needs (Schaner, 1962). Understand relationships among complex events and conditions (Schaner, 1962; Eninger, 1963; DCPA, 1973) Communicate clearly and effectively (Collins, 1972; Beach, 1967; DCPA, 1967; Eninger, 1963). Motivate people (DCPA, 1967). Delegate authority (DCPA, 1973; ANRC, 1979). Mediate conflicts (Altman, et al., 1960). Establish clear lines of authority (Collins, 1972). Direct team efforts (Eninger, 1963). Adapt leadership style to situation (Eninger, 1963). Establish and maintain schedules (Altman, et al., 1960). Evaluate performance of subordinates (Eninger, 1963). Allocate resources (Bend, et al, 1963).	Experience in any of the following positions: - Factory manager - Industrial plant supervisor - Department store executive - Company official - Civil service administrator - Hospital administrator - Bank manager - Construction superintendent - Engineering - Sales manager - Military service (Eninger, 1963). (DCPA, 1967, 1973). Management or administrative experience in general (ANRC, 1979; DCPA, 1967; Eninger, 1963). College education with potential to become an executive (Smith et al., 1966). Technical background related to shelter maintenance (Eninger, 1963). Knowledge of specific shelter to be used (ANRC, 1979; Eninger, 1963) or surrounding area (DCPA, 1973). Official leadership position (title, uniform, etc.) (Beach, 1967; ANRC, 1979). Common background shared with sheltered population (Beach, 1967; Eninger, 1963). Experience in disasters or life-threatening situations (DCPA, 1973).	Emotional stability (ANRC, 1979; Bend, et al., 1963; Beach, 1967). Intelligence (Smith, et al., 1966). Good physical condition with no obvious handicaps (Bend, et al., 1963; DCPA, 1973). Stamina and energy (Beach, 1967). Resourcefulness and flexibility (Bend, et al., 1963; DCPA, 1973; Eninger, 1963). Forcefulness, ability to exert authority (ANRC, 1979; Bend, et al., 1963; Collins & Bend, 1966; DCPA, 1967). Optimism (Altman, et al., 1960; Beach, 1967). Empathy, capability to inspire trust (Altman, et al., 1960; Beach 1967). Ability to think and make decisions quickly (ANRC, 1979; Beach 1967; DCPA, 1967; Bend, 1963). Ability to set priorities (Bend, et al., 1963; Hale, et al., 1966; DCPA, 1967). Ability to cope well with ambiguity and complexity (ANRC, 1979; DCPA, 1973). Self-control (ANRC, 1979; DCPA, 1967). Acceptability to shelterees as a leader (Beach, 1967).

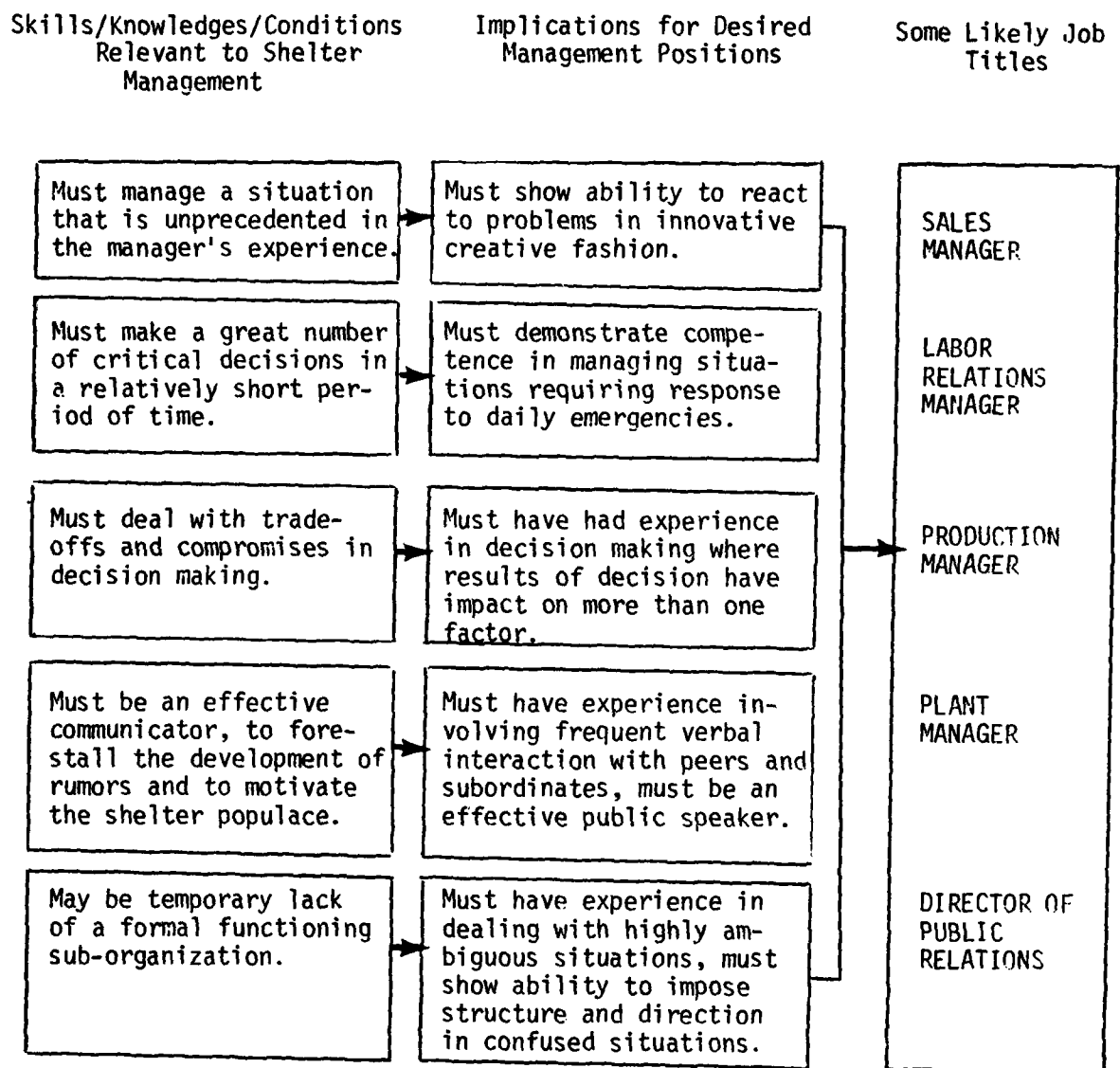


Figure 9: Relationship of managerial skills in shelter management to skills in other management roles. (From DCPA, 1973.)

c. Learning characteristics. Whatever other characteristics the trainees for shelter management positions may have, they will certainly be mature adults. Since the majority of the literature on instruction and training deals with young learners, it is important to consider the ways in which adult learning styles and preferences differ from those of other learners and to identify some of the approaches which have been developed for teaching adults.

Knowles (1970) suggests that whereas adults do not "learn" (i.e. internalize information) in a different manner than children, the conditions surrounding adult and juvenile learning must be significantly different. Knowles attributes much of the failure of adult education to the practice of teaching adults as if they were children.

The differences between adult and juvenile learning styles can be summarized under four headings: self-concept, experience, readiness to learn, and orientation to learning (Knowles, 1970; Ingalls, 1973).

(1) *Self-Concept.* Adults are independent rather than dependent. They therefore resent being put into situations in which the way they are treated contradicts their self-image as mature individuals. Such treatment includes lack of respect, being talked down to, and being judged or otherwise dealt with as if they were children. To avoid this problem, the instructor should relate to learners as a helper rather than as a director.

(2) *Experience.* Unlike children, adults have accumulated a great deal of experience of various kinds. The implication is that this experience is a rich resource for learning. Effective adult education makes use of experiential and multidirectional techniques such as group discussions, simulation, role playing, buzz groups, design teams, team practice sessions. Because of their experience, adults can function both as teachers and learners. Turning part of the instructional responsibilities over to the adult learners can

facilitate the learning process for all concerned.

(3) *Readiness to Learn.* Adults are not accustomed to and may be resistant to being told that they need to learn a particular subject matter. Ever since their days of formal schooling they have decided for themselves if and when they had learning needs. For this reason, it is recommended that instructors allow shelter management trainees to identify their own learning needs within a structure provided by the instructor.

(4) *Orientation to Learning.* Formal education is general and preparatory. Adult education is specific and "now." According to the prevailing wisdom concerning adults, effective adult education should be efficient, problem-centered, concrete and realistic, oriented to the present and probable, and tied to the experiences of the learners. Schindler-Rainman & Lippitt (1977) provide the following guidelines for training volunteers:

1. Build on the volunteer's experience, knowledge, and skills.
2. Let volunteers plan and conduct their own learning experiences.
3. Make training practical and relevant.
4. Conduct training in an informal, experiential atmosphere.
5. Adjust training sessions to the limited time available to most volunteers.
6. Make learning activities a rewarding and recognized aspect of the functioning of the organization.
7. Adjust training to the needs of the particular group and situation.

In summary, the characteristics most typical of adults as learners, and which are most important to attend to in designing their training can be described as follows: The adult learner

- is ideally an equal partner in the learning process;
- has skills and background which can contribute to both the conduct and content of learning;

- prefers training to be functional and immediately relevant to his/her own perceived needs;
- prefers training to be conducted efficiently both in terms of time spent and relevance to a specific environment.

C. The Shelter Environment

In order to design effective training, it is necessary to understand the characteristics of the situation in which the trainees will be operating. In the terminology of instructional psychology, this is an aspect of task analysis--describing the criterion situation. Stated otherwise, the shelter environment is the functional context within which the shelter manager will play his or her role.

The aspects of this environment which will have the most effect on what the shelter manager must be prepared to do can be divided into three major factors--characteristics of the shelter itself, the time period during which the manager is being trained, and the nature of the population being sheltered.

1. Procedures and Sources

We began our effort to define the shelter environment by developing a series of questions whose answers were likely to provide information that would lead to a description of shelter environment parameters. These questions included the following:

- What might be the major variations in shelter location?
- What might be the major variations in shelter resources?
- What might be the major factors related to shelter size?
- What other variations in the basic operating situations might be important?
- How would shelter management and management training be affected by variations in the attack warning time?

- How might the socio-economic class or ethnicity of the sheltered population affect the management role?
- How might familiarity with and among the population be factors in shelter management?
- How might the amount of time the shelterees had to prepare for the attack be a factor in shelter requirement?

To find the answers to these questions, we looked at literature in the following major areas:

- studies of shelter construction, stocking, and operation;
- studies and planning reports on crisis relocation;
- reports on shelter occupancy tests, and reactions of sheltered populations during natural disasters and earlier wartime situations;
- scenarios and projections of events during a nuclear war.

2. Basic Operating Situations

In his review of research on shelter management, Carr (1968) recommended that research be undertaken to identify the 6-12 basic patterns of large shelters based on size, facilities, etc., and that a different shelter management training approach be designed for each pattern. Since this research has not been undertaken, only a few general recommendations can be found in the literature.

In this analysis, four dimensions of the basic operating situations that may affect shelter management and shelter management training will be looked at: location, nature of the facility, size of the shelter, and resources.

a. Location. Current U.S. Civil Defense policy provides for two nuclear civil protection options (DCPA, 1979a). The first option is Crisis Relocation, which involves moving the two-thirds of the population who live in risk areas to safer locations in rural areas and small towns. The second option is for people in risk areas to be sheltered "in-place" in buildings identified by the National Shelter Survey.

The major location factor relates to proximity to a targeted area. As implied above, some shelters will be risk area shelters. Risk area shelters will be designated buildings in cities, suburbs, and areas near military installations and other targeted locations. Shelter management training for risk area shelters might emphasize reinforcement procedures to increase blast protection and fire suppression procedures to deal with incipient fires in addition to other concerns (DCPA, 1973, 1979b).

Host area shelters consist of buildings in rural areas that could be used for urban evacuees and members of the rural population without alternative means of shelter. With the exception of their differential susceptibility to blast and thermal effects, there are no data on differences between risk area and host area shelters. It may be that they will both vary along the same dimensions although it is likely that host area shelters will be more apt to be aboveground and on a single level.

Other locational factors that might be considered include geographical factors, e.g., nearness to a target; climate and meteorological factors, e.g., consequences of an absence of heating or cooling apparatus, wind patterns and how they would affect fallout dispersal; and nearness to a military installation, e.g., probability that retargeting would be initiated.

A further implication for training concerns whether or not shelter management trainees are to be identified with particular shelters. An alternative strategy would be to train trainees to operate a variety of kinds of shelters, i.e., in this instance, risk area and host area shelters. A related question concerns the selection of shelter managers for host area shelters. Shelter managers selected from the host area population would be familiar with the shelter facility but not with the shelter population. Managers selected from risk areas to serve as host area shelter managers would be familiar

with the evacuees (at least in lifestyle) but not with the facility.

b. Nature of the facility. The most salient variant across varieties of shelters is probably size. Shelters will vary from those that can house less than one hundred to shelters that can accommodate 9,000 or more. According to the National Shelter Survey, more than half of the shelter facilities surveyed had a capacity of less than 200 spaces each. However, these smaller facilities accounted for only 7% of the identified shelter spaces. The majority of surveyed spaces are in facilities with a capacity of 3,000 to 9,000 persons (Hale, Bend, & Jeffreys, 1966) and three-fourths of all shelters have a capacity of 1,000 or more.

The differences in management properties of large and small shelters can be summarized as follows:

(1) *Characteristics of Small Shelters* (Hale et al., 1966; York & McKnight, 1978)

- The shelter manager can talk to everyone at the same time without mechanical aids.
- Shelter supplies will be handy.
- Potential problems should be immediately apparent and the number of problem cases among shelterees should be small in proportion to the population.
- The manager can personally supervise all activities.
- Smaller facilities are more likely to be well-supplied with water and with temperature control; sewage disposal, etc., will be easier.
- There will be a smaller human resource pool to draw upon--the manager must possess more essential skills.
- It may be harder for authorities to provide resources for many small shelters than for a smaller number of large ones.

(2) *Characteristics of Large Shelters* (Hale et al., 1966; Bend, 1966; Wright, York, Hill, & McKnight, 1977).

- The shelter manager must communicate with the population through mechanical means (loudspeakers, bull-horns, etc.) or through subordinates.

- Shelter supplies may be hard to inventory or access.
- The manager will spend his/her time directing subordinates rather than dealing with problems directly.
- A large shelter population increases the probability that all possible problems will be represented.
- There will be a large human resource pool, increasing the chances that someone with the expertise to solve any problem that arises will be available.
- Ventilation and sanitation may be difficult, but larger facilities can be more efficiently lighted and protected from fallout.
- Authorities are likely to be aware of and give priority to supplying a large shelter.

A number of occupancy exercises have been conducted in which guidelines were provided to be used by emergent leaders within the shelter group (stocked shelters holding between 50-200 people). The results of these tests indicate that a small shelter of this type "can do at least a minimally adequate job of managing itself without the advantage of newly trained managers" (Bend et al., 1966, p. 3).

On the other hand, a shelter holding upwards of 1,000 people will require trained executive management-- someone capable of operating at the equivalent of a company's vice-presidential level or higher. Bend et al., Hale et al., and others suggest that the scope of coordination, communication, and leadership problems in a large shelter requires a significantly different type of training.

Other characteristics of the facility that must be considered in the design of shelter management training include the strength of the building, whether or not the building has its own ventilation system, whether the building is underground or not, whether it is on a single floor or not (multiple floor shelters pose special management problems according to Bend, Griffard, Shaner, Shively, and Hudak (1963), per-person space allocation, and shape

of the living sleeping space. No data are needed in order to project that management demands for a 100-person school gymnasium made of concrete blocks reinforced with steel will be quite different from those for a 9,000 person underground parking lot with cement floors and no in-place facilities for food, water, and sanitation.

c. Resources. Shelters will not only vary in size and configuration, they will vary in a variety of ways that will have a profound effect on the sheltered population during their stay. Such factors as sleeping facilities noise, temperature, ventilation, seating space, privacy, communication equipment, food and food preparation equipment, lighting and sanitation facilities represent factors that have made a difference in shelter studies in the past (Carr, 1968). If a shelter is to provide a safe and livable environment for its inhabitants, it must possess certain resources when the attack occurs, or acquire them quickly thereafter. These resources include the following (DCPA, 1973):

- ventilation devices for providing fresh air and temperature control, or tools and raw materials to construct them;
- one quart of water per person per day spent in the shelter (average expected stay, approximately two weeks);
- radio or other means of communication with CD authorities;
- radiological monitoring equipment;
- toilet facilities and waste storage capacity for about one half gallon of sewage per person per day (containers, sanitizers such as bleach, etc.);
- basic first aid supplies;
- something for shelterees to sleep on, and to keep them warm if weather requires;
- enough food per person per day to satisfy basic nutritional and psychological requirements;
- adjustable sources of light.

The longer the shelter experience lasts, the more important it will be for the shelter to be well-supplied. During a long stay, survival may be enhanced by the presence of other resources, such as books, games, more varied food, etc. For comparison purposes, it might be useful to look at two types of resource circumstances.

(1) Partially Stocked Shelters. It has generally been the policy to stock designated shelters with "vital" non-perishable supplies only--primarily water, basic medical supplies and radiological monitoring equipment, and perhaps some shelter biscuits. However, according to a survey conducted in the mid-1960's only about half of the marked shelters were stocked with vital supplies and in some cases, the stocked water drums were found to be empty (Bend et al., 1966).

If there were little or no warning of attack, shelter managers might find themselves having to deal with a situation in which the shelter was stocked with few basic vital supplies, and in which food was limited to items brought in by the shelterees.

(2) Fully-Stocked Shelters. Given an adequate period of preparation, shelters would be stocked not only with the basic vital supplies and food brought in by the inhabitants, but commercial food distributors might deliver food during the evacuation and waiting period. Government stockpiles of grain and other essentials could also be distributed. In this situation, the manager's job would be to make the best use of the multitude of resources available (DCPA, 1979b).

Peacetime shelter management trainees should be told how to cope with all possible levels of supply. In a crisis-expectant period, information should be provided on the most likely situation, given current planning. In either case, training would be most effective if it were combined with the actual

preparation for occupancy of the specific shelter that the trainee would later be expected to manage.

d. Interaction of variables. A useful technique when dealing with a multi-variable situation is to display the dimensions and variants on a grid or, in this instance, a cube. The eight different configurations of two locations, two extremes of size and two levels of resources can be displayed as follows:

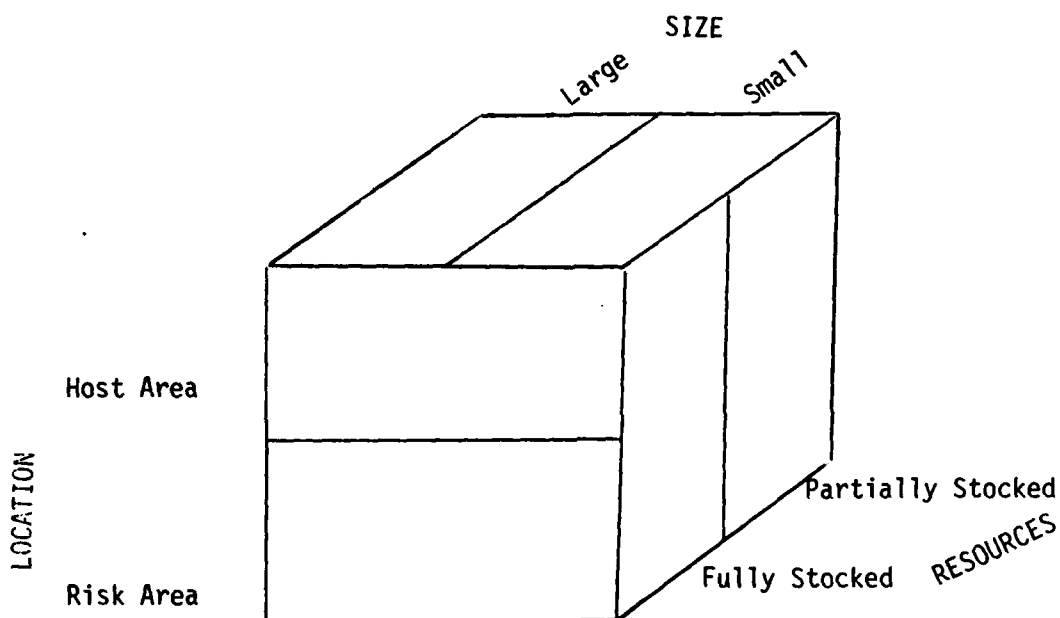


Figure 10: Three dimensions of the basic operating situation.

3. The Time Factor

The Civil Defense literature includes a number of scenario analyses or projections of possible events given a nuclear crisis. These can be divided into three major groups with regard to time: those which assume an extended crisis-expectant period, those which plan for a short crisis-expectant period, and those which are based on the idea that warning of an attack will be

extremely short, if there is any warning at all.

a. An extended crisis-expectant period. A study of possible Civil Defense during a protracted crisis is presented in The Nuclear Crisis of 1979, in which a six month period of increasing tension leads to crisis relocation and possible nuclear attack. It is based on a number of earlier studies of the implications of escalation.

This sequence emphasizes the point of view that a kind of strategic warning (provided by the nuclear crisis) may be inherent in many if not most of the nuclear war threats that could arise in the decades ahead and that such "warning" could provide weeks if not months of time for emergency CD responses. (Brown, 1975, p.5).

This scenario describes a massive increase in Civil Defense activity (and funding) in response to a major public demand after a physical confrontation of American and Soviet troops in East Germany has occurred. DCPA actions include sending guidelines to host and risk areas. An example of such a guide would be the Guide for Increasing Local Government Civil Defense Readiness During Periods of International Crisis (DCPA, 1979b), which directs the following actions with regard to shelters:

1. Review plans for operation of public shelters.
2. Review plans for activating shelter management staffs.
3. Assemble shelter management staffs for briefing and commence refresher and accelerated training.
4. Inspect public shelter areas and prepare for occupancy.
5. Alert shelter management staffs for duty.
6. Staff public shelters on 24-hour basis (DCPA, 1979b).

In the scenario, preparation activities are directed towards implementation of the Crisis Relocation Plan. Most of the shelter preparation activity is therefore directed to the upgrading and stocking of comparatively small shelters in host areas. In such a situation, shelter managers are most likely to

be drawn from the population of the host area who are already familiar with the facilities and resources, perhaps aided by staffs recruited from among the evacuees.

As Brown points out, in a period of escalating tensions "the U.S. President obviously would have a considerable control over the available time (to develop civil defense)," (Brown, 1975, p. 8). In fact, the length of the preparation period would depend not so much on the actions of the enemy, but on U.S. interpretation of and response to enemy actions.

b. A short crisis-expectant period. Much of current Crisis Relocation and Organizational Relocation planning is based on the assumption that, given the existence of appropriate plans and arrangements, most of the population of most risk areas could be evacuated in from three days to a week (DCPA, 1979a). A prototype State Crisis Relocation Plan (DCPA, 1976) indicates that the Governor would order relocation at the request or order of the President following a period of planning. Evacuees would be expected to stay in host areas for about seven days, and would be sheltered in congregate lodging facilities (CLFs) and selected private homes.

According to this plan people would remain in congregate lodging facilities for an undetermined period. They would move to fallout shelters (or upgrade their facility to fallout shelter specification) if a warning of an actual attack was received. Managers would therefore need to be trained for one or the other or both types of shelter. Host area residents would be the most likely managers for CLFs, whereas personnel from the risk area could be assigned to manage fallout shelters.

A short crisis-expectant period would require a great deal of very concentrated and coordinated effort to prepare shelter facilities, train managers, and match the two. Shelter preparation and manager training might be extremely short.

productively combined in such a situation. Since this time-frame is considered to be the most likely, shelter management training must be designed to function in such a period as well as in peacetime.

c. No preparation/short-warning period. The third time-frame to be considered is the one which was the basis for civil defense planning during the 50's and early 60's, and which unfortunately cannot be dismissed even today. The situation is one in which an attack is launched unexpectedly, resulting in the need to shelter people "in-place" via home fallout shelters or public facilities (DCPA, 1979a).

Maximum readiness instructions call for using mass media to inform the public of what preparations to make and the location of shelters, and to call shelter management teams to duty and get shelters ready for occupancy. When an attack warning is received, the population is to be directed to move to shelter as quickly as possible where they will be received by the shelter management teams (DCPA, 1979b).

In this situation, the majority of the population would be sheltered in their own homes or in large public shelters managed by emergent leaders or shelter managers trained in peacetime.

4. Social Factors

In addition to factors affecting the shelter facilities and the circumstances of the crisis, the characteristics of the sheltered population being managed must also be considered as aspects of the "environment" of the shelter. Relevant factors might include the "class" or socio-economic status of the shelterees, their racial or ethnic background, their relationship to the manager and each other, and the amount of preparation for the shelter experience they had received.

a. Socio-economic status and ethnicity. Social class has been defined as:

...a distinct reality which embraces the fact that people live, eat, play, mate, dress, work and think at contrasting and dissimilar levels. These levels-- social classes-- are the blended product of shared and analogous occupational orientations, educational backgrounds, economic wherewithal, and life experiences. (Bertrand, 1967, p. 173)

It has often been observed that in the first reaction to a sudden disaster, class lines are erased, and people from a variety of backgrounds can work together to solve problems. However if the emergency is of long duration, particularly if people are confined in an uncertain situation, small differences may become sources of trouble. Differences that may become salient relate to customs and mores in the areas of religion, sexual expression, language, cleanliness, gambling, and noise (Beach, 1967).

The social and occupational background of shelterees may also affect the kinds of administrative and technical assistance that can be expected to emerge from the group. For example, a shelter that is made up of engineers or skilled laborers might be more capable of solving radiology and ventilation problems than a shelter made of up service workers which might be more successful at solving administrative and counseling problems.

In the United States, differences in racial or ethnic background are more likely to cause difficulties than differences in social class. Distinctions will be physically visible even before differences in behavior become apparent, and in some cases there will be a language barrier as well. The extent to which this becomes a problem may depend on factors such as the local history with regard to inter-racial or cultural relations, the proportions of people from different groups within the shelter, and the manager's ability to relate to the groups represented.

b. Social relationships. There is evidence that the behavior of people in a shelter may be more positive if they are already known to each other than if they are a chance collection of strangers (Guskin, 1960). It is especially desirable to have family members together in the same shelter, or at least to provide people with dependable information about where members of their families are.

Primary groups like the family...are a powerful source of emotional support for one another as well as a basis for control. Other natural groupings like language groups, religious groups, or even professional and labor groups can provide a basis for communication, socialization, expression and control, and may indeed come to function almost like a primary family group in an emergency situation. (Beach, 1967, p. 107)

This reasoning is one of the factors contributing to the current interest in organizational relocation as a part of civil defense planning. It is felt that this approach would serve to:

- Provide a specific, pre-designated relocation address to evacuating employees and their families.
- Provide already-organized evacuee groups in numerous Host Area facilities, reducing the burden of staffing and managing reception and care services for a significant portion of the evacuee population.
- Maintain greater continuity and capacity in organizations attempting to operate during a crisis and facilitate the resumption of organized activity following a crisis (Chenault & Davis, 1978, p. 1).

If the shelter is filled by strangers, then a certain amount of time will have to be spent in organizing them into groups, identifying group leaders, and developing a shelter social system. If, on the other hand, the shelter is populated by a single, already organized group such as a business, or a number of smaller family or neighborhood clusters, this process will be accelerated and the manager can more quickly move to other problems.

c. Preparation. A third factor that could make a great deal of difference to the shelter manager's job would be the amount of preparation

shelterees had before entering. In some cases this could be as important as the degree to which the shelter itself has been prepared.

Beach points out that emergencies which are unexpected or sudden are much more likely to produce shock and emotional trauma than those which have a gradual onset (Beach, 1967). Foreknowledge of the possible nature, impact and duration of the emergency can help people understand what is happening and react appropriately. Public education in a crisis-expectant period should prepare people realistically for the conditions of nuclear war in general and for the shelter experience in particular. A shelter population which has been psychologically prepared for the experience will exhibit far fewer emotional problems and be able to cope sooner and more effectively.

In addition to psychological preparation, physical preparations can also be significant. Civil Defense guidelines include instructions and sample articles and announcements for newspapers and other media, detailing the kinds of supplies that people would be asked to take with them to shelter (DCPA, 1979b). These instructions usually include food and water, medical supplies, flashlights and radios with batteries, blankets and extra clothing. The model State Crisis Relocation plan recommends that people be instructed to take three days worth of food with them to the Host Area (DCPA, 1976). If time or money prevents the stocking of all the shelters, the provision of resources by the shelter population may be critical to survival.

D. Behavioral Analysis

This section addresses the question: How can the demands of the shelter manager's job be expressed? First it discusses different ways of analyzing the job to reveal some important variants. Next it describes sources and procedures for conducting the analysis. Finally, it presents lists of task dimensions that were identified by the different analyses.

1. Statement of the Problem

Preceding sections have analyzed the shelter environment and potential training audiences to discover variants that influence the design and that must be accommodated in the Shelter Manager Training System. The next step in the analysis is to examine the demands of the task and identify different ways in which these requirements can be expressed. The literature reveals that the shelter manager's job requirements can be expressed in the following ways: information or content categories that must be assimilated; a series of steps or stages that are likely to occur and that require certain behaviors; responsibilities to be assumed and operations that must be performed; and a set of behaviors and skills arranged according to priority.

The first way of analyzing task behavior was to look at the different content areas that need to be addressed. In order to do the job, the shelter manager will require information concerning different aspects of shelter living and the shelter's life support system. The manager's information needs can vary according to the location, size, and complexity of the shelter and according to a variety of circumstances under which Civil Defense activities may occur. The range of information that covers the variety of shelter situations can be expressed as major topics in an outline of content. Appropriate portions of this content can be selected and elaborated to fit both general and specific needs.

The second way of analyzing the task behavior was to identify a set of events that can or will occur as the Civil Defense scenario unfolds. These events are listed below as they relate to hypothesized time references.

- Peacetime
 - Establishing and maintaining operational readiness
- Crisis Expectant Period
 - Increasing operational readiness
 - Activating a Congregate Lodging Facility
 - Managing a Congregate Lodging Facility
- Crisis Surge Period
 - Managing the transition from a Congregate Lodging Facility to a fallout shelter
- In-shelter period
 - Activating a fallout shelter
 - Managing a fallout shelter
 - Emerging from the fallout shelter

Although these events are sequential in an ideal sense, they may not occur at the most appropriate time, and some may not occur at all. For example, peacetime planning to bring the nation's fallout shelters to operational readiness may not precede the crisis expectant period when the shelter would be activated to receive the relocated population. Likewise, the risk area population may be relocated to Congregate Lodging Facilities in the host areas, and the threat of attack may cease, thus eliminating the need for protection from radioactive fallout or for recovery operations.

A third way in which the demands of the manager's job were expressed was to describe areas of responsibility that must be assumed and related operations that must be executed. These operations were defined as clusters of skills that combine to fulfill necessary functions such as maintaining order in the shelter

or storing and preparing food. These responsibilities and operations can vary according to the conditions and circumstances that have been discussed. It is very unlikely that any shelter manager will actually carry out all of the operations that were revealed by the analysis, but it may be necessary to train others to do them. Also, the ultimate responsibility for any or all of the operations required by the situation will rest with the management position. Therefore, the manager will need an understanding of all of the delegated operations performed in the shelter, and may also require certain operational skills in addition to those related to executive management.

The behavioral analysis also revealed that there are variations in time and importance to all of the above which must be considered. Certain actions have priority over others and must happen first, while others can happen later. Some will happen only one time or infrequently, while others go on continuously throughout the sheltering period. Depending on the circumstances, some actions may be of such crucial importance, that unless they are performed adequately and in a timely manner, little else matters (e.g., correcting inadequacies in the ventilation system or procuring and allocating an adequate supply of drinking water for the sheltering period).

2. Procedures and Sources

The major source for the behavioral analysis is the Manual, How to Manage Congregate Lodging Facilities and Fallout Shelters. The Manual was developed by the American National Red Cross (ANRC) for the Defense Civil Preparedness Agency to: a) guide an untrained shelter manager in solving the most difficult problems of managing a Congregate Lodging Facility or Fallout Shelter during an actual emergency, and b) provide reference material for manager trainees in a pre-crisis period.

The Manual is divided into two major sections, one dealing with management

of a Congregate Lodging Facility and the other dealing with management of a fallout shelter. Each section is then divided into the major areas of management responsibility: administration, operational services, technical services, and special services. Under these categories, all of the operations that sustain the shelter environment and support the life of the sheltered population are defined with lists of prioritized actions and reference information.

Other sources for the analysis include the literature on shelter organization, shelter management, and training for shelter managers. Selected sources of technical information pertinent to the shelter situation were also used.

The organization of the American National Red Cross Manual provided the structure for the behavioral analysis. The operations identified in the Manual were listed and clusters of skills that defined the capability to carry out the operations were derived from the content of the Manual. The adequacy of this set of operations and skills was tested by reviewing other sources and making comparisons. Whenever additional operations or skills not identified in the Manual were found, they were added to the list. The following pages present an abbreviated version of the list.

3. Content

These are the major content categories that could be selected to design training system(s) for shelter managers. All major and sub-headings were covered to some extent by the ANRC Manual except those where other references are cited.

- i. sheltering and civil defense
 - a. background of civil defense (DCPA, 1979a)
 - b. blast protection (Bend, Griffard, Shaner, Shively & Hudak, 1963; Department of the Air Force, 1978)
 - c. crisis relocation
 - 1. congregate lodging facilities
 - 2. fallout shelters
 - 3. transition from one facility to another

- d. establishing/maintaining/increasing operational readiness (Bend, Griffard, Shaner, Shively & Hudak, 1963)
 - e. other nuclear emergencies (nuclear accidents and terrorist incidents)
- ii. organizational structure of congregate lodging facility/fallout shelter
 - a. core management roles and responsibilities
 - 1. manager/deputy manager
 - 2. deputy for administration
 - 3. deputy for operational services
 - 4. deputy for special services
 - b. task team duties, responsibilities, qualifications
 - c. community groups size and membership
 - d. advisory group election and functions
- iii. activation of congregate lodging facility/fallout shelter
 - a. registration forms and procedures
 - b. selection of teams
 - c. staff/team leader orientation
 - d. floor plans
 - e. daily schedules
 - f. rules and regulations
 - g. initial protective actions for special conditions (DCPA, 1979b; Department of the Air Force, 1978)
 - h. other priority actions
 - i. special problems
- iv. shelter records
 - a. shelter log
 - b. communications log
 - c. radiation monitoring log
 - d. shelteree radiation exposure record
 - e. records of personal belongings
- v. operational services
 - a. water requirements and problems
 - b. food requirements and problems
 - c. sanitation
 - d. sleeping arrangements and problems
 - e. medical/health care and problems
 - f. security/maintaining order
 - g. special problems
- vi. technical operations
 - a. ventilation
 - b. upgrading for fallout protection
 - c. equipment maintenance and supply distribution
 - d. radiological defense
 - e. fire safety
 - g. escape and rescue
 - h. power and lighting
 - i. special problems
- vii. special services
 - a. religious services
 - b. recreational services
 - c. education/training
 - d. psychological support
 - e. special problems
- viii. emergence from shelter
 - a. temporary emergence phase
 - b. full emergence phase

4. Responsibilities/Operations

The following areas of responsibility and operational categories were extracted from the American National Red Cross Manual, How to Manage Congregate Lodging Facilities and Fallout Shelters, and other sources. All major and sub-operations were covered to some extent by the ANRC Manual except those where other references are cited. Please note: an * indicates an operation appropriate for a Congregate Lodging Facility only, a double ** indicates that an operation is appropriate for a fallout shelter only.

- Shelter Planning (Bend et al., 1963)
 - establishing operational readiness
 - maintaining operational readiness
 - increasing operational readiness
- Executive Management
 - providing overall management of facility
 - maintaining liaison with the Emergency Operating Center (EOC)
 - delegating responsibility
 - solving problems/making decisions
 - adjudicating complaints and problems
 - planning transition from Congregate Lodging Facility to fallout shelter*
- Administration
 - registering and organizing the sheltered population into appropriate community groups
 - making leadership and task team appointments based on information contained on registration forms
 - developing floor plans and making space assignments
 - establishing and maintaining record keeping systems for shelter events and for information regarding individual shelterees
 - providing liaison between management and security team concerning collection of private property
 - developing rules and regulations
- Operational Services
 - Food
 - maintaining inventory of food supplies and determining food rations
 - scheduling, preparing, distributing, and monitoring use of food
 - maintaining cleanliness of food preparation and eating areas
 - Water
 - inventorying, rationing, tapping, and purifying water
 - distributing water and monitoring water use
 - Sanitation
 - setting up and maintaining toilet facilities
 - collecting and disposing of garbage and wastes
 - maintaining cleanliness of the facility
 - establishing procedures for personal hygiene
 - coordinating with medical team for preventive sanitation and body disposal

- Medical/Health Care
 - initiating and maintaining procedures to protect the health of the sheltered population
 - operating sick bay if necessary
 - controlling allocation of medical supplies
 - training shelterees in first aid procedures
 - making referrals to medical facilities in the community*
- Sleep Supervision
 - maintaining order in the sleeping area and assisting people who require aid
 - monitoring the toilet facilities during sleeping hours
 - monitoring the facility at night for hazardous conditions such as fire and guarding supplies
 - reporting serious problems to management personnel
- Security
 - directing population movements on entry or exit
 - guarding facilities
 - controlling outbreak of disorder
 - guarding major offenders who are isolated from others during the fallout shelter stay**
 - controlling any exiting from the shelter until it is officially permitted**
- Technical Services
 - Communications
 - setting up and maintaining communications equipment
 - monitoring and recording incoming and outgoing messages
 - transmitting messages to appropriate shelter management
 - Safety and Rescue
 - initiating procedures for protecting shelterees from the immediate effects generated by the detonation of a nuclear weapon (DCPA, 1979a)
 - initiating and maintaining procedures for preventing and suppressing fires
 - rescuing people trapped in the shelter area
 - preparing, orienting, and drilling shelterees on fire safety and other emergency procedures in cooperation with other teams
 - supporting protective actions conducted by the radiological team.
 - Maintenance/Supply
 - procuring, inventorying, storing, and issuing all shelter supplies
 - maintaining the operability of all shelter equipment
 - supporting the upgrading procedures for increasing the facility's protection from radioactive fallout
 - handling all facility repair contingencies
 - Ventilation
 - maintaining a continuous flow of fresh air into the facility and exhausting odors and stale air
 - Power/Light
 - ensuring that as many portable auxiliary lighting devices as possible are available for the facility
 - controlling the use of emergency power and lighting in the event normal power is not available
 - evaluating the importance of illumination in establishing locations for different activities

- Upgrading for Fallout Protection
 - determining what is required to upgrade Congregate Lodging Facility to provide radioactive fallout protection and undertaking the work so that the protection will be available if the facility becomes a fallout shelter*
 - determining what is still needed to upgrade facility to provide radioactive fallout protection and undertaking the necessary work so that such protection can be provided**
- Radiological Defense**
 - maintaining protection against fallout by monitoring, decontaminating, and increasing shielding
 - measuring, recording, and advising management on radiation levels in the shelter
 - advising management of necessary actions to take in order to increase protection and reduce exposure to radiation
- Special Services
 - Psychological Counseling
 - assisting emotionally disabled people to return to normal functioning as quickly as possible
 - helping seriously disturbed people to be more comfortable
 - Religious Services
 - organizing and conducting religious services
 - consoling and comforting shelterees
 - Recreational Activities
 - planning and implementing activity programs to increase morale (e.g., arts and crafts, spectator entertainment, reading activities, etc.)
 - allocating available recreational material and improvising additional materials
 - Training and Education
 - orienting shelterees to world and shelter conditions
 - preparing evacuees for shelter survival and/or adjustment
 - teaching basic management and technical skills necessary for carrying out assigned tasks
 - providing on-going education of school children
 - preparing shelterees for post-shelter survival and adjustment**
 - Support and Special Services
 - providing care for children, elderly, and infirm
 - providing special services to handicapped and non-English speaking people (not addressed in ANRC Manual or other sources)

5. Prioritized Operations

The following operations are divided into three categories: a) First Priorities which include behaviors or skills that must be performed as the shelter is activated or soon thereafter in order to ensure the survival of the sheltered population (the sequence of activities will vary according to events);

b) Second Priorities which include behaviors and skills that should be performed

on a continuing basis throughout the sheltering period. The source for this listing was the ANRC Manual.

- First Priorities for Congregate Lodging Facility and Fallout Shelter
 - appointing or reappointing deputies for administrative, operational, technical, and special services
 - controlling traffic for orderly entry into the facility
 - registering population and selecting functional teams
 - assigning space and organizing population into community groups
 - testing and, if necessary, repairing all electrical and mechanical equipment in the facility
 - establishing toilet area and setting up additional toilets as needed
 - establishing and maintaining constant air exchange, bringing fresh air in and exhausting stale air and odors
 - establishing procedures for security and fire prevention with strict fire controls in fallout shelter
 - establishing medical care area and sick bay if needed and screening incoming population for injury, illness, or medical problems
 - orienting management personnel and providing guidance/reference information to help them perform their tasks
 - identifying requisite information about the facility, staff, and local conditions and writing it on the Shelter Information Form
 - checking cleanliness and adequacy of the water supply and locating additional sources of water
- First Priorities for Congregate Lodging Facility Only
 - establishing communications with the Emergency Operating Center and monitoring radio and TV for news bulletins
 - determining how the population will be fed, in the facility or elsewhere
- First Priorities for Fallout Shelter Only
 - rechecking upgrading and other protective factors so that upgrading team can make any last minute improvements
 - moving supplies and equipment into the shelter if they are not already there

- making sure ventilation system is operational and that ventilation kits stocked in the shelter are properly located and operational
- determining whether power will be available to operate the mechanical equipment in the facility, and if necessary, procuring portable power generators
- monitoring phone, shortwave radio, and Emergency Broadcast System for latest information on movement of radioactive clouds and general conditions resulting from the attack
- informing the EOC that the shelter has been occupied, reporting the number of persons in it and the initial supply status
- inventorying water and food supplies and establishing distribution system for rationing supplies over a two-week period
- Second Priorities for Congregate Lodging Facility and Fallout Shelter
 - providing information to the sheltered population concerning events and conditions and orienting them to shelter living
 - establishing a daily schedule
 - activating all functional teams on a regular basis
- Second Priorities for Congregate Lodging Facility Only
 - maintaining daily supply inventory and medical care program
 - planning for fallout shelter use by initiating upgrading procedures, determining space requirements and need for supplies
 - holding daily information meetings with shelter groups
 - obtaining sanitation supplies, generators, and other equipment needed for maintenance of Congregate Lodging Facility and potential use in fallout shelter
- Second Priorities for Fallout Shelter Only
 - maintaining close control over daily supply inventory and guarding supplies
 - maintaining daily health checks with emphasis on preventing spread of disease and psychological upsets
 - initiating continual radiological safety surveillance
 - maintaining strictest possible sanitation controls
 - establishing continual fire and security patrols and beginning instruction in emergency rescue and escape techniques

- Continuing Priorities for Congregate Lodging Facility and Fallout Shelter
 - maintaining shelter discipline and daily schedule
 - monitoring health conditions
 - maintaining best possible air exchange
 - maintaining contact with EOC and providing information to the sheltered population
- Continuing Priorities for Congregate Lodging Facility Only
 - upgrading facility for fallout shelter use
 - maintaining supply inventories and equipment, especially those related to water, ventilation, and sanitation
 - stockpiling supplies for fallout shelter use
- Continuing Priorities for Fallout Shelter Only
 - maintaining constant check on radioactivity levels in the shelter and taking necessary steps to improve protection
 - maintaining close controls over distribution of water and food and use of other supplies and equipment
 - preparing population for post shelter living
 - preventing people from leaving the shelter until the EOC authorizes emergence

E. Instructional Management Specifications

Previous sections have dealt in a very broad fashion with questions relating to the nature of the trainees, the universe of responsibilities involved in shelter management, and some of the situational or context variables that might complicate the shelter management task. These analyses provide the background necessary to define the objectives for shelter management training. What remains then is to define the nature of the training program itself. In so doing, many of the considerations and issues raised in previous sections are pulled together and a model can be constructed and displayed.

1. Procedures and Sources

Six questions are posed in this section:

- Who should be trained?
- What should be the content of the training program?
- What should be the training method?
- How should the training be evaluated?
- When should the training be conducted?
- Where should the training take place?

No attempt will be made to reach a final conclusion for any of these questions. The premise for the investigation is that the variability in context factors and the differential sophistication and progress of Civil Defense planning from site to site make it necessary for individual cities or regions to design their own training program tailored to their particular situation. Given this premise, the procedures for this section are to display a set of reasonable options for each question and then to display those options together with the significant context variables in the form of an options

profile. Finally, three specific variants will be described - each variant being a configuration of context factors and training options.

Sources for the information contained in this section include research on shelter living and shelter management training, testimonials, case studies of shelter life, and instructional psychology textbooks.

2. Who Should Be Trained?

The number and types of people who will need to be trained will depend in large measure on the size of the shelter. Large shelters will need a variety of leaders and technicians from administrative assistants or deputies to team leaders responsible for such life support operations as food, sanitation, and ventilation and such security concerns as radiological monitoring and fire suppression. The complexity of the situation leads to a number of questions. Will all of these individuals be recruited, selected and trained in advance of a crisis relocation, i.e., in a formal setting? If not, will they be trained in the shelter (or on the way to the shelter)?

The question addressed in this section is "who should receive formal training?" Formal training is here considered to be some form of supervised instruction which results in an increase in the competence level of the trainee. Usually that competence is assessed by the trainer before certifying the trainee as trained. There is another aspect of this definition of formal training that must be stressed as well. Training is a special type of education that focuses on skills. So, by definition, formal training implies guidance and practice oriented to selected functions and operations.

In their analysis of the requirements for shelter management training, Singer and Fetter (1963) list three options for who to train:

1. The shelter manager only. One approach is to train formally only the shelter manager. This training would be intensive, covering all aspects of shelter management, including the

responsibilities and duties of other members of shelter management. The underlying assumption of this approach is that the shelter manager can be so thoroughly trained on all facets of shelter organization and management that s/he could, in turn, train or direct the training of all other cadre members. S/he may even be given guidance materials to assist in conducting or accomplishing the training of others.

2. The manager plus key technicians only. This approach differs from the previous one by recognizing that some cadre responsibilities are so technical that formal training is required. The best cited example would be the role of the Radiological Officer. The technical aspects of monitoring and decontamination may be such that persons assuming this role require specialized training from qualified instructors. A similar case can even be argued for the training of a Medical Officer in the event that a physician is not available for inclusion in the cadre.
3. All members of the shelter cadre. According to this concept, there should be a degree of formal training, conducted by a person or persons not a part of the cadre, for all key roles in the cadre organization. The reasoning is that if such persons must learn things to effectively carry out their responsibilities and duties as cadre members of shelter management, they should learn them at the hands of qualified instructors who are experienced with the particular training material (Enginer & Fetter, pp.88-90).

As Enginer and Fetter point out, the advantages associated with training the shelter managers only are that the requirements for formal training are greatly reduced. As a consequence of their training, managers, who would have to learn everyone's job and all operations, would become more competent overall and more highly respected. However, this last advantage is not inextricably tied to this option. Shelter management training could be comprehensive even in a situation where deputies and technicians were receiving training.

The problems associated with the first option above is that it places, perhaps, too many responsibilities in the hands of the manager. Managers may not have the time, the inclination, or the ability to train their cadres. As Enginer and Fetter point out, some managers will lack the background to train others in technical operations such as radiological monitoring. Finally, option one makes the manager irreplaceable.

Eninger and Fetter dismiss the third option for the heavy burden it would place on a training system and recommend that training be provided for the manager and key technicians (option two). Defining the nature and number of key technicians should probably be done with the following considerations in mind:

- The size and layout of the shelter, e.g., a large multilevel shelter may require two or more fully trained shelter managers
- The necessity for the on-the-spot, immediate upgrading of the shelter in an attack situation, e.g., a shelter that would require external reinforcing should have a well-trained construction team leader
- The composition of the sheltered population, e.g., a shelter that will host a large heterogeneous urban population may benefit from having trained counselors
- The probability of attrition among the shelter management cadre, e.g., in an unstable population center it may be necessary to train more than the required complement of leaders and technicians. Michael (1960), in a study of procedures for managing large fallout shelters, recommended that several managers be trained for each shelter in order to insure that one trained person would be there when required.

3. What Should Be the Content of the Training?

There are a number of questions that need to be addressed under this heading. First, there is the question of what content is to be selected for the training program. Second, there is the question of how much content is sufficient or warranted. Questions of sequence and focus will be addressed in section 6.

The question of how much content to include in a shelter management training program is partly a matter of contextual constraints and partly a matter of strategy. On the one hand, the amount of content you can cover in a training program is a function of the time and resources you have to work with, the situation you are training for (e.g., sophistication of the trainees, nature of the facility), and the assumptions of the trainer relative to the optimal amount of instruction to be provided.

a. How much content to cover. With regard to the last question, the question of how much content to cover (and how much time to devote to it), Eninger and Fetter (1963) present the following three options:

1. The absolute minimum concept. According to this concept, only that content which constitutes an absolute minimum is included in the training content. Thus, for example, descriptions of what to do would be included, whereas the details of how or the explanations of why would be excluded on the assumption that the person being trained would either know or be able to determine the how or why. In terms of training a shelter cadre, this approach would emphasize who does what. Essentially, it would be a description of each person's responsibilities and duties. It would leave it to the individuals trained to fill in the details.
2. The more, the better concept. According to this concept, the more information given to the trainee in the form of principles, concepts, and procedures, the more fully will s/he understand the total complexity of shelter management. It describes not only the what, why, where, when, and how, but also, the background. For example, it might include a discussion on how radioactive fallout is formed, or how radioactive particles cause tissue damage, or why certain symptoms occur only late after radiation sickness has occurred. Such topics provide a background of understanding that is in the category of "nice to know, but not really essential."
3. The minimal requirement concept. This concept of how much training content to include represents a compromise between the two aforementioned concepts. It includes all training topics which can be directly related to the responsibilities and duties of specific shelter management positions, providing details of what, why, how, when, and where, but avoiding all non-essential background material. In a training discussion of what must or can be done to control shelter humidity, this approach would not, for example, include the topic of why excessive humidity causes people to feel uncomfortable. Such a topic would be considered superfluous to the intent of the topic of humidity control. On the other hand, it would include a discussion of the possible consequences of failure to control humidity. The critical questions that this concept puts to all potential training topics are: (1) "Does the trainee need to know this to effectively carry out his or her responsibilities and duties as a member of the shelter management team?" and (2) "If s/he does, should it be regarded as a prerequisite knowledge or skill, i.e., one which s/he can reasonably be expected to have from prior training or experience, or should it be included in the training content?" (Eninger & Fetter, 1963, pp. 85-87)

Eninger and Fetter recommend the last alternative as the one that strikes a satisfactory compromise between the disadvantages of lengthy and costly training programs and those of unpreparedness on the part of managers. The "minimal requirement" notion is similar to Flanagan's (1954) critical incident method where behaviors or operations involved in a criterion task-- the management of a shelter in this instance-- are selected out as candidate objectives for a training program if the successful performance of these behaviors and operations can be shown to make "a significant contribution, either positively or negatively to the general aim of the activity" (Flanagan, 1954, p. 338).

b. What content to cover. Surprisingly few researchers have applied themselves to the task of determining what topics to cover given limited time and resources for training. Considering the implications of an inadequate or misguided training program, our ignorance of what aspects of shelter management to emphasize in a training situation could be quite dangerous.

The question of what content to cover is replete with options. There are scores of distinct areas of responsibility and as many distinct operations that have to be performed. In addition, there are priorities -- operations, provisions, or principles that remain crucial to a successful shelter operation. These are also time sequence operations that must be learned (or over-learned) -- things that must be done immediately vs. subsequent operations. There are problems, issues, concerns that must be understood and dealt with. And finally, there are contingencies -- occurrences that might happen in some shelter and that must be prepared for in special problems resulting from a peculiar combination of context features, e.g., the interaction of heterogeneous populations with two-level shelters. For each problem, operation, skill, or area of responsibility, the trainer must decide which of the following levels of proficiency is recommended:

- Orientation (know about)
- Familiarization (know about and know where to find additional information).
- Low Proficiency (minimal skill level; can carry out task with guidance).
- High Proficiency (can perform or supervise the task with little need for guidance).
- Expertise (very experienced in all aspects of the operation and can instruct others)

A number of investigators have ventured educated guesses on the question of what aspects of shelter management to emphasize in a training program. Smith et al. (1966) outline the topics for a one-day course in shelter management as follows:

- The national shelter program
- The nature of shelter management
- Organizing the shelter (population, resources, activities, rules)
- Radiological protection
- Satisfying basic needs (atmosphere, food, water, sanitation, medical care)
- Support operations
- Adjustment to shelter living
- Summary

Eninger and Fetter (1967) divide content into core content cepts, principles and information that all shelter management cadre should know and specialized content which is content that is uniquely related to specific cadre roles. An abbreviated version of Eninger and Fetter's core content is included below (pp.98-102):

- part i: orientation on nuclear war
 - i. nuclear weapon effects
 - a. thermal effects and ranges
 - b. blast effects and ranges
 - c. radiation effects and ranges
 - ii. secondary nuclear weapons effects
 - a. casualties from (and protection principles for) thermal effects
 - b. casualties from (and protection principles for) blast effects.
 - c. casualties from (and protection principles for) radiation effects
- part ii: orientation on civil defense
 - i. the normal fallout shelter capability program
 - a. goals
 - b. objectives
 - c. status of program
 - d. relation of federal to state and local civil defense
- part iii: the shelter system
 - i. goals
 - a. the concept of the shelter as a system
 - b. the primary goal of the shelter
 - c. the sub-goals of the shelter system (e.g., radiation protection, provision for sleep, maintenance of social control, etc.)
 - d. general implications of shelter goals
 - ii. basic activities
 - a. temporal phases
 - b. essential management activities by goal and phase
 - c. implications for shelter management organization
- part iv: shelter management and organization
 - i. the organization of shelter management
 - a. alternative forms of shelter management organization
 - b. organization in peacetime and wartime
 - c. the development of a peacetime cadre
 - ii. shelter management responsibilities and duties
 - a. the concept of minimal requirements
 - b. position responsibilities
- part v: orientation on leadership
 - i. alternative concepts of leadership
 - a. authoritarian leadership
 - b. democratic leadership
 - c. laissez-faire leadership
 - ii. elements of successful leadership
 - a. thorough knowledge of the shelter problems
 - b. pre-planning of procedures and controls
 - c. delegation of responsibility and authority
 - d. adequate communication to and from shelters
 - e. responsiveness to shelteree needs
 - f. exercise of personal example
 - g. adaptability to changes in situation
 - h. sensitivity to individual differences
 - i. ability to deal with problem shelterees
 - j. ability to project self-confidence

- iii. psychology of shelterees under stress
 - a. responsiveness to competent leadership
 - b. reactions to prolonged stress
 - c. methods of alleviation, stress reactions

One approach to identifying the content of a training program, an approach that is similar to the use of the "critical incident method" (Flanagan, 1954) mentioned above, is to define content on the basis of research data concerning salient problems that have occurred in a situation that is similar to the anticipated shelter management situation. Collins (1972) investigated shelter management problems that occurred in a number of natural disaster situations. These problems included:

- management fatigue
- people's attachment to pets
- conflicts between managers and heads of other agencies
- identification of volunteers (remembering who was assigned to what; security)
- insuring that shelterees bring critical supplies
- dealing with conflicting information

Smith et al. (1965) analyzed a number of shelter functions from a problem perspective. His goal was to identify what he termed "serious" and "severe" consequences associated with a particular problem or failure. Serious consequences are those that could produce casualties or place a major strain on the shelter system; severe consequences would probably result in the failure of the shelter system. From this analysis, Smith developed a set of responsibilities that he recommended be carried out in peacetime and/or at the time of shelter entry. The following analysis for temperature and atmosphere control is one of a number of Smith's analyses (p. 36).

Table 3

Temperature and Atmosphere Control

Casualty-Producing Consequences of Management Failure

<u>Consequence</u>	<u>Description</u>
1. Heat prostration or suffocation.	Caused by inadequate temperature or atmosphere control.
2. Radiation sickness.	May occur if shelterees evacuate a shelter due to inadequate temperature or atmosphere control.
3. Injury due to violence.	May occur as a result of uncontrolled attempts on the part of individuals or groups to achieve a more habitable atmosphere.

Management Responsibilities

<u>Responsibilities</u>	<u>Major Consequences of Management Failure</u>
<u>Peacetime</u>	
1. Determine ventilation potential, both natural and mechanical, of the shelter area.	Heat prostration or suffocation.
<u>Entry</u>	
1. Initiate operation of mechanical ventilation.	Heat prostration or suffocation.
2. Open shelter area as required for natural ventilation.	Heat prostration or suffocation, radiation sickness.
3. Evaluate shelter capacity in terms of temperature and atmosphere control.	Heat prostration, suffocation, radiation sickness or injury.

A similar analysis was conducted by Murray (1960). Murray was interested in identifying factors that lead to environmental stress in fallout shelters. With only a slight extrapolation from Murray's report, Murray might recommend that a shelter manager receive the following kinds of training:

Knowledge about:

- effects of food and water deprivation
- effects of severe cold, heat
- effects of oxygen deprivation
- the psychological effects of deprivation and frustration: aggression, depression, regression and withdrawal

Skills in:

- group leadership
- setting up channels of communication
- delegating responsibility
- running democratic discussions
- keeping up morale

Some investigators have emphasized technical skills; others focus on administrative problems in their recommendations for shelter management training. Still another kind of emphasis is on the affective sensitivities and capabilities presumed to be salient in effective shelter management. Biderman (1960) emphasizes the problem of shelterees' lack of commitment to the immediate situation and the concomitant need for shelter managers who recognize the importance of operations designed to strengthen commitment such as the allocation of space (territory), the delegation of responsibilities, and the establishment of some kind of "heroic" purpose that can unite and sustain the shelterees. According to Biderman, it is crucial that the shelter leadership dispel the idea that shelter living and life after a nuclear attack are "fates worse than death." Hilmar (1960) discusses the same theme - the importance of certain attitudes, psychological safety, and what managers can do to insure the well being of the shelterees. Hilmar emphasizes the division of the shelter into living units, the delegation of responsibilities, and communication between shelters. Janis (1960) stresses that not only must instruction in what to expect from and how to cope with psychological problems be a major part of management training, but this training should be in the form of realistic simulations.

Additional recommendations covering aspects that might be included in shelter management training include styles of leadership (Hale et al., 1966), ability to interpret Civil Defense messages (Altman et al., 1960), and the

requirements of work rotation and shift sleeping (Carr, 1968). Bend et al (1963) in their Guide to Shelter Organization and Management list six principles of effective arrangement that should be stressed in training sessions:

1. The rapid assumption of command
2. The early demonstration of authority and display of personal leadership
3. Delegation of authority while retaining the ability to perceive, evaluate, and make decisions on the overall shelter situation
4. Keeping priority actions in mind at all times and using these priorities to deal with conflicts
5. Serving as a model to shelterees
6. Being sensitive to changing needs of shelterees

Finally, Carr (1968), stresses that the diversity of shelter situations will be so great that no single training program could be appropriate everywhere.

Shelter facilities vary in configuration, location of protective areas, ventilation provisions and potential requirements, optimal per person space allocation potential, equipment, water provisions and other supplies important to shelter operations, organization of the people who normally occupy it -- and the extent to which this organization will be useful during shelter occupancy -- organization requirements for shelter operation, communication provisions and potential requirements, and many others. (pp. 72-73)

Carr recommends that shelter management training consist of the construction of a local shelter organization, management, and operations plan. Carr calls this training "probably the most effective training we would be likely to get them to submit to" (p. 78) and suggests that conferences could be built around the development of these plans.

To select the content (skills, topics, areas of responsibilities, etc.) appropriate for any set of trainees and any shelter situation, behaviors should be reviewed closely and the following determinations made.

1. Operations listed as priority operations. These might be extracted for review.
2. Priority operations that one or more trainees are unfamiliar with. These might become focuses for training.
3. Operations and decisions to be made in the brief start-up period. These might be extracted for over-learning on the part of trainees.
4. Particular operations or contingencies that will be highly problematic given the nature of the shelter and the sheltered population. These might be extracted for practice exercises.
5. Operations that can be handled by looking up guidelines in an in-shelter resource book. The location of these guidelines might be reviewed.

4. What Training Methods Should be Used?

The question of training method can be considered as a narrow question or as a broad question. As a narrow question, method is usually considered to be a matter of what instructional strategy or teaching strategy to use. In the broad sense, the question of method addresses matters of teaching strategies, media, learning mode and arrangement (how the learner will respond and how learner groups are organized), instructional time and sequencing, instructional space and location, and resources and materials provided. Gerlach and Ely (1971) display some of these considerations in the column just to the right of center in the following figure.

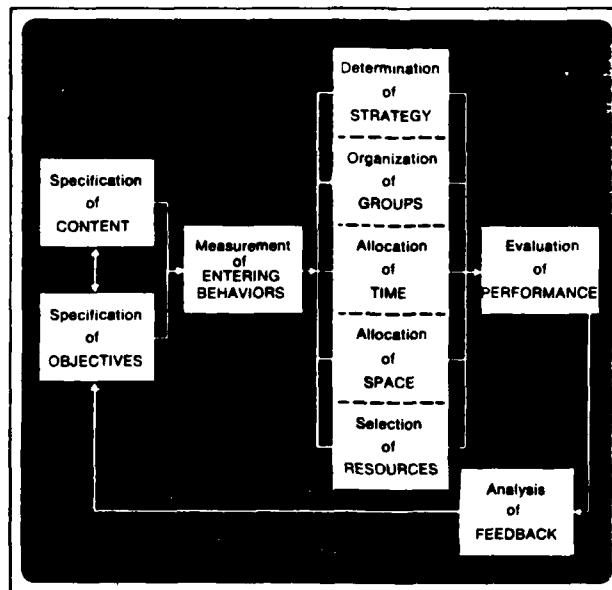


Figure 11. Steps in the design of an instructional system

For the purpose of this analysis, method will be considered to be (a) the selection of an instructional strategy that fits the instructional objectives (content) of the training program, (b) the selection of appropriate media for that strategy, and (c) the instructional/learning management (e.g., the organization of groups). Questions of when and where instruction should take place will be considered in subsequent sections of this part of the report. The question of resources and support systems is a very broad one with regard to shelter management training and will be considered in great length in Part III of this report.

a. Procedures and sources. As noted above, the procedure employed was to ask three questions: (1) what strategies, (2) what media, and (3) what arrangements are possible and appropriate for shelter management training. Again, the selection of options rather than the specification of a particular configuration of strategies and modes is based on the premise that training programs will have to be tailored to particular instructional objectives, contents, and

trainee characteristics.

Sources for the analysis included previous shelter management training programs, studies relating to shelter management, and texts of instructional psychology.

b. Group strategies.

(1) *The Lecture* uses a carefully prepared oral presentation of a subject area to: present factual material, to entertain or inspire, to stimulate thinking or further study, or to promote group discussion.

Advantages: suitable for an audience of any size; easy to organize; some people may learn more easily or be more willing to learn by listening to a lecture than by reading

Disadvantages: audience is passive; feedback is limited; effect is difficult to gauge

(2) *The Demonstration* is a presentation that shows how to use a procedure or perform an act, often accompanied by an oral and/or written description. It may be followed by a practice session in which the trainee performs the activity under the supervision of the trainer

Advantages: the combination of seeing the demonstration and hearing it discussed helps students understand what is required; actual materials and models can be used; the pace is flexible; and the demonstration can be repeated

Disadvantages: it may require considerable time and money to obtain and handle equipment and materials; small objects are difficult for large groups to see; limited materials/equipment make it difficult for members of large groups to practice using them

(3) *The Conference, Symposium, Workshop* can be used to provide information, set policies, solve problems, sensitize participants to a particular facet of management.

The Conference Method involves convening a group of persons to relate ideas or experiences concerning a common problem or need. The Symposium is made of presentations by several subject matter experts. The Workshop

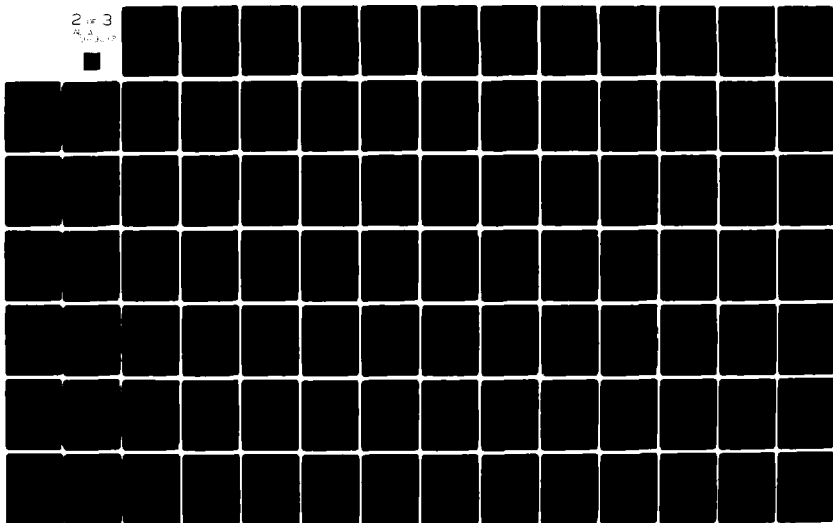
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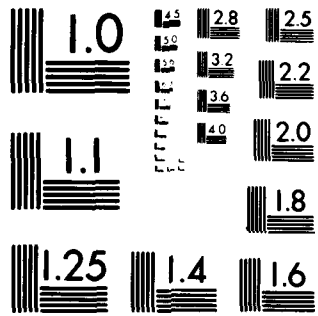
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MODELS OF SHELTER MANAGEMENT TRAINING AND DELIVERY SYSTEMS.(U)
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usually involves participants and stresses application of procedures to solve problems or develop skills.

Advantages: group instruction usually generates a high level of participant interest; makes good use of trainees' past experiences; facilitates information sharing

Disadvantages: participants need to have some knowledge of the topic to participate in the discussions; some participants may monopolize the discussion; evaluation is difficult; groups must be small (U.S. Civil Service Commission, 1977)

(4) *The Case Study* is a detailed account of a real or hypothetical incident or series of related events involving a problem that may be encountered on the job. The case is analyzed and discussed and trainees are required to solve a problem and/or develop a plan of action. The case study can be presented orally, in writing, through a dramatization, or on film.

Advantages: the case can be designed to focus on a problem or situation common to group members; it helps learners develop or understand alternative solutions to problems; it develops analytical and problem solving skills; many find it interesting and challenging

Disadvantages: some may not see the relevance to their own situation; it takes time and skill to develop a good, complex case study; it may not be possible to use a case with more than one group (Ax & Kohls, 1977; Bauman, 1977; U.S. Civil Service Commission, 1977)

(5) *The In-Basket Exercise* may be used as an individual or group participation training method. It presents management problems to the trainee(s) that might be confronted on the job: reports, complaints, requests, phone calls or other messages, etc. The individual or group must determine how they would deal with the materials in a real situation and record what actions they would take. This procedure can also be used to test trainees' performance on management skills.

Advantages: it resembles a realistic set of management problems with varying degrees of difficulty; it can include stress factors such as time limitations

Disadvantages: it is time consuming and difficult to construct a variety of In-Basket exercises (Ax & Kohls, 1977; Kowski & Eitington, 1976; U.S. Civil Service Commission, 1977)

(6) *The Simulation/Scenario Technique* is a structured set of events and conditions within which to work. The trainee is confronted with problems stated and implicit in the scenario.

Advantages: offers an opportunity for trainees to apply prior learning in a context similar to that in which it will be used; requires trainees to decide on a course of action; provides a concrete reference point for the discussion of important concepts and tasks; feedback is immediate; time can be compressed to include many events; discussion is realistic

Disadvantages: participants might not take situation seriously; sense of danger is difficult to simulate; requires time and skill to stage them; may cost more than other types of training; zero-sum games such as Monopoly may elicit competitive rather than cooperative responses (Ax & Kohls, 1977; Bauman, 1977)

(7) *Role Playing* is similar to the Simulation/Scenario, Critical Incident, In-Basket, and other techniques that introduce realism into the training situation and require trainees to assume roles and act out behaviors. It is usually less structured than these techniques because it allows the trainees to determine the content of the situation they act out. It is probably more appropriate for handling delicate problems in human relations than for complex decision making problems that require dealing with multiple sources of information. It is usually followed by discussion of the implications of what has taken place.

Advantages: an effective and motivating way to present a problem and stimulate discussion; provides clues to possible solutions to problems; allows an opportunity to try out alternative solutions without risking trial and error on the job; allows the trainee to assume the position of another and gain insight into that person's behavior; allows the instructor to assess how well trainees understand and can apply principles

Disadvantages: some people may not be able to role-play successfully; trainees may not be able to apply what they've learned to real-world problems because they will often confront circumstances beyond their control; because the content of the role playing situation is determined by the players, the instructor may not be able to direct the exercise so that it will accomplish the objectives (Ax & Kohls, 1977; Bauman, 1977; U.S. Civil Service Commission, 1977)

c. Individual strategies. The following techniques were suggested by Bauman (1977). Most of them can be used independently or in conjunction with other types of instruction. It should be noted that some of the group methods that were presented earlier can be adapted to individual instruction, e.g., In-Basket Method.

(1) *Assignments or "Homework"* include reading, writing, viewing, or listening tasks given to trainees either as preparation or follow-up for another type of instruction.

Advantages: can be used to support many instructional functions; allows for more information to be presented than would be possible in the training session alone

Disadvantages: adults may resent "homework assignments" or may not have sufficient time to complete them

(2) *The Correspondence Course* is a self-instructional or independent study course which may use printed and/or nonprinted materials as the medium of communication. This method may be combined with others such as tutorial or small-group sessions, consultation from a trainer, written assignments, examinations, etc.

Advantages: instruction is self-paced; it can be self-directed; it allows sufficient time for individuals with different schedules and learning rates to master the objectives

Disadvantages: individuals may not be sufficiently motivated to complete the course; unless it is combined with other methods, it may not allow for sufficient realism, opportunity to learn from others and share information, or opportunity to demonstrate interpersonal or technical skills; it is perhaps best suited for learning intellectual skills

(3) *Information Sheets* are commonly called "handouts." They are learning aids given to trainees in support of a learning activity. They may be in narrative, outline, or diagram form. They may be part of a set of curriculum materials or they may be written by the trainer or reproduced from published materials.

Advantages: well designed handouts can help the trainee recall information about behaviors, concepts, or principles; they can provide quick reference in actual situations

Disadvantages: they are usually thought of as supplemental; they often tend to get misplaced or lost, or the information may become obsolete

(4) *Letters, Circulars, and Newsletters* are means of keeping trainees "up to date." A newsletter may include an announcement or report that is mailed to interested people. It often includes training information and is one way of personally communicating with many people. Circular letters are less personal than newsletters. They carry announcements, reports, and training information.

Advantages: they can maintain trainee interest and communicate new information about concepts, skills, job conditions, etc.

Disadvantages: they do not provide an opportunity for trainees to ask questions, test applications, practice or demonstrate skills.

(5) *Programmed Instruction* involves a self-instructional format, often in the form of a printed book or booklet, but it can include the use of teaching machines, computer-assisted instruction, dial access information retrieval systems and other devices. The method requires that the learner be shown an example of a concept or principle that exemplifies a stated objective. The learner then makes a response to demonstrate that he or she has learned correctly. Immediate feedback is given concerning the correctness of the learner's response.

Advantages: similar to correspondence course; immediate feedback is an advantage

Disadvantages: the method is mostly limited to verbal or abstract presentation learning

d. Selecting an instructional strategy. The criteria for selecting instructional strategy should take into account at least the following:

- the type of instructional objective (e.g., information learning vs. principle learning)
- the context for the criterion task (e.g., filling out a form vs. organizing a team of people)
- the nature of the learners--their personal characteristics, experience, and present circumstances
- the constraints imposed by the context in which the instruction will take place. In the case of the Shelter Manager Training System, types of constraints include:
 - a) time-- when (peacetime, increased readiness, crisis surge, in-shelter period); amount available (one or two days, semester course, on-the-spot training)
 - b) location-- formal institution, informal setting, in the shelter
 - c) nature of trainers-- managerial/technical/interpersonal expertise; need for guidance, materials, props, etc.; volunteer or compensated
 - d) number of persons to be trained-- trainer/trainee ratio; size of instructional groups; availability of adequate facilities, etc.
 - e) financial considerations-- compensation for trainers/trainees; cost of materials/equipment; costs of using facilities

Stated differently, selecting an instructional strategy is a matter of maximizing the following criteria:

1. Effectiveness. How well can the method achieve the instructional objective?
2. Efficiency. How well does the strategy get the most out of the available resources?
3. Suitability. How appropriate is the strategy for the trainees, the training context, and the criterion task content?
4. Feasibility. Given the constraints that have been identified, can it be done?

e. Selecting appropriate media. Instructional strategies are sometimes associated with a particular medium such as printed material. But, usually, an instructional strategy can employ a variety of media. One way of looking at the decision of matching appropriate media to an instructional strategy is to consider that there are nine distinct instructional events associated with any effective learning session. It is often possible to select a desired medium for each of these nine events. The table below displays the nine instructional events (Gagne & Briggs, 1974) against eight types of media (Gerlach & Ely, 1971).

Table 4
Selecting Appropriate Media

Instructional Events	Types of Media
1. <u>Gaining attention</u>	1. <u>Real things</u> , e.g., people, events, objects, demonstrations
2. <u>Informing the learner of the objective</u>	2. <u>Verbal representations</u> , e.g., printed materials, chalkboard notes
3. <u>Stimulating recall of prerequisite learned capabilities</u>	3. <u>Graphic representations</u> , e.g., charts, graphs, maps, diagrams
4. <u>Presenting the stimulus materials</u>	4. <u>Still pictures</u> , e.g., photographs
5. <u>Providing learning guidance</u>	5. <u>Motion pictures</u> (including television and videotape)
6. <u>Eliciting the performance</u>	6. <u>Audio recordings</u>
7. <u>Providing feedback</u>	7. <u>Programs</u> , e.g., sequences of verbal, visual or audio information
8. <u>Assessing performance</u>	8. <u>Simulations</u> , e.g., replications of real situations
9. <u>Enhancing retention and transfer</u>	

Gerlach and Ely (1971) suggest the following criteria for selecting appropriate media (pp. 2921-295).

1. Appropriateness. Is the medium suitable for accomplishing the purpose of the instructional event?
2. Level of sophistication. Is the medium on the correct level of understanding for the learners?
3. Cost. Does the potential learning from this medium justify its cost?
4. Availability. Can the material and equipment be readily available when they are needed?
5. Technical quality. Is the quality of the material acceptable--easy to read, easy to see, easy to hear?

In 1977 Far West Laboratory extensively analyzed various delivery media according to their cost benefits and the feasibility of their utilization based upon aspects of their production, distribution, and use.*

f. Determining the instructional/learning arrangement. The instructional/learning arrangement of a traditional elementary school classroom has the following features: a live instructor, one instructor, large group instruction with occasional small group work, classroom control vested in the instructor, instruction occurs when and only when the instructor is present.

Applying this analysis to the shelter management training situation yields at least the following questions.

1. Is an instructor necessary?
 2. If so, must the instruction be live? For instance, could the instruction be on videotape or in the form of a programmed booklet?
 3. What will the "class" be like? Should there be a group? Could a class consist of individuals at different locations, e.g., teleconferencing.
 4. Will the instruction be massed, individualized, or mediated through learning teams?
5. How Will the Training be Evaluated?

The question of evaluation has a number of sub-questions including:

* Far West Laboratory for Educational Research and Development, A concept and feasibility study of a citizen civil preparedness educational program.
San Francisco: Far West Laboratory, 1977.

- How might data be collected on a prototype shelter management training program in order to improve and revise it (formative evaluation)?
- What are the criteria for evaluating the worth of a training program (summative evaluation)?
- What level of competence should trainees achieve?
- What methods can be used to assess learner competence?

Each of these questions will be considered briefly below.

a. How might formative evaluation be carried out? Formative evaluation is a type of evaluation that is oriented to "product improvement." In this case, the question would be, what changes should be made to make the program more effective, more efficient, suitable for the population; etc. Sanders and Cunningham (1973) present the following scheme for formative evaluation:

- I. Pre-Developmental Activities
 - A. Needs Assessment
 - B. Evaluation of Needs
- II. Evaluation of Objectives
 - A. Logical Analyses
 - 1. Cogency of Rationales for Objectives
 - 2. Consequences of Reaching Objectives
 - 3. Appeals to Higher Values
 - B. Empirical Analyses
 - 1. Evaluation by Relevant Groups
 - 2. Evaluation by Specialists
 - 3. Appeals to Written Documents
- III. Formative Interim Evaluation
 - A. Formal
 - 1. Pay-off Evaluation
 - 2. Intrinsic Evaluation
 - 3. Evaluation of Program Operations
 - B. Informal (Unobtrusive)
- IV. Formative Product Evaluation
 - A. Validation Studies
 - B. Cost Analyses
 - C. Descriptive Analyses
 - D. Goal Free Evaluation

Figure 12. A structure for planning formative evaluation in product development. (From Sanders & Cunningham, p. 218.)

b. What are the appropriate criteria for summative evaluation? Summative evaluation looks at all aspects of the training program and asks a

series of questions designed to assess the program's worth, success, relevance, etc. Some of the criteria that might be used are:

- evidence of need
- suitability of program across a variety of potential user populations
- cost effectiveness
- ease of program adoption/adaption
- evidence of program effectiveness: quality
 - importance, adequacy and appropriateness of program content
 - appropriateness, efficiency and perceived effectiveness of program strategy
- evidence of program effectiveness: trainee performance
 - trainee satisfaction
 - trainee knowledge, attitude or awareness gains
 - trainee performance gains
- side effects

c. Trainee level of competence. Without question, the most important aspect of summative evaluation is the question of trainee competence. For any instructional program it is not possible to decide that training has been successful until you can show that the trainees have achieved the instructional objectives. In the case of shelter management training, a successful training program is one that results in trainees who have the competence to prepare and manage a shelter, carry out all necessary operations, deal successfully with administrative, technical, and social problems; who can do so with minimum guidance; and who have demonstrated such competence in situations that are as close to the criterion situation as possible.

The design of an evaluation then involves specifying the behaviors or operations that trainees must become proficient in, which aspects of the criterion tasks can be learned at some later time, which aspects trainees need only

become familiar with, and so on. A useful breakdown of levels of competence is as follows:

- orientation (awareness)
- familiarization (knows about, knows where to locate)
- low proficiency (minimal skill level)
- high proficiency (performs without guidance)
- expertise (can teach)

d. Evaluation methods. Evaluation "methods" is here used to refer to the testing method employed to measure trainee knowledge and/or performance. Other kinds of techniques would have to be used to measure cost effectiveness, appropriateness of the instructional strategy and other dimensions of a summative evaluation. Jenks and Murphy (1980) list the following types of performance measures and response modes for those measures.

TYPE	RESPONSE MODES	TYPE	RESPONSE MODES
1. <u>WRITTEN</u> Objective Tests	● true/false ● completion ● multiple choice ● matching ● short answer	3. <u>ORAL</u> Interview	● oral communication
		Group Discussion	● learner group addresses problem and submits group solution orally or in writing
Essay Tests	● extended discussion of a set topic in continuous prose	Role-Play	● two or more learners interact in assigned roles and tasks
2. <u>PERFORMANCE</u> Work Sample	● learner performs task(s) in realistic setting	4. <u>SELF-REPORT</u>	● rating scales ● inventories ● checklists ● autobiographical reports ● diaries, journals of experience
Case Study or Reports	● a written statement, highly detailed and complete, of a problem, including definition, analysis, relevant information, conclusion, etc.	5. <u>PEER-ASSESSMENT</u>	● written or oral report ● interview/dialogue ● checklist ● rating scale
Simulation	● problem-solving, decision-making, and setting priorities		
Products	● constructing ● making plans, schedules, etc. ● improvising		

Figure 13. Performance measures and response modes.

Eninger and Fetter (1963) suggest three evaluation methods for shelter management training. The first is to use instruments to evaluate trainees' opinions concerning the training program. They argue that these data would: provide formative evaluation of the total training effort; highlight regional, state, and community differences in reaction to training; indicate potential areas; and diminish the emotional intensity of negative attitudes toward the training.

The second recommendation is to use standardized objective examinations which require no writing and can be scored mechanically or with a hand-scoring template. They argue that despite the distaste that adults may have for this type of test, these tests can motivate learners to seek additional instruction, help instructors to identify problems and misunderstandings, and act as a control on instructor bias. They indicate that carefully designed tests are well accepted by adult trainees and are frequently used to advantage in industry.

The third option they suggest is to employ trainee performance evaluation. Performance in establishing the operational readiness of a shelter is one feasible option. (An evaluation instrument to assess the operational capabilities of community fallout shelter systems was developed by Shontz [1963]).

6. When Should Shelter Management Training be Conducted?

Shelter management training can be conducted during one or more of the following crisis-related time periods: peacetime; crisis expectance (increased readiness due to international tension or perceived threat to peace); crisis surge (a period that begins with government orders to relocate and/or shelter the population and ends with the close of a CLS or shelter); and in-shelter period. Two other periods for which additional training might be required are initial post-disaster emergence from the shelter and the long-term recovery

period. It is extremely likely that prudence and necessity will require some training for shelter managers and their staffs during all of these periods. The important issues are: a) when to concentrate the greatest effort, and b) what should be the focus of the training during the different time periods.

a. When to concentrate the greatest effort. Eninger and Fetter (1963) state: "There is no question but that peacetime shelter management cadre must receive training in peacetime in order to accomplish its initial objective, namely, establishing the operational readiness of the shelter facility. There is a question about the timing of such training in the peacetime period" (p. 80). Their reference to the "time of the cold war crisis" corresponds to the increased readiness period described above.

Their arguments for training the shelter management staff as soon as possible are: a) it is consistent with the principle of establishing operational readiness as soon as practical, and b) it avoids recruiting personnel and not training them until later, a mistake that could cause them to lose interest. Brictson, Bustya, and Streich (1967) suggest training for the shelter manager staff during a "normal" or peacetime period that would develop "procedures that minimize the time required to activate and organize a shelter . . . and develop . . . the plans, policies, and procedures governing the use of large scale shelters (e.g., organizational schemes and supervisory techniques for handling large massed groups)" (p. 66). Smith, Pilette, and Bend (1965) argue for pre-designation and training of shelter managers as a factor in reducing casualties.

Eninger and Fetter (1963) point out that the Cuban crisis in the Fall of 1962 prompted increased interest in Civil Defense training. But they reject the idea that a crisis is the optimal time for training despite the increased interest in Civil Defense and the ease of recruitment of shelter personnel. Their reasons, briefly, are: a) this would alarm large segments

of the public, b) these activities might alarm a potential enemy into fear-stimulated counter measures, c) it may not be possible to activate training machinery to coincide with a rise in international tension and still be effective, d) should there actually be a nuclear war, it would probably be "too little, too late," and e) the establishment of operational readiness of a national system of fallout shelters should not wait until a crisis occurs (pp. 90-91). For these reasons and others, Eninger and Fetter recommend peacetime training.

b. What should be the focus of training during different time periods?

It has been well documented that peacetime shelter manager training should focus on establishing the operational readiness of the shelter system (Bricton, Bustya, & Streich, 1967; Carr, 1968; Eninger & Fetter, 1963; Smith, Pilette & Bend, 1965). Bend (1966) suggests that a large shelter simulation game be played during a shelter occupancy exercise in which the students assume the roles of executive cadre of a large shelter. A Shelter Management Contingency Game has been developed and evaluated by Hale, Bend and Jeffreys (1967).

Speaking to the issue of training for the increased readiness period, Bricton, Bustya and Streich (1967) indicate that accelerated training of shelter managers and management cadre would be initiated and that briefings would be conducted to refresh personnel with special practices. The same writers urge the on-the-spot instruction of assigned personnel for essential shelter operations during an actual emergency. These authors also indicate that preparation and training for shelter emergence and recovery should be conducted during all time periods, with information on problems resulting from actual conditions following the attack determining the focus of post-attack training.

Discussion of the issues surrounding the different time periods during

which shelter management can occur suggest that there is need for a variety of training programs to satisfy the requirements of each training situation. The problem of defining a variety of local needs and requirements must also be addressed.

7. Where Should Shelter Managers be Trained

Eninger and Fetter (1963) indicate that the question of where to train shelter managers is related to the question of how to train because certain locations have implications for particular training approaches. They suggest the following locational possibilities. These possibilities are listed below. These options are discussed more fully in Part III of this document.

1. *At established OCD training centers.* (In 1963, there were three such centers. At present, only one remains--the Defense Civil Preparedness Staff College in Battle Creek, Michigan. This facility would, of course, be inadequate to train the many shelter managers that are needed.)
2. *At institutions of higher learning.* At present, the growing number of community colleges increases the attractiveness of this option.
3. *At secondary school locations.* The availability of teachers who would likely volunteer to teach such classes during evening sessions makes this a good choice.
4. *At home on a self-study basis.* The authors suggest that this option be included to allow people to participate who could not otherwise because of conflicts with fixed time schedules.
5. *At the shelter location.* The authors suggest that individual shelters would not be good locations for formal training because of the difficulty of bringing in qualified instructors. Variations in the

suitability of shelters as training facilities is a further reason for rejecting this opinion.

In addition to Eninger and Fetter's options, another possible location should be included:

6. *Offices of organizations engaged in disaster relief.* The Red Cross for example, has a long history of providing training for various emergency related needs, including shelter management. Fire or police departments could also host training programs.

F. A Model for a Shelter Management Training System

In this section we will draw conclusions from the preceding sections and attempt to arrange those conclusions into alternative models for a Shelter Management Training System. These models will then be compared with the goal of producing an ideal composite system model. The implications of that system for existing practices and materials will then be discussed.

1. Procedures and Sources

The diagram on page 29 of this Report shows the relationship among the various sections and how they all contribute to the development of a model for the instructional system. An analysis of the potential training group and of the various settings for which and in which training might be conducted provided a general context for the analysis of training needs. A third analysis looked at what content and skills would be involved in managing a fallout shelter and congregate lodging facility. Finally, a fourth analysis brought together information about instructional management techniques that might be applied to the presentation of these content and skills. What remains is to pull together the conclusions, training options, factors to consider, and contextual features that need to be accommodated into a single profile that can be easily displayed. Next, the profile must be tested by applying it to a number of likely situations--scenarios that would lead to the activation of a training system. Given the features of these scenarios, selections are made among the options and considerations. The result is the formation of particular shelter management training system configurations. Finally, a composite model can be constructed by describing all of the common features of these configurations. To repeat, this process involves the following steps:

- select content, instructional methods, and teaching/learning arrangements for a training program that would meet the needs of each scenario (alternative training system configurations);
- compare the alternative models developed and devise a composite model that can be used in a variety of situations and time periods (Shelter Management Training System Model).

An additional step involves comparing the content and methods of the composite model with those available in existing training programs and materials in order to assess the potential of those existing pieces for inclusion in the training program. The result of this step is reported on in Chapter Four.

2. The Options Profile

An options profile is a device or conceptual tool employed by a designer to manage complexity. It provides an easily accessible summary of all of the major choices, considerations, and factors that might influence or enter into the design of a training program. From an analytical perspective, the profile can be used to classify and describe relationships among items. From a synthetic perspective, the profile allows the designer to test design configuration for completeness and to generate ideas for new configurations.

The options profile for shelter management training displayed in Figure 14 has four major dimensions.

- Training Context. Training context refers to the major factors that define the design task: who, what, when, and where must the training occur?
- Management Context. Management context refers to factors that determine variations in the criterion task, the management of the shelter or lodging facility. These factors include the nature of the facility, the adequacy of its provisions, the nature of the sheltered population and the nature of the management cadre.
- Considerations for Establishing Instructional Objectives. These factors represent design decisions that must be made before the content and methodology options can be selected. These decisions include the amount of content judged to be optional, the relative emphasis to be given to different learning domains, the level of proficiency to be achieved by the trainees, and the training design principles to be incorporated into the materials.

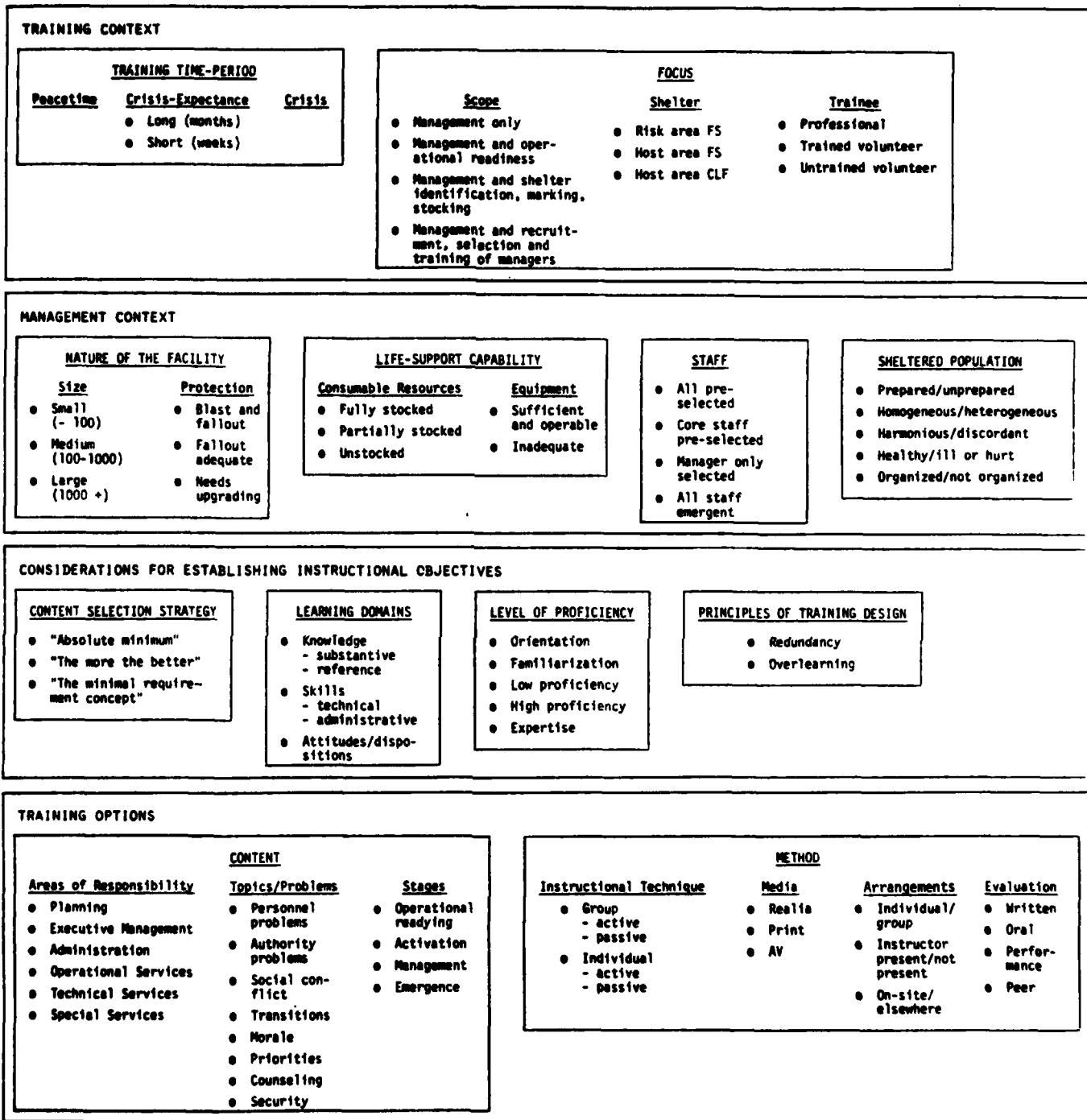


Figure 14. Options and context variables for a shelter management training system

- Training Options. Training options refer to the aspects that describe the training program itself. These aspects describe the "curriculum"--the content and method of content presentation--that the trainees will receive.

It should be noted that these options and considerations do not fully describe the training program as implemented. The next chapter includes a profile of options and considerations for the delivery of a training system.

3. Sample Scenarios for Shelter Management Training

Analysis of the civil preparedness and shelter management literature indicates that there are a number of variations in shelter environment for which managers must be trained. It is not possible to define the ideal or typical situation in which shelter management training will take place. Nor is it possible to make many assumptions about the nature of the manager or of the shelter in which the manager will function.

However, a number of scenarios have been developed which describe possible sequences of events leading to a nuclear conflict. Also, Civil Defense policy statements list plans and procedures which allow one to infer, with some confidence, the range of most probable shelter management and training situations. This information provides a basis for describing three varieties of hypothetical situations in which shelter managers might need training.

It is apparent that time is the factor which is responsible for more variations in training context than any other. As time for training and other crisis actions decreases, the "degrees of freedom" for training programs decreases as well. From a design point of view, that means that the designer's ability to specify the training situation increases as the amount of time projected for training increases. If these two factors are placed at the two ends of a continuum, one can identify three hypothetical scenarios for shelter management training:

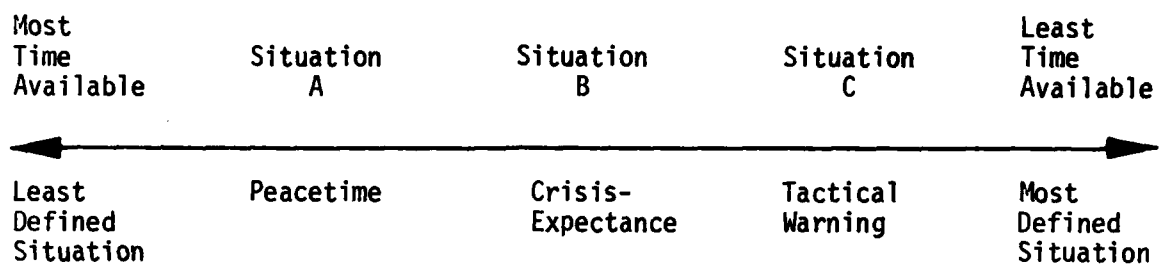


Figure 15. Three training scenarios.

a. Peacetime (situation A). Of the three situations, Peacetime is the one about which we have the most certain information, since it is the only one we have experienced. Current plans call for the training of approximately 30,000 shelter manager officers and instructors during the years 1981-1983, and of some 20,000 shelter managers thereafter (Far West Laboratory, 1979). This is a comparatively small number, given the total number of shelter managers who would be needed if a crisis should occur. The fact that their training would be spread over several years means that individual training groups would probably be small as well.

Since it would not be known when, if ever, the training would be used, trainees could not be certain about the location and characteristics of the shelter which they would manage (although conducting training in conjunction with development of regional or community civil preparedness plans could make this knowledge more likely). Therefore it would be advisable to provide trainees with basic knowledge about all kinds of shelters, with provision for acquiring expanded proficiency on specific topics once the need for them was known.

b. Crisis-expectance (situation B). The second situation in which training might take place is a period of increasing international tension during which the authorities are making preparations in all areas of Civil Defense.

This is the scenario upon which much of current Civil Defense planning is based. In this scenario, a crisis-expectant period of between a week to six months culminates in relocation of the risk-area population to shelter in host areas. The remaining 400,000 managers needed, as well as shelter support staffs, would have to be trained during this time.

In this situation, shelter management training would be part of a massive effort to develop and implement Civil Defense plans. It would therefore be much more likely that the managers trained during this time would be trained for service in specific shelters, and upgrading and bringing these shelters to operational readiness might well be part of their training.

However, the pressure on both instructors and trainees during this period would be high. Training would take on the characteristics of a "crash course" in which trainees must absorb as much essential information as quickly as possible and there would be little time for practice and relearning of difficult skills.

c. Tactical warning (situation C). The third situation is the least likely situation, according to defense intelligence. However, as long as it is a possibility it must also be considered in Civil Defense planning and shelter management training design. In this scenario, the attack comes either without much warning or sooner in the crisis period than expected. The protection of both risk and host area populations in in-place shelters would be required. If an attack came before managers for identified shelters had been assigned and trained, large numbers of emergent leaders would have to learn from self-instructional, in-shelter materials during the emergency itself.*

*This is the scenario used for the testing of many shelter management manuals developed during the 1950's and 1960's.

In such a situation, there would be no doubt about the conditions in which the training must be used (although it might take some time for the new manager to learn about the resources and other characteristics of his or her shelter). The manager would have to take the situation as it existed, and cope. Obviously, this would be a situation of extremely high pressure, with scarcely enough time to absorb the material, much less practice it. However, it has been demonstrated that under reasonably favorable conditions, a self-instructional manual can enable an emergent leader to do an adequate job (Bend, 1966).

4. Scenarios and Training Options

The options profile represented a synopsis of information about the context, objectives, and options relevant to the design of a Shelter Management Training System. The three scenarios described above are also drawn from analysis of the training context, and offer possible situations in which the training might be used. As a preliminary step to the development of a comprehensive training model, we will present a synopsis of the ways in which the basic options from the profile might be interpreted in the design of the different scenario-based training systems.

Table 5 presents the desirable characteristics of a Shelter Management Training System for each scenario. A comparison of the three systems allows one to note that whereas in peacetime, training might have to cover identification and preparation of a shelter facility as well as its management, training for a tactical warning situation would focus on making the best use of whatever shelter facilities were available. Comparison of training needs for such different situations also helps identify those points at which the characteristics of the training required would be the same.

Table 5

Desirable Characteristics of a Shelter Management
Training System Under Varying Situations

OPTIONS	SITUATION A: Peacetime
Specificity of Context	Situation in which training will be used is extremely uncertain.
Training	Covers recruiting, selecting and training of shelter managers; identification, stocking, operationalizing of shelters; management of CLFs and FSs.
Shelter Characteristics	Fallout/blast shelters in risk area, CLF or FS in host area; all sizes; variations and consequences of different levels of stocking and equipping shelters.
Trainees	CD professionals and volunteers willing to be trained; shelter manager officers and instructors (SMOIs) drawn from professional ranks.
Staff	All staff roles covered to enable SM to train others.
Population	All sectors of probable population for training area should be discussed.
TRAINING	
Coverage	Broad, trainee input encouraged, non-nuclear disasters may be included.
Level	Familiarization with all topics, high proficiency on shelter readiness, and areas a SMOI will teach; how to increase proficiency when needed.
Domains	More reference than substantive; administrative and technical skills (to teach others); positive attitudes towards CD.
RESPONSIBILITIES	
Planning	Emphasize procedure for estimating/maintaining shelter readiness.
Executive Management	Emphasize CD structure, staff, organizational linkage and responsibilities; procedures for administering, readying and management of multiple shelters.
Administration	Learn administrative procedures for different kinds of shelters.
Operational Services	Learn procedures for providing for basic needs given a variety of scenarios.
Technical Services	Learn basic principles for providing protection in worst through best possible situations.
Special Services	General principles and psychological support on disasters, use examples from history.
PROBLEMS	
Management	How to prioritize actions, leadership skills.
Security	Probable internal emergencies, implications of different scenarios and sample responses.
Personnel	Basic principles, how to select counsellors.
STAGES	Overall phases of crisis.
INSTRUCTIONAL TECHNIQUES	Classes with team learning, simulation/role plays; lectures, demonstrations
MEDIA	Combined print and audio-visual.
ARRANGEMENTS	Groups led by coordinator in facilities provided by delivery agency.
EVALUATION	Combine written, oral and simulated performance.

Table 5

Desirable Characteristics of a Shelter Management
Training System Under Varying Situations
(Continued)

OPTIONS	SITUATION B: Crisis-Expectance (weeks)
CONTEXT:	
Specificity of Content	Situation in which training will be used is increasingly certain
Training	Stocking, upgrading and management of CLFs and FSs.
Shelter Characteristics	Risk or host area CLFs or FSs; status of supplies and facility being improved (perhaps by trainees); training adjusted to sizes and protective characteristics of known shelters.
Trainees	Volunteers, management or technical experience selected/recruited for.
Staff	Managers, sometimes other shelter staff as well.
Population	More likely to be known in general (type of people) or specifically (names of people assigned to shelter) - training should be adjusted accordingly.
TRAINING	
Coverage	As specific as possible, given increasing knowledge of situation.
Level	Familiarization with overall CD plans, high proficiency in content related to assigned shelter.
Domains	Substantive content; technical and administrative skills; positive attitudes towards effectiveness of CD.
RESPONSIBILITIES	
Planning	Establish readiness and manage shelter.
Executive Management	Emphasize management of single shelter, communication with EDC (in large shelters), delegation of authority, adjudication of conflicts, procedures for the transition from CLF to FS.
Administration	Registration, staff selection (if not done in training), floor plan, record keeping, security.
Operational Services	Learn how to meet basic needs for food, water, sleep, first aid, order given resources of assigned shelter.
Technical Services	Learn how to manage communication, fallout protection, ventilation, maintenance, light power, fire prevention, etc., given facilities in assigned shelter.
Special Services	Learn how to provide non-physical services for the expected shelter group.
PROBLEMS	
Management	Decide action priorities for assigned shelter, learn leadership principles.
Security	Develop plans for dealing with dangers most likely with assigned shelter and shelter group.
Personnel	Learn values, cultural characteristics, etc., of expected shelter group, and appropriate technique for psychological support.
STAGES	Operational readiness, activation, management, transition to FS, emergence.
INSTRUCTIONAL TECHNIQUES	Classes in which shelter staffs may train as teams or for managers only, using lecture, demonstration, reading and immediate application of learning to readying of assigned shelter.
MEDIA	Print (readings, worksheets) graphics, audio-visual, on-the-job applications.
ARRANGEMENTS	Groups led by coordinator in classroom or on-site.
EVALUATION	Oral, work-sample, and performance peer assessment.

Table 5

Desirable Characteristics of a Shelter Management
Training System Under Varying Situations
(Continued)

OPTIONS	SITUATION C: Tactical Warning
CONTEXT	
Specificity of Content	Situation in which information will be used is immediate and obvious.
Training	Management only.
Shelter Characteristics	Risk area Fallout Shelters (host areas FS if fallout danger); small, medium, or large size; probably fallout protection only; resources and equipment likely to be minimal depending on shelter.
Trainees	Trainees emergent from shelter population.
Staff	All shelter staff must be recruited and instructed on the spot.
Population	Characteristics known through registration upon entry. Probably heterogeneous, unorganized, and unprepared. May have health problems.
TRAINING	
Coverage	Information appropriate to single shelter and situation only.
Level	Train for high proficiency in priority areas.
Domains	Substantive knowledge, technical skills. Administrative skills and positive attitude must preexist.
RESPONSIBILITIES	
Planning	How to manage shelter, plan for emergence.
Executive Management	How to delegate responsibilities to shelter staff, adjudicate problems, communicate with EOC.
Administration	Registration, staff selection, floor plan, record keeping, security.
Operational Services	How to plan and supervise use of available resources, identify personnel for special roles.
Technical Services	Personally or by delegation, implement or improvise communication, fallout protection, ventilation, maintenance of light, power, fire protection, radiological monitoring, given available facilities.
Special Services	Arrange to provide psychological or spiritual support for shelter population under stress.
PROBLEMS	
Management	How to set priorities and take initial actions, how to organize shelter, how to exercise authority in emergency.
Security	How to position people to survive blast, how to deal with emergencies in shelter, how to manage supplies.
Personnel	How to exclude unwanted possessions, reduce social conflict, keep up morale.
STAGES	Activation, management, emergence.
INSTRUCTIONAL TECHNIQUES	Individual self-instructional checklist, programmed reference
MEDIA	Print, graphics.
ARRANGEMENTS	Manager trains self on-site, on-the-job.
EVALUATION	Survival

5. A Comprehensive Approach to Modeling a Shelter Management Training System

In previous sections of this part of the report we have analyzed and organized various factors which must be considered in designing a training system for shelter management. This process culminated in an analysis of training requirements for the three most probable types of situations in which training might be conducted. However, it is unlikely that it will be feasible to develop separate training systems for each situation. Therefore it is necessary to use these analyses as a basis for modeling a comprehensive training system and setting priorities for the consideration of specific training topics.

In this section, we will present our analysis of comprehensive training requirements, priorities, and appropriate instructional approaches, followed by an image of what a training package which would address these requirements might be like.

a. Requirements for a comprehensive shelter management training system.

The analysis on the following pages (Table 6) organizes training system content in the left-hand column under headings from the options profile and suggests appropriate instructional techniques and methods of presentation in the right-hand column. Priority content requirements are marked with asterisks.

b. An image of a comprehensive training package. When the content of a training system must include a broad spectrum of knowledge, skills, and attitudes, and when the content of training is uncertain, the "package" in which the training system is incorporated must necessarily be an extremely flexible one. No single product or approach to training will cover all the obvious priorities, much less address factors which could become priorities in some situations. The workshop materials designed by the ANRC to accompany this manual, for instance, appear to train effectively at an orientation level in the usual Red Cross training setting, but are not intended to be adaptable to other situations.

TABLE 6
Training Requirements

CONTENT	POSSIBLE INSTRUCTIONAL APPROACHES
<u>Context</u> • meet the demands of various situations and scenarios* • include both general and specific information about technical topics • allow for the addition of information specific to a given locality or scenario* • meet the needs of an emergency inexperienced leader • assist in the selection of the most qualified trainees/leaders when training time is short • accommodate the need to train shelter staff (administrative assistants and technical cadre) • be deliverable in a variety of settings • meet the needs of trainees with different backgrounds and learning characteristics • include information about national/local civil defense programs, shelter system and probable characteristics of nuclear war	guidance and principles for developing different training configurations reference materials planning outline, fill-in sheets optional leadership developed exercises information about the training program should encourage self-selection optional exercises for staff specialties; training for managers in instructing staff guidance and principles for using different environments guidance for identifying trainee characteristics and selecting from optional exercises and content orientation film; lecture from outline with local input
<u>Training Coverage</u> <u>facilities</u> • describe basic characteristics of shelters* • provide for identification of and information about common shelter configurations <u>level</u> • proficiency in priority areas* • familiarization with all content <u>domains</u> • substantive knowledge of priority content, ability to reference other information*	reference or audio-visual guidance for information gathering, shelter survey form
<u>Responsibilities</u> <u>overall domains of responsibility</u> • bring shelter to readiness • activate, manage shelter • assess, maintain readiness • manage transition CLF-FS, emergence	exercises or self-checks for priorities exercises or reference presentation should identify priorities, give clear reference instructions Checklists, reference materials, lecture, memorize procedures, simulation, practice using forms

*Priority content areas.

Table 6
Training Requirements (continued)

CONTENT	POSSIBLE INSTRUCTIONAL APPROACHES
<u>Responsibilities (continued)</u> <u>operational readiness</u> ● set up management structure, select staff* ● establish external communications* ● receive and organize shelterees* ● register shelterees ● plan spatial arrangement of shelter ● set up record-keeping system <u>operational services</u> ● know basic human life-support requirements* ● calculate resource use in various situations* ● know requirements for protection from dangers associated with nuclear war* ● identify and operate shelter equipment ● improvise resources and equipment <u>special services</u> ● know basic principles of human psychology in stress situations* ● provide psychological support or manage its provision ● apply techniques for establishing and maintaining authority, resolving conflicts* <u>Problems</u> ● prioritize actions in shelter situations* ● respond correctly to threats and dangers* ● analyze situation-relevant characteristics of sheltered population* ● maintain morale of self and shelterees <u>Evaluation</u> ● mastery of content ● mastery of skills ● acquisition of attitudes	checklists, reference materials, practice using forms, sample case histories, simulation, role playing reference, lecture/discussion, visual displays, model or sample equipment, exercises in decision-making and calculation, simulations reference, lecture/discussion, simulation and role playing use of case histories for practice in decision-making case history exercises, simulations practice drawing conclusions from registration forms, etc., case histories, role playing self-check questions and feedback, use of material in exercises and simulations demonstration of proficiency through work-samples, simulation written or oral discussion, self- and peer-assessment

*Priority content areas.

However, it is possible to imagine a set of training resources consisting of several components which could be combined or selected from to form a variety of configurations that could meet different needs. The components of such a resource package might be as follows:

1. Shelter Management Training Coordinator's Manual. This Manual would function as a guidebook which would allow an instructor with some experience in teaching (but not necessarily in shelter management) to act as a coordinator of learning for a training group. Specifically, the Manual would offer model instructional sequences based on the other training resources and suggest procedures for selecting or developing an approach to meet the requirements of the situation. Particular attention would be given to procedures for integrating shelter management training with the development of a shelter system in a local Civil Defense program, and to ways of training managers for assigned shelters. The Manual would also include guidance in setting up refresher courses for managers already trained. The Coordinator would become an expert on helping trainees learn from the resources of the training system and other sources, rather than being the primary source of content him/herself.

2. The Shelter Management Sourcebook. This text would be the major reference book for training.* It would consist of narrative and illustrations covering major and minor aspects of managing a Congregate Lodging Facility or a Fallout Shelter, which would be presented attractively at the reading level of the average adult with priority information clearly indicated. In addition to serving as a training resource, this book could also be stocked in shelters as a reference.

The Sourcebook could be divided into chapters devoted to the following topics:

- current information on weapons effects, the Civil Defense program, and the shelter system;
- shelter facilities and equipment-- ideal and improvised;
- life support requirements and procedures for a sheltered population;
- getting and keeping a shelter ready for use;
- organizing shelter activities;
- human beings under stress-- identifying and solving psychological problems in a shelter situation;
- leadership;
- transition, emergence, and recovery.

* This book could consist of a revision and reformatting of the American Red Cross Shelter Management Manual.

3. The Shelter Manager's Action Checklist. This booklet would contain a checklist of priority actions for the shelter manager in a crisis situation, from last minute preparations through emergence. It could be arranged in a branching format like that used in the DCPA Checklist Guide for Nuclear Emergency Operations Planning (ALFA NEOP), in order to cover a variety of situations. It would also contain spaces and planning sheets in which the shelter manager could insert information relevant to a given shelter and locality. Each action or condition would be referenced to the Sourcebook, and the Checklist, like the Sourcebook, would be taken by the Manager to the shelter, or already stocked there. The Checklist might be accompanied by a poster kit containing material to be posted in the shelter for information or reference, as well as a packet of forms for registration and record-keeping.

4. The Shelter Management Workbook. This consumable booklet would accompany the Sourcebook, and would be organized around the same table of contents; however it would not contain reference material, but worksheets, exercises, simulation materials, etc., for the trainee to use. Each exercise would be tied to one or more sections in the Sourcebook. Guided by the Manual and the needs of the trainees, the Coordinator would assign exercises to the training group as appropriate.

5. Shelter Survival Skills Modules. A series of modules (which could be used self-instructionally or in a group) covering essential skills needed to operate a shelter such as: ventilation, radiological monitoring, fire prevention/suppression, shelter upgrading and construction, human problems in a shelter, and life support. These modules could be used to increase the expertise of shelter managers, or to train other members of the shelter management team.

6. Orientation Film (or slide-tape). A resource which, though less essential, could be a valuable part of the training package, would be a film or slide-tape introducing the shelter management training system. Such a film would focus on the need for trained shelter managers as part of the Civil Defense program and highlight the kinds of things they would learn and do. In addition to catching the interest of trainees and orienting them to the program, it could also be used to aid in trainee recruiting and to provide basic information about shelter management to people in other areas of Civil Defense.

7. Other Resources. There are some materials already in existence which might be made available or recommended as part of the training package. These include the following:

- American Red Cross: First Aid Manual
- American Institutes for Research: The Shelter Management Contingency Game
- American Institutes for Research: Planning and Organizing Non-Operational Activity Programs;
- Scientific Service, Inc.: Shelter Upgrading Manual: Host Area Shelters

- DCPA: Upgrading Fallout Protection in Congregate Care and other Facilities
- American Institutes for Research: The Small Shelter Management Guide
- Cresson H. Kearny: Nuclear War Survival Skills

c. How the comprehensive shelter management training package might be used. We have already described three possible scenarios in which shelter management training would be needed and indicated that a comprehensive shelter management training package like the one described in section b. would be flexible enough to use in any one of the three.

In order to clarify the way in which this might work, let us present three capsule case histories which show how the training package could be used to meet needs for shelter management training in sample situations

1. Peacetime

Several industries in the Golden Valley area are developing Organizational Relocation plans, and have requested the regional FEMA Director to provide training for those employees from each organization who have volunteered to serve as shelter managers. However, these volunteers are all busy people, who will not be able to spare much time for training. The Director consults the section of the Coordinator's Manual devoted to short forms of training, and develops the following training strategy.

Arrangements are made for the prospective shelter managers to spend a weekend at a conference center maintained by one of the industries. The Director, acting as Learning Coordinator, introduces the civil preparedness program and the shelter management program by showing two films. S/he then distributes copies of the Shelter Management Resourcebook and explains what it contains and how it can be used. S/he hands out instructions for an exercise designed to give learners practice in finding specific items in the Sourcebook. S/he asks each participant to spend some time looking through one section in the Sourcebook so that he or she can talk about it to the other the next day.

On the second day, participants discuss their sections. The Director uses discussion guidelines in the Coordinator's Manual to fill in any basic points they may have missed. Using transparencies of drawings and diagrams of a shelter (from masters in the Manual), the Director leads a discussion of possible sequences of events, problems, and solutions. Participants have a chance to review their learning and evaluate the weekend by filling out a checklist questionnaire at the end of the session.

The Director explains that at six-month intervals the group will be meeting for similar weekends, in which they will explore in greater depth the skills and knowledge areas involved in shelter management.

2. Crisis-Expectance

For several weeks, the international situation has been steadily worsening. The Mayor of Crescent Corners is informed that it is probable that the President will give the crisis relocation order soon, and in that case, his town must be prepared to shelter three times its usual population. In addition to all the other necessary preparations, shelter managers must be trained. Trained emergency personnel are all busy on the other tasks, but the shelter manager, who belongs to an industry from Golden Valley which will be relocating to Crescent Corners, agrees to act as training coordinator. Meanwhile, volunteer shelter management teams have been formed. The Coordinator meets with representatives from each team and they select the most appropriate content and exercises from the materials, following the suggestions in the Coordinator's Manual.

For the next week, the shelter management teams meet for several hours each day. After a general introduction to the material, team members select specialties (ventilation, food, etc.) and do appropriate exercises from their workbooks. The teams also do group activities designed to test their understanding of what they have learned and teach them to work as a team. The training coordinator visits each learning team several times during this period, advising and discussing problems that have been raised. As shelters are identified by local authorities, teams are assigned to them and assist in making them ready for occupation, using the Shelter Upgrading Manual as a resource.

When the evacuees finally arrive from Golden Valley, both shelters and staff are ready to receive them.

3. Tactical-Warning

Although the international situation has been tense for some time, it was hoped that last-minute negotiations would avert conflict. However the media have been carrying information on warning signals and shelter locations.

When the warning sounds, Jane Doe has just returned from her job teaching in an inner-city high school. She has always been interested in Civil Defense, and because she expected that an alert would come, she has already packed a suitcase. Jane heads immediately to the nearest shelter.

When she arrives, she finds that no shelter manager has been assigned to the facility. However, the Emergency Checklist is posted, and the Shelter Management Sourcebook is nearby. Seeing that no one else is taking charge, Ms. Doe follows the instructions on the checklist and in the sourcebook concerning what to do and how to do it. By the time the attack occurs, people are positioned and ready, and they have

accepted Ms. Doe as shelter manager. Throughout the shelter period, Ms. Doe uses the checklist and sourcebook, and whatever expertise others in the shelter have, to figure out how to cope with the problems that occur.

CHAPTER III

A MODEL OF A SHELTER MANAGEMENT TRAINING DELIVERY SYSTEM

A systems approach to the design of training requires that attention be paid simultaneously to the "what" and the "how" of training--the nature and conditions of training and the requirements for delivering that training to users. These design activities must occur simultaneously because they are interdependent: specifications for the training system influence delivery requirements; constraints on possible delivery strategies can lead to modifications in the training system.

In this chapter, we will describe our approach to the design of a model of a delivery system, and present a discussion on the nature of delivery systems in general and on the requirements which a shelter management training delivery system (SMTDS) must fulfill in particular. This discussion is followed by an analysis of the differential viability of two agencies for delivering training and a specification of a delivery strategy for each agency as well as for the agencies in combination form.

A. Introduction

Delivery systems are arrangements of resources, people, and procedures that provide for the use of some product or process. Typically, the product or process is designed first. In the case of training programs, the design task is usually seen as one of specifying (given information about audience and contextual characteristics) the optimal configuration of content and methods necessary to accomplish some end. According to this view, the design of a delivery system is seen as the next step in the process. The delivery of training is a matter of setting up arrangements that will ensure the incorporation of the training program into a user system.

In recent years, however, a new and seemingly more sensible perspective has gained acceptance among both designers and practitioners. This view holds that any set of delivery arrangements and the process of delivery itself can and will change the nature of the training program. That is to say, the process of implementation or dissemination is one of mutual adaptation between the demands and norms of the "new" system and those of the system which is already in place. In this case, the prudent design approach is to resist making final decisions on the product to be delivered until all factors, constraints, barriers, and consequences of delivery have been considered. The design of a shelter management training delivery system will be carried out in this latter, mutually adaptive fashion.

From this point of view, design of a delivery model is seen to be a major contributor to the conceptual evaluation of the training model, just as the content of the training model provided the raw material for the design of the delivery system. This relationship should continue as the training system passes through all the stages from model to product. Even after the system is in the hands of users, changing needs and conditions will require adjustments in both the training and in the system which delivers it. If, for instance, the delivery agency will be unable to supply trained instructors, then the training system will have to include much more explicit directions for the coordinator. On the other hand, delivery systems which are able to collect vast resources and already possess considerable expertise will need a less extensive training package.

In order to understand what a delivery model should look like, and why and how it might affect the design of a training system, we will need to consider the meaning of the term "delivery system" and how it is related to the more general discipline of knowledge diffusion and utilization. This in turn will lead to a discussion of the various requirements which a delivery system for shelter management training must fulfill, and to a first, generic version of a process model for delivery.

The second major area which must be considered is that of the selection of an appropriate delivery agency. In order to do this, it will be necessary to analyze those characteristics and relationships of organizations that might help or hinder the process of delivering shelter management training and to apply that analysis to some candidate agencies - two agencies in this case. Once this is done, it should be possible to consider what strategies these or other agencies might use to perform the operations necessary to deliver shelter management training.

B. A Generic Model of a Shelter Management Training Delivery System

This section will present a discussion of what delivery is and what is entailed in a "system that delivers." The discussion will proceed in three sections: definitions of delivery and delivery systems, general prerequisites and specific requirements for a shelter management training delivery system, and an operational model of a shelter management training delivery system.

1. Delivery Systems: Definitions and Functions

Delivery is an omnibus term that has come to stand for one or more operations performed or processes that occur after a new social or educational program has been developed and is ready to be introduced to users and/or to some existing institution or system. These operations and processes include the following (Ed Materials/Support Center, 1978):

- Adoption--The end result of the diffusion process; the point at which consumers decide on and begin to use a specific R&D program output; informed and explicit action to undertake some previously unused program or practice with an expressed intention to continue such utilization.
- Diffusion--The spread of new programs, practices, products, or knowledge beyond the initial users, whether intended by the originator or not; physical movement of validated options from development site to other user locations. Traditionally, the term includes the full spectrum of dissemination from initiation through incorporation.
- Dissemination--A knowledge-transfer process which may consist of four levels of activities (spread, exchange, choice, and implementation).
- Educational Change--The utilization of new practices or procedures resulting either from an innovative process or from dissemination of new knowledge. A measurable shift in skills, attitudes, or behavior by educational personnel and/or institutions, usually implying amelioration of the status quo in the direction of positive improvement in the teaching/learning process.

- Implementation--The second major stage in the change process, in which attempts are made to utilize new knowledge and to effect actual changes in behaviors and practices; installing a program in an existing organizational setting.
- Innovation--The process by which new knowledge, programs, products, and practices are developed; also a new program, product, or practice developed through such a process.
- Institutionalization--Assignment of institutional status to a program or practice.
- Linkage--The establishment and maintenance of effective channels of communication between educators and various knowledge-producing agencies.
- Marketing--Activities by which an agency's product is promoted, physically distributed, and finally adopted at the consumer level; refers mainly to selling the product after development is complete.
- Organizational Development (OD)--the method for facilitating change and development in people (e.g., styles, values, skills), in technology processes and structures (e.g., relationships, roles). The objectives of OD are to optimize human and social improvement or to optimize task accomplishment (or a blend of both).
- Replication--Duplication of the key structural elements of a program or practice, usually with the expectation that the original results will be reproduced as a consequence.
- Utilization--The actual full-scale implementation and use of an R&D outcome, product, or practice by an individual or organization.

As stated in the introduction, our working definition for delivery refers to a configuration of resources, people, and procedures that will insure the optimal deployment and institutionalization of the shelter management training system. In order to define that configuration, it should be useful to look first at some of the models for delivery that exist in the literature. Three such models or frameworks are discussed below: delivery as a stage in the research and development process, delivery as an aspect of the knowledge production and utilization process, and delivery from a systems perspective.

a. Delivery as a stage in the research and development process.

Havelock (1971) compares three phase models of diffusion and change: the social interaction perspective, the research, development, and diffusion (R,D,&D) perspective, and the problem-solver perspective. Because of the circumstances surrounding the initiation of the innovation we are concerned with--shelter management training--only the (R,D,&D) perspective is relevant to this discussion.

The R,D,&D perspective or model assumes a rational sequence of phases beginning with the time that an innovation is "invented or discovered, developed, produced, and, finally, disseminated to the user" (p. 9-37). The phases are depicted in Figure 16 below.

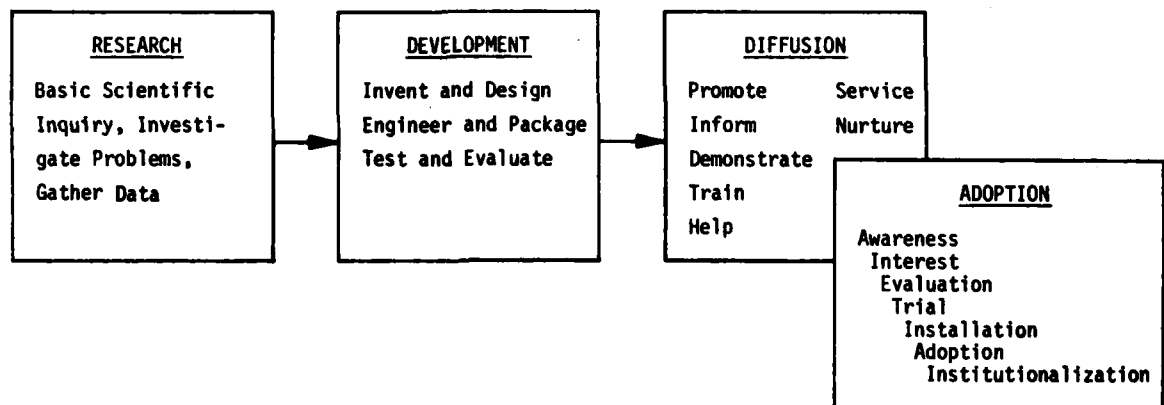


Figure 16. Phases in the R,D,&D Model

Havelock presents a detailed discussion of one such model of R,D,&D developed by Guba and Clark.* Guba and Clark's "Theory and Practice Continuum" includes four phases of activity: (a) Research, (b) Development, (c) Diffusion and (d) Adoption. (Evaluation is tied to each stage instead of being depicted as a separate phase.)

* Havelock cites a 1966 conference paper by Guba as the source of the information cited above in the Guba and Clark Model.

Focusing on the diffusion and adoption phases, Havelock reports that the following activities and principles are characteristic of these phases:

Diffusion

- dissemination: to create awareness among practitioners, to inform; evaluated according to the criteria of intelligibility, fidelity, pervasiveness, and impact of the message.
- demonstration: an opportunity to examine and assess operation qualities of the innovation; evaluated according to credibility, convenience.
- direct involvement with the user to (1) help the practitioner by performing as a consultant or troubleshooter, (2) involve the practitioner in problem identification, development, testing, packaging and diffusion of the innovation, (3) train the practitioner in the use of the innovation, and (4) intervene in order to mandate certain actions.

Adoption

- trial: build familiarity with the innovation and to provide a basis for establishing the innovations fit in a particular setting; evaluated in terms of operational feasibility and performance.
- installation: to operationalize or fit the innovation to the requirements of a setting; evaluated in terms of effectiveness and efficiency.
- institutionalization: becoming an assimilated, integrated, accepted component of the system; evaluated in terms of perceived value and support provided.

b. Delivery as an aspect of the knowledge production and utilization (KPU) process. Havelock (1971) characterizes the KPU process in the following manner: Who says what to whom by what channel to what effect and to what purpose? With regard to an innovation--a product or a new piece of information--the process of change or knowledge utilization can be conceptualized as involving four systems and three linkage operations. Figure 17 displays these systems and linkages:

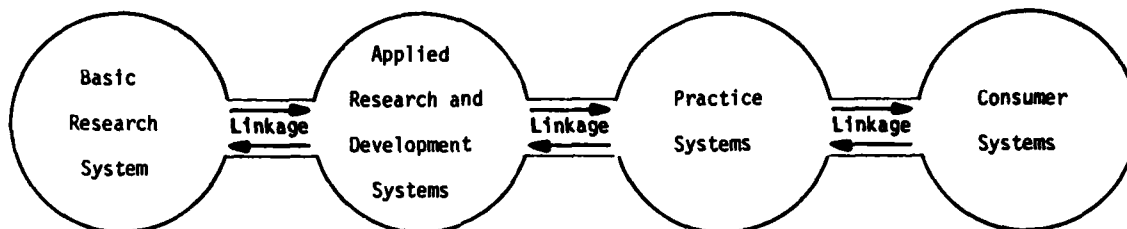


Figure 17. A knowledge production utilization framework

Havelock's Linkage Model displayed above is useful for the design of a delivery system because in contrast to the R,D,&D model, the Linkage Model focuses not on operations, but on the user and on the user's need. The user, e.g., the potential trainee (operating in the consumer system) has a need to fulfill and looks to resource systems to help him/her satisfy that need. Linkages are procedures for connecting users to resource systems and must be set up to simulate the natural problem-solving process of the user. According to this perspective, delivery becomes primarily a matter of providing those simulation experiences, e.g., models of training for the trainers operating in the practice system, and models for shelter management practices for the user operating in the consumer system.

c. Delivery from a systems theory perspective. Smith (1971) defines system as "a group of components which has been integrated or coordinated to accomplish a purpose" (p. 5). Banathy (1977) presents a generic model of a change delivery system that can be seen to borrow important features from both the R,D,&D model and the Linkage Model presented above. For Banathy, a change delivery system (CDS) has four essential elements:

- A holistic orientation that would address intended change in the systemic context of the larger system or environment in which the target system operates.
- The intent to attend to all systems levels and all components of the target system in contemplating change delivery.
- The use of a set of systems models in designing the change system (i.e., a model of change functions, a model of adaptation, and a model of infusion and management).
- A projective assessment of impact.

The levels that must be considered with regard to both the training and delivery of training for shelter management can be characterized as follows:

- The societal level, at which the present and future civil preparedness and survival needs of society must be considered.
- The institutional level, at which current civil and emergency preparedness goals and policies are made. Also, it is at the institutional level that formal interorganizational linkages can be arranged that may facilitate delivery operations.
- The organizational level, at which goals and policies are carried out and translated into specific programs, agreements, and arrangements for Civil Defense education and training.
- The instructional level, at which appropriate instructional strategies, products, resources, and learning arrangements must be implemented.
- The learning experience level, around which available resources, instructional policies and structures, administrative practices, and instructional/learning arrangements must be built in order to enhance the trainees' mastery of requisite skills.

Delivery is concerned primarily with the organizational level (which serves as a link between the institutional and instructional levels), while training addresses the instructional level (which links the organization with the learner). This relationship is illustrated in Figure 18.

In general, delivery functions support training functions. They include all the tasks which must be performed by individuals or organizations in order to identify, acquire, and coordinate all the resources and

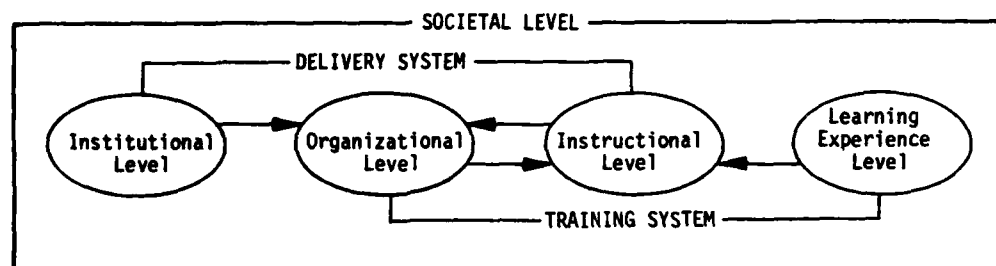


Figure 18. Levels of the training and delivery system.

arrangements necessary for training to take place. According to a systems perspective, the delivery and training systems should be designed concurrently since delivery constraints may affect the feasibility of content and instructional management choices.

At different levels of the system, different individuals are involved in delivery. Their roles can be characterized as follows.

<u>System Level</u>	<u>Actor</u>	<u>Role</u>
Societal	The nation	Members of the public influence government action on civil preparedness and respond to programs.
Institutional	Administrator	Sets policy; funds R&D, makes results available to consumer organizations; provides guidelines, requires reports.
Organizational	Administrator	Interprets policy, guidelines; acquires materials; coordinates use of resources; manages staff; selects/admits learners; evaluates programs; makes reports; maintains programs.
Instructional	Instructor (or learner in coordinating role)	Selects from available materials and interprets them to plan instruction; conducts instruction; evaluates learners; provides input for reports.
Learning Experience	Learners	Participates in learning experiences; provides data for reports, influences policy.

Figure 19. Actors and roles for the different levels of the delivery system.

2. Prerequisites and Requirements of a Delivery System

In the previous section, the attempt was made to define delivery by characterizing how the delivery process fits in with other processes. In this section, delivery will be defined in terms of what has to happen for delivery to occur. Prerequisites, in this instance, are structures or processes that must be in place for optimal delivery. Requirements refer to operations that the delivery system must perform. The major value of this analysis should be to help define components and capabilities that must be built in order to deliver shelter management training.

a. Prerequisites. The following list was gleaned from an inspection of the literature on educational change and dissemination/utilization.

(1) *Adequate Design, Planning, and Evaluation*. There is a consensus in the literature on innovations and social and educational change that design and planning should not be activities that occur early in a program's history and never again; evaluation is not an activity that can be safely left to the end of a program's lifetime. All three activities must occur continuously, cyclically, and interactively (Blum and Associates, 1969; Goodlad, 1975; Zaltman, Duncan and Holbeck, 1973). For example, according to Blum:

Planning should include arrangements for the concurrent and continual collection and review of information to guide the program's activities, as well as to periodically review the program's effects. What these special kinds of guidance information consist of, how often they are obtained, and when and how they are used are the evaluative problems of planning. (Blum, 1969, p. 13.03)

Blum also stresses the importance of a continual process of evaluation-planning-implementation-evaluation to successful delivery system implementation. The following figure is adapted from Blum (p. 13.02):

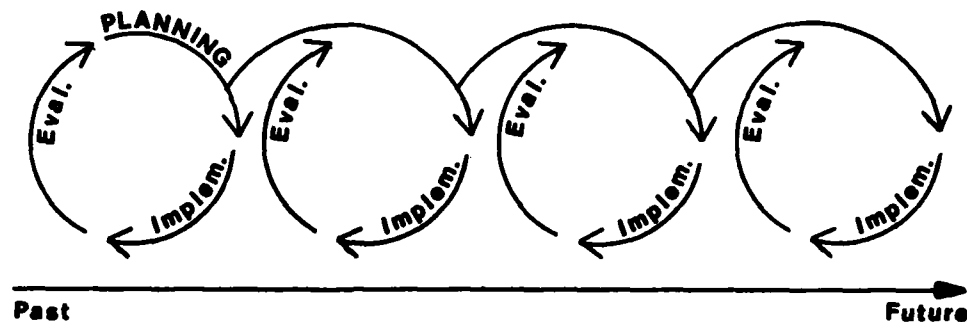


Figure 20. The iterative cycle of planning-implementation-evaluation.

(2) *Manageable Scope.* The RAND studies of federal programs supporting educational change had some interesting findings about the scope of change projects. They found that projects attempting a broad scope of change were somewhat more likely to be continued than those which were less ambitious or more narrowly defined. Specifically, they found that "projects that required significant change in overall teaching style and that called for extra effort on the part of staff induced significantly more teacher change" (Berman and McLaughlin, 1973, 13, p. 71).

Baldrige and Deal (1975) provide two "rules" to guide considerations of project scope in implementing educational change. First, "changes must be directed at manipulable factors" (p. 17). The most readily manipulable factors of educational organization include organizational rewards, evaluation and sanction systems, administrative and departmental structure, personnel practices, such as hiring, firing, and promotion policies, and technology and operational processes, according to Baldrige and Deal.

A second rule according to the authors is that "changes must be both politically and economically feasible" (p. 17). The political issue is often tied to the economic one when planners fail to take into account the total financial cost of implementing and continuing the operation.

The author notes that one of the most expensive costs is personnel time oriented to resource management, incentive systems, and teacher training.

(3) *Timely Implementation of the Innovation.* Baldrige and Deal address this concern with their "rule" that "proposed changes must be relevant to the history of the organization" (p. 15). It is important to realize that the history and specific nature of an organization have a pronounced effect on the acceptance of change as introduced at any particular time. This is especially the case where the history and tradition of the organization conflict with the proposed innovation. These aspects should be reflected in a comprehensive planning effort and in the assessment of the proposed scope of a program.

(4) *Effective Leadership.* Baldrige and Deal outline two methods that school principals can employ to insure the success of an innovation. These methods are: (1) influence the personal priorities and values of teachers, and (2) influence the peer culture to encourage support and sharing of ideas. According to Baldrige and Deal, the principal who is an effective leader "will constantly evaluate the effects his behavior is having on his staff. Only by doing so can he remain sensitive to the needs of his teachers and the effectiveness of his own performance in promoting innovation" (p. 178).

Havelock (1968) introduces the "gatekeeper" concept in relation to administrators and other program leaders. The gatekeeper is the one who holds the strategic position, and who controls the flow of information through the "gate"--a set of norms about change and innovation in a particular situation. This function may or may not be held by someone in a formally designated position. Havelock also discusses the role of an "opinion leader."

There is a large body of literature supporting the view that the vast majority of those who eventually adopt new ideas do so because they are influenced by some other member of their own group. When this pattern of imitation is focused on one particular person and is stable over time and across a number of innovations, we can speak of "opinion leadership." (pp. 77-78)

(5) *Appropriate Staff Characteristics.* No matter how extensive the planning or how elaborate the system for transmitting an innovation, ultimately the practitioner is the one who decides whether or not to implement a change. According to the literature on educational change, there are certain staff characteristics which are positively or negatively related to successful implementation. Berman and McLaughlin (1978) present the following summary from the RAND studies:

Above all, teacher's sense of efficacy emerged as a powerful explanatory variable; it had major positive effects on the percentage of project goals achieved, improved student performance, teacher change, and continuation of project methods and materials. The teacher's years of experience, in contrast had a consistent negative relationship to project outcomes; experience was negatively related to the percentage of project goals achieved, teacher change, and student improvement. The teacher's verbal ability was positively associated with improved student performance, but otherwise did not affect implementation, teacher change, or continuation. (p. 73)

Again, despite the problems inherent in generalizing from the literature on educational change to the design of a delivery system for shelter management, it is useful to look to this literature for lessons that might be applied to a delivery model. In this instance, insuring that trainers and trainees have a sense of efficacy or power over the course of training might represent a reasonable and appropriate inference.

b. Requirements. The design of a delivery system for Shelter Management Training must consider how the basic requirements of such a system are to be fulfilled. These requirements may be divided into three groups: contextual, operational, and system state requirements.

Contextual Requirements relate to the environment within which the delivery system must operate. This environment includes levels of the societal/educational system, aspects of either performance settings (e.g., size of the shelter) or the instructional setting (available instructional time) that must be considered for delivery system design, and the requirement that the delivery system establish a compatible interface between the training system and the real world.

Operational Requirements include all the basic functions which the delivery system must perform for the initiation, implementation, and maintenance of the system.

System State Requirements refer to those ideal features which characterize a viable delivery system. Unlike operational requirements, system state requirements are suggested rather than necessary attributes of a delivery system. We identify seven requirements based on Havelock's (1971) seven factors in knowledge dissemination and utilization: linkage, structure, openness, capacity, reward, proximity, and synergy.

Consideration of these three types of requirements forms a kind of lens through which the parameters for the delivery of a Shelter Management Training System can be viewed. These requirements help to form an initial image of what a delivery system must "do" and "be like." But they also provide criteria for determining, at some later time, whether or not the system is adequate and effective. These requirements must be considered both by the designer of a generic delivery model and by the practitioner who uses the generic model to develop delivery strategies for a given community.

(1) *Contextual Requirements.* The context for the delivery of shelter management training consists of those institutions, relationships, and ideas in the physical and conceptual "environment" of the system whose existence

is likely to enhance, constrain, or otherwise influence the development and functioning of the system.

Some contextual requirements which should be considered in designing the Shelter Management Training Delivery System include the following:

- The necessity to address several levels of the emergency preparedness system. The design of the delivery system must address the needs and assess the potential contribution of individuals and organizations at the societal, institutional, organizational, instructional, and learning experience levels.

Although the primary activity of the delivery system may focus on who initiates and provides the training (the organizational and instructional levels) the system must be responsive to movements and pressures at the societal level that may influence policies at the institutional level (FEMA) which in turn may have a direct effect on the definition of training needs and the resources available to address them. The experience of learners in the training system may also affect delivery. Field tests of prototype systems may result in major redefinitions of optional delivery arrangements.

- The necessity to tailor delivery systems to the particular performance demands and instructional needs of a locale or time.

The training system provides the purpose for the delivery system's existence. Although some adjustments in the training system are possible, it is primarily the job of the delivery system to make the arrangements and provide the support which will allow the training system to be used effectively. Context factors which may affect training requirements as well as delivery considerations include the size and type of shelters served, the density and type of population served by a particular locale, the time available for training, the personnel available for training and related functions, and the degree of receptivity characteristic of the local populace and emergency service personnel.

- The necessity to establish an interface between the ideal world of the training system and the real world of competing interests and values. The delivery system must establish a compatible interface between the constraints of the real world and the ideal shelter management training system.

This requirement focuses on the practical arrangements necessary to reconcile the consequences of meeting the requirements mentioned above. Constraints of the real world include available resources, client needs, societal and institutional demands relevant to civil preparedness, crisis relocation and sheltering. Constraints of the ideal training system include model programs, training strategies, and materials.

The relationship between these two sets of constraints is displayed in the following figure.

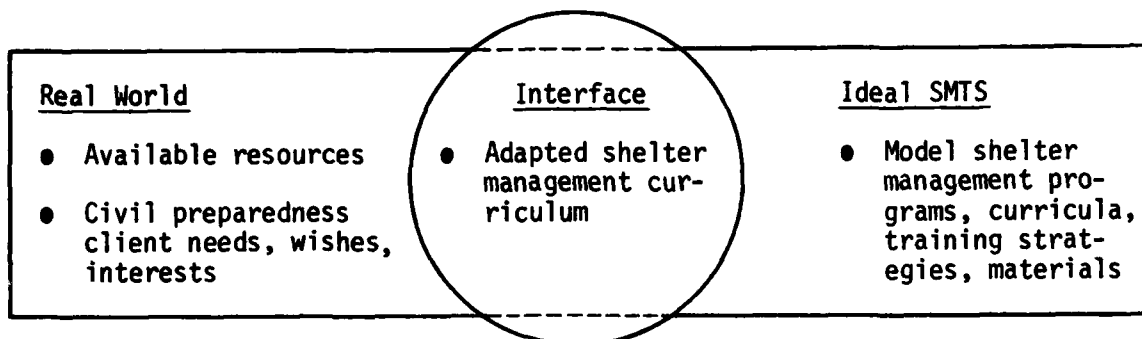


Figure 21. Levels of the training and delivery system.

(2) *Operational Requirements.* In order to meet the contextual requirements just described, the delivery system must perform certain operations. These operations fall into three broad categories: (1) initiation of the training system, (2) implementation of training processes, and (3) maintenance of the training system.

(a) *Initiation requirements.* The delivery system must establish a favorable environment for the new training system, and must perform those functions necessary to get it started. Studies of diffusion and educational innovation have shown that the success of a new program or technique depends to a great extent on the readiness of the individuals and institutions being addressed to receive the innovation. Specific initiation functions that must be performed are the following:

- Establishing Awareness and Motivation: Readiness is first and foremost, gaining acceptance, which includes building a constituency, enlisting support, spreading the word and beginning to open the channels of communication and resource linkage that will be required for successful delivery.
- Establishing a Planning Capability: Planning is required in order to chart the course of all of the operations listed here, design delivery components as necessary, arrange for resources, and monitor continuously the progress of all operations. Included in this operation are requirements to develop plans and procedures for acceleration of effort in crisis situations, mobilization, contingency situations, etc.

- Orienting/Training Trainers and Administrators: People who are charged with carrying out training and other responsibilities must become familiar with their role and duties. Defining these roles is an additional aspect of this operation.
- Securing and Organizing Resources and Support: Facilities and equipment must be acquired for training; administrative support (finance, registration, record keeping) must be provided for, and coordination of systems (e.g. reception and care) must be arranged.
- Recruiting and Selecting Trainees: Recruiting requires the dissemination of information through appropriate channels; selecting the best candidates requires attention paid to the demands of the shelter management tasks at a particular locale.
- Adapting the Training System/Materials to Local Needs: The generic training materials must be tailored to local requirements (population, CRP plan, shelter size and type) and training strategies must be selected depending on the sophistication of personnel.

(b) *Implementation requirements.* Whereas initiation operations establish system readiness, implementation is the process of carrying out the central function of the system--training shelter managers.

- Conducting Training: The essential task is to facilitate the learning of all of the information, skills, and attitudes required to manage successfully a fallout shelter or congregate lodging facility. Such training will include:
 - orientation to shelter management
 - follow-up technical training in selected areas
 - extensive simulated practice and further instruction as needed in a crisis expectant period.
- Monitoring Training: The delivery system must include procedures whereby the adequacy, appropriateness, and effectiveness of training is continuously assessed and corrected.
- Evaluating Training: The system is responsible for the employment of procedures to measure the effectiveness of the training program in terms of learning outcomes, utility to the system, and client satisfactions.

(c) *Maintenance requirements.* The delivery system must be capable of maintaining operational capability over long periods of time and adjusting to changing conditions and needs in the local community and the civil

preparedness system. While implementation requirements deal with the operation of the training system at any given time, maintenance addresses the capability at a local and regional level to provide shelter management training on a long-term basis. It is particularly important that the system provide a means of adapting to changes in civil preparedness policy and technology, in local resources and conditions, and in civil preparedness plans. Also, maintenance requirements are oriented to keeping trainees and other personnel "in the system." Maintenance operations include:

- Revising Training: Each time training is presented, evaluation results should be used to refine materials and procedures to increase effectiveness for subsequent sessions. Training outcomes should also be periodically re-aligned with the changing objectives of the civil preparedness system.
- Diffusing and Expanding Training: In peacetime, the training system may be transmitted to other sectors of the community or to other communities. In a crisis-expectant period, the system must be able to expand immediately, extensively, and flexibly, using whatever means are available to train sufficient numbers of shelter managers and shelter staff.
- Providing Refresher Training: Maintaining trainee competence and interest requires that the system include ways of informing trainees about new conditions and technological developments and provide means for them to practice and retain the skills they have already learned.
- Compensating for Attrition: The delivery system must assess the rate of attrition for trained shelter managers and provide for the recruitment and training of replacements.

The figure which appears on the next page displays the relationships and timing of the various delivery operations.

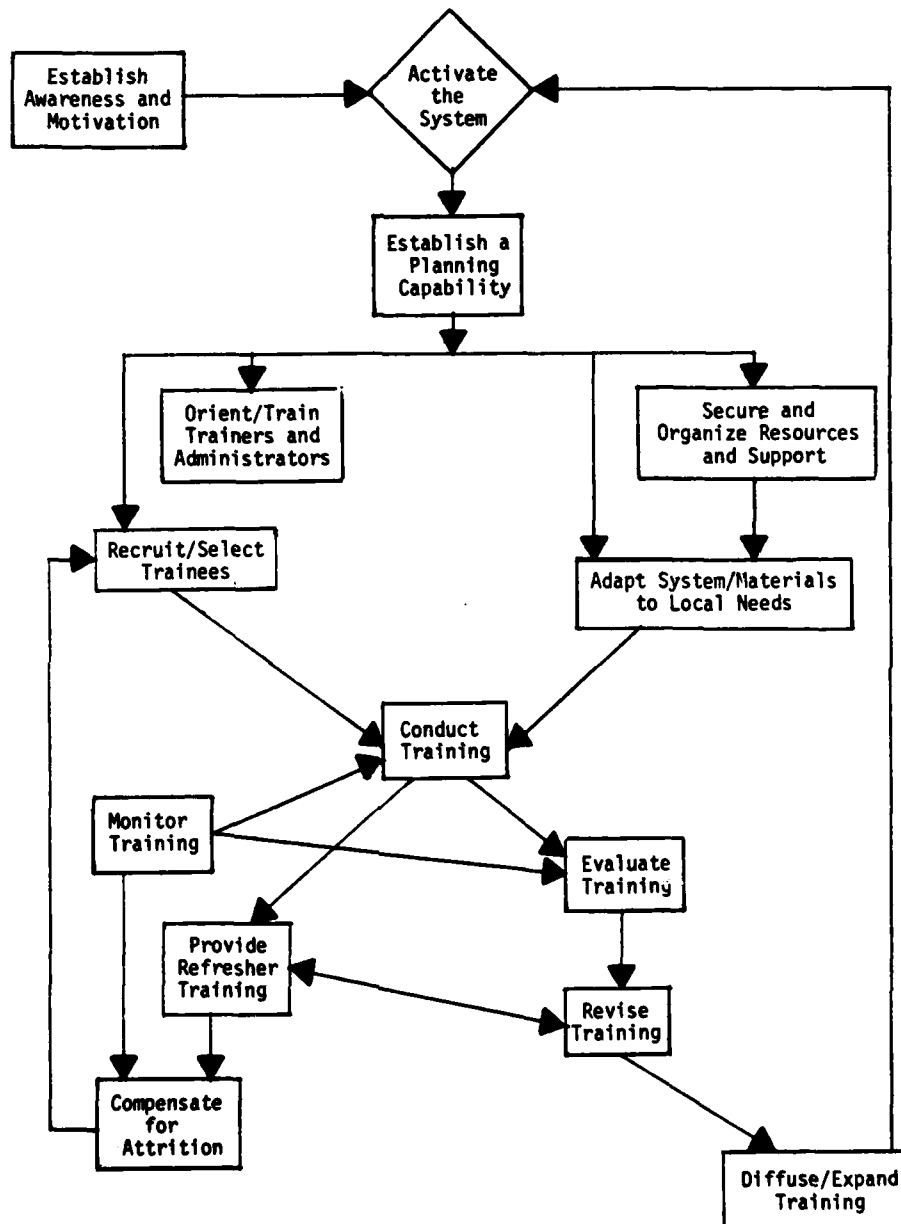


Figure 22. Delivery operations.

(3) *System State Requirements.* System state requirements refer to those characteristics of a system that tend to be associated with effective delivery systems. They are not operations that must be performed, but rather are ideal states that a delivery system should strive for. A specification of these requirements should be useful for (1) building delivery system components, (2) selecting among alternative strategies for accomplishing delivery operations, and (3) choosing delivery agencies.

The following list is adapted from Havelock's (1971) list of factors that make a difference in the dissemination and utilization of knowledge. Havelock lists seven factors: linkage, structure, openness, capacity, reward, proximity and synergy. The essential nature of each factor was preserved below. Alterations were made in order to make the list more relevant to the delivery of shelter management training and in order to convert the list to words that all denote "states" of the system.

Table 7
SMTDS System State Requirements Compared to
Havelock's Knowledge Dissemination and Utilization Factors

SMTDS Evaluative Requirement	Havelock's Term	Description
(1) Integration with Related Systems	Linkage	The system would be well integrated with related systems in order to achieve maximum cooperation, easy access to resources and open communications. Well integrated systems confront less obstacles, are more efficient and are less prone to sabotage. Well integrated systems are also stable systems. Effecting many and varied resource linkages is one method of achieving integration.
(2) Structure	Structure	The delivery system should be characterized by a high degree of systematic organizations of and coordination between resources, users, strategies, and messages. Structure within a system refers to rules and procedures. Structure between settings refers to consistency of operations. Effective delivery must take place within a cogent framework: a structure which designates a rational and consistent sequence of steps, a sensible set of rules and procedures governing all exigencies, and an appropriate set of role descriptions to ensure coordinated efforts.
(3) Openness	Openness	Openness refers to the receptivity of the system to input and the flexibility of the system to incorporate change. This input can come from above (from the institutional level or from the environment). An open system is one that is ready and willing to assess its needs, to ask for help, and to accept help when required.
(4) Capability	Capacity	Capability is an omnibus term that refers to capacity (size, strength, power, wealth) competence (expertise, relevant experience) and breadth (richness of experience, diversity of experience). A capable system is one that is able to retrieve and marshal diverse resources in order to achieve a purpose.
(5) Commitment	Reward	An effective system is one that is committed to its mission, i.e., has committed members and policies that reinforce that commitment. Successful delivery systems provide for the continued instruction of participants and stakeholders through rewards and other means of recognition and motivation.
(6) Access	Proximity	Access is a factor that is conceptually similar to integration. Whereas integration refers to a systems capacity to gather resources, access refers to the ease by which those resources can be harnessed. High access systems are systems that have compatible components that are perceived as understandable and usable by constituents and are easy to use.
(7) Synergy	Synergy	High synergy systems are internally well integrated and have procedures and heuristics that provide a high degree of purposeful redundancy of function.

3. A Process/Function Model of a Shelter Management Training Delivery System

In this section we will consider the kind of model most appropriate for a delivery system, review some of the components that must be incorporated into the model, and finally, display a working model for the delivery of shelter management training.

a. Modeling a delivery system. Lippitt's (1973) discussion of model building includes the following quote:

Basically, a model is a symbolic representation of the various aspects of a complex event or situation and their interrelationships. A model is by nature a simplification and thus may or may not include all the variables. It should include, however, all of those variables which the model-builder considers important and in this sense, models serve as an aid to understanding the event or the situation being studied. The true value of a model lies in the fact that it is an abstraction of reality that can be useful for analytical purposes. (p. 2)

From the discussion in the previous section it is apparent that delivery is both a process--events in time--and a configuration of operations and activities. As an initial goal, it should be useful to conduct a representation of important functional and process variables.

Delivery has been defined as a process by which a product or process is transmitted to a user population and/or adopted by some system or institution. In the case of shelter management training, delivery is the transmission of a training capability to some yet-to-be-defined delivery agency which in turn will delivery instruction to a user population. A delivery system model must then characterize the process of transmittal as well as the levels of delivery and the functions to be delivered. In its simplest form, a model of the delivery process can be displayed as follows:

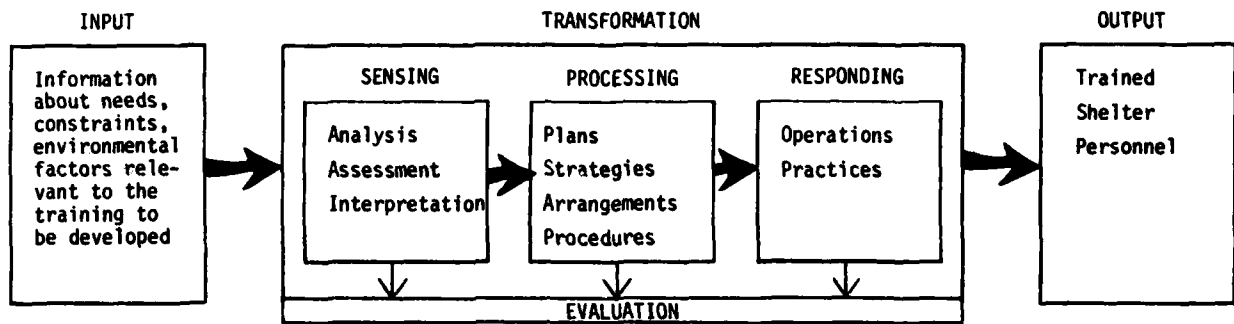


Figure 23. A process model of the delivery process.

b. Components that must be incorporated into the model. The delivery system has purposes which were explicit or implicit in the discussion of requirements. First, the delivery system must be adaptive to its environment. Second, the system must perform certain operations. And finally, the system should strive to achieve and maintain a certain state defined by the host of ideal system requirements. These three clusters of requirements displayed as components of a delivery system can be seen in Figure 24.

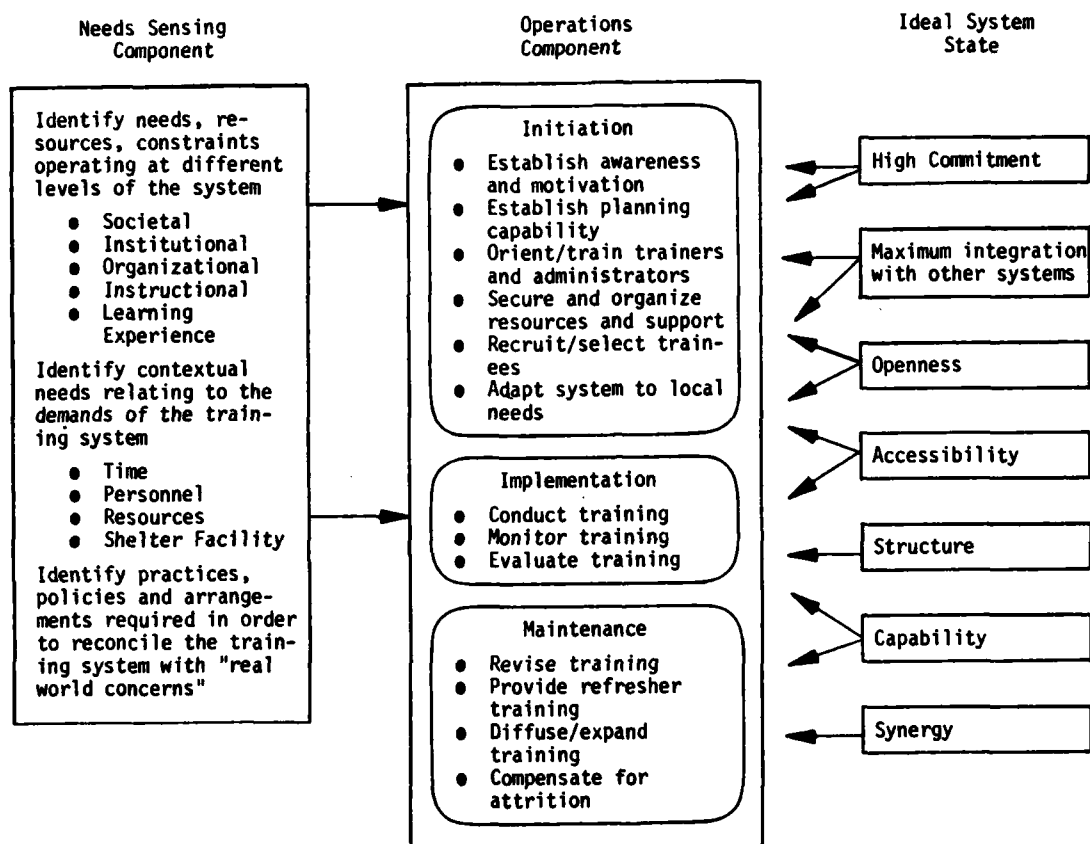


Figure 24. A functional model of a shelter management delivery system.

c. A process/function model of a shelter management training delivery system. The model displayed in Figure 25 represents an attempt to combine process features (Figure 23) with functional features (Figure 24).

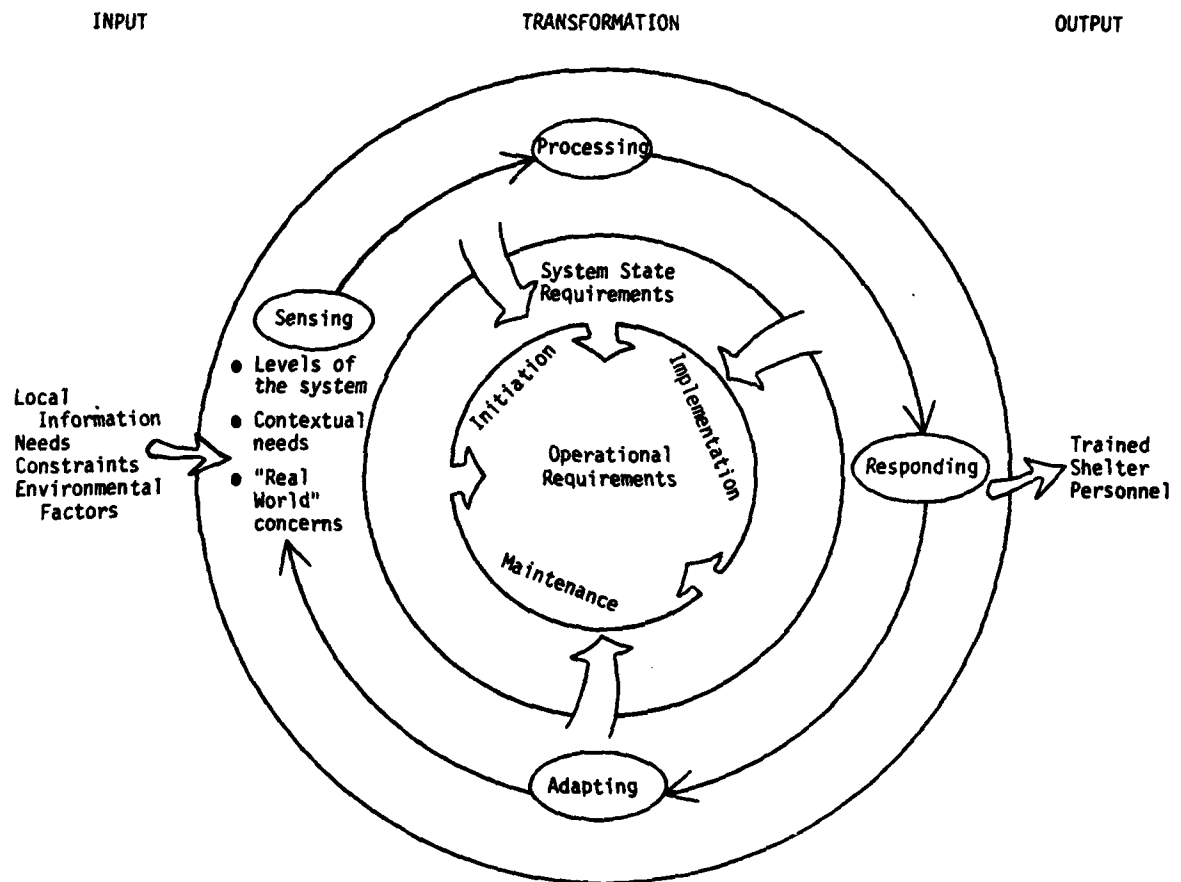


Figure 25. A working model of a shelter management training delivery system.

This generic model of the delivery process shows how the delivery system takes in the necessary data about the locale-specific needs with regard to shelter management training and about resources available to conduct that training, filters it through its sensing functions and begins processing it, resulting in the initiation and implementation of the training program. This implementation provides the system's response to the initial stimuli guided by the ideal system state requirements. Meanwhile, the system is also addressing those activities which enable it to maintain itself and adapt to changing needs and conditions. In this way it can both continue to approach and support a locally-defined specification of the "desired state."

Such a model displays what a generic delivery system does. The model is a characterization of a system; it does not indicate what the system will look like (its structure as opposed to its process). The structural components involved in delivery are much less predictable than the processes. Their identification and operations will depend on the delivery strategy developed for specific situations. Section D of this chapter presents one possible structural model of a delivery system.

The next section of this report presents a discussion of organizational dimensions relevant for selecting a delivery agency and an analysis of two candidate delivery agencies with respect to those dimensions.

C. Selecting a Delivery Agency

A compatibility analysis is a method of looking at the similarities and differences between two or more organizations. This technique was used for "A Study of External Training Settings Available to Diffuse Civil Preparedness" conducted by the Far West Laboratory in 1974-75. That study provided a useful methodology for comparing agencies and organizations relative to their suitability for disseminating educational programs developed by and for a "parent" agency. The methodology entails a close examination of such dimensions as compatibility of goals and structural and operational characteristics. The present study is concerned with selecting an appropriate agency or set of agencies for delivering FEMA's Shelter Management Training Program. In order to do this, a variety of organizations and dimensions must be assessed in order to determine which have the best combination of characteristics and capabilities for achieving the goals of the training program.

1. Procedures and Sources

The literature on interorganizational linkage and coordination, change processes and innovation in education, and shelter management training was reviewed and synthesized. This synthesis made it possible to define a set of organizational dimensions that could be used to compare potential delivery agencies and linkage arrangements. These dimensions fall into five categories: (a) structural dimensions, (b) descriptive dimensions, (c) training capability dimensions, (d) interorganizational compatibility dimensions, and (e) linkage arrangement dimensions.

Information concerning candidate agencies was derived from interviews with representatives of those agencies and through an analysis of publications and policy statements produced by those agencies. The analysis of candidate

agencies by delivery requirements features two agencies as potential delivery agents: The American National Red Cross and community colleges.

2. Relevant Organizational Dimensions

The delivery of shelter management training requires an inter-organizational agreement and subsequent linkage arrangements between FEMA and some agency, organization, or institution charged with carrying out the training. Therefore, we need to examine some organizational variables that can affect the relationship. Some of the most salient dimensions are described below as options and/or considerations in making choices among delivery agents.

a. Structural dimensions. The first set of variables defined were dichotomous categories that provide an indication of the way the organization fits into the societal matrix in terms of its scope of operations, ownership or source of control, interdependence with other organizations, and educational mission.

- National vs. Local. Agencies may have a national scope of operations through an organizational arrangement that features a centralized headquarters with many member branches or chapters located throughout the country. Others can have a more limited scope with operations that serve the needs of a single regional or local area.
- Private vs. Public. Agencies may be either privately owned and operated or they may have been established and are controlled by a body of the federal, state, or local government.
- Single Agency vs. Network. Agencies are established in order to fulfill one or more missions or set of objectives. Sometimes a single agency is designated to provide all of the services needed to accomplish the mission. In other cases, a network of agencies and organizations is created to share the responsibilities and resources needed for this aim.

- Formal Educational vs. Informal Educational. Formal educational agencies include those that are "in the business of" providing education and training such as the public schools, junior and community colleges, public and private four year colleges and universities, and technical and trade schools. Informal educational agencies may have other primary missions, but they may be capable of providing educational/training services.

b. Descriptive dimensions. The following characteristics describe ways that interactions take place within the agency and between the agency and its environment. The characteristics are described as extreme points on a continuum. Actual agencies will fall somewhere between these points with respect to each characteristic. These characteristics may have implications for the delivery of shelter management training.

- Highly Organized vs. Loosely Organized. Agencies vary in the degree of structure or systematic organization and coordination present in their use of resources. Their relationships with clients, the strategies they employ for dissemination/utilization of products, and the formality of their communication systems (Havelock, 1971).
- Open vs. Closed. Agencies that are "open" are characterized by the belief that change is desirable and possible. They are often willing and ready to accept and give help. "Closed" organizations have a social climate that is less favorable to change (Havelock, 1971).
- Autonomous vs. Dependent. An autonomous agency is characterized by a lack of environmental controls. It can carry out decision-making and other functions without supervision, control, or outside involvement. A dependent agency would be one that is subject to many constraints and controls from outside (Douglass, 1978; Paulson, 1977). It should be noted that a national agency can have branches or chapters that operate in either an autonomous or dependent manner with respect to their headquarters. Likewise, a local agency may be either autonomous or dependent, depending on the constraints it must deal with.
- Complex vs. Simple. A complex agency is characterized by a high degree of horizontal differentiation with many roles and occupational specialties. A simple agency might have only a single role to play in the community and very little differentiation among the skills and interests of its staff (Paulson, 1977).

- Centralized vs. Decentralized. In centralized agencies, decisions, policies, arrangements come from the top. In decentralized arrangements, branch offices, departments and personnel have more discretionary power. Centralized decision-making in an agency is related to the proportion of members whose desires regarding an issue are resolved: the higher the proportion, the lower the centralization (Paulson, 1977).
- Formal vs. Informal. This dimension refers to behavioral standardization. Formal agencies have many rules that are carefully observed and highly specified; conversely, informal agencies have few (Paulson, 1977).
- Innovative vs. Conservative. This characteristic is similar to the open vs. closed dimension. It is concerned more specifically with the number of changes that have been implemented by the agency. An innovative agency has an increasing number of new populations served, services offered, and problems covered (Paulson, 1977).
- Experience in Responding to Emergencies. Agencies that have a history of responding to emergencies tend to have effective methods and means of dealing with them. They are better able to interpret conditions, identify problems, and mobilize resources than agencies that do not have this background. Other agencies would have to develop this capability in order to fulfill the requirements of shelter management training.
- High Influence vs. Low Influence. A highly influential agency is characterized by power and/or prestige. It may have an outstanding reputation for effectiveness in its field. It may be able to direct and control other agencies in a variety of ways (Douglass, 1978).
- Unique Role vs. Shared Role. An agency may have a unique role in that it is unchallenged or unhindered; it has no competition for providing services to clients. Agencies that share roles with other agencies may either compete for clients or they may enter into agreements wherein they divide up portions of the responsibility for providing a service (Douglass, 1978).
- Stable vs. Temporary or Emerging. A stable agency is one that is enmeshed in the fabric of its environment by virtue of its reputation, role, and ability to organize resources and serve client needs on a continuing basis. A temporary agency is one that has been created to fulfill a temporary need, and that will most likely be disbanded when the need no longer exists. An emerging agency is one that has been recently created and may or may not be permanent.

c. Training capability dimensions. The following characteristics are measures of an agency's ability to organize, support, and conduct training activities related to shelter management. Candidate agencies can be rated with regard to the extent to which they possess these capabilities.

- Relevant Educational Operations. This capability refers to all of the following: (1) experience in conducting similar training, (2) appropriate staff expertise, (3) adequate training facilities, (4) ability to reach probable target audiences and plan appropriate training for them.
- Ability to Initiate New Courses and Programs. This refers to the ease with which new programs can be planned and implemented. (What procedures must be accomplished? Who must approve? How is funding provided?)
- Ability to Coordinate Training with Other Agencies. This dimension refers to the agency's relationships and agreements with emergency response and disaster related agencies in the community. How effectively could it plan and coordinate training activities and resource-sharing with these agencies?
- Appropriateness of Existing Training Format and Methods. This dimension refers to the congruence between the requirements of the shelter management training model and the format for training and methodologies employed by the candidate agency (one- or two-day workshops, lecturettes, semester courses, use of trained instructors and self-instructional programs, provision of feedback to trainees, evaluation procedures, provision for active trainee participation in selecting activities, etc.).
- Absence of Constraints and Barriers to Shelter Management Training. This dimension refers to a minimum of problems that would interfere with the agency's ability to provide shelter management training (e.g., inability to understand implications of global disaster, suspicion or hostility toward Civil Defense/emergency preparedness, overworked personnel, lack of administrative support, difficulty in insuring sufficient interest and motivation throughout the agency).
- Needs for Assistance in Conducting Shelter Management Training. What would the agency require from FEMA or other agencies in order to conduct shelter management training (help with recruitment, payment for staff/trainees, consultation with experts, etc.)?

d. Inter-organizational compatibility dimensions. Benson (1973, 1975)

conceptualized four dimensions that can provide a basis for inter-organizational arrangements. He suggested that the higher the rating on each of these dimensions, the greater the likelihood of successful interorganizational arrangements between the agencies involved. These dimensions are listed and briefly described below as they relate to shelter management training.

- Domain Consensus. This dimension is a measure of the extent to which participants in organizations (FEMA, potential delivery agents, and other involved agencies) agree on the appropriate role and scope of the candidate delivery agency with regard to delivering shelter management training (who will do what?).
- Ideological Consensus. This dimension refers to agreement among participants in all organizations regarding the nature of the tasks confronted by the organizations and the appropriate approaches to those tasks (what will be done, how will it be done?).
- Inter-Agency Assessment. This refers to the judgment of members in one organization of the value of the work of another organization. This judgment should be applied not only between FEMA and candidate agencies, but to FEMA and candidate agencies by other agencies in the emergency preparedness system.
- Work Coordination. This dimension refers to patterns of collaboration between organizations. The likelihood of achieving effective coordination between FEMA and a delivery agent can be predicted in part by looking at the ways the program activities could be geared to work together.

e. Linkage-arrangement dimensions. The term linkages as used here, refers to a negotiated, authoritative arrangement between organizations for the mutual coordination and/or systematic exchange of resources or activities.

In defining and negotiating these arrangements, several options may exist.

Two sets of options are discussed below.

- Formal vs. Informal Arrangements. These represent extreme points on a continuum of possible arrangements. The most formal arrangements tend to be contracts which are often highly specific, with responsibilities, resources arrangements, time schedules, etc. completely spelled out, signed, and witnessed. Informal or loosely agreed on arrangements may leave many things unspecified, and they can be bound only by a handshake.
- Single vs. Multiple Arrangements. Depending on the organizational arrangement of the delivery agency, it may be necessary to negotiate only one agreement in the case of an agency with a centralized decision-making body. Multiple arrangements would be required for a collection of agencies that were regional or local in scope, or that belonged to a loosely federated organization with local decision making autonomy for its branches.

3. Implications of Organizational Characteristics for Delivery

The table on the following pages lists some possible implications for delivery of the structural and descriptive dimensions that were described on preceeding pages. The extent that the implications of the descriptive dimensions are true for a particular agency must be verified by observational data collection procedures. The implications listed on the table are intended to alert the designer to some of the possible facilitating and/or constraining implications that may be present for potential delivery agents.

The remaining dimensions that were discussed (training capability, inter-organizational compatibility, and linkage arrangement) were not included on the table because the implications they suggest are self evident and/or they require a special analysis in order to determine the extent to which they apply.

The remaining sections will use the described above to present a profile of two candidate agencies: The American National Red Cross and community colleges (represented by Monterey Community College). It will also discuss some conclusions that can be drawn from the analysis of the two agencies as deliverers of shelter management training.

Table 8

Implications of Organizational Characteristics for Delivery

Characteristics	Implications
STRUCTURAL DIMENSIONS	
National	● only one arrangement needs to be made
Local	● multiple arrangements must be made; nonconsistent procedure
Private	● organization can transfer resources freely ● organization may be less tied to congressional whims
Public	● agency may not be respected ● boundary problems ● good access to resources
Single Agency	● vulnerability to resource scarcity ● capability to make quick decision and take action quickly
Network	● greater diversity of expertise and resources ● susceptibility to "red tape"
Formal Educational	● good legitimacy, credibility ● established procedures for conducting and monitoring instruction
Informal Educational	● greater flexibility ● access to different channels for providing training
DESCRIPTIVE DIMENSIONS	
Highly Organized	● can provide structure and consistency of procedures easily ● efficiency, rationality of operations ● sometimes resistant to change and innovation
Loosely Organized	● agency may have redundant procedures that waste resources ● changes can occur in one part of the system without affecting others ● sometimes can react more quickly to system "tuning" needs
Open	● agency often has willingness to give and receive help ● agency is influenced by feedback from clients, new scientific knowledge, technology ● agency tends to be flexible and accessible

Table 8

Implications of Organizational Characteristics for Delivery (continued)

Closed	• has high degree of internal consistency • is not subject to pressures from outside
Autonomous	• lack of outside controls would allow it to make decisions and act quickly • may lack sensitivity to environmental conditions and needs
Dependent	• may need to obtain consensus throughout system or approval from headquarters before it can act • may be aware of trends and conditions in the total system
Complex	• the presence of many professional specialties provides high input of new information, technology • greater role differentiation may increase the number and kind of training activities that can be conducted
Simple	• may simplify orientation/training of staff and support personnel • "high fidelity, low band width"
Centralized Decision Making	• fewer people involved in decision making increases the importance of key figure(s) • the organization will be able to act quickly if the key decision maker(s) want it to
Decentralized Decision Making	• it may take longer to negotiate an agreement with an agency that features decentralized decision-making • the greater number of people who are involved in the decision-making process may generate greater enthusiasm throughout the agency.
Formal	• procedures will be uniform throughout the agency • decisions will be implemented without delay • operations will be highly monitored
Informal	• procedures will be subject to interpretation by individuals and groups • greater variation in procedures may result in the generation of useful ideas that can be applied throughout the system • operations will be more difficult to monitor
Innovative	• has experience in implementing new programs and services, reaching new audiences
Conservative	• may have well established procedures that have worked well over time • resistant to change

Table 8

Implications of Organizational Characteristics for Delivery (continued)

Experience in Responding to Emergencies	● staff will have orientation to Civil Defense/emergency preparedness ● agency staff is likely to have well established procedures for sheltering populations, providing training of personnel
No Experience in Responding to Emergencies	● staff may be open to or able to generate new procedures for providing emergency shelter and training personnel
High Influence	● the agency will be able to control resources, attract trainees, command respect in the community ● the agency can elicit cooperation from other agencies ● the agency may not have a need to develop new programs, respond to new problems
Low Influence	● the agency may have difficulty obtaining necessary resources, attracting trainees ● the agency may be interested in making arrangements that will extend its influence
Unique Role	● the agency may be capable of providing a large proportion of the functions of delivery
Shared Role	● the agency may require cooperation arrangements with other agencies in order to accomplish delivery functions
Stable	● the agency can provide long-range plans and procedures for delivery
Temporary	● the agency may be phased out unless it can define a new role that provides a basis for continuance
Emerging	● it is difficult to predict the future status of an emerging agency

4. Candidate Agencies: A Compatibility Analysis

The broad consideration of possible delivery agencies for shelter management training produces a number of candidates of varying potential. Possibilities include national organizations already involved in emergency preparedness, such as the American National Red Cross, and locally organized training organizations which form part of a national network, like community colleges. Other agencies which could be considered include various governmental sectors, businesses involved in Organizational Relocation Planning, and church and community service groups in host or risk area communities.

In order to explore the usefulness of the delivery considerations identified in the previous section, we will use them as a basis for the consideration of representatives of the two most promising candidates--chapters of the American National Red Cross and community colleges--as possible delivery agencies for shelter management training.

The following pages present an analysis of the suitability of two candidate agencies (The American National Red Cross and community colleges) for delivering shelter management training.

The characteristics used for the analysis are those that were discussed earlier in this section. The listing of each characteristic is followed by a brief discussion of the agency as it relates to that dimension.

a. The American Red Cross.

(1) *Structural Dimensions.*

(a) *National vs. Local.* The American National Red Cross has a national scope of operations with its national headquarters in Washington, D.C. There are four national field offices located in Alexandria, Virginia; St. Louis, Missouri; Atlanta, Georgia; and Burlingame, California. Division offices are organized to facilitate uniform services throughout larger areas,

and chapters are located in communities throughout the United States. There are a total of 60 divisions and 3,125 local chapters.

(b) *Public vs. Private.* The ANRC is a private organization supported by voluntary contributions from the American public. It has a legal mandate that was enacted by the United States Congress on January 5, 1905 and, as amended, re-enacted by all subsequent congresses to provide services to people suffering from disasters.

(c) *Single Agency vs. Network.* The ANRC operates both nationally and locally through an extensive network of federal, state, and local agencies and organizations, both public and private, in providing disaster assistance.

(d) *Formal Educational vs. Informal Educational.* The ANRC is an informal educational agency that conducts training for professional staff and volunteers regularly at the national, field office, and divisional levels. It also provides training as needed to members of the community through the local chapters.

(2) *Descriptive Dimensions.*

(a) *Degree of Organization.* The ANRC has a high degree of organization and coordination with well defined by-laws and procedures for administration of all operations, control and allocation of resources, and for the conduct of training. The communication system follows a line of authority with chapters seeking counsel first from the division, then from the field office. There is also a high degree of structure in field operations, with lines of authority clearly defined. For example, administrative teams are sent from field offices to administer and direct disaster operations that are too large for the local chapter to handle.

(b) *Degree of Autonomy.* The federal grant of authority to the ANRC makes it unnecessary for federal, state, municipal, or other local governments to issue permission for the conduct of its disaster assistance services. Neither

can these governments deny the right of the ANRC to render its services in accordance with its congressional mandate and its own policies and under its own administration. The agency's financial transactions are audited yearly by the Department of Defense and a private firm of accountants.

(c) *Degree of Openness.* The ANRC is a moderately open system that is responsive to needs that arise in the conduct of its operations including training. The sensing function is carried out through staff and participant observation and through contact with organizations and agencies in the local community.

(d) *Degree of Complexity.* The ANRC is a moderately complex organization that has administrative and specialized staff that perform the following functions: disaster assistance, aid to service personnel and their families, public relations, and fund raising.

(e) *Degree of Centralization.* The ANRC has a moderately centralized decision-making system. Local chapters are free to make many decisions on issues that do not conflict with national policy. The broader the implications of the decision, the higher up in the organizational hierarchy approval must be sought and given.

(f) *Degree of Formality.* The ANRC is a moderately formal organization. Standardized procedures are followed for many functions, particularly for disbursing funds and conducting training.

(g) *Degree of Innovation.* The ANRC is responsive to information about newly defined needs or opportunities for service. This information is fed into the system through liaison with the many agencies in the disaster response network. It is also responsive to client/community needs through local chapters. It regularly reviews and makes changes in its procedures and it utilizes current technology for conducting its operations.

(h) *Experience in Responding to Emergencies.* ANRC has probably amassed more experience in responding to the needs of people in emergencies than any other agency in the United States. It has a data bank which stores information on the expertise, location, and availability of personnel it has trained.

(i) *Degree of Influence.* The ANRC is highly influential because it has the authority to channel and coordinate resources from many other agencies and organizations in order to meet the needs of disaster victims. It also has a long and well established reputation for service to the community.

(j) *Degree to Which Role is Shared.* The ANRC cooperates with a great variety of organizations in order to provide disaster assistance services. It has in its files numerous agreements called Statements of Understanding that provide a basis for sharing responsibilities and resources during emergencies and disasters. The ANRC is unique in that it is the organization that coordinates services during these periods.

(k) *Degree of Stability.* The ANRC as a national organization is "here to stay." Local chapters vary in the degree to which they are an integral part of the community, but the majority are very stable.

(3) *Training Capability Dimensions.*

(a) *Relevant Educational Operations.* For peacetime operations, the ANRC rates high on experience in conducting similar training, appropriate staff expertise, and adequate training facilities. It has an average ability to reach and plan appropriate training for probable target audiences for shelter management training. This reflects, in part, the lack of definition with regard to crisis relocation planning and the imprecise designation of who the likely candidates for this training should be.

A great deal of planning would need to be done in order to develop

an expandable training capability during crisis expectant and crisis activation periods. The problem, however, is being addressed by ANRC through efforts of the training officers who are developing short courses for on-the-spot training during crisis periods.

(b) *Ability to Initiate New Courses and Programs.* Local chapters of the ANRC may initiate informal training courses as the need arises, given chapter board approval. A district may initiate training at that level with the approval of the field office, but certification can be given only at the division level. In order for ANRC to initiate more extensive or formal training courses that will be offered repeatedly, approval must be given at the national level. The Personnel, Training, and Development Offices at national headquarters and at the field offices develop training courses for staff development in each of the areas in which ANRC is active. The training Officer for Disaster Assistance initiates new technical courses for paid and volunteer staff in that area as on-the-job experience indicates a need.

(c) *Ability to Coordinate Training With Other Agencies.* The ANRC's cooperative agreements with other agencies would be a definite asset for coordination of training. The agency has a history of providing disaster-related and other types of training to personnel from other agencies as the need arises.

(d) *Appropriateness of Existing Training Format and Methods.* The ANRC currently offers a course in managing a shelter for disasters with limited impact. The course is approximately six hours long. The agency is currently conducting a limited number of two-day workshops to test the feasibility of using the recently developed How to Manage Congregate Lodging Facilities and Fallout Shelters and other materials to train managers for these facilities.

A typical format for a training course follows this pattern: (1) introduction of staff, statement of goals, objectives, etc., (2) presentation

of information and assignment of task, (3) small group interaction with task, (4) reporting of small group's findings to larger group and instructor feedback, and (5) evaluation (Instructor's report, participants' responses).

The courses are taught by highly trained and monitored instructors who must have had relevant experience in the field. They use a variety of media including audio tapes, films/videotapes, transparencies, handout sheets, etc. Chapter newsletters provide trained personnel with new information and review problems. They feature self-instructional quizzes to ensure retention of information.

(e) Absence of Constraints and Barriers to Shelter Management Training.

There are very few barriers that would affect the ANRC's ability to deliver shelter management training. Their long association with emergency preparedness and disaster mitigation and their current role in shelter management training place them in a favored position. A degree of uncertainty exists about the workability of crisis relocation of populations from target to host areas that would need to be dealt with. Also, the global implications of nuclear attack would need to be emphasized in planning for future training requirements.

(f) Needs for Assistance in Conducting Shelter Management Training.

The ANRC has a liaison officer that works within FEMA's Washington headquarters and in each of FEMA's ten regional offices to coordinate activities and information between the two agencies. There is, however, no formal tie between local chapters and FEMA. After planning is completed, it is unlikely that any other assistance from FEMA personnel would be necessary in order for ANRC to conduct shelter management training. Assistance with program/materials development and evaluation specialists would probably enhance the effectiveness of the ANRC's shelter management training procedures.

(4) *Inter-organizational Compatibility Dimensions.*

(a) *Domain Consensus.* ANRC and FEMA have a history of cooperative relationships in which the territoriality of both agencies has been well defined and understood. As a delivery agent for shelter management training, ANRC would be in the position of "working for FEMA," a role that might cause some difficulty unless issues of jurisdiction and authority were discussed and agreed upon.

(b) *Ideological Consensus.* ANRC and FEMA may have some areas of disagreement concerning the nature of shelter management and appropriate approaches to the tasks. This disagreement arises from a difference in perspective: FEMA is primarily concerned with the widespread impact of nuclear war and the implications this would have on sheltering, while ANRC has had extensive experience in providing shelter for emergencies of limited scope. There may be a need for agreement on the emphasis that should be placed on problems of providing shelter under conditions where it is not possible to draw on outside resources and support.

(c) *Inter-agency Assessment.* There is a generally high level of mutual respect between representatives of ANRC and FEMA, although there may be a degree of unwillingness to work for the government among certain ANRC personnel. The two agencies have maintained close contact and cooperation in the area of disaster assistance over a long period of time at the national and field office level. At the community level, the tie between ANRC and FEMA is less well defined, and representatives of the two agencies may have had less opportunity to evaluate each other.

(d) *Work Coordination.* The history of liaison and cooperative working arrangements between ANRC and FEMA provide a favorable climate for integrating the patterns of work involved in providing shelter management training

Any potential problems with procedures relating to methods of payment or lines of authority would need to be resolved.

b. Community colleges.

Community colleges focus on a variety of educational goals, including basic academic education, vocational education, and lifelong learning. Many are closely connected with other educational and community organizations with whom they share services and resources and institute new courses in response to changing community needs.

(1) *Structural Variants*

(a) *National vs. Local.* The Monterey Community College (MCC) serves several communities located in Monterey County, California. It is representative of the 107 community and junior colleges in California which operate within 69 districts throughout the state. It belongs to the American Association of Community and Junior Colleges in Washington, DC. Other states have developed community college systems similar to California's.

(b) *Public vs. Private.* Community colleges are public educational agencies. MCC, for instance, is chartered by and governed by a local Board of Governors.

(c) *Single Agency vs. Network.* It would be incorrect to characterize colleges like MCC as belonging to a network of agencies that share responsibilities and resources in order to provide services. However, they cooperate informally with other agencies and sometimes, other colleges, to identify needs and to provide services to the community.

(d) *Formal Educational vs. Informal Educational.* Community colleges are formal educational agencies that utilize administrative, professional, and support staff along with classroom and other facilities in order to provide education and training on a regularly scheduled basis.

(2) *Descriptive Variants.*

(a) *Degree of Organization.* Organizational characteristics of community colleges vary considerably both from school to school, and within a given college. MCC has a varying degree of organization with regard to the conduct of education/training. This is because education is provided to serve three district purposes: (1) basic education courses that are transferable to four year institutions, (2) vocational education, and (3) lifelong learning (adult education).

(b) *Degree of Openess.* Some community colleges, like MCC, are highly open systems that are characterized by a great deal of sensing activity oriented to identifying needs and offering new courses or changing old ones. Others are tightly focused on specific educational goals, such as vocational training or preparation for transfer to a university, and are more resistant to change.

(c) *Degree of Autonomy.* Autonomy also varies among this type of agency. MCC is controlled most directly by a local Board of Governors who must approve all matters involving curriculum and expenditures. All junior and community colleges in California are regulated more indirectly at the state level by the state Board of Governors. Another constraint on MCC's autonomy is related to funding for operations, which is dependent on the availability of tax monies and legislative action. Private junior colleges, on the other hand, are responsible to their directors rather than to the public.

(d) *Degree of Complexity.* MCC is a complex educational agency with a diversified professional staff representing both academic and technical areas of expertise. Other community colleges may focus on one or the other.

(e) *Degree of Centralization.* MCC is a moderately de-centralized agency. In order to make policy decisions, approval is required at the institutional (Board of Governors), organizational (college administration), and instructional (professional staff) levels.

(f) *Degree of Formality.* Non-residential schools like MCC are

moderately informal educational agencies that regulate the behavior of their professional staff and students only to the degree necessary in order to maintain an effective learning environment. Within the agency, there may be variations with regard to attendance, evaluation procedures, etc. In general, there are fewer rules affecting adult students and the conduct of courses designed to provide lifelong learning.

(g) *Degree of Innovation.* MCC is a highly innovative agency. It has a history of providing programs and courses in order to serve new populations and meet newly identified needs. The agency is flexible with regard to when and where courses can be offered and the length of new courses/programs. As a group, community colleges tend to be more innovative than junior colleges or four-year schools.

(h) *Experience in Responding to Emergencies.* MCC has little or no experience in responding to emergencies as an agency. Community colleges often do, however, offer in-service training for emergency response personnel such as police, firefighters, paramedics, etc. The knowledge base regarding emergency conditions and procedures would have to be developed within the agency by the inclusion of trained staff members and the provision of workshops/materials developed for that purpose.

(i) *Degree of Influence.* This consideration varies widely, depending on the school involved. MCC has an excellent reputation as an effective deliverer of education and training. Its dependence on governmental bodies for financial support makes it less powerful than a private agency with respect to its ability to control resources and/or control or direct other agencies.

(j) *Degree to Which Role is Shared.* MCC is a typical community college in that it cooperates with other educational agencies (community colleges, technical/vocational schools, secondary schools) in providing continuing education for members of the community.

(k) *Degree of Stability.* Like most of the community colleges throughout the nation, MCC is stable and well integrated into the community. As such, it can be expected to continue in its role as a deliverer of education unless and until serious shortages of funds cut back all public education.

(3) *Training Capability Variants.*

(a) *Relevant Educational Operations.* Community colleges have extensive experience in conducting education/training and in planning and providing education for adults. MCC has abundant facilities (classrooms, simulated shelters, a library, cafeteria, etc.). The staff is trained and experienced and represents an amalgam of technical competencies relevant to shelter management under one roof. As an established educational agency, they are familiar with accreditation procedures. They are also able to publicize courses, develop and produce materials, provide facilities and attract whatever audiences that may be desired for shelter manager training.

(b) *Ability to Initiate New Courses and Programs.* Given an adequate level of funding and board approval, MCC can initiate a new course if there are fifteen people in the community who request it. Non-public, two-year colleges have similar systems though the specific requirements may differ.

(c) *Ability to Coordinate Training With Other Agencies.* A community college like MCC has contacts with many agencies, organizations, and groups in the community. They have a history of cooperation with these groups in order to offer educational programs and services to the community. They are well versed in procedures for assessing needs and for coordinating exchange of personnel and other resources for the conduct of education/training.

(e) *Absence of Constraints/Barriers to Shelter Management Training.* MCC appears to have few, if any, barriers that would interfere with the delivery of shelter management training. Further exploration would be necessary in

order to verify this observation. In other schools in other political climates, such barriers might be salient.

(f) Needs for Assistance in Conducting Shelter Management Training.

Community colleges would require identification of the conditions and requirements that provide the context of crisis relocation and shelter management training (e.g., how would the community function during different periods, who are likely candidates for training? etc.). They also would most likely need some or all of the following kinds of assistance: orientation workshops, consultation or communication with experts from FEMA, information resource materials on the various aspects of shelter management, instructor/facilitator guidelines for developing training/materials appropriate to the local community and student materials. However, once training was underway, minimal assistance from FEMA would be required.

(4) Inter-organizational Compatibility Variants.

(a) Domain Consensus. No difficulties in domain consensus are expected. Community colleges are accustomed to providing training and support systems as their special expertise or "territory."

(b) Ideological Consensus. There may be two difficulties with ideology. First, to the extent that a shelter management course is perceived as externally developed and implemented rather than community developed or responsive to the needs of students, there may be some resistance. Second, community colleges in some locations may have a political aversion to defense matters that may present a barrier to successful course delivery.

(c) Inter-agency Assessment. Little data is available concerning how FEMA and community colleges regard each other and would react to working together.

(d) Work Coordination. MCC has ongoing collaborative relationships

with various community organizations for other areas of study. This pattern of coordination could easily serve as a model for relationships between FEMA and community colleges.

(5) *Linkage Variants.*

(a) *Formal vs. Informal Arrangements.* Community colleges function on the basis of their charter and various formal arrangements with other community bodies. Such an arrangement would have to be negotiated between the college and FEMA before training could begin.

(b) *Single vs. Multiple Arrangements.* A separate arrangement for each community or junior college would be necessary in order to provide the basis for implementing shelter management training.

5. Conclusions

The preceding parts of this section have defined a number of delivery dimensions which may be useful for analyzing the viability of potential agencies as a delivery vehicle for shelter management training and the compatibility of these agencies with FEMA. The section also presented a profile of two candidates--the American National Red Cross and community colleges--with regard to these dimensions. In many respects, both the American National Red Cross and community colleges represent viable and compatible delivery agencies. Their differential strengths and weaknesses as delivery agencies are discussed below.

The American National Red Cross's broad scope of operations, and especially the fact that a policy set at the national level can be implemented through its local chapters, is advantageous for the design of a delivery system. A single training design developed at the national level would be available for widespread dissemination through systematic and structured procedures. These procedures would provide first for training field office and division level trainers. These trainers could, in turn, train managers for local shelters

through local chapters. The American National Red Cross's training system provides quality control of training activities and also provides for certification of trainees. The training design would need to include sufficient flexibility to allow it to be adapted to varying local conditions. Such flexibility is currently a defining attribute at the division-local relationship.

The community college system is equally represented throughout the country. However, there exists no central body that establishes policy for all of the local agencies. National dissemination of a training design would require that separate arrangements be made for each agency.

The ANRC's standing as an agency that serves the community during emergencies and disasters is another advantage. So are its many standing agreements with other agencies in the community. These two features would allow it to attract appropriate trainees and coordinate training with other agencies in the community. Presumably its credibility, the respect it engenders, and its existing ties would be valuable for maintaining commitment on the part of participants as well.

Both agencies operate within networks that provide service to the community. The major difference is that ANRC exists primarily as an emergency response agency and its mission is shared with others in this field, whereas the community college cooperates with other agencies in order to provide education and training. The practical implications of this difference is that both agencies would need to broaden their associations in order to deliver shelter management training.

The ANRC provides training in order to support its other operations which are largely organized around responding to emergency situations. On the other

hand, the community college exists primarily as an educational and training institution. The potential impact of this difference on the delivery of shelter management training would be that the community college could provide an in-place training capability whereas the ANRC would require time to organize such a capability.

In order to initiate shelter management training, a local chapter of ANRC would need the approval of higher levels within the organization and of the local chapter Board. Given adequate funding along with administrative and staff support, the community college could provide training fairly rapidly in response to local needs.

The questions of complexity and relevant experience reveal some differences. The community college is a more complex agency than the local ANRC chapter in that it encompasses more kinds of technical expertise under one roof. However, the skills of the paid staff and volunteer resource personnel of an ANRC chapter may be more directly related to shelter management concerns. Also, personnel associated with ANRC are more psychologically attuned to dealing with emergencies.

In a crisis situation, both agencies would be able to focus more of their resources on shelter management training. In a peacetime situation, the perceived importance of the need for such training would affect the use of resources at the organizational level (which controls allocation of funds) and at the instructional level (which controls interest in initiating it).

Some conclusions can be made with regard to uniqueness of role and stability. The ANRC has a unique role in coordinating emergency services. In the event that both agencies were used for delivery of shelter management training, provisions should be made for fitting the community college into the emergency service system. Otherwise, competition between the two agencies for clients

could work to the detriment of the system. With regard to stability, both organizations are perceived as stable, although the community college is more subject to legislative actions and budget cutback which could restrict its operations.

With regard to training capability, the following conclusions can be drawn. Both candidate agencies have the necessary capability to deliver shelter management training. The local chapter, with the support of its national organization, has all the resources necessary to develop an adequate peacetime training system. It is likely that it will have had more experience in many of the required operations than the community college, but the community college is more versed in offering a variety of formats and methods. The community college also has more resources (classrooms, personnel, etc.) that could be diverted to this purpose during a crisis. It has the advantage of a professional teaching staff that is experienced in providing all of the relevant training functions.

Neither agency has experience in dealing with the global ramifications of nuclear war, but this is equally true of other agencies. The ANRC presently has a shelter management training course that is designed to prepare people to manage small shelters during an emergency of limited impact. This agency's experience in limited sheltering could be utilized to anticipate the requirements of sheltering massive groups of people following nuclear war.

D. Application--Alternative Models for Shelter Management Training Delivery

To conclude our consideration of the design of a model for a Shelter Management Training Delivery System, we will propose alternative delivery models featuring different agencies and different strategies for those agencies.

1. Procedures and Sources

The major outcome of this phase of the model-building effort was to design strategies by which the delivery operations identified in section B might be carried out by the agencies discussed in section C.

To do this, it was necessary to:

- determine what is meant by a delivery strategy;
- review essential delivery operations with reference to the level of the system which could best carry them out;
- review our notes from our meetings with Red Cross and community college representatives with special attention to capabilities and strategy ideas;
- generate possible strategies for each delivery operation for both the Red Cross and community colleges; and
- present implications and conclusions from these analyses.

2. Delivery Strategies

Some attention must be devoted to vocabulary at this point. So far we have described operations as discrete classes of activities that the delivery system must perform and defined processes as types of operations. Strategies are specific plans for action that facilitate the accomplishment of an operation or a particular activity within an operation. The following example may serve to clarify those distinctions:

Type of Operation: Initiation

Operation: Recruiting and Selection of Trainees

Activity: Develop means of identifying people who have relevant skills

Strategy: Contact business groups such as the Rotary and Junior Chamber of Commerce

Again, strategies are plans of action that help accomplish some end. They are facilitative or propaedeutic rather than necessary or sufficient for getting something done. Also, strategies constitute selections from among options.

In general, there are three kinds of strategies that are useful for designing a delivery system:

- strategies that help to ensure that some ideal state of affairs is present or realized
- strategies that facilitate the accomplishment of some activity
- Strategies that help to remove some barrier or circumvent some constraint

The next section will consider the first type of strategy. The section that follows will deal with the other two strategy types.

a. Strategies for achieving system state requirements. In an earlier section, we introduced the idea that some of the requirements for an effective delivery system constitute features of the system that, according to the literature on delivery, tend to be associated with maximum effectiveness and with the institutionalization of the system. Those ideal system states are (at least):

- | | |
|------------------------------------|--------------|
| ● integration with related systems | ● capability |
| ● structure | ● commitment |
| ● openness | ● access |
| | ● synergy |

Strategies that might be used to achieve these ideal system requirements are listed below. Note that these strategies are described in very general terms. It is also possible to be very specific (e.g., describe tactics) about how to build commitment or how to ensure maximum structure. The list below is a preliminary list and would have to be supplemented by more and more detailed region- and site-specific ideas.

- Participation of key stakeholders in program planning and goal setting: To promote and insure the support, commitment, and/or participation of citizens, community organizations, and educational agencies; to provide for a program that satisfies a wide range of interests and needs; to provide a variety of technical assistance and material resources.
- Observation of (similar) programs in other areas: Once SMT has been piloted, subsequent implementers can observe pilot programs in order to recognize and learn how to solve problems in curriculum adaptation, instructor preparation, obtaining support and funding.
- Gradual program start-up: To avoid risking too many resources and too much good will, the training program should be started with a small number of trainees.
- Primary reliance on interest incentives rather than money: Wherever possible, agencies and personnel should be encouraged to see the training as a resource rather than a burden, and should therefore incorporate it into their regular programs.
- Primary reliance on local control: To avoid irrelevance and inflexibility, to increase adaptiveness of program plans; to promote a greater sense of ownership and commitment to program goals and objectives.
- Concrete (practical) and on-going training for instructional support staff: Provide orientation and training for all personnel involved in the program, including refreshers and up-dating in order to maximize the interchangeability of staff.
- Regular program meetings: To provide a forum for sharing problems, suggestions, and successes, and to provide a vehicle for building morale and cohesiveness among those involved in the program.
- On-going monitoring of activities: At both the instructional and organizational levels, to provide staff with timely and appropriate information with regard to the conduct of the training and program management.

- Dissemination of information about the program to the community: To promote understanding of and support for the SMT program; to demonstrate or advertise activities; to inform and assist others engaged in similar programs; to raise public consciousness of emergency preparedness policies and activities.

Again, these general strategies can be used by designers of delivery systems for shelter management training as a basis for developing more specific procedures, arrangements, and activities.

b. Strategies for facilitating operations and removing barriers. The critical set of questions that will be faced by designers of shelter management delivery systems for particular locales will be how to accomplish the operational requirements for delivery: what particular configuration of agencies, organizations, resources, and procedures will most effectively accomplish all of the necessary operations given the constraints associated with the environment. The operational requirements (presented in a previous section) are:

- | | |
|---|-------------------------------|
| ● establish awareness and motivation | ● adapt system to local needs |
| ● establish planning capability | ● conduct training |
| ● orient/train trainers and administrators | ● monitor training |
| ● secure and organize resources and support | ● evaluate training |
| ● recruit/select trainees | ● revise training |
| | ● diffuse/expand training |
| | ● compensate for attrition |

In designing strategies for these delivery operations, it may be helpful to use a decision tree that displays the activities, decisions, and decision-related processes involved in strategy design. The use of a decision tree is valuable because there are many factors to consider when making a decision about a particular operation. For example, when considering how to accomplish the operation, "recruit/select trainees," the following subsets of the task must be dealt with:

- activities that must be carried out to accomplish the operation
- possible general strategies that might be used
- possible specific tactics that might pay off

- environmental constraints and barriers that mitigate against these strategies and tactics
- consequences/implications of other strategies employed for other operations that suggest additional strategies or barriers
- ideal system states that must be realized or preserved with this strategy

The decision tree displayed in Figure 26 may be useful for organizing some of the thinking that must occur in strategy generation and selection.

As shown by the decision tree, in selecting strategies for the delivery of shelter management training one begins with the training and delivery requirements specified and suggested in the model. Next, the task is to develop a set of program specifications that will deliver this model in a specific community setting by considering the real-life constraints and barriers presented by the setting.

As one considers constraints, the design task will always involve modifying the affected delivery requirements to bring them into line with the constraining conditions. As one considers barriers, the design task will involve: (1) assessing the importance and malleability of the affected requirements with regard to which of the requirements can be achieved given the available resources (i.e., money, time, people, materials, knowledge, skills, motivation); (3) considering the extent to which the barriers can be modified or eliminated; and (4) devising specific procedures, arrangements, or activities by which modified or unmodified requirements can be achieved.

3. Model Delivery Strategies

Figure 25, included in a previous section, displayed the essential processes of delivery and the functions that must be accomplished during this process. In order to design an applied model that indicates how these functions might be fulfilled by agencies in the real world, it is necessary to go through

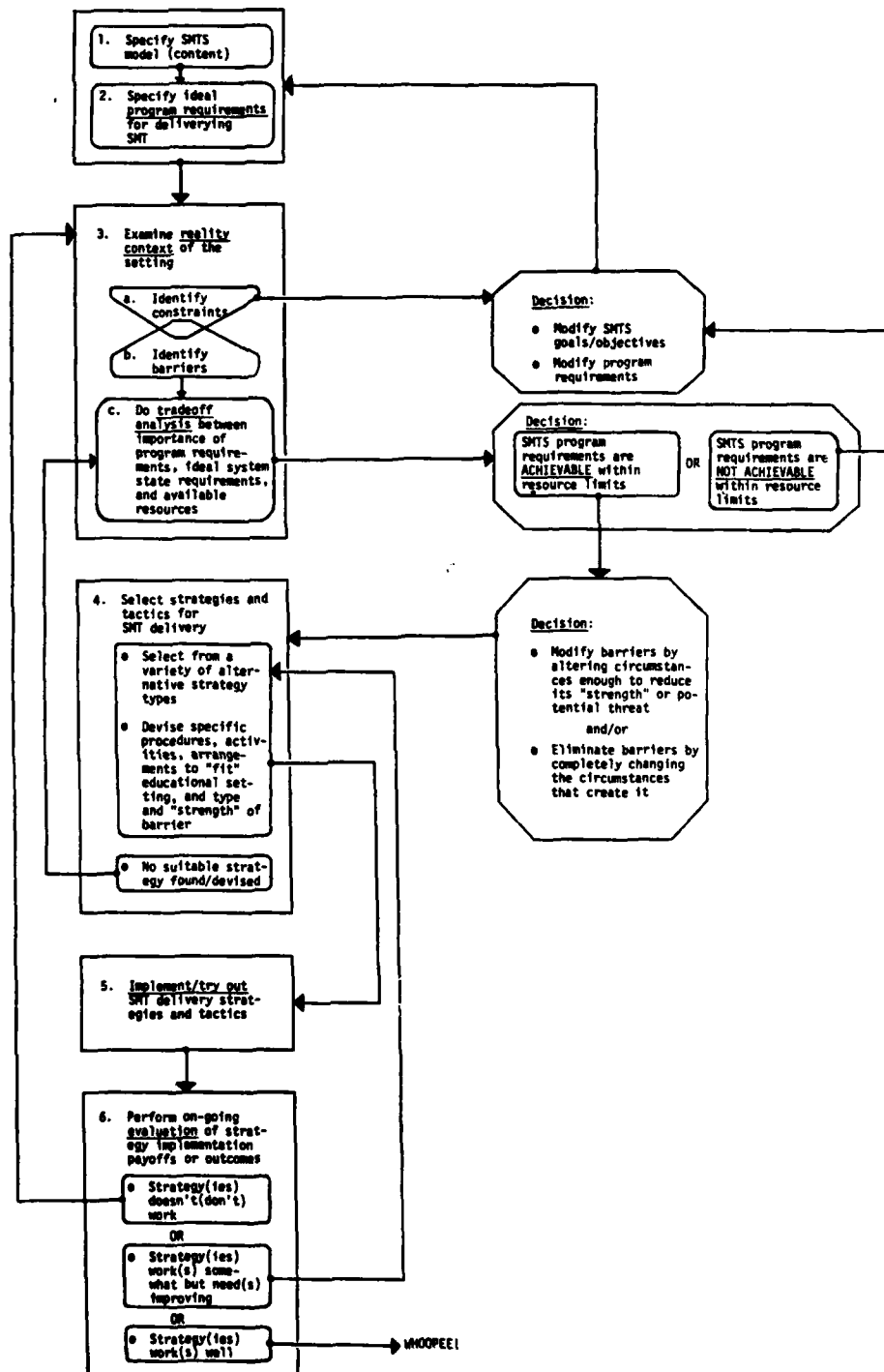


Figure 26: A decision tree for the selection and evaluation of strategies and tactics to deliver Shelter Management Training (SMT).

an intermediate step of translating the process model into a structural model of a delivery system.

a. A generic structural model of the delivery system. Among the most basic characteristics of the process model were the ideas that it must respond to appropriate systems levels and that it must address the basic functions of sensing, processing, responding, and adapting. These functions are generic: they must be addressed by any delivery system for shelter management training. The degree to which the system will be able to fulfill all of its ideal requirements will depend on what strategies are used and what trade-offs must be made.

Although major system functions are ascribed to different levels, all of the functions are addressed at all the levels in different ways and to different extents. For instance, individuals involved in the system at the instructional level take in goals, materials, and resources from the organizational level (sensing); they process them by selecting appropriate instructional management strategies and by deciding how to use the available resources, etc.; they respond (their main function) by actually conducting the training in a way that represents an adaptation to local circumstances.

As indicated in the process model on page 146, the major system functions are most closely associated with the system's operational requirements. The contextual ideal state requirements affect the ways in which the operations performed at the different levels should be carried out. For instance, the requirement that the system evaluate the training it provides can be handled at the instructional level by the trainers, at the organizational level by another department of the delivery agency, or at the institutional level by some kind of FEMA evaluation component. Deciding which level should handle this operation may well be a matter of considering contextual and ideal system

state requirements, e.g., maintaining openness and commitment.

Figure 27 displays delivery functions and operations arranged according to the systems level within which they are most likely to be performed. The discussion that follows indicates why these tasks are assigned in this way and what strategies might be used to accomplish them. It must be recognized that system levels may not correspond exactly to agency divisions. For instance, different departments of an agency might act at different levels, or a department or an individual might act at different levels at various times.

(1) *The Societal Level.* This level consists of the undifferentiated environment which is both the original source of input to the delivery system and the ultimate recipient of its product. Nationally, the attitudes of citizens towards the need for civil preparedness influence government policy and funding in this area, and thus act as the initial inspiration that will eventually result in a developed and delivered training program for shelter managers. Locally, community awareness and perceptions about civil preparedness can prompt the initiation of a training program and can determine whether that program succeeds once it has begun.

(2) *The Institutional Level.* Agencies at this level are those national or regional organizations which are responsive to public needs on a broad scale, and which have the resources and communications networks to make and disseminate policies and programs to a large number of communities. Such institutions may be highly organized with a national structure and a hierarchy of branches down to the local level, or they may be loose associations of local organizations linked only by a common interest. The operations listed for this level are most likely to be performed by regional or state agencies acting as an interface between the surrounding society and the organizations which will actually manage the training program at the community level.

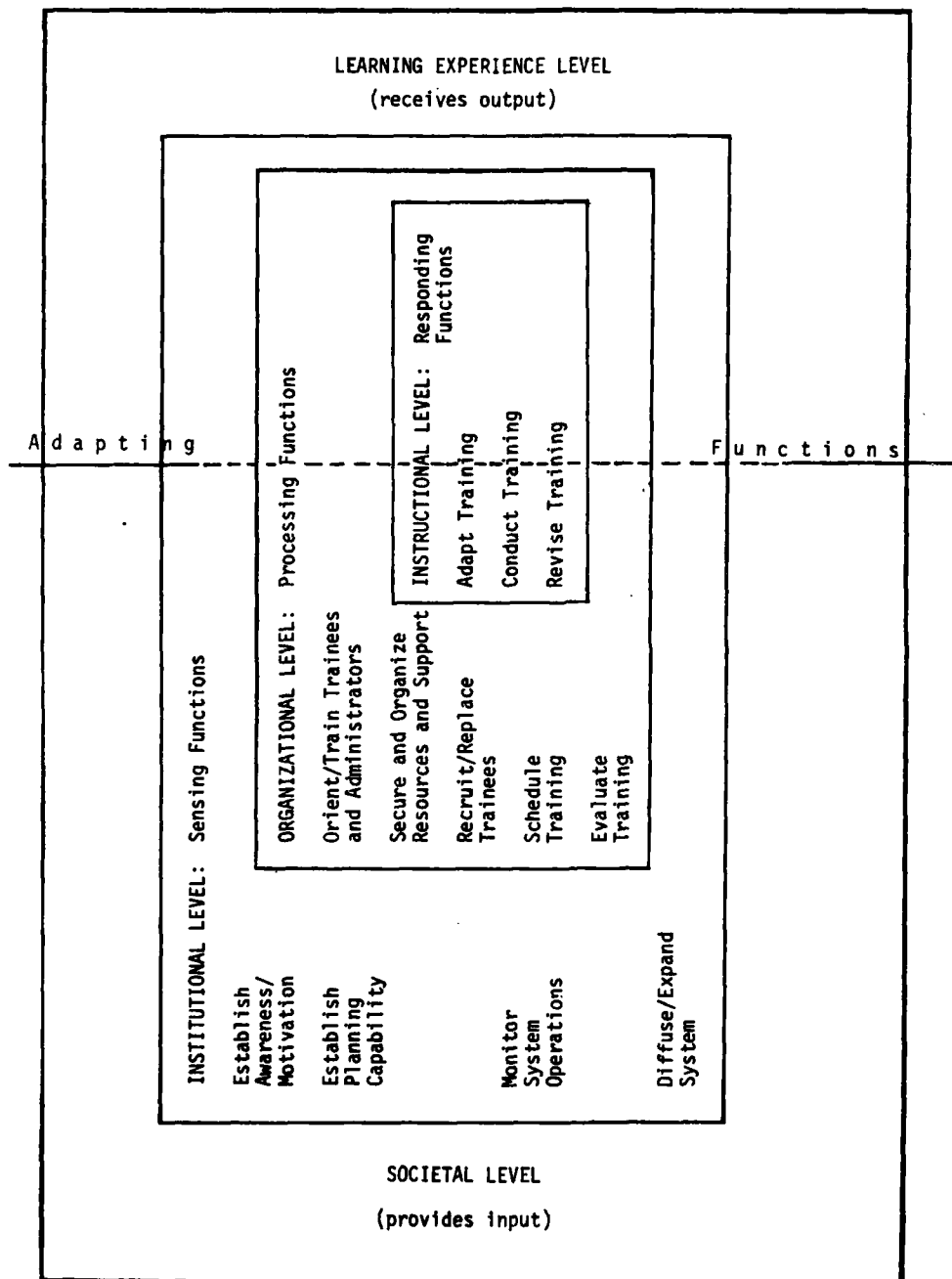


Figure 27: A structural model of shelter management training delivery operations displayed according to system levels.

Operations performed at this level have the following purposes:

- Communication. Making local communities aware of the need for civil preparedness and of the existence of a generic training/delivery system which can guide the development of a training program. The dissemination of information about shelter management training from community to community is another communication operation that might be performed at the institutional level.
- Assistance. The institution may also assist the organization by helping it acquire the contacts and resources needed to begin planning and designing its program. The institutional level may assist in monitoring the program once it has begun in order to identify problems, to maintain program integrity, and to insure articulation of the program with the larger civil preparedness system of which it is a part.

(3) *The Organizational Level*. This level is of primary importance in the delivery system (just as the instructional level is most significant for the training system). It is represented by agencies in communities that are willing to assume responsibility for providing a "home" for the training program as part of their contribution to the local civil preparedness. As such, it serves as an interface between the training system and the "real world" of the community civil preparedness system.

Such agencies may be local branches of larger organizations, or they may exist primarily on the community level with ties of varying formality to institutions with a regional or national scope. They may be organizations which are regularly concerned with emergency response, or whose primary function is training, or even agencies (such as a business involved in Organizational Relocation Planning) for which this is a new kind of activity.

Operations performed at this level are aimed at providing human and physical resources needed for training, coordination, evaluation, and other management functions. Specifically, the delivering agency:

- Orients and Trains Staff. This includes identifying and providing appropriate orientation or training to all personnel who will be involved with the program, including any community resource people who will be participating, as well as managers and instructors.

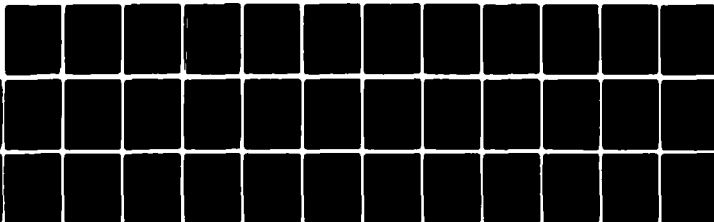
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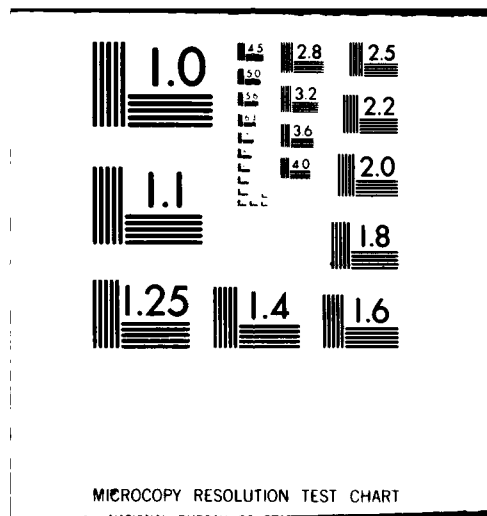
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- Organizes Resources. This includes all financial, physical, and human resources needed to conduct the training. If the agency does not itself provide a resource, it is responsible for establishing linkages with other organizations who will. The agency must identify needed resources, acquire them, make whatever adaptations are necessary, and provide them to the instructors as needed for training.
- Recruits, Replaces Trainees. The delivery agency is responsible for developing and implementing procedures to recruit or select qualified trainees until the community's need for a core group of trained shelter managers has been met. After this, it will have to keep track of "graduates," and recruit additional trainees to compensate for attrition as people move or become unavailable.
- Schedules Training. As plans for implementation of the training system are developed, the delivery agency must arrange a schedule for the training that will make the best use of resources and meet the time constraints of trainees. System managers must also arrange for refresher and up-date training sessions as needed.
- Evaluates Training. It is the responsibility of the delivery agency to conduct a regular evaluation of the training program so they will be able to assist instructors to improve the program and so they can report back to the institutional level (providing input for possible revision of materials and alterations in the dissemination of information to other settings).

(4) *The Instructional Level.* The instructional level of the delivery system is represented by the individual or department within the delivery agency that is given the responsibility of actually conducting the training. This may be a regular staff member at a disaster-response organization who is interested in this area, the training officer of a business, or an instructor from an appropriate department in a college. The instructor is responsible for the following operations:

- Adapting Training. This involves becoming familiar with the instructional management specifications and the content of the training system and deciding how to use these and the other resources that the organizational level has made available to achieve system goals in a way that will fit local needs.
- Conducting Training. Once everything is prepared, the instructors will conduct or coordinate the training experiences themselves. The need for additional adjustments may become apparent as the training progresses. For example, the instructor may find it necessary to build in learner incentives. Ideally, the instructor will function as a facilitator of the trainees' learning.

- Revises Training. During and immediately after training sessions, instructors should note how well the various learning activities worked and make suggestions for desirable changes or improvements. These changes should be incorporated into the training program before it is conducted again.

(5) *The Learning Experience Level.* This level is the level at which the skills and knowledge required of the shelter manager are acquired. The trainee is the recipient of the delivery systems' output--the training. Once the training is completed, the trainee becomes a reserve member of the community's civil preparedness system. In a crisis-expectant situation, people trained during peacetime may be called upon to serve at the instructional or organizational levels to provide training for others.

b. Specific models for delivery of shelter management training. In the preceding section we presented a discussion of the roles that various agencies or individuals at the five systems levels could play in the delivery of shelter management training. This model of the way in which a delivery system might operate was necessarily generic. In order to become more specific (keeping in mind that this is a model rather than a negotiated plan), it is necessary to focus on actual agencies, singly or together, and consider how they might function in a Shelter Management Training Delivery System.

In this section we will present alternative analyses of how the Red Cross or a community college might operate a delivery system and how a combination of agencies could be employed to deliver shelter management training.

(1) *Alternative Delivery Strategies.* On the chart, operations are broken down into sequential activities and tasks which are loosely matched to strategies which might be used for accomplishing these activities and tasks.

Table 9

Alternative Delivery Strategies for Shelter Management Training by the American National Red Cross (ANRC) or a Community College

OPERATIONAL REQUIREMENTS	STRATEGIES	
	American National Red Cross	Community Colleges
<u>Establishing Awareness and Motivation</u> ● identify significant individuals at all levels ("Stakeholders" and "Gatekeepers") ● assess interest of various organizations and groups in the community ● provide information about the community's needs for crisis relocation planning, establishing shelter readiness, and shelter management training ● open channels of communication; develop or activate community linkage network ● remove barriers that interfere with cooperative arrangements (unfavorable attitudes, conflict of procedures, lack of information, misunderstandings, etc.)	● FEMA personnel discuss ANRC's interest in shelter management training and their role as a delivery agent with the ANRC liaison officers at FEMA headquarters and regional offices ● identify barriers and develop a basis for removing/reducing them by effective communication, modification of procedures, etc. ● set up meetings between representatives of FEMA and ANRC who are prepared to disseminate interest in shelter management training and work with division offices and local chapters ● in communities that have an ANRC chapter, assess the broad community interest in crisis relocation planning, organizational relocation, shelter identification and stocking, shelter management training, etc. ● plan and conduct meetings between ANRC Field Office personnel, members of local chapter Board of Directors, and members of the community who have indicated an interest in shelter management training	● FEMA personnel and/or representatives of facilitating agency meet with decision makers from community colleges (members of state and local Boards of Directors, administrators, instructors in key content areas, etc.) at locations across the country ● identify barriers through interviews/survey instruments directed toward decision makers; analyze barriers and plan procedures for eliminating/reducing them through effective communication, modification of procedures, etc. ● set up meetings between representatives of FEMA and a Regional Leadership committee, composed of community college representatives who are willing to disseminate interest and provide leadership for utilizing community colleges as delivery agents for shelter management training ● in communities that are served by a community college, assess the broad community interest in crisis relocation planning, organizational relocation, shelter identification and stocking, and shelter management training ● plan and conduct discussion meetings between representatives of local community colleges (administrators, members of the local board of directors, interested teaching staff), the Regional Leadership Committee, and members of the community who have indicated an interest in shelter management training
<u>Establishing a Planning Capability</u> ● decide when, for whom, where, and how training will be arranged ● determine what physical resources are needed and available ● develop procedures for organizing resources ● monitor the progress of all operations continuously ● plan how training capability will be expanded during crisis periods	● ANRC works with FEMA representatives and/or facilitating agency to design a model coordinating structure for local chapters that addresses all of the planning functions ● members of the ANRC cadre meet with identified groups in the community and local chapter personnel to adapt the model coordinating structure to local needs ● formal arrangements are negotiated between ANRC and FEMA that define the role and responsibilities of both agencies with regard to shelter management training	● Regional Leadership Committee members work with FEMA representatives and/or the facilitating agency to design a model coordinating structure for local community colleges that addresses all of the planning functions ● members of the Regional Leadership Committee work with administrators and teaching staff from local community colleges to adapt the model coordinating structure to the needs of individual colleges and communities ● formal arrangements are negotiated between FEMA and individual community colleges or community college districts
<u>Orienting/Training Trainers and Administrators</u> ● disseminate general information about crisis relocation planning and shelter management training to all who are interested or have a stake in the success of the system ● provide specific information to all personnel who have a role to play in the delivery of shelter management training ● orient trainers/coordinators in the use of training materials/procedures	● during peacetime, release general information about crisis relocation and shelter management training through newsletters and other publications of FEMA, ANRC, and other interested groups in the community ● approach decision makers in business, church, civic, and volunteer groups, and secure their commitment to provide or receive training during crisis conditions ● develop training procedures and materials in conjunction with ANRC Disaster Assistance Training Officers at the national and	● during peacetime, release general information about crisis relocation and shelter management training through newsletters and other publications of other interested groups in the community ● approach decision makers in business, church, civic, and volunteer groups, and secure their commitment to provide or receive training during crisis conditions ● develop training procedures and materials (resource and student materials, instructor/facilitator guidelines, etc.) that are broadly applicable to a variety of approaches

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Table 9 (continued)

Alternative Delivery Strategies for Shelter Management Training by the American National Red Cross (ANRC) or a Community College

OPERATIONAL REQUIREMENTS	STRATEGIES	
	American National Red Cross	Community Colleges
<u>Orienting/Training Trainers and Administrators (continued)</u> orient administrative personnel in record-keeping and financial (and other) procedures	- field offices. Include an on-the-spot training course for crisis periods when rapid expansion of training capability would be necessary - orient, train, and certify trainers according to established ANRC procedures - orient/train personnel who will handle administrative functions in the required procedures - during crisis periods, train members of groups that have expressed commitment or interest in shelter management training using on-the-spot training materials - during crisis period, use previously trained managers to train additional managers or to monitor training	- available to community colleges (semester courses, workshops, satellite television courses, etc.); include an on-the-spot training course for crisis periods when rapid expansion of training capability would be necessary - conduct training/orientation workshops in the use of the training materials at locations across the country - certify trainers who have attended workshops and have demonstrated acceptable level of competency - orient/train personnel who will handle administrative functions in the required procedures in short sessions at the local/regional level - during crisis periods, train members of groups that have expressed interest in shelter management training using on-the-spot training materials - during crisis periods, use previously trained managers to train additional managers or to monitor training
<u>Securing and Organizing Resources and Support</u> - in the community, identify and acquire the physical facilities and equipment that are required for conducting shelter management training - coordinate with other agencies in the community in order to share resources and information, and to increase community involvement/support for crisis relocation planning and shelter management training - provide for the necessary administrative support, such as finance, registration, record-keeping, etc.	- assess the local chapter facilities and equipment and determine the need for additional resources - use the existing ANRC chapter linkage arrangements to facilitate resource and information sharing and coordination of training activities - develop new linkage arrangements whenever necessary to increase the resources and involvement of significant groups in the community (ethnic and business groups, etc.) - strengthen or establish a tie between ANRC local chapters and community FEMA representative (e.g., Director of Emergency Preparedness) - disseminate general information about shelter management training to members of the community through local newspapers, civic groups, etc. - during crisis periods, utilize the facilities and equipment of community businesses and groups (e.g., churches, local schools, theaters, etc.)	- assess the facilities and equipment of the local community college and determine the need for additional resources - use any existing linkage arrangements between the local community college and other agencies in the community to facilitate resource and information sharing and coordination of training activities - develop new linkage arrangements with disaster assistance and emergency response agencies in the community that will allow shelter management training to be integrated into the community's emergency preparedness plans - disseminate general information about shelter management training to members of the community through community college bulletins and announcements, releases, to newspapers, etc. - during crisis periods, utilize the facilities and equipment of community and business groups (e.g., churches, local elementary and secondary schools, theaters, etc.)
<u>Recruiting and Selecting Trainees</u> - determine the broad criteria for selecting candidates for shelter management training - determine how to modify selection criteria on the basis of community characteristics and the requirements of the local emergency preparedness system - disseminate information about the availability of training through appropriate agencies, publications, etc.	- utilize ANRC's disaster assistance experience base and the expertise of their training development personnel along with information cited in the Shelter Management Training Program - develop procedures for modifying selection criteria to fit special needs by using all published data and other information gathering techniques (e.g., shelter survey) - disseminate information concerning availability of training through ANRC publications, newsletters, etc.	- use the disaster assistance experience base of appropriate agencies in the community along with information cited in the Shelter Management Training Model to establish criteria for selecting trainees - develop procedures for modifying selection criteria to fit special needs by using all published data and other information gathering techniques (e.g., shelter survey) - disseminate information about the availability of training through community college bulletins, announcements, and publications of

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Table 9 (continued)

Alternative Delivery Strategies for Shelter Management Training
by the American National Red Cross (ANRC) or a Community College

OPERATIONAL REQUIREMENTS	STRATEGIES	
	American National Red Cross	Community Colleges
<u>Recruiting and Selecting Trainees (continued)</u> develop a system for keeping track of people who have training/relevant skills for shelter management and for replacing trained managers who are lost due to attrition	- disseminate information about the availability of training through agency network publications and publications of interested community and business groups - approach businesses and other community groups housed in facilities which could be used as shelters, or who could relocate as a unit, and secure an agreement to designate an individual who would be trained as a shelter manager during a crisis expectant period - utilize ANRC personnel databank to store information about skills of shelter managers who have been trained - check databank information regularly to determine whether trained people are still available, and if not, use recruitment strategies to replace them - in a crisis situation, use all of the recruitment procedures described above and also put announcements in local newspapers, church and club bulletins, have spot announcements on local television and radio stations	interested community service and business groups - approach business and other community groups housed in facilities which could be used as shelters, or who could relocate as a unit, and secure an agreement to designate an individual who would be trained as a shelter manager during a crisis expectant period - in a crisis situation, use all of the recruitment procedures described above, plus announcement in local newspapers, church and club bulletins, and spot announcements on local television and radio stations
<u>Adapting Training System to Local Needs</u> - determine local needs and requirements for resources and modification of generic training materials - organize the resources needed to provide training for local shelter managers - specify changes to make in the generic training procedures that will identify: - information to collect and make available - resource people to contact - methods for integrating training with local agencies and emergency plans - methods for accommodating the requirements of local shelters/populations - methods for accommodating requirements of different levels of trainee sophistication	- provide guidelines and suggestions for determining local needs and requirements - develop information collection instruments to include in training materials package - provide a series of examples of ways in which training materials and procedures could be adapted to typical local conditions in the form of case studies - develop instructional materials that address major variations in shelter conditions where ability to understand and deal with those variations is critical to the survival of the sheltered population	- provide guidelines and suggestions for determining local needs and requirements - develop information collection instruments to include in training materials package - provide a series of examples of ways in which training materials and procedures could be adapted to typical local conditions in the form of case studies - develop instructional materials that address major variations in shelter conditions where ability to understand and deal with those variations is critical to the survival of the sheltered population - consult with local experts concerning community emergency plans, shelter and population characteristics, etc.
<u>Conducting Training</u> provide all the training activities necessary to achieve the desired level of competence required for managing a congregate lodging facility/fallout shelter under varying contextual circumstances (e.g., varying time periods, shelter, community and audience variations)	- during peacetime, utilize ANRC's training system to train trainers who could implement training at the local chapters - during crisis expectant period, use trained managers to facilitate on-the-spot training of additional shelter managers and/or use self-instructional short course designed for the purpose	during peacetime, use community college professional staff, facilities, equipment, and administrative system along with resources from other sectors of the community to conduct training in any or all of the variety of ways that are compatible with the agency's educational operations (semester courses, weekend workshops, satellite television transmissions, computer-aided instruction, etc.)

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Table 9 (continued)

**Alternative Delivery Strategies for Shelter Management Training
by the American National Red Cross (ANRC) or a Community College**

OPERATIONAL REQUIREMENTS	STRATEGIES	
	American National Red Cross	Community Colleges
<u>Conducting Training</u> (continued) - provide training that includes the following: - orientation to shelter management - follow-up technical training in selected areas - extensive simulated practice - further training as needed (e.g., on-the-spot training during crisis periods)	- make arrangements through community network for providing simulated practice for trainees - inform personnel throughout ANRC disaster assistance system of new training methods/materials as they are developed; conduct orientation meetings/training sessions to acquaint trainers with procedures for using new methods/materials	- provide for infusion of shelter relevant content into technical and professional courses offered by the community college (ventilation, restaurant management, fire science, etc.) by making resource information available - during crisis expectant period, use trained managers to facilitate on-the-spot training of additional shelter managers and/or use self-instructional short course designed for that purpose - make arrangements through community linkage network for providing simulated practice for trainees - conduct orientation meetings/training sessions to acquaint trainers with procedures for using new methods/materials
<u>Monitoring Training</u> - initiate and maintain procedures that insure that standards of training are maintained and correct procedures are used during training - maintain sensing procedures that seek feedback concerning training, and use it as input for correcting and adjusting training whenever necessary	- utilize the ANRC training monitoring system wherein: - training monitors are sent from the field office or national headquarters to monitor newly trained trainers' performances and provide feedback to them concerning their strengths, weaknesses, and knowledge skills - records are kept that document procedures used for training and estimate their effectiveness - trainer/trainee comments are elicited concerning the adequacy, appropriateness, and effectiveness of training procedures - use ANRC's communication system to convey feedback concerning training to appropriate decision makers in the organization - employ videotape and other procedures to document training for review by a panel of training experts made up of disaster assistance training personnel and other training experts in the ANRC organization	- develop guidelines for monitoring training, and orient administrators or supervisory personnel to observe trainers' performances and provide feedback concerning their strengths and weaknesses and their knowledge skills - initiate record-keeping measures that document procedures used during training sessions and estimate their effectiveness - employ videotape and other methods to document training for staff and administrative review - hold periodic regional shelter management training meetings wherein trainers, FEMA personnel, and others exchange ideas, discuss procedures/problems related to the conduct of shelter management training and recommend changes/revisions
<u>Evaluating Training</u> - initiate and maintain procedures that assure that training at all levels achieves its objectives - initiate and maintain procedures that assure that training objectives are adequate and appropriate for both the needs of the nation's emergency preparedness system and those of the local community's emergency preparedness planning - initiate and maintain procedures that insure input from trainees concerning the perceived utility and effectiveness of the training and their degree of satisfaction with it	- utilize the ANRC quality control system that requires written reports from trainers assessing the adequacy and effectiveness of all training sessions - require local chapters to submit reports that tell what measures have been taken to insure that training is responsive to local needs - utilize and augment ANRC's trainee feedback procedures that allow trainees to make suggestions and tell how they will utilize training on both an immediate and follow-up basis - develop and utilize criterion performance measures that assess the degree of skill attained by trainees with respect to important objectives	- require trainers to submit periodic reports that summarize the adequacy and effectiveness of training sessions - hold meetings between community college staff and administrators involved in shelter management training and members of the Regional Leadership Committee to evaluate measures that have been taken to insure that training is responsive to local needs - provide instruments that allow trainees to make suggestions and tell how they will utilize training immediately after training sessions and on a follow-up basis - develop and utilize criterion performance measures that assess the degree of skill attained by trainees with respect to important objectives

(continued on following page)

Table 9 (continued)

**Alternative Delivery Strategies for Shelter Management Training
by the American National Red Cross (ANRC) or a Community College**

OPERATIONAL REQUIREMENTS	STRATEGIES	
	American National Red Cross	Community Colleges
<u>Revising Training</u> - utilize all information gleaned from monitoring/evaluation activities to refine training materials and techniques - periodically evaluate the training program content for relevance and timeliness - periodically evaluate training outcome data to determine how well it fits the needs of the national and local emergency preparedness system	- have training review panel review data from monitoring/evaluating procedures and recommend/implement revisions based on that data - consult periodically with FEMA and other experts in the field of sheltering technology and incorporate their content revision suggestions into the training materials/procedures - disseminate exemplary procedures as they are brought to light through the observation/review process by means of newsletters, bulletins, training films, and workshops - note training techniques that worked and didn't work and use these notes to refine and improve training sessions	- use recommendations from regional shelter management training meetings and all monitoring/evaluation data to revise training materials/procedures - consult periodically with FEMA and other experts in the field of sheltering technology and incorporate their content revision suggestions into the training materials/procedures - disseminate exemplary procedures as they are brought to light through the observation/review process by means of newsletters, bulletins, training films, and workshops - trainers make notes of techniques that worked and didn't work and use these notes to refine and improve training sessions
<u>Diffusing and Expanding Training</u> - augment established peacetime training system by extending its outreach to other sectors of the community and to other communities - in crisis expectant periods, provide for increased flexibility in the system in order to train large numbers of shelter managers	- in peacetime, develop procedures for certifying locally trained shelter managers as trainers who can conduct training in a variety of locations in or near the community where the chapter is located - during crisis period, previously trained shelter managers conduct training for additional managers and/or monitor self-instructional shelter management courses - provide monitoring to insure that all of the important aspects of shelter management training are adequately treated	- in peacetime, develop procedures for certifying locally trained shelter managers as trainers who can conduct training in a variety of locations in or near the community where the chapter is located - during crisis periods, previously trained shelter managers conduct training for additional managers and/or monitor self-instructional shelter management courses - provide monitoring to insure that all of the important aspects of shelter management training are adequately treated
<u>Providing Refresher Training</u> - maintain trainee competence for skills that have been learned - maintain interest of previously trained shelter managers during periods when performance is not required - provide previously trained shelter managers with new information about conditions, technological developments, etc.	- utilize trained shelter managers during emergencies of limited impact that require sheltering - utilize trained shelter managers to train others - in cooperation with disaster response agencies in the community, plan and implement simulations that provide opportunities for practicing previously learned skills - provide information concerning changing conditions, new technologies, etc. through ANRC and other network agency publications (newsletters, magazines, bulletins, etc.)	- utilize trained shelter managers during emergencies of limited impact that require sheltering - utilize trained shelter managers to train others - in cooperation with disaster response agencies in the community, plan and implement simulations that provide opportunities for practicing previously learned skills - provide information concerning changing conditions, new technologies, etc. through community college and other network agency publications (newsletters, magazines, bulletins, etc.) - include paper and pencil simulations, multiple choice tests, etc. in ANRC newsletters - conduct divisional refresher training workshops periodically
<u>Compensating for Attrition</u> replace trained shelter managers who are no longer available because they have died or moved away, etc.	use ANRC's computer databank and other records to determine the rate of attrition for shelter managers in the various areas of the country and plan recruitment campaigns/procedures accordingly	use records which show the status and location of all previously trained shelter managers to determine the rate of attrition for different parts of the country and plan recruitment campaigns/procedures accordingly

(2) *A Combined Strategy.* There is no single delivery model that will be equally appropriate and effective in all situations, and the delivery agency which is the ideal choice for one community may, because of different personnel, resources, or interests, not be suitable in another. Therefore we should consider the potential of an approach to delivery that involves the use of different agencies to perform delivery tasks at different levels of the system.

For instance, the Red Cross might serve as the primary delivery agency of the institutional level nationwide. However, in a given community, a local chapter might be focusing its resources on other activities. In such a situation, the Red Cross regional training director might call a community meeting involving representatives not only of the local Red Cross and FEMA branches, but personnel from local government, business, and educational agencies as well.

As a result of this meeting, some agency within the community, the community college, for example, might volunteer to serve as the delivery agency at the organizational level. It could send instructors and management people to the regional office of the Red Cross for training and to identify and obtain resources, but it would perform all the functions identified for the organizational and instructional levels itself.

4. Conclusions

A training delivery system consists of those individuals and agencies who carry out the system functions of sensing, processing, responding, and adapting, so that the needs of the larger community can be met. For this to happen, potential delivery agents must be identified and the operations which they will have to perform linked with appropriate implementation strategies.

We have found it useful to describe a delivery system in terms of operations imbedded within the systems levels and then to identify types of agencies

that operate at these levels and represent, therefore, potential delivery agents for these functions.

As stated above, it is the institutional and organizational levels that are most active in the delivery system. We conclude that delivery agents operating at the institutional level should either be national in scope or regional institutions with links to a national network. Also, we conclude that agencies with current involvement in the civil preparedness system would be best suited to accomplishing the required operations. The American National Red Cross and FEMA itself both fit these criteria.

On the other hand, delivery agents operating at the organizational level shall be integrated within the local community, be willing to participate in the local civil preparedness system, and have the resources to provide training. Local Red Cross chapters, community colleges, and businesses involved in Organizational Relocation Planning, are among the kinds of agencies that could operate in this way.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this report has been to present the research and analyses leading to the design of an image or "model" of a generic Shelter Management Training System (SMTS) and a companion Shelter Management Delivery System (SMTDS), along with suggestions for implementing and testing some of these models.

This final chapter, therefore, has the function of bringing together the conclusions we have drawn during the investigation and displaying some of the essential characteristics and variables associated with training shelter managers. A second purpose for this part of the report is to offer several recommendations for future research and design, development, and pilot testing activities relevant to shelter management training.

A. Conclusions

The major activities of this project have been research, analysis, and design. Research activities focused on identifying and searching relevant literatures and involved consultation with professionals in the field of civil preparedness. A variety of procedures were used to analyze the results of this research and to display the findings in a useful way. These analyses formed the foundation for the design of generic and specific models for Shelter Management Training and Delivery.

1. The Shelter Management Training System

The first task of the project was to identify the functions, conditions, audience(s), and potential strategies which ought to characterize a Shelter Management Training System. This led to an analysis of the requirements for such a system, and to the design of a model for a training system which could

meet these requirements. This model can then be used to make judgments about components (e.g., materials) that are presently available and compatible with model requirements and components that need to be developed.

a. Requirements for a Shelter Management Training System. The requirements for a SMTS derive from an analysis of the need--what functions the system must perform and the characteristics it must possess in order to do the job of training shelter managers--and the conditions within which it must be able to operate.

Briefly, the system must be able to do two things. It must be able to impart the knowledge, skills, and attitudes appropriate to the conditions for which the shelter manager trainee is being trained. Second, the system must be able to present these learnings by means of methods which are appropriate to the learners and the instructional situation. For this to happen, the materials used for training must include a sufficient range of options to address all of the more probable conditions as well as sufficient guidance to allow the learning coordinator or instructor to select appropriate options.

We are not able to predict with certainty, the setting, or the time-frame in which shelter management training will be used. However, we can estimate the range of variables affecting the conditions within which training might take place. These variables act as a filter through which to screen the total content of shelter management and the total array of instructional strategies and methods which might be used to present this content. This flexible, local-option approach to the design of a Shelter Management Training Course is likely to be more economical as well as more effective than a single, prescribed, national course of instruction.

An analysis of the options and context variables for a SMTS appeared on p. 102 of this Report. Figure 28, below, indicates how an instructional designer might progress through these options and context variables in order to meet the training needs of a particular group of learners in a specific set of circumstances.

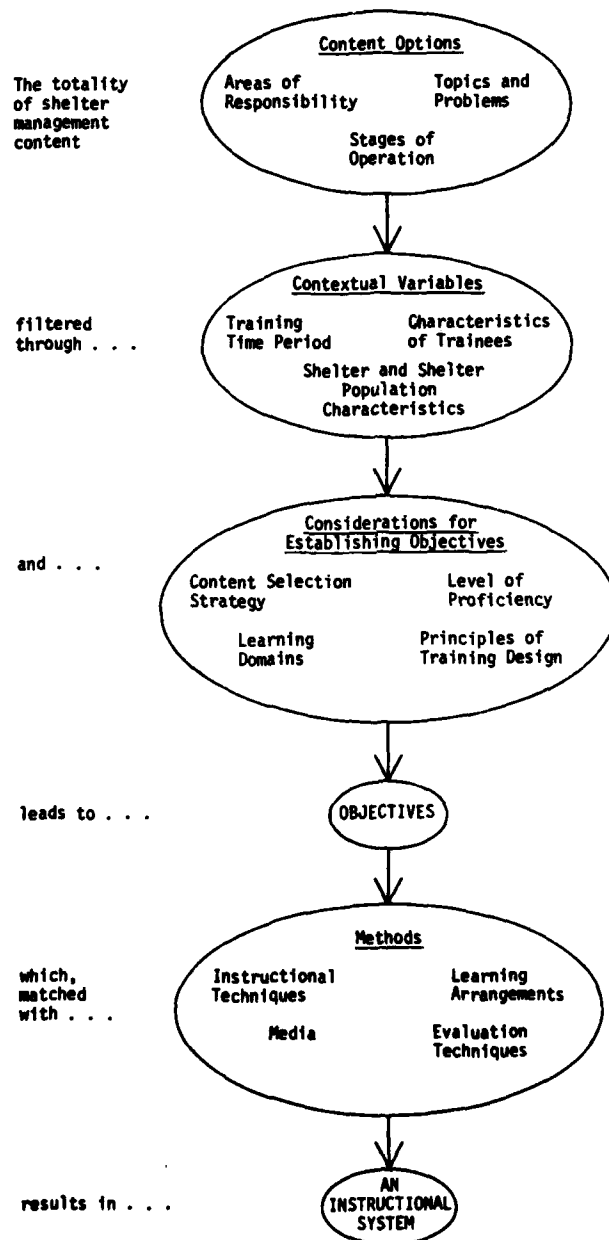


Figure 28. Use of the generic model to design a specific instructional system.

Each of the listings on Figure 28 represent separate analyses that appear in the body of this report. It might be useful, at this stage, to present a summary of what emerged as basic defining requirements of a training system. These requirements can be summarized as follows; a Shelter Management Training System should:

- meet the specific training needs of and be usable in peacetime, crisis-expectant, and crisis periods;
- be adaptable to a variety of geographical settings, shelter systems in various stages of development, and various types of shelters;
- be adaptable to the training needs of learners with varying backgrounds and experiences;
- provide for training of varying intensity and for various levels of proficiency, depending on time, trainee's responsibilities, and the shelter management environment;
- orient shelter managers to all essential areas of responsibility, topics and problems, and operational stages (see the listing in the body of the report);
- provide opportunities for learner response, simulated practice, feedback, and relearning;
- provide a means for evaluating the learners' mastery of knowledge, skills, and attitudes;
- be usable with or without a pre-trained instructor and a training facility.

In addition, the materials which make up the system ought to meet the criteria of clarity, attractiveness, and convenience.

b. Potential shelter management training resources. Once the requirements for a Shelter Management Training System had been defined, the next task was to consider the potential of existing training materials to fulfill these requirements. The project analyzed materials developed by the American National Red Cross, by DCPA, and by others in an attempt to establish what training needs could be met by materials already available and what needs might require the development of additional materials.

(1) *The Red Cross Shelter Management Workshop.* The American National Red Cross has developed and is now testing a two-day (12-hour) workshop in Shelter Management. The workshop materials include the following items:

- How to Manage a Congregate Lodging Facility and Fallout Shelter--a massive user's manual for shelter managers which includes a general description of most shelter management operations and a priority checklist;
- Instructor's Manual--a set of guidelines, directions, and activities for an instructor familiar with Red Cross procedures to use in conducting the workshop, and a set of transparencies;
- Introductory videotape--covering shelter management and the role of the Red Cross;
- Flak Sak--a bag with descriptions of possible shelter problems and emergencies to be drawn at random by the learner (used as a practice exercise and a test of familiarity with the manual);
- Feedback reaction sheets--used to evaluate the workshop.

The workshop is designed to be conducted in peacetime within the context of the Red Cross training program. Certification of instructors and formal monitoring procedures are being considered. Shelter managers and other shelter staff members are trained together at an orientation level.

(2) *Other Materials.* Some of the materials developed by other agencies should also be considered. AIR's Shelter Management Contingency Game is a simulation exercise designed to prepare managers for large shelters. AIR has also produced a number of other booklets such as the Small Shelter Management Guide which could serve as resources in a SMT program. DCPA has sponsored the development of many resource materials in the area of shelter construction and upgrading, such as the Shelter Upgrading Manual: Host area Shelters (Scientific Service, Inc.).

c. Discrepancies between requirements and reality. On the basis of the Red Cross statement about the field testing of their Shelter Management Workshop, it would appear that the materials are able to provide an orientation to Shelter Management when used in the conditions and by the personnel

for whom they were designed. The other materials mentioned are useful for those portions of training content which they address, but are not intended to be comprehensive, and would have to be used by an experienced instructor.

When existing materials are compared with the requirements defined by the Shelter Management Training System model, it becomes apparent that in terms of content covered and conditions of use, there are certain gaps that need to be filled.

(1) *Content that Needs to be Included:*

- the civil preparedness system and the place of the shelter manager within it;
- protection enhancement for the sheltered population in risk area shelters, including positioning;
- procedures for the transition from a congregate lodging facility to a fallout shelter, and techniques for upgrading a shelter;
- high proficiency training in special skills such as crisis intervention counselling, radiological monitoring, fire prevention and suppression, and building expedient ventilation; and
- responses to nuclear emergencies other than a direct attack by a foreign power.

(2) *Guidance that Should be Provided:*

- instructions which would enable training to occur given an experienced trainer, an inexperienced trainer, no trainer (team learning);
- instructions to help the coordinator identify and use information and other resources relevant to the local shelter and the local civil preparedness system;
- instructions to guide the development of learning configurations appropriate to a variety of settings and time periods (especially crisis-expectance);
- instructions for formative evaluation intended to guide system adaptation at the local level;

- instructions for using materials self-instructionally during a crisis-expectant period or in the shelter during an attack; and
- instructions for selecting instructional activities (e.g., a module on radiological monitoring) appropriate to differing learner capabilities and needs.

2. The Shelter Management Training Delivery System

The project's second major purpose was to define the operations, conditions, participants, and strategies involved in a delivery system for shelter management training. Using frameworks developed to study the knowledge diffusion and utilization process, we defined a delivery system as a set of arrangements, resources, and procedures capable of transmitting a knowledge product or process to potential users in such a way as to become integrated with the users' systems.

The task of designing a model of a delivery system for shelter management training centered on three analyses: defining the requirements that the system would have to fulfill, assessing the extent to which selected agencies could satisfy these requirements, and determining what might be an ideal delivery configuration.

a. Requirements for a Shelter Management Training Delivery System. The project identified three types of requirements for the SMTDS: those involving the system's relationship with its environment (contextual requirements); those which indicate the basic functions the system must perform (operational requirements); and those relating to the system's characteristics (ideal system state requirements).

(1) *Contextual Requirements.* The Delivery System must address the needs and assess the potential contributions of individuals and organizations at the societal, institutional, organizational, instructional, and learning

experience levels. It must be tailored to the performance demands of the training system it is delivering, and it must establish a compatible interface between the constraints of the real world and the ideal training system.

(2) *Operational Requirements.* Essential delivery operations include those that have to do with initiating the training system (e.g., establishing awareness and motivation and establishing planning capability), those that relate to implementing the system (e.g., conducting the training and monitoring the training), and those that have to do with maintaining the system (e.g., revising the training and diffusing and expanding the training). In the analysis, these operations were integrated with the basic knowledge utilization processes involved in training delivery and with the various systems levels of the delivery system.

(3) *Ideal System State Requirements.* Characteristics which have been identified as contributing to a system's effectiveness include: integration with existing systems, structure, openness, capability, commitment, access, and synergy.

Figure 29, on the next page, matches system operations with levels of the system that might carry out these operations. This ideal configuration of operations performed by different system levels combined with a consideration of ideal system state characteristics led to the selection and assessment of candidate delivery agencies.

b. Potential delivery agencies. A second task in the design of a SMTDS model was the identification of potential delivery agencies for shelter management training. A preliminary step in this direction was the identification of organizational variables that might affect an agency's suitability to perform delivery operations. The organizational dimensions that were considered are as follows:

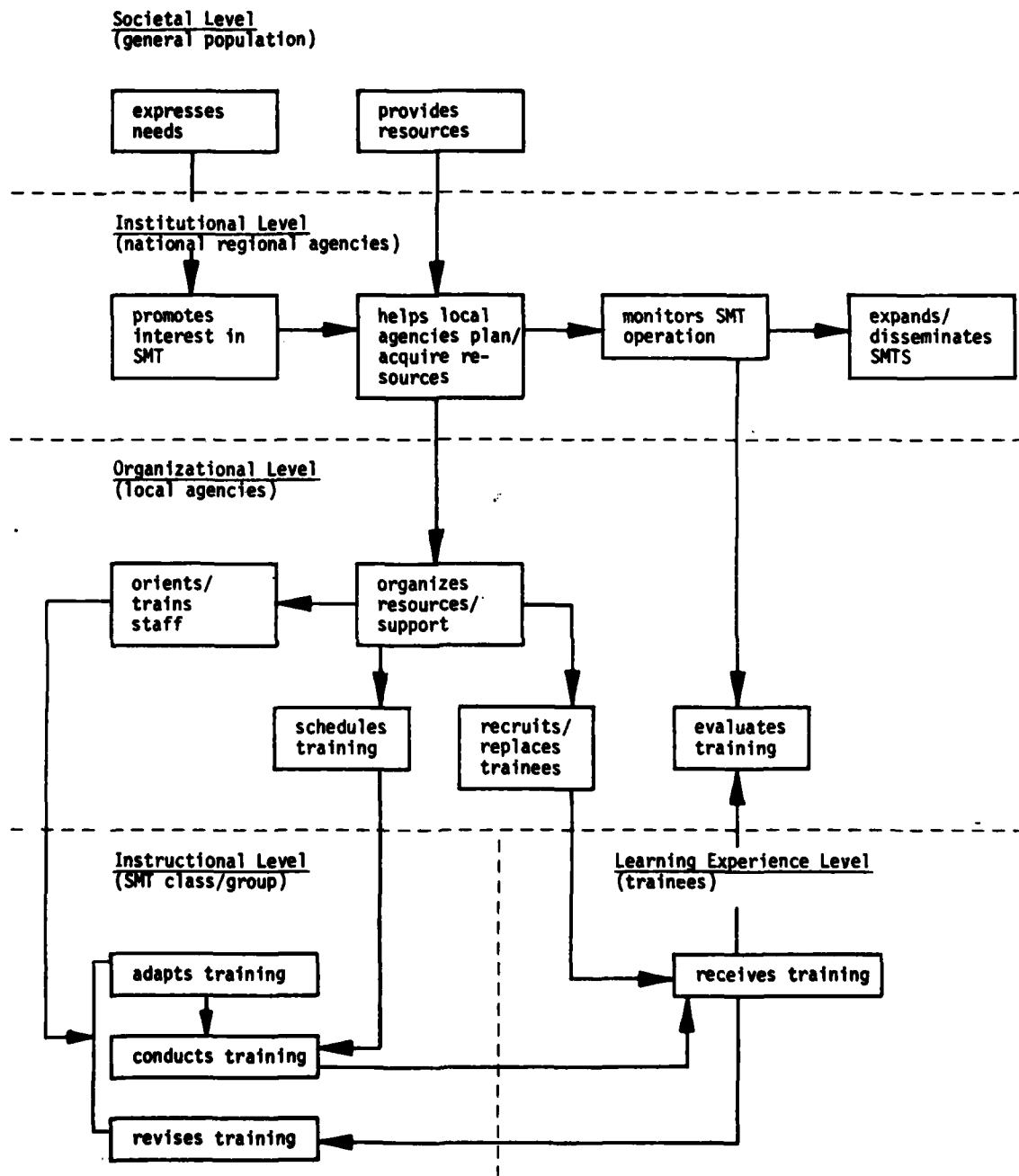


Figure 29. Delivery operations and educational systems levels.

- structural dimensions--national vs. local, private vs. public, single agency vs. network, formal vs. informal educational agency;
- descriptive dimensions--highly vs. loosely organized, open vs. closed, autonomous vs. dependent, complex vs. simple, centralized vs. decentralized, formal vs. informal, innovative vs. conservative, experience in responding to emergencies, high vs. low influence, unique vs. shared role, stable vs. temporary or emerging.
- training capability dimensions--relevant educational operations, ability to initiate new courses/programs, ability to coordinate with other agencies, appropriateness of existing training format/methods, absence of constraints/barriers to the subject matter, need for assistance in conducting SMT;
- inter-organization compatibility dimensions--domain consensus, ideological consensus, inter-agency assessment, work coordination, and
- linkage arrangement dimensions--formal vs. informal arrangements, and single vs. multiple arrangements.

These dimensions provided the basis for an analytical framework which was applied to the American National Red Cross and community colleges (using Monterey Community College) in order to evaluate their potential as delivery agencies for shelter management training. The most significant findings of this analysis will be mentioned below.

(1) *The American National Red Cross.* The Red Cross is a single agency which includes a hierarchy of divisions extending from the national to the local level. Because its organization is independent of governmental boundaries and because it is supported by public contributions rather than taxes, it has both the freedom and the ability to act quickly and independently in emergencies. It is also the largest, most broadly-experienced, and best-known emergency-response organization in the United States.

The Red Cross tries to maintain a balance between control and independence for its local chapters. In an emergency, the degree of involvement from higher levels will depend on the size of the problem. Chapters are

required to offer services in those areas covered by national mandate, specifically, emergency assistance and aid to military personnel and their families. Otherwise, they are free to select areas to be involved in as long as they are related to the basic mission of the Red Cross. New programs require the approval of chapter boards.

The organization has a well-developed training system, including programs in many relevant subject areas, with provisions for monitoring and certification. Most training programs require the cooperation of the division and sometimes the national offices. If the national office of the Red Cross were to define training shelter managers as part of the organization's responsibility, such training could be made available to, though not required of, the more than 3,000 Red Cross chapters.

The Red Cross is experienced in coordinating the activities of other agencies. It is less clear how well it would function in an egalitarian, cooperative relationship with other organizations. Individual chapters also vary considerably in interests, efficiency, and local reputation.

(2) *Community Colleges.* Community colleges and junior colleges are linked by voluntary membership in the American Association of Community and Junior Colleges. This network is an information network with little influence and no authority. Depending on the state, community colleges are controlled by local, regional, and/or state governing bodies.

Community colleges focus on a variety of educational goals, including basic academic education, vocational education, and lifelong learning. Many are closely connected with other educational and community organizations with whom they share services and resources and institute new courses in response to changing community needs.

Community colleges have a great deal of expertise in providing training, but comparatively little experience in responding to emergencies. However, in some communities they are the institution through which professional training for personnel in such emergency-related areas as police work, firefighting, and paramedicine is provided. In these situations, at least, community colleges might be readily accepted as delivery agents for training in shelter management.

The willingness of a given community college to deliver such training could depend on a number of factors, including the community's awareness of need, faculty and student attitudes towards civil preparedness, and organizational flexibility. Because of their lack of expertise in this area, personnel at a community college would need dependable materials and other input from the national and local civil preparedness system.

c. Conclusions from the investigation. Because of its expertise in emergency service in general and in light of its recent involvement in shelter management training in particular, the American Red Cross must be considered as the primary candidate for the role of delivery agent for the Shelter Management Training System. Red Cross' legitimacy in the field, its in-place national network, its training and certification capability and its existence at the local level make it admirably suited to satisfying the major delivery requirements as defined in this investigation.

However, there appears to be some problems associated with defining a delivery system which relies on the Red Cross as the sole agency involved in delivery. These problems include the independence of local chapters in the Red Cross system, the lack of available instructors in some divisions and chapters, and the multiple commitments that would occur during a crisis-expectant period. For these reasons and to maximize system redundancy, we

conclude that the optimal delivery system would be one that incorporates multiple agencies.

The particular configuration described in the body of the report which involves the Red Cross at the regional/organizational level and the community college at the local/instructional level is only one possible multiple-agency configuration. Additional configurations should be explored in subsequent studies.

B. Recommendations

The purpose of this final section is to outline some of the directions that future work in the area of shelter management training and delivery might take. These recommendations are derived from the analyses and design work included in Chapters II and III of this report and from related investigations in the field of emergency preparedness over the past several years by Far West Laboratory staff.

The principal recommendation is that there appears to be a need to describe in detail a multiple-agency delivery system that is generalizable to all possible settings. To achieve this end, three types of research and development activities are required: further development of shelter management training materials, pilot tests of the materials in conjunction with the delivery systems described in this report, and further research and design work oriented to the specification of a workable multi-agency delivery configuration developed in collaboration with agency and community representatives. Some of the requisite activities are described briefly below.

1. Research and Design

a. Conceptualization of a FEMA Training and Education Program. In designing models for the Shelter Management Training and Delivery Systems, the project was at times hampered by the lack of clear and up-to-date information about the larger emergency preparedness training system of which shelter management training is a part. In order to develop and implement the SMTD systems, it is essential that FEMA attend to the need to clarify and standardize its training requirements and define the inter-relationships among emergency preparedness training domains.*

* This effort was described in an RFP: to "Develop Scientific Inputs to the Conceptualization of a FEMA Training and Education Program."

During a crisis period, shelter managers would need to cooperate with other members of the civil preparedness system. The training of managers should therefore be coordinated with that of other participants in the system so that they all will share an understanding of how the system is supposed to function, and of how they can help each other. This goal will be much easier to accomplish if a central agency is guiding training design and monitoring its delivery. Delivery of shelter management training will be completed at the local level, but it must begin at the national level, where basic policy decisions are made, and where basic resources such as training materials are commissioned. Local agencies need to know how the FEMA training and education department is organized, what its responsibilities and resources are, and what they can count on FEMA to do for them in an emergency.

b. Exploration and design of a media-based approach to shelter management training. In a crisis-expectant period, delivery systems which depend on face-to-face contact between instructors and trainees might be insufficient to reach the number of trainees that would be required. In some areas, such as isolated rural sites, low population density might make it difficult to convene a training group. In such situations, a shelter management training program which could be presented by videotape over public television, through teleconferencing, or by some other means. A media-based approach might also be used to tie different local and regional emergency preparedness systems together. Needs and options for such an alternative delivery strategy ought to be explored.

c. The design of shelter management training for special populations. The present project focused on the design of a training and delivery system that would be implemented in the majority of settings and that could meet the needs of the greatest number of trainees. However, in a pluralistic

society such as ours, there are populations with unique training needs which require the development of special tailored versions of the Shelter Management Training System. It would be advisable therefore to investigate in more detail the characteristics of specific groups that might need specialized training, the extent to which existing training materials would or would not serve their needs, and the design requirements for materials development for these populations. Groups which might be addressed include: ethnic minorities, linguistic minorities, and groups living in special geographic settings, such as the inner-city and outlying rural areas.

d. Exploration and design of alternative delivery configurations. An earlier study conducted at Far West Laboratory (Banathy, Stigliano, Bates, Hoeschler & Waterman, 1977) provided a hierarchy of organizations, beginning with those that are most amenable to providing a delivery capability:

- National organizations with local chapters and federal affiliations: e.g., the Red Cross, the Boy Scouts of America.
- National organizations with little federal affiliation but with systematically managed local structures: e.g., labor unions, public media corporations, social service fraternities.
- State government agencies: e.g., state community colleges, state emergency preparedness networks.
- Local agencies: e.g., governmental agencies such as the police, fire service and school districts; agencies that have national or state affiliation but are controlled locally such as religious organizations, labor union locals, and service and civic clubs.
- Private industry: shelter management training could be appended to already existing employee training program or organizational-planning (ORP) capability.
- Ad-hoc organizations: e.g., neighborhood youth groups, community centers.

The above mentioned report also defined three ways that a programmatic effort such as the establishment of shelter management training can expand to the local level and from one locality to another:

- The top down method. National organizations would deliver the program through their channels to agencies or affiliates at the local level.
- The "ripple" effect. Once a program is established at the local level either through national or state initiation, other organizations would become interested and involved and spread the program to new audiences and/or new locations.
- The institutional ripple effect. Agencies (at either the organizational or the institutional level) might deliver the program to other agencies who would then be responsible for carrying out some or all of the required operations at the same or new locations.

Future design work is necessary in order to identify national, state, and local agencies who, singly or in combination, might be capable of delivering shelter management training in different localities. In addition, techniques for disseminating information and diffusing responsibilities need to be explored for each of these arrangements.

2. Instructional Development Activities.

At the end of Chapter II of this report, we presented an image of a comprehensive training package that could be used in a variety of situations. Information obtained from our analysis of potential delivery systems has enabled us to specify further what materials should be included in such a training "package" and what characteristics these materials should have.

According to our analysis, the three most probable training situations would be the following:

- small-group instruction carried out by a trained instructor using the facilities of a delivery agency;
- small-group instruction using the facilities of some community agency with a member of the group acting as facilitator; and
- self-directed learning using pre-packaged materials stored in a delivery or community agency facility or in a shelter.

If materials are to be usable under such varied conditions, they should (cf Bend, Unterwagner, and McIntyre, 1966):

- be packaged in a compact box that is easy to store or transport;
- be packaged in sets which might include materials for 10-12 trainees and a coordinator;
- be marked for easy identification;
- be written in familiar, brief, readable prose, with subheadings to aid scanning;
- use variations in type size, spacing, and colors to increase readability in stress conditions;
- use tabs for easy access; and
- present emergency instructions and checklists as concisely as possible.

Specific development tasks are as follows:

a. A Coordinator's Manual for shelter management training. The Coordinator's Manual would be one of the most important products in the system. The manual would enable an instructor (or trainee serving in that role) to design an instructional strategy appropriate for a particular group of trainees, to manage these activities, to identify and use community resources, and to adapt training to local conditions and needs. The manual would offer model instructional sequences incorporating other materials in the training package and present guidelines for dealing with special situations.

The manual would be divided into two major sections. The first section would cover the management of the orientation workshop. The second section would address various ways of presenting training in specific shelter survival skills. References to additional information, resources, and activities would be provided at appropriate points.

b. Orientation materials. This resource would be a valuable part of the training package (though less essential than the other materials) since it could serve not only to introduce trainees to the program, but could also be used to inform personnel involved at various levels of the delivery system.

Its primary purposes would be: (1) to orient and motivate trainees by providing them with basic information about the civil preparedness system, crisis relocation planning, and the shelter system; and (2) to foster positive attitudes concerning the viability of these procedures for saving lives in a nuclear attack situation. Orientation materials would involve, at a minimum, a booklet and some type of audio-visual message.

c. Shelter management training Sourcebook and Checklists. The Sourcebook would serve as the major reference manual for use by trainees during the orientation workshop and during the actual management of a shelter. With certain revisions, the manual, How to Manage Congregate Lodging Facilities and Fallout Shelters, prepared by the American National Red Cross (1979), could satisfy the requirements of the Sourcebook. In order for this manual to function optimally in all situations and for all contingencies, the following revisions would be required.

- the addition of new topic areas such as characteristics and dangers of nuclear power plants, and requirements for sheltering people safely in a target area (positioning shelterees for maximum blast protection, prevention/suppression of incipient fires generated by blast);
- the expansion of content in other areas, for example, the transition from one facility to another;
- reformatting some of the content to facilitate use by an emergent shelter manager (i.e., someone without previous contact with the Sourcebook);
- the addition of poster-sized checklists that could be affixed to shelter walls.

d. Shelter management Workbook. The Workbook would be used by trainees during the orientation workshop and crisis surge exercises. The Workbook would provide application exercises, tests, simulation and role playing experiences, as well as a place to note specific information about local

conditions and shelters which would not appear in the Sourcebook. Although the Workbook would include a guidesheet indicating which exercises could be used self-instructionally, its primary application would be for group activities in the workshop situation. Exactly which exercises were used in any workshop would be decided by the workshop coordinator.

e. Shelter Survival-Skills Modules. Since the orientation workshop could only serve to introduce trainees to the content of shelter management, additional learning experiences would be required to train them in specific essential skills at the requisite level of proficiency. We recommend the development of a series of skills modules that could be used with a group or with individuals. In peacetime, these modules would serve to increase the proficiency of shelter management trainees and to maintain their interest (refresher training). In a crisis-expectant period, they would form the basis of an intensive course to train shelter managers and their staffs. The behavioral analysis performed during this project, indicated that the following content/skill areas are of sufficient import to require special treatment in the form of additional materials.

- (1) Ventilation--information and skills concerning equipment and procedures necessary to maintain a continuous flow of fresh air and to remove stale air and odors from the shelter.
- (2) Upgrading shelters and expedient shelter constructions--information on how to determine upgrading requirements for a facility in order to provide protection from radioactive fallout; techniques for upgrading shelter in limited time; plans and procedures for constructing an expedient fallout shelter.
- (3) Human problems--information on how to deal with psychological problems relating to stress, crowding, and other conditions associated with crisis relocation and confinement in a shelter; leadership for interpersonal and group relations; techniques for dealing with problems of security, deviant behavior, death in a shelter, etc.
- (4) Life support problems--information for solving problems related to crucial life support systems or requirements (other than ventilation) such as power, water, food, sanitation, medical needs, equipment, etc.

- (5) Radiological monitoring--information regarding construction and/or use of equipment to measure radiation; diagnosis of radiation sickness, and protective or palliative measures (this may be adapted from the RADEF course).
- (6) Nuclear emergencies other than war--information about conditions and problems relating to nuclear power plant accidents, and terrorist incidents involving nuclear weapons or blackmail; providing shelter to populations threatened by such situations.

These materials would include content, directions for use, and exercises for self-testing, application, and practice. The development of posters, checklists, and in some cases, accompanying media would also be desirable.

f. Establish and implement procedures for revision and updating. As strategic weaponry and shelter technology increase in sophistication, new information will become available, and old information will become outdated. If the Shelter Management Training and Delivery Systems are to remain effective, procedures will have to be developed for periodic evaluation and revisions.

3. Field Development and Pilot Testing

The present project had as its intent, the design of a model of a training and delivery system. Models are useful representations of the requirements and complexities of a system but models are not systems. Systems must be developed and implemented in "the real world" by the people who will use the system. This process of field development, implementation, and evaluation is a very important one for insuring that a system design is workable and effective.

Field development and pilot testing activities that should be carried out include the following:

- Tryouts of the Shelter Management Training System materials. Pieces of the instructional materials package described above must be tested by potential users in situations that simulate actual conditions of use. These tryouts can occur after each instructional piece is developed and/or the tryouts can involve a test of the materials used together.

- Field development of a Shelter Management Delivery System Configuration based on specifications in the model. A particular set of arrangements, resources, and procedures must be defined for a particular setting using the guidelines included in the model. Collaborative development procedures involving representatives from participating agencies and other community people will be used to insure that the resultant system configuration is well integrated into the local emergency management system.

Depending on the level of effort possible, the above field development process should be carried out in multiple settings representing variants of important environmental features (e.g., host area vs. unsophisticated system) and of candidate delivery agencies (Red Cross and community colleges vs. Red Cross and fire companies).

- Pilot testing of the Shelter Management Training System and the Delivery System configuration(s). At some point after the materials have been submitted to a tryout and after a delivery configuration has been worked out and tested conceptually, a simulated test of both systems should be conducted.
- Field testing of the Shelter Management Training System and Delivery System. Following the pilot tests, materials and procedures are revised in preparation for a "hands-off" test of the two systems in a new setting. The field test tests simultaneously the workability and effectiveness of the systems and their generalizability to different users in a different community.

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MODELS OF SHELTER MANAGEMENT TRAINING AND DELIVERY SYSTEMS

Unclassified

Far West Laboratory for Educational Research and Development
May 31, 1980, 229 pages, DCPA 01-79-C-0248, Work Unit 1541 C

The report presents two models: a model of a shelter management training system and a model of a delivery system for that training system. The project was supported by FEMA in order to design procedures and arrangements that would provide for the training of 30,000 managers of congregate care facilities and fallout shelters during various time periods including peacetime.

The report presents a number of related analyses intended as input to model building efforts. For the training model, audience characteristics, the shelter environment, areas of responsibility, and instructional management considerations are examined and converted into a set of considerations and options. Three training configurations are then developed based on three training scenarios.

For the design of the delivery system, prerequisites and requirements are described and delivery components are defined. The viability of two candidate delivery agencies is then assessed with reference to system requirements and a number of organizational dimensions. Finally, optimal delivery strategies are described based on a combination of the capabilities of the two agencies.

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